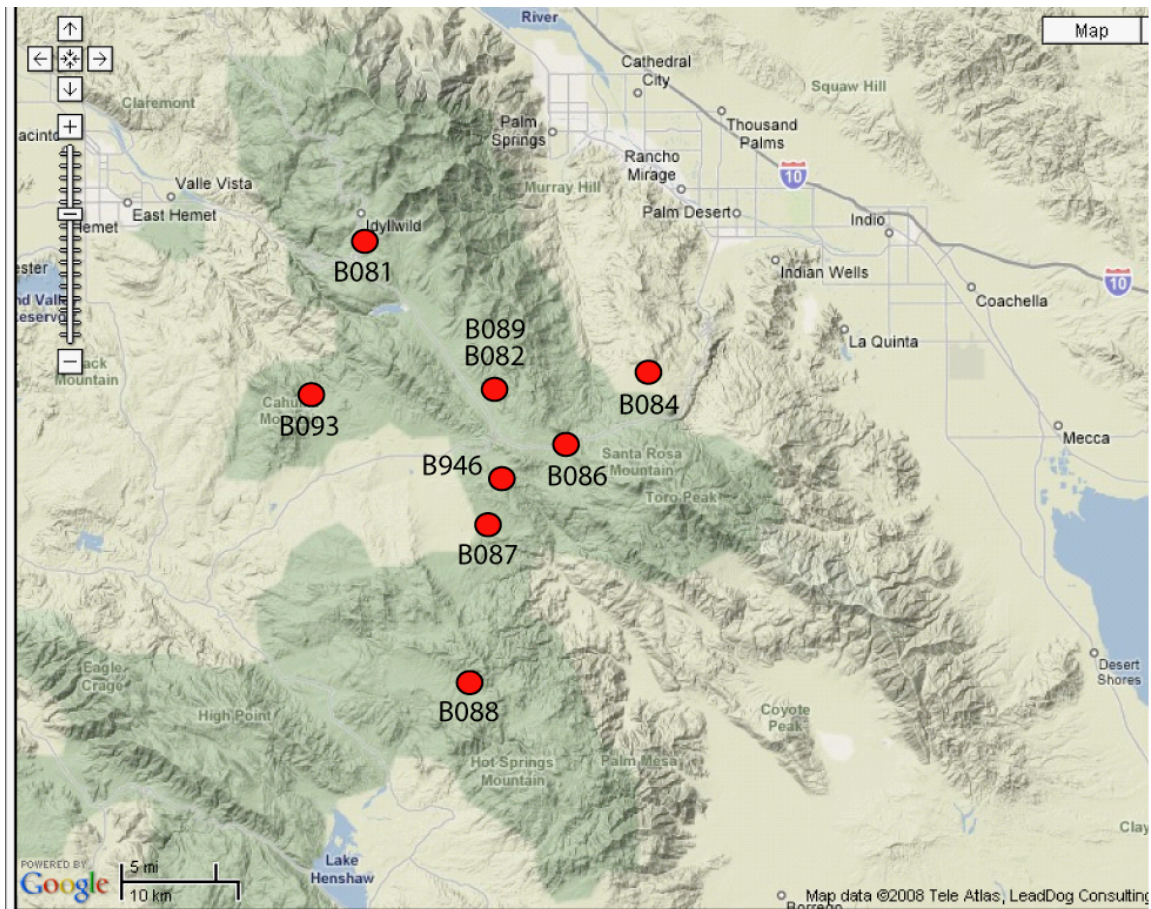


Station Notes for B081, keenwi081bcs2006

Latitude:	33.7112 (WGS 84)
Longitude:	-116.7142 (WGS 84)
Elevation:	1467m / 4813 ft
Install Depth:	242.93 m / 797 ft
Orientations:	CH0=3.2, CH1=303.2, CH2=243.2, CH3=213.2
Install Date:	16 June 2006
GTSM Technologies #:	US15
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.3
Home Page:	www.unavco.org/instrumentation/networks/status/pbo/overview/B081
Notes Last Updated:	March 23, 2020

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

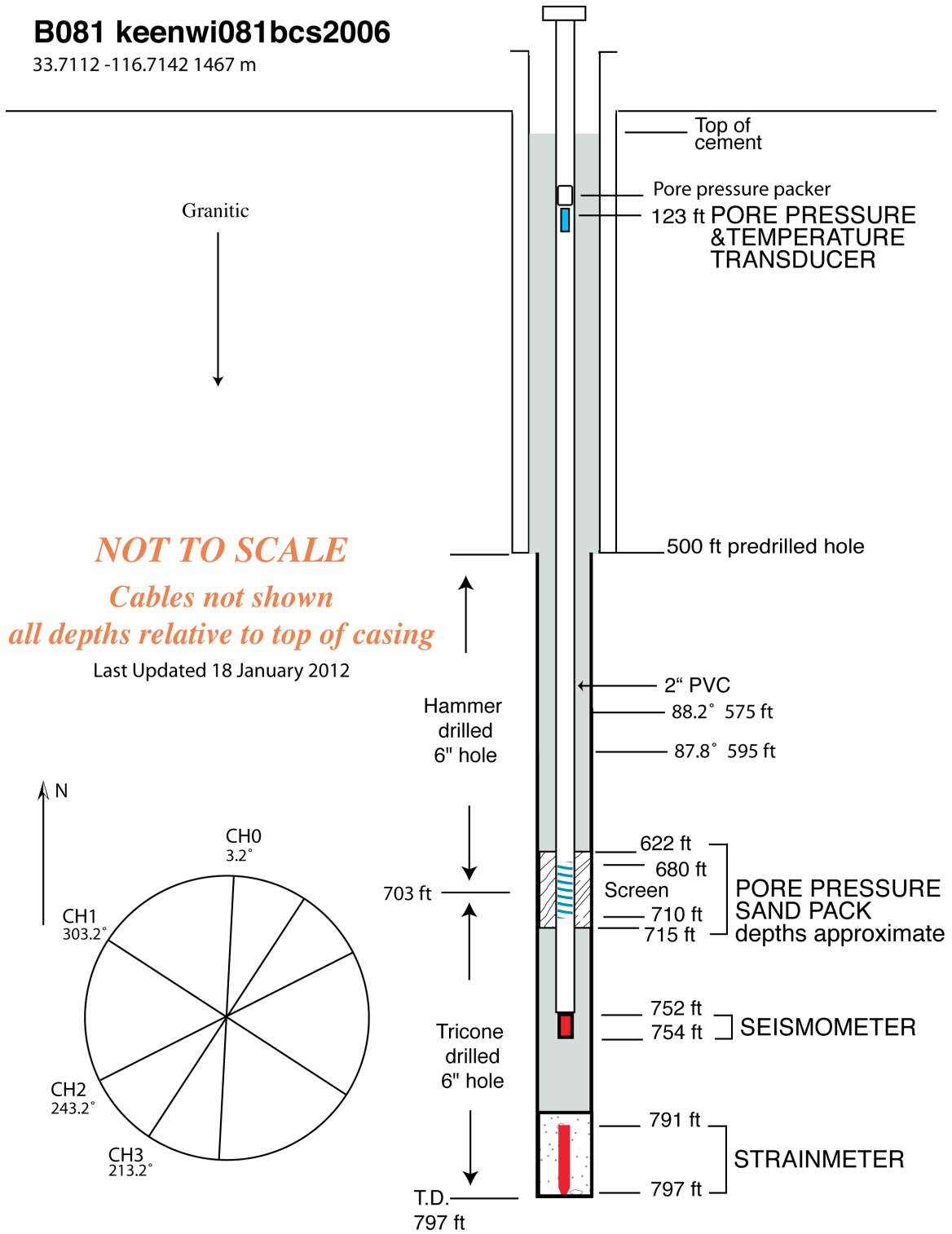
·Orientations are in degrees East of North.



Anza PBO strainmeter network, August 2010

B081 keenwi081bcs2006

33.7112 -116.7142 1467 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	Not installed at this time	

1. General Information

- Down Dec 18 2006 – January 8 2007, no data collected
- Sensitivities of all EH channels corrected in the dataless on March 4, 2010.
- April 4, 2010 - Magnitude 7.2 - BAJA CALIFORNIA, MEXICO
- The pore pressure sensor is installed at 123 feet with the packer inflated directly above the sensor.

2. Strainmeter Maintenance

- January 8 - 9, 2007 – Michael Hasting visited the site. When he got there the GTSM power box was not working properly and required a reset. He went ahead and put in a flex charge controller and found that the pore pressure DB9 connector was not attached to the NetRS. He went ahead and tested the pore pressure sensor and found it was set to PSI and not mbar/hPa. He changed the configuration and attached it to the NetRS so we should now be able to get pore pressure readings. When he went back the next day he noticed that the Environmental SOH data was not updating after coming back online the day before. He rebooted both the power box and the data logger for the GTSM and it now appears to be working. He checked the firmware releases on the RT boards and GPS and they are current so no upgrades were done on this trip. Everything else looks good at the site and appears to be working at this time. He also went ahead and adjusted the downhole temperature RV3 setting so at TP7 it reads 1.25V and it is now in range.

He also checked into the bad seismic channel on the seismometer. Channel 2, EH1, appears to be dead, open circuit.

- January 10, 2007 – Michael Hasting was able to adjust the barometer setting. As such it should now be reporting barometric pressure.
- January 15, 2007 – Michael Hasting installed a marmot
- January 22, 2007 – Tim Dittmann visited the site. He mounted solar panels (6 total). Solar Input was disconnected, panels were moved and mounted, then solar was connected back up. Rain gauge was disconnected and will be hooked back up tomorrow with proper butt splices.

- January 24, 2007 – Wade Johnson and Warren adding the new DC back panel to the site. After installation they fired up the new DC power system and cleaned up the site.
- January 31, 2007 – Wade visited the site to get the station back online. The WiLan cable for B081 was poorly soldered. Half the solder joints had failed after a few days under a very slight bend to the cable.
- April 19, 2007 – Station was configured to record pore pressure, and began logging at 20:22 UTC.
- August 10, 2007 – Steve Smith visited the site to find out why the station was slowly losing power.

4:42 (PST) -- Arrive at B081

4:45 -- Doors open at B081

4:46 -- Voltage check

- BSM side 13.2 Volts

- "Net" side 12.2 Volts

4:50 -- Found loose connections on batteries "Net" side

5:44 -- Solar panel check (there are 6 panels setup as 2 sets of 3 panels in series)

- 11.99 Volts on load on Right bank only

- 12.0 Volts on load with BOTH banks

- 11.98 Volts on load with Left bank only

6:08 -- Charge controller blinking Green the whole time (means it's charging)

6:10 -- DC to DC converter reads 12 V on input side and 15 V on output side

6:11 -- Doors closed at B081

6:12 -- Off site

- February 20, 2008 UTC – Tim Dittmann visited the site.
00:44 - On site, marmot status light blinking red (not online).
00:50 - Adjust power leads on marmot and power cycle, status light returns to green and the marmot is back online.
01:07 - Replace old fiber modems with new blue modems.
01:17 - Adjust GTSM quadratures, tighten lugs, and clean inside of hut.
01:30 - Off site.
- July 23, 2008 UTC – Heidi Willoughby & Liz Van Boskirk visited the site to plug in the pore pressure to the Q330 and work on the power system problems.
21:40 - Arrived on-site and opened enclosure.
21:58 - Pulled pore pressure serial out of port #2 of the NetRS and plugged into serial #1 of the Q330.
22:20 - Remove GPS (small) antenna and NetRS.
22:35 - Leave site. Need new batteries for the voltmeter. After leaving site they call Otina Fox to let her know the Pore Pressure had been moved to the Q330.
- 24 July 2008 UTC
17:20 - Opened enclosure, begin checking batteries. The battery bank of six from the solar panels read, in order from right to left, 12.68, 12.68, 12.70, 12.60, 12.68 volts. All four GTSM batteries read 13.03 volts.
17:30 - Lock up enclosure.

- January 15, 2009. On 1/15/09 Mike Gottlieb replaced the Router and 4 port modem at B081.
- January 23, 2009. On 1/23 we lost contact with the gtsm and marmot but could still see the router and the q330. As of this week, the router is totally unreachable, although it appears the radio link is still valid. The router either needs a reboot, or replacement again, and the 4 port switch may also need to be swapped.
- March 2, 2009 - Shawn Lawrence was able to fix this site on by replacing the blue 4 port fiber optic modem. The previous one went down ~1 week after installation. The blue Marmot also needed a manual reboot, as it had hung.
- March 17, 2009 - Upgraded logger to version 2.02.2.
- April 20, 2009 – Mike Gottlieb visited the site.
22:30 UTC – Swapped powerbox and installed a new GPS antenna. Barometer replaced with new power box. Rain gage connector was home-made, and there was a visibly corroded splice in the cable. Mike installed a proper connector and some new wire, and wrapped the splice in weatherproof tape. Testing the gage at 23:17 showed 9 mm of rain (artificially generated). The splice between the pore pressure sensor cable and the serial cable had failed (one of the wires had broken). Mike repaired the connection, and also moved the cable from serial 2 to serial 1 on the Q330. This appears to restart pore pressure data collection. The sensor was reading 30' of water and 59 deg F when he left.
- June 17, 2009. Mike Gottlieb arrived on site to find strainmeter powered off. The SM batteries were at 9.5 volts and not receiving any charge. The breaker apparently tripped, which shut off the charging circuit. I flipped the breaker back on, and moved 2 batteries from the mains to the gtsm, leaving the site with 3 mains and 2 gtsm batteries. The site needs 5 more batteries.
- June 16, 2009. RTs upgraded to 1.20 on 6/16/09 at 1445 PST.
- June 23, 2009. Mike Gottlieb added 5 more batteries. There are now 2 SM and 8 mains batteries on site. Site has 6 solar panels that are pointed ineffectively. By about 3 pm, they are no longer getting any direct sunlight. The way the mount was built makes it nearly impossible to rotate these panels. The best plan appears to be to add an additional 3 panels pointing more west to capture some of this late day sun. This should cover the small amount of additional power needed to keep the Q330 running.
- September 10, 2009 - Mike Gottlieb swapped the logger board and increased the number of solar panels to 9 to help the power situation.
- October 14, 2009 – Mike went back to the site and cut/re-soldered the geophone connector. The channels of the seismometer tested okay, with resistances of ~2.45 kOhm on each channel.
- February 18, 2010 – Mike Gottlieb visited the site and restarted the Marmot.
- March 16-17, 2010 – Mike Gottlieb was onsite. The pore pressure sensor does not appear to be working. He re-spliced some broken cables, but was still unable to talk to the sensor using

both hyperterminal and digiquartz interactive. There is no data showing up on the Q330. The sensor appears to have failed, and should be replaced. He also discovered the connector for the geophone into the Q330 was made incorrectly, and that the EH1 channel was going to pins B and C, rather than D and E. He fixed this problem, which should hopefully resolve the problems on that channel.

- April 1, 2010 – Mike Gottlieb was onsite. He was able to connect to the pore pressure sensor via Digiquartz software, and determined that the failure was within the serial 1 port of the Q330. The sensor was moved to Serial 2 at 12:00 PST. There is now pore pressure data streaming into and recognized by the Q330. The Paros sensor did not have to be replaced.
- July 15, 2010 – Installed datalogger to measure power usage.
- July 16, 2010 – Removed datalogger and installed fuel cell. Deployed a broadband seismometer at 13:20 PT. Diagnosed power problems as bad LVDs, which have allowed the batteries to die. Batteries need to be replaced. Cleaned up wiring on backpanel (turned off power to non-gtsm equipment). The GTSM turned off after 20 minutes of no input power, so these batteries need replacement too. Replaced marmot. Ran Birddog to get seismometer metadata.
- July 20, 2010 – Removed the broadband seismometer at 14:00 PT. Hooked up second fuel jug to fuel cell, and replaced 2 strainmeter batteries. GTSM was off from 14:25 to 14:35 PT.
- July 22, 2010 – Redeploy datalogger and turn off fuel cell.
- July 26, 2010 – Turn fuel cell on.
- August 23, 2010 – 8 batteries were replaced at this station.
- September 3, 2010 – Failed LVD was replaced. The solar/fuel cell combination seems to be working much more efficiently at the current time.
- January 13, 2011 – Chad visited the site and verified that the fuel cell fuel tank was empty and needed to be replaced.
- January 31, 2011 – Deployed a temporary broadband seismometer, and collected metadata with the Birddog.
- March 2, 2011 – Replaced fuel tanks for fuel cell and replaced battery jumpers with 4 gage wire.
- August 8, 2011 – Replaced metpack pigtail cable with new version (to S3 on Marmot). This required splicing a new DB9 connector (used 1/2 a serial cable) onto the metpack cable, as the original connector had broken. The new pigtail required a null modem, but once connected, was able to receive a response from the metpack. This is the first unit in the field to be recording on a blue marmot.
- September 8, 2011 – Replaced the solar charge controller with the new style Morningstar Tristar MPPT charge controller.

- April 23, 2012 – Found that port #1 on the cisco router had failed. Moved the 4-port switch to ethernet port #2 on the router and the equipment came back online. No data was lost in this outage.
- June 21, 2012 – The coms were taken off LVD2, which shuts off at 12.5 V, and placed on LVD1, which should stay on until almost 11 V. This will end the nighttime coms outages. LVD2 was disconnected. The duocart switch was not enabled after the fuel cell was replaced in April. This prevented it from drawing from the second tank, which was still full. The setting was enabled, and the fuel cell started working again.
- November 18, 2013 – GPS was invalid upon arrival. The coldstart command did not fix the problem, so antenna was replaced. The fuel tanks for the fuel cell were empty and need to be replaced.
- April 4, 2014 – The fuel cell had gone bad and did not see the new fuel cart. The serial and Ethernet ports were corroded, so the fuel cell was removed.
- January 21, 2015 – A new fuel cell was installed to replace the failed unit removed by Wade last year. It was missing the interface adapter IA1, which is required to hook the system up to communications. As such, Mike was unable to activate the duo-cart switch, set up coms, or adjust the on/off voltages. The fuel cell was connected to 1 M28 cartridge directly, with another M28 and the duocart-switch left inside the hut. Need to bring the adapter (ethernet to Serial) that goes between the fuel cell ethernet cord and the B&B electronics serial-to-ethernet converter next time, and finish set up. Fuel cell had 0 operating hours at time of set up. Adjusted quadrature on CH0 and CH2. Checked pore pressure sensor. Could not communicate with device directly using digiquartz software. Sensor/cable needs to be replaced. This will be non-trivial, as the sensor is ~120' down, and has a packer (still inflated to 40 psi), and copper tubing. A decision needs to be made whether to replace with another packer, or switch to a sensor without a packer. Additionally, the borehole is outside the enclosure, and connected by conduit, so a new cable would need to be run through this as well. The conduit is also full of water. This will need to be done on a subsequent trip.
- June 16, 2015 – Pore pressure sensor and packer had failed. Both were replaced, and the new packer was filled with water and inflated to 45 psi. Fuel cell communications were repaired by installing the interface adapter IA1. Fuel cell is now online. There was only one tank remaining on site, so the duocart switch was not installed. Cell was at 577 operating hours.
- April 18, 2016 – Corrected file storage configurations from FW 2.02.3.
- December 27, 2016 – Confirmed RT firmware was 1.20. Adjusted quadrature and chop delays. Quadrature was close on all channels, but delays needed moderate adjustment. Turned on event mode, set trigger/aftershock to 300/60.
- August 9, 2017 – Installed a new logger.
- January 23, 2018 – Fuel cell showed error 76. Serious reservoir error, permanent error, repair required. Removed fuel cell and remote. Left all other hoses and cabling, operational hours on fuel cell were 2368 and there are 1.1 M28 fuel cans on site.

- June 27, 2018 – Installed fuel cell.
- July 25, 2018 – Site was having power issues, not staying online over night. Removed cisco router replaced it with a RV50. Attached missing fuel cell remote to EFOY. Error 20 change fuel, tank one was empty tank 2 was full. Turned out duo cart switch was not enabled, so it didn't see the remaining fuel. Mike enabled the switch and it seemed functional. Replaced old batteries. 2 banks of 4 mains and 1 bank of 2 gtms.
- August 23, 2018 – Station was affected by nearby fire in late July. Exterior of enclosure was charred, and paint was melted. Other damage suspected. Metpack was melted and no longer operable, and was removed. Metpack should be replaced. GTSM batteries were dead, and were removed. Mike stole a battery from the mains side to power the GTSM. It ss now 1x3 and 1x4 on mains, and 1 gtms. Found breaker to equipment tripped, all equipment powered off. Marmot, Q330, and GTSM all started nominally. No input from PV system. Conduit and wires from solar panels to hut were melted and shorted. Mike replaced all conduit and wires. PV system started working again. Rain gauge wire was melted. Mike spliced around the bad area and remounted the rain gauge closer to the hut. It should be secured better (He didn't have small enough hose clamps at the time).
- June 25 ,2019 – Visited site to repair fire damage and install met pack. Worked on enclosure. Used fiberglass resin to patch and smooth out areas where gel coat burned off.
- June 26, 2019 – Continued patching, too hot for bondo to work correctly. Cleaned enclosure and spray painted area without gel coat.
- June 27, 2019 – Finished up repair. Painted entire enclosure with exterior acrylic primer/paint. Replacement metpack, previous metpack melted during a fire.
- December 21, 2019 – Swapped RT board and oscillator board to see if it would help the noise on CH1. Total quadrature on CH1 was less, and it was possible to get CH1 into G3. Noise issues was still present after swaps. Added 2 batteries.