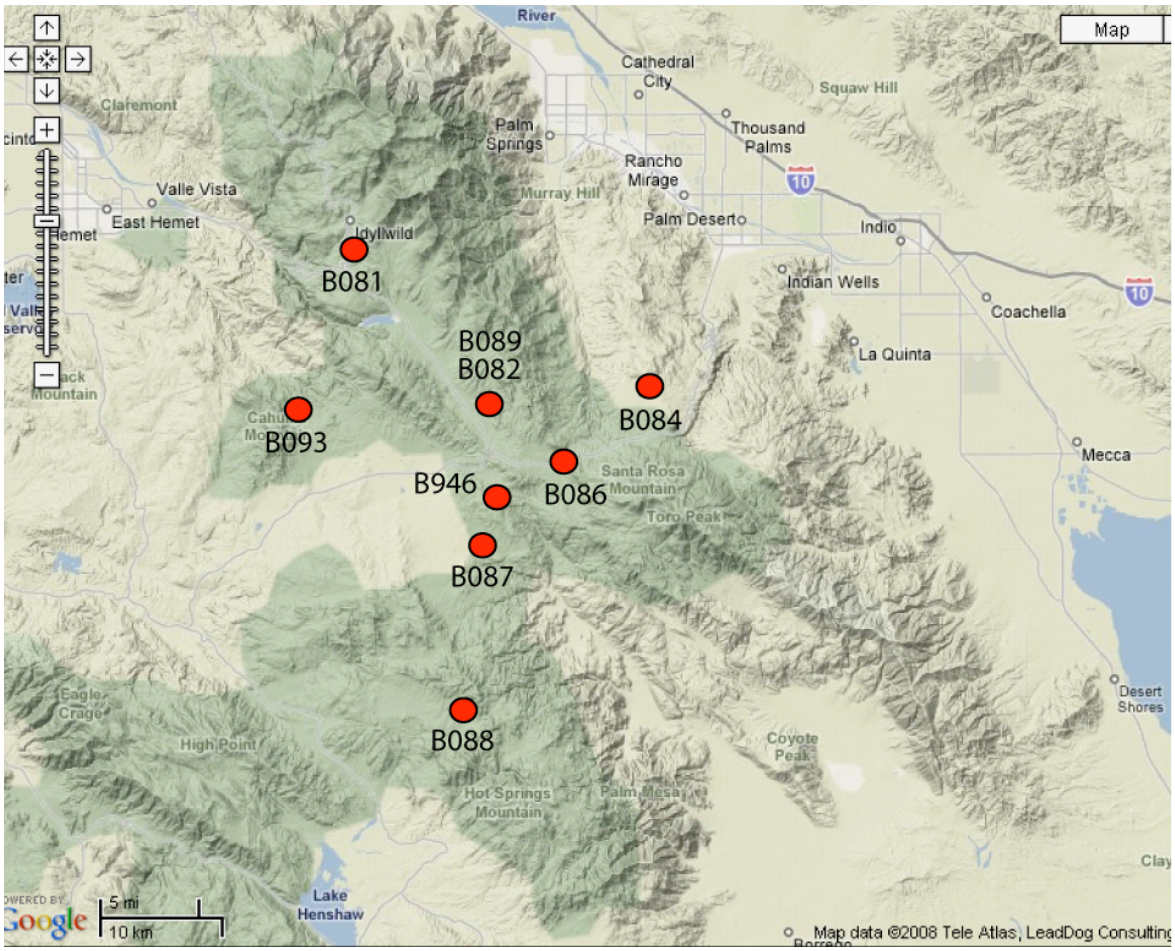
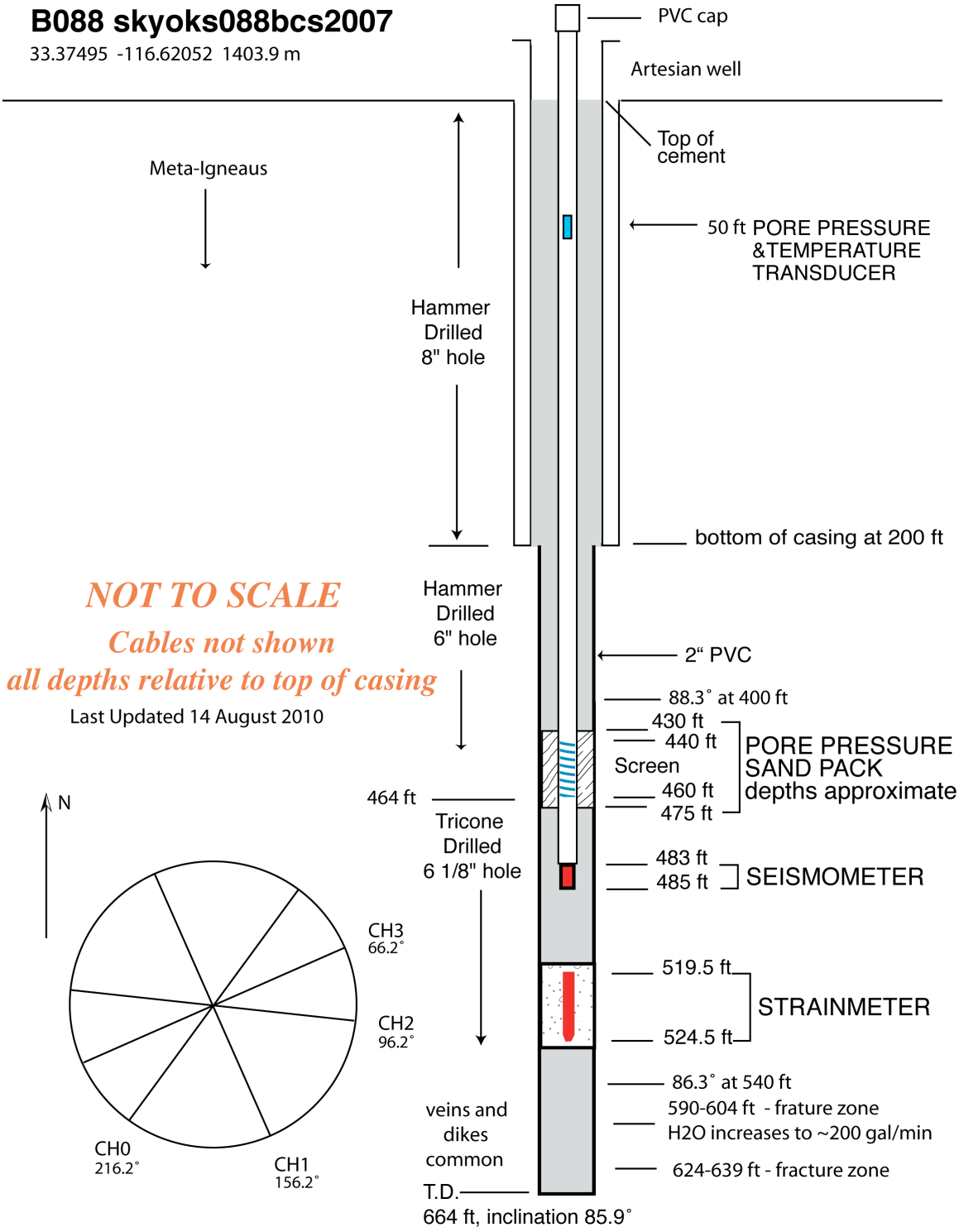
Station Notes for B088, SkyOks088BCS2007

Latitude:	33.37495 (WGS 84)
Longitude:	-116.62052 (WGS 84)
Elevation:	1403.00 m / 4603 ft
Install Depth:[1]	160.02 m / 525 ft
Orientations:[2]	CHO=216.2 CH1=153.2 CH2=96.2 CH3=66.2
Install Date:	January 28, 2007
GTSM Technologies #:	US29
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	http://pbo.unavco.org/station/overview/B088
Notes Last Updated:	January 13, 2020

[1]Install depth is from the top of the casing to the bottom of the strainmeter.
[2]Orientations are in degrees East of North.



Anza PBO strainmeter network, July 2010.


B088 skyoks088bcs2007
33.37495 -116.62052 1403.9 m
PVC cap
Artesian well
Top of cement
Meta-Igneaus
50 ft PORE PRESSURE &TEMPERATURE TRANSDUCER
Hammer Drilled 8" hole
bottom of casing at 200 ft
NOT TO SCALE
Cables not shown
all depths relative to top of casing
Last Updated 14 August 2010
Hammer Drilled 6" hole
2“ PVC
88.3˚ at 400 ft
430 ft
440 ft
Screen
460 ft
475 ft
PORE PRESSURE SAND PACK depths approximate
464 ft
Tricone Drilled 6 1/8" hole
483 ft
485 ft
SEISMOMETER
N
CH3 66.2˚
CH2 96.2˚
519.5 ft
524.5 ft
STRAINMETER
86.3˚ at 540 ft
590-604 ft - frature zone
H2O increases to ~200 gal/min
624-639 ft - fracture zone
veins and dikes common
CH0 216.2˚
CH1 156.2˚
T.D.
664 ft, inclination 85.9˚

Instrumentation at Strainmeter

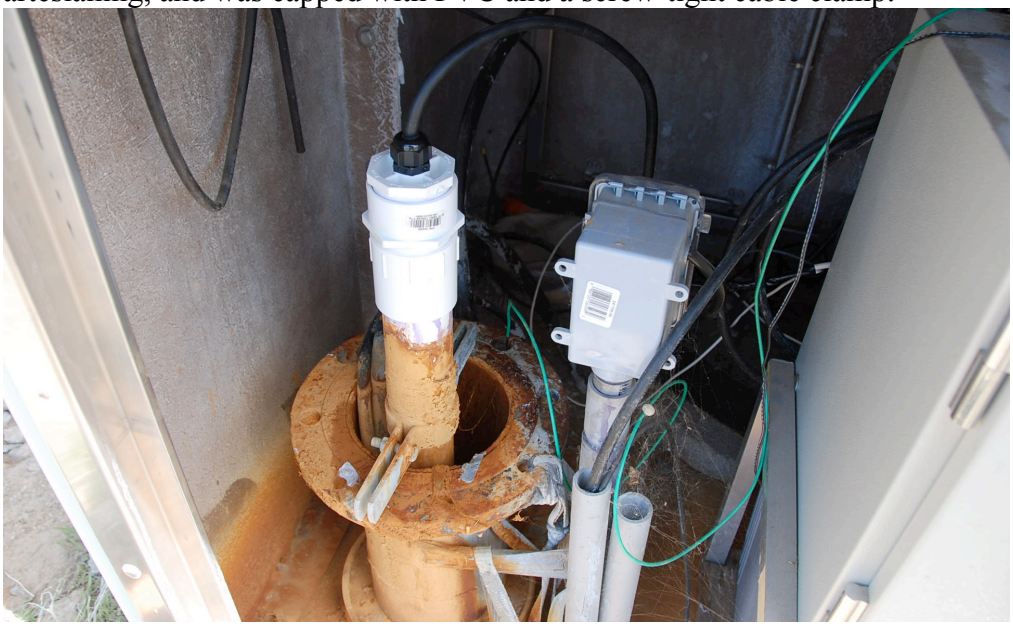
Instrument	Units	Bottle/ASCII Scale Factor	SEED Scale Factor
Pore Pressure	Hecto Pascals	1.0	N/A
GTSM Barometer	Kilopascals	1.0	0.0001
Rain Gauge	Millimeters/hour	1.0	0.252
Down hole Temperature Sensor	Degrees Celsius	1.0	0.0001
Logger Temperature Sensor	Degrees Celsius	1.0	0.0001
Setra Barometer	Hecto Pascals	Not installed at this time	

1. **Installation notes**

Installed BSM at target depth of 524.5'. Mixed Masterflow 816 grout for 11.5 minutes (including 5.5 minutes after last water added) using 1.7 gal h20 per 55lb sack. BSM was inserted into grout column 39 minutes after start of mixing. Near crisis averted with Parkfield (or Australian?) wasps nesting in the cable reel. BSM grout up to depth of 510'.

2. General Information

- The rock is heavily fractured below the strainmeter (below 590 ft). Drillers started losing water to the formation at 575 ft. When they tried to flush out the hole at 664 ft, there was no water return (using 280 gal/minute from a fire hose).
- Sometime between January 13 and March 16, 2010 the pore pressure pipe started artesianing.
- There is an accelerometer installed at this site.
- Sensitivities of all EH channels corrected on March 4, 2010.
- April 4, 2010 - Magnitude 7.2 - BAJA CALIFORNIA, MEXICO
- The pore pressure sensor is installed at 50 feet, no packer was installed. The pipe was artesianing, and was capped with PVC and a screw-tight cable clamp.



3. Strainmeter Maintenance

- February 2, 2007 – David Mencin visited the site to bring up the VPN manually. He also noted that the GPS does not have a valid lock.

- February 13, 2007 – The station was taken offline to move electronics and replace the power box.

- March 15, 2007 – For some reason the Cisco router hung up again at this site. After several attempts at pinging Boulder via the VPN, Michael Hasting finally did a reload on the system and it is back up.

- November 3, 2007 UTC– Dave Mencin visited the site to get it back online.
  17:10 - Onsite. Visual inspection indicates nothing obvious wrong other than the lack of GPS LED on GTSM logger. Plugging directly into the Cisco shows nominal communications to all instruments except the GTSM. Lights on fiber modems appear nominal. This is indicative of fiber modem failures we have been seeing. All batteries nominal.
  17:25 - Reboot logger only on GTSM, plug into GTSM directly and verify operations. GTSM appears nominal minus GPS. Verify fiber modems are inoperative, clean and swap fiber channels, reboot fiber modems, etc. Fiber modems have failed. Dave did not have any replacement fiber modems with him.
  17:48 - Shutdown GTSM, replace power box, restart. Wait for update to environmental data at top of hour. Download all data via sftp. (Dump entire /data to local disk)
  18:11 - Close up site and phone Boulder to verify site is nominal minus GTSM communications.

- November 15, 2007 – Tim Dittmann and Tyson visited the site at 00:55 UTC to replace the fiber-optic modem. After arriving on site they opened both sides of the enclosure. They plugged in the black fiber optic modem, then e-mailed Warren to let him know of the transfer. Tested the batteries and received 14.3volts. They then opened the GTSM door slightly just to be certain it was on and closed the door. They then looked for the netrs, but there wasn't one. Got a confirmation from Warren that all was well and he was able to communicate with the instruments just fine. They also looked at the top of the white PVC and saw that it was duct taped still and no pore pressure wire coming out, they only saw the strainmeter and seismometer cable coming out top of well head.

- February 19, 2008 UTC – Tim Dittmann visited the site to install a marmot.
  23:10 Arrived on site.
  23:35 Made fine adjustments to quads on GTSM.
  23:46 Installed Marmot #334, tightened battery lugs, caulked small gap between bottom of hut and concrete pad, and snapped photos.

- 25 July 2008 UTC - Heidi Willoughby and Liz Van Boskirk visited the site to switch the pore pressure from the NetRS to the Q330.
  19:00 - Opened enclosure. There was no NetRS or GPS antenna onsite. They looked for pore pressure, but these was none. They notice the power connector going into the Q330 was not clicked all the way in, it's now all the way in.
  19:16 - Locked enclosure.

- March 18, 2009 - The logger was upgraded from version 1.15 to 2.02.2.

- June 23, 2009 – Adjusted the barometer in the power box because it was flat lined. Station still needs an upgraded powerbox.

- January 12-13, 2010 – Mike Gottlieb discovered that the A/C power adapter to the master EB-1 in the communication trailer had failed. It was supplying irregular power, which in turn was restarting the radio every 5 seconds or so. He made a new power adapter by splicing the

connector from the old adapter to a spare Cisco power supply, which is now giving out a steady 19V. Coms are back up and data appears to have caught up (no data gaps from this failure).

- March 16, 2010 – Mike Gottlieb visited the site to get it back online. When he arrived he noticed the pore pressure pipe had begun artesianing since his last visit, and the floor of the station was rather wet. No electronics appeared to have been damaged, and he got everything up away from the water. The flow needs to be shut off, either with a packer/pore pressure sensor or at least with a cap of some kind. He will try to shut off the flow on March 17, 2010

- March 17, 2010 – Mike installed a cap on the pipe at 18:15 UTC, which appears to have shut off the flow. Power was also restored to the comms. Quadratures for all 4 channels were adjusted, and chops were checked and looked fine.

- April 2, 2010 – Mike Gottlieb installed a pore pressure sensor (no packer) at a depth of 50'. The pipe was no longer flowing, the static water level was 3' down. He capped the top with PVC and a nylon cable clamp in case it starts artesianing again.

- March 3, 2011 – Checked all GTSM connections for corrosion, none found. Replaced the logger board and adjusted the quadrature on Ch0,CH2, and CH3.

- April 11, 2011 – Temporary broadband seismometer deployed, and borehole seismometer metadata collected with the Birddog.

- September 8, 2011 – Replaced the metpack cable with a functional one. Marmot is now collecting MET data.

- October 4, 2011 – Shannon Hoss reset the GFI on the outlet at B088, which restored the power lost on 10-1-11.

- March 15, 2012 – Found GFI tripped, but it would not stay on after being reset. Any load plugged into the outlet caused another interrupt. Took voltmeter to breaker panel on warehouse, and it appeared there was an issue with the power there. The neutral and ground wires had a 150-180 V differential, instead of being connected. This would cause a GFI to trip. Mike was unable to resolve the issue however. He sent an email to Pablo Bryant with SDSU to see if they can get an electrician to the site soon, and he replied that they would get someone up there this coming week. In the meantime, the station is totally powered down and not collecting data.

- March 19, 2012 – Resolved grounding issue with power at the warehouse. However, the electrician says that the charge controller at our station is not working properly (it was hard to hear him on the phone, so I didn't exactly get all the details). He also replaced our tripplite with a different power strip because ours kept setting off the GFI. It has been several hours since he was there, and the station has not come back online. The station will need a visit to possibly swap Iota charge controller, and replace/add batteries. A new tripplite should also be installed.

- April 2, 2012 – Replaced the 3 batteries on site with 8 new ones. (2 banks of 3 mains, 1 bank of 2 GTSM). Hopefully this resolved the power stability issue. It appears the line (black) and neutral (white) A/C wires needed to be reversed. This fixed the fault light on the tripplite surge protector, which now appears to be operating nominally.

- July 3, 2012 – After speaking with M. Gottlieb, Chad turned the breaker for the station back on. This breaker was the 15A breaker in the left side of the breaker box mounted to the side of the warehouse/garage on-site. He reset the GFI inside the enclosure, and power was restored to the equipment. The 15A breaker tripped again, along with a 30A breaker not

belonging to the station. Chad turned both breakers back on, making the station operational once again.

- July 23, 2012 – A temporary broadband seismometer was deployed.

- August 7, 2012 – Pablo Bryant visited the site to get it back online. He found a blown network switch, data is being downloaded again.

- March 6, 2013 – A Trillium T120PH broadband seismometer was installed at the site.

- June 25, 2013 – The site lost comms to the GTSM on June 13, 2013. Other instruments still had comms. When Mike arrived at the site he found the locks cut and all 8 batteries stolen. He replaced the batteries with 3 for now, 2 mains and 1 GTSM. The GTSM powerbox had stopped working, and was replaced. The site still needs 5 more batteries and a new door handle.

- November 20, 2013 – GFI was found tripped. Batteries were dead and all equipment was powered off. The station had not been collecting data since late July. Coms are working currently, but there are still some intermittent problems with the HPWREN connection.

- November 22, 2013 – Batteries were replaced after GFI was found tripped and all batteries were dead. There are now 2 GTSM and 2x2 mains batteries installed. The door hand was replaced a few weeks previously.

- April 1, 2014 – Marmot was power cycled.

- July 26, 2018 – Site hadn't been visited for a few years and needed scheduled maintenance visit. Adjusted chops and quadrature.

- December 21, 2019 – Update clock speed 100 mhz to 400 and added earthquake straps.