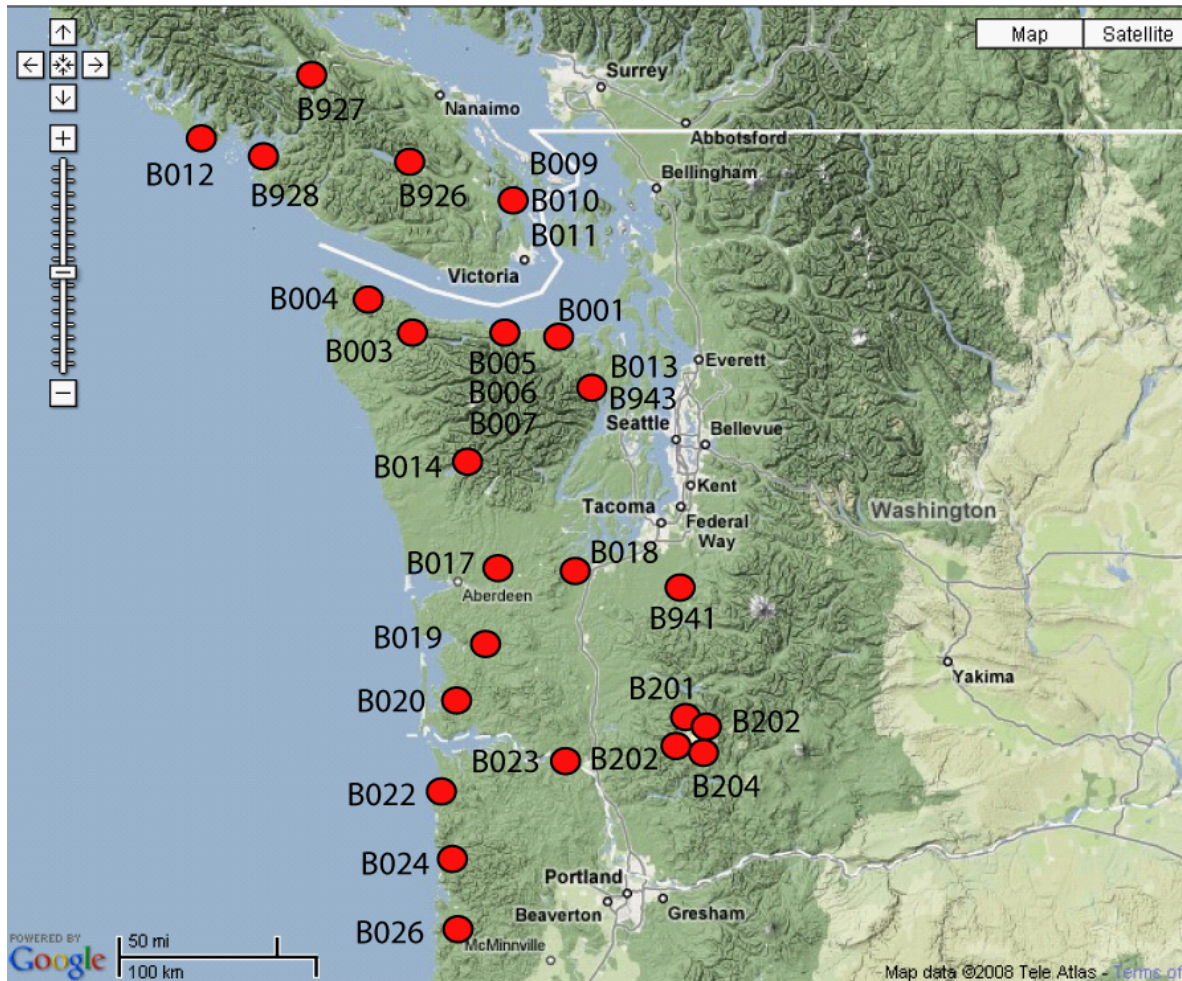


### Station Notes for B023, cataln023bor2008

Latitude:	46.1112 (WGS 84)
Longitude:	-123.0787 (WGS 84)
Elevation:	177.4 m / 582 ft
Install Depth:	240.2 m / 788 ft
Orientations:	CH0=206.5, CH1=146.5, CH2=86.5, CH3=56.5
Install Date:	May 16, 2008
GTSM Technologies #:	US70
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	<a href="http://pbo.unavco.org/station/overview/B023">http://pbo.unavco.org/station/overview/B023</a>
Notes Last Updated:	August 8, 2020

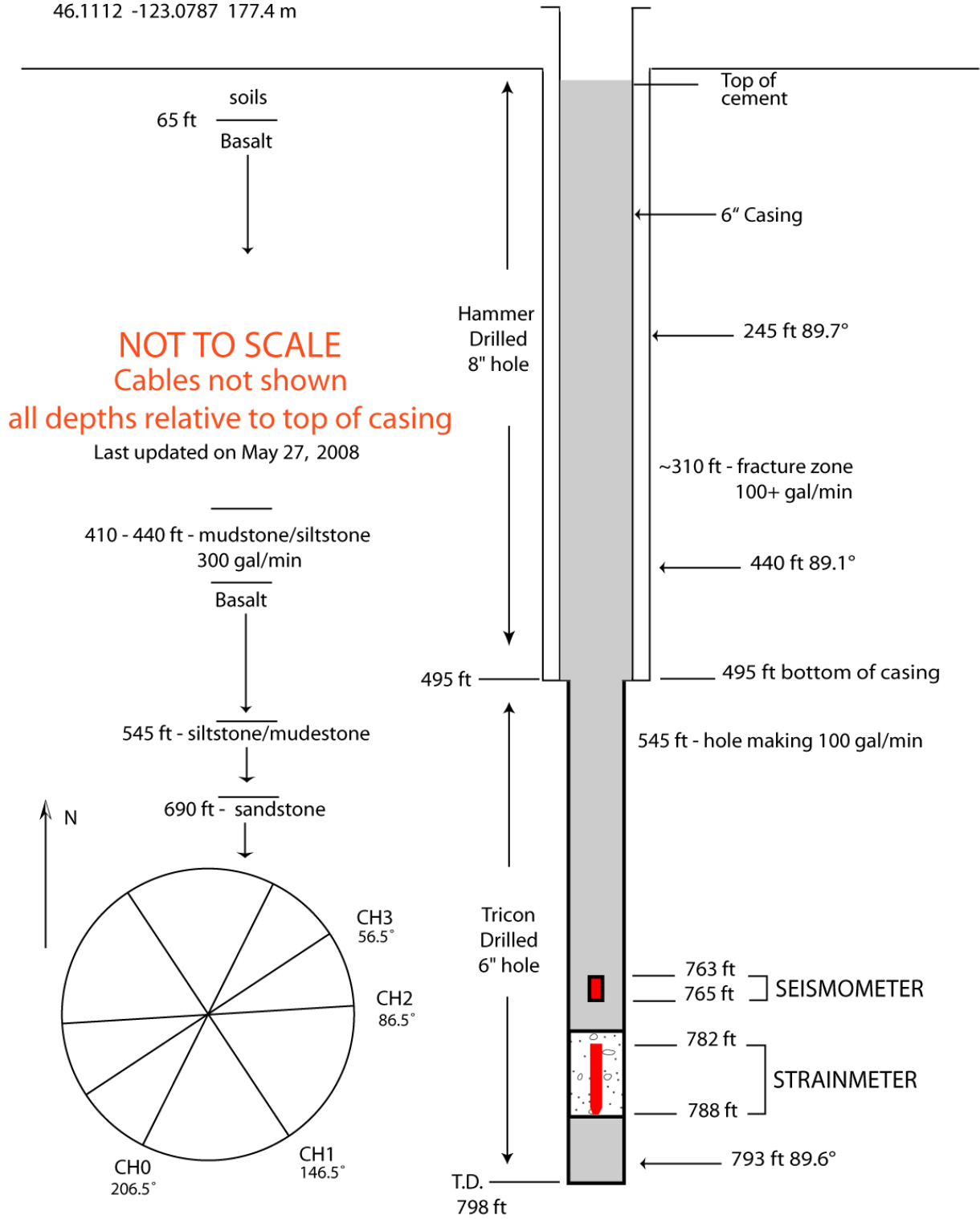
·Install depth is from the top of the casing to the bottom of the strainmeter.

·Orientations are in degrees East of North.



Pacific Northwest PBO strainmeter network, April 2008

B023 cataln023bor2008  
46.1112 -123.0787 177.4 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	1.0	

#### 1. Installation notes

May 16, 2008 UTC

14:00 - Onsite. Sound Hole at 788', US70 looks good.

Calculate cable mark for installation. Length on instrument to 1m mark is 9'2" or 2.794m.

Depth of hole is 788' or 240.182m. Cable mark is 237.8m with 0.5m of stretch.

15:00 - Compass test. X: 0.487, 1.320 Y: 0.514, 0.770

15:45 - Begin mixing grout. 10 bags of grout and 4.4 quarts of water per bag.

15:53 - Start mixing timer, last bag of grout added.

15:57 - Add last water for a total of 4.75 quarts of water per bag.

+6 minutes - Flowcone test: 15sec.

+17 - Flowcone test: 15 sec.

+20 - Stop mixing and fill dumb bailer.

+23 - Dump bailer going down.

+29:30 - Dump bailer on bottom.

+33 - Out of grout.

16:29(+36) - Strainmeter in hole.

16:43 - Strainmeter on the bottom.

16:45 - Strainmeter turned on. X:0.961 Y: 0.537

17:00 - Clean up site. Head out to get supplies to finishing downhole installation.

May 17, 2008 UTC

15:30 - Onsite

16:00 - Lower seismometer 123.

16:20 - Seismometer 5ft off the bottom, trip in pipe.

17:00 - On the bottom at 770', seismometer at 765'.

17:15 - Pumping grout.

20:10 - Done pumping and tripped out.

22:00 - Shut down strainmeter to bury cable.

02:17 - Strainmeter back online.

May 18, 2008

15:58 - Shut down GTSM to install enclosure.

18:05 - Turn on GTSM.

19:58 - Adjust downhole temperature.

23:00 - Leave site.

#### 2. General Information

- Installed with TEG.

- Sensitivities of all EH channels corrected in the dataless on March 4, 2011.

### 3. Strainmeter Maintenance

- July 7, 2008. Reason for visit: VSAT not responding  
11:55 (local) on site. All systems powered down. TEG is not running, propane gages show 1/2 tank and 7 psi (both fine). Batteries show 5.11 V on the mains, and 12.15 V on the SM. Attempted to start TEG locally (w/ low batteries) resulted in clicking noise (attempting to fire) but does not ignite. Swap over to strainmeter batteries (12.15 V), try again. This time clicking is accompanied by hiss of gas for a few seconds, then nothing. Conclude that the TEG has likely failed. Unable to power site at current time. Disconnect the TEGs battery leads to prevent further drawdown of batteries.  
1230 Off site.  
Site either needs A/C power to arrive soon, or else a new TEG to keep it up in the meantime.
- July 10, 2008. Reason for Visit: Try and repair TEG  
12:00 (local) On site.  
Replace igniter electrode.  
Try starting TEG, still won't ignite. Can smell and hear gas, and can hear electrode sparking. Troubleshoot on phone with Chuck. No success, will leave site offline until A/C power arrives. Supposedly this will occur in 1 to 1.5 weeks.  
13:00 Off site.
- November 21, 2008 - Wade and Liz visited the site to get it online. Pulled dead batteries from main side. Disconnected dead GTSM batts. 3 batts on mains. 2 on GTSM. Need to pull TEG.
- Fri March 27 04:42:50 TUC 2009. Logger Software Version upgraded from 1.16 to Version 2.02.2.
- July 14, 2009. Korey Dausz. RT upgrade to 1.20. Barometer installed.
- August 13, 2009 - Korey Dausz power cycled the mormot.
- April 14, 2011 – A Proxicast LanCell 2 using Sprint's 4G network was set up at the site to test data flow on a new communications system. The Sprint service read as "fair" with three bars. Liz could ping all equipment and surf the web. Warren logged onto the LanCell remotely, and reported poor service. The VPN tunnel was dropped after 6 minutes. The antenna that came with the system was used. In the future a different antenna should be used. The tests will continue next week after delivery of a new antenna.
- April 25, 2011 – Lancell 2 with stronger antenna was tested at the site. Even with the new antenna the Sprint service was poor, none to 2 bars. The antenna was moved around outside the enclosure with service never improving. The VPN tunnel could not be established, and service (by internet browser) was constantly being dropped. It was determined to choose another test site for moderate Sprint coverage. The site was left with VSAT operating as the comms.

- September 29, 2012 – GTSM power box and GPS were replaced. GTSM Timing issue was corrected.
- May 8, 2013 – Liz visited the site. She added diatomaceous earth and strapped all equipment to the equipment rack. The GPS CDMA was hanging in the enclosure, not on the equipment rack. The equipment was re-arranged for securing. All GPS (NETRS & CDMA) are on their own shelf to help with GPS related fieldwork. Set chop and quads on GTSM. Filled VSAT mount with expansive foam to eliminate yellow jacket hazard. Took site photos and photos of all equipment. The equipment UNID will be compared and added to the MDM. Replaced GTSM desiccants.
- November 20, 2013 – Liz visited the site to check the metadata. She also replaced the desiccants and a rusty lock.
- January 28, 2015 – Switched comms from VSAT to cell.
- September 15, 2015 – Annual O&M visit. Check site and adjust GTSM chops and quads. Removed VSAT ODU, but not entire dish due to yellow jacket hazard. Replace desiccants in GTSM environmental box.
- January 6, 2016 – All equipment is offline. GTSM was online. The power strip/surge protector had the red light on. Batteries were charged. The breaker box right by the enclosure was open, possibly by strong wind gusts. Downed tree limbs were in the area. Replaced power strip and back panel (for wiring/powering site). Equipment did not come on. The red warning light on the Q330 was lit. There was either a power surge or water/power damage. Site went off-line during heavy rains. Need to replace: Q330, Marmot ,GPS Receiver ,CDMA (was Lancell III w/Verizon), possibly Setra - did not test but it was wired in with other failed equipment. GTSM was running. Tried installing a LS300 w/ ATT, but no luck with ATT service.
- July 6, 2016 – Connect to LS300 w/ Verizon. The CDMA looks ok when logged on, but cannot surf the web. Power cycle. Now CDMA says "Data Connection Failed." Verizon phone service is currently only one bar. Recommend directional antenna or boost. Left LS300 on, expecting slow comms to persist.
- August 2, 2016 - Tested capacitance and resistance of downhole instruments.
- June 22, 2017 – Arrived on site, all equipment was on. LS300 displayed red network and signal lights and was very hot to the touch. Set up a cool environment in the work truck to test a new RV50 and the old LS300. The RV50 connected with a redbull antenna, while the LS300 would not connect and displayed red for network and signal strength. Left the new RV50 in the site, but will not connect to network.
- June 28, 2017 – Redbull antenna was mounted on old VSAT pole to try and improve signal strength.
- November 29, 2017 – Visited site to check on anomalous low battery charging reports and check GTSM power box. GTSM battery bank of 2 was in float at 14.5 V. Checked the setting in the GTSM power box, which was 1.2V. Will leave to discuss before swapping GTSM power box.

- January 3, 2018 – All channels had flat lined. Viewed oscillator board signal on scopemeter before removal, it was flat lined. Swapped out oscillator board and could see a sine wave. Adjusted chops and quads with limited scopemeter screen use. They should be close, but unable to perform the task to the precision usually applied.
- August 8, 2018 – Site kept dropping out. Logged onto RV50 and service was weak. Rebooted RV50. Waited and watched for VPN tunnel to connect. The power drop pole is by the site. The panel was not securely closed and was opening in the breeze. There are now cows in the field. Liz bent the tab metal to keep it closed. A cow could easily open the panel using it as a back-scratcher.
- January 29, 2019 – Site has bad voltage readings. Swapped out EnvRead bin file for one that is from site with proper voltages. Did not resolve issue.
- January 30, 2019 – Something had failed in either the power box or the logger resulting in a GTSM voltage reading of 4-6V despite the actual battery voltage being 14+. Status report showed 6 V for GTSM. Rebooted system, no change. Unplugged power to power box, no change. Replaced power box, now showing 14.25 V (the correct voltage). The rain gauge top had blown off since the last visit, so any recent rainfall was likely under-recorded. Found the top in the grass and replaced it, also cleared a clog.
- June 23, 2020 – Bad Verizon CDMA comms. Swapped out RV50 for RV50x with Verizon. Swapped out white redbull antenna for a new black redbull antenna.
- August 5, 2020 – Swapped comms from Verizon to ATT&T.