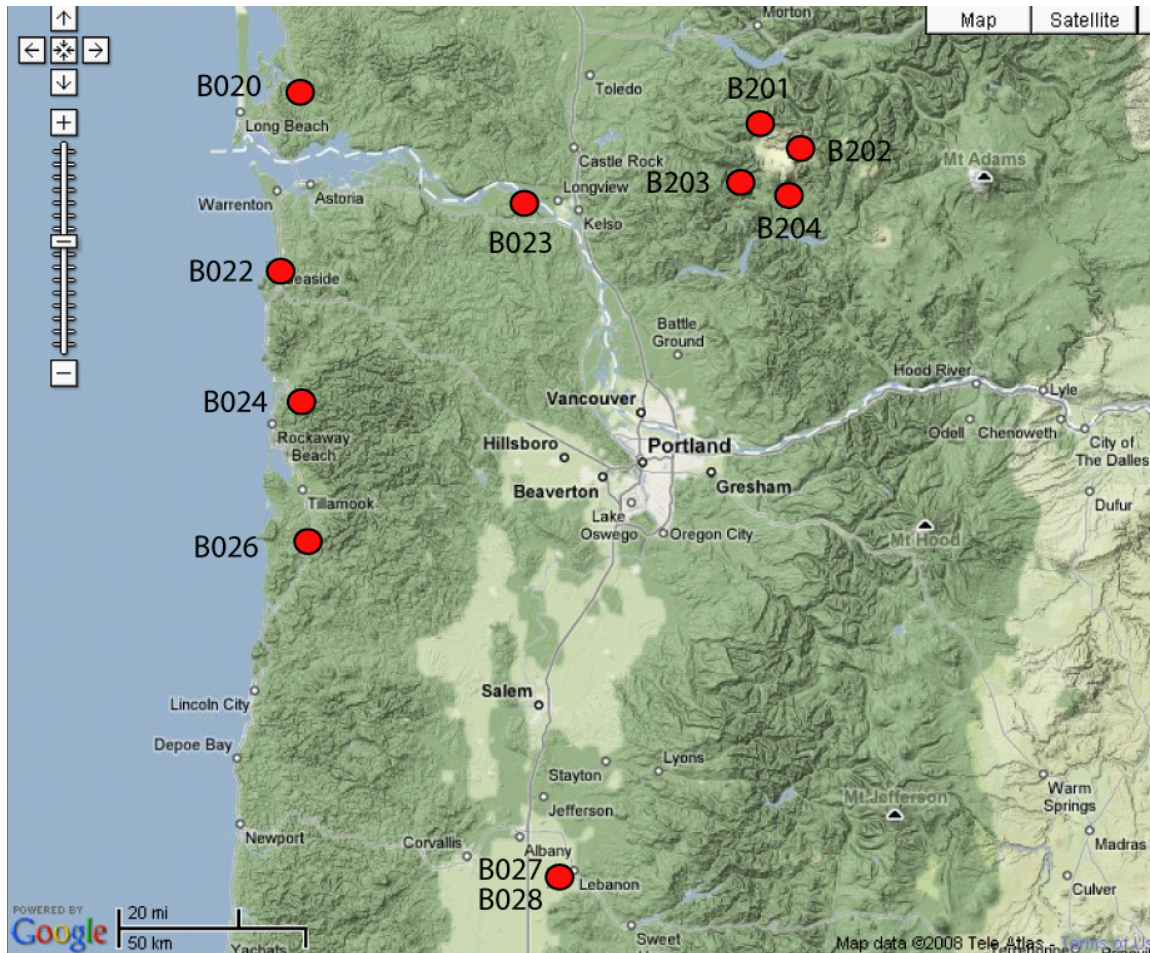


Station Notes for B028, lester028bor2007

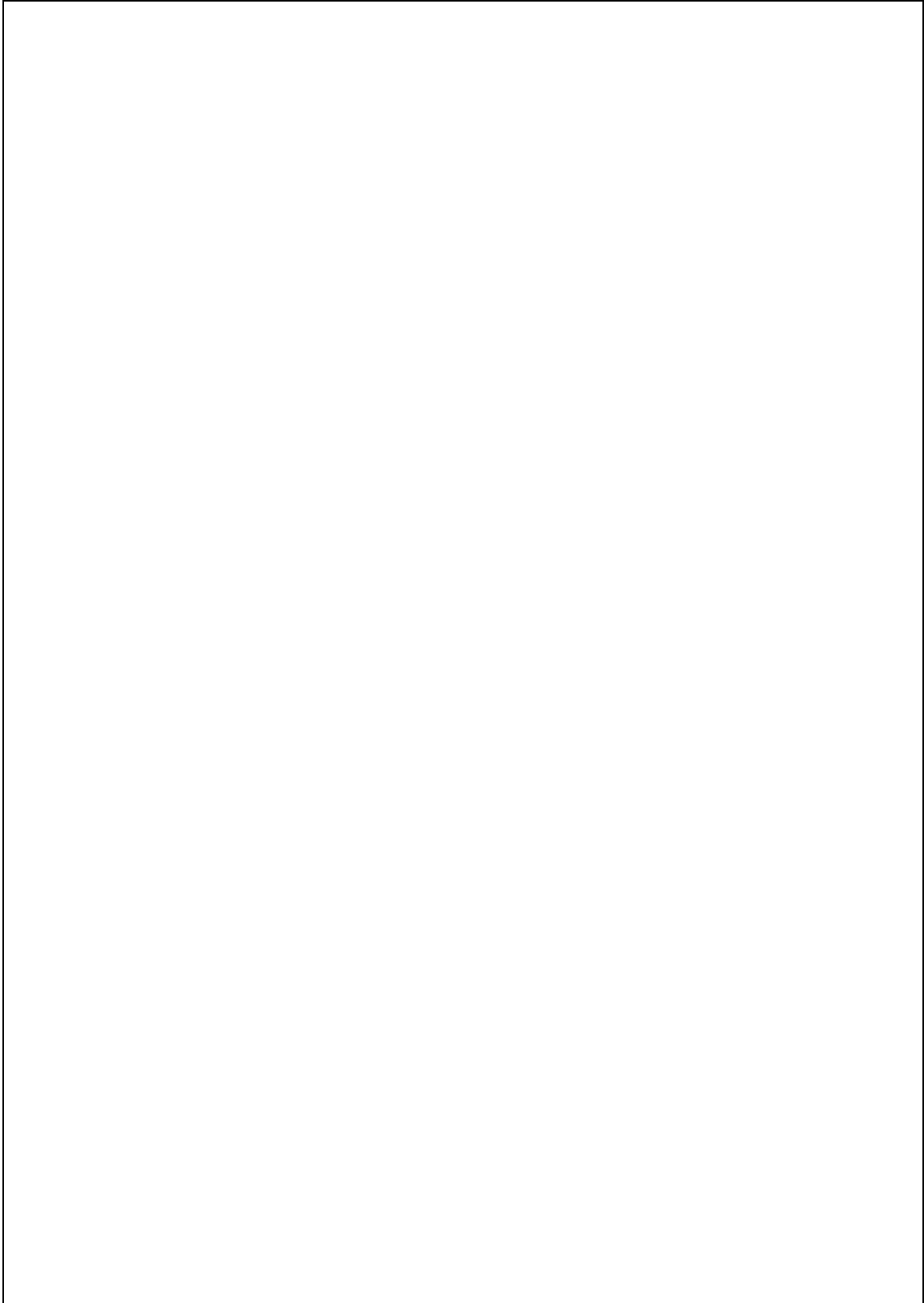
Latitude:	44.493667 (WGS 84)
Longitude:	-122.963833 (WGS 84)
Elevation:	140 m / 459 ft
Install Depth:	240.5 m / 789 ft
Orientations:	CH0= 282.3, CH1= 222.3, CH2= 162.3, CH3= 132.3
Install Date:	19 March 2007
GTSM Technologies #:	US25
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	www.unavco.org/instrumentation/networks/status/pbo/overview/B028
Notes Last Updated:	August 21, 2020

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

·Orientations are in degrees East of North.



Portland strainmeter network and surrounding area, June, 2008



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	-

1. Installation notes

March 17, 2007 – Heidi Willoughby and Wade Johnson used 1cm gravel to bring up the bottom of the hole from 797.5 to 793 feet. The plan was to bring up the hole by 2-3 feet, but they over shot by a foot. They may have knocked off some of the sidewall from just under the casing. They used a four section bailer in the install, which would make up for any grout leaking into the gravel. They will lower the strainmeter to the bottom of the hole and then pull up 1m. This should put the sensor volume between 784-790. They will be using 1341 cable grout for this install. The test a week before indicated that this grout is much more usable with a longer working time than the 816, which will be very useful. On paper this grout also looks better than the 816.

March 19, 2007 – The strainmeter, US25, was installed at 789'. During the install the capstan motor failed causing the capstan wheel to free spool. The strainmeter was stopped and it was decided to lower it by hand. While lowering the strainmeter the tie off mark was missed because the cable was very hard to read. As a result too much cable was lowered into the hole. The strainmeter was slowly sinking into the grout so they had time to pull slack cable out of the hole with out moving the strainmeter. They tied off on the proper mark and allowed the strainmeter to sink to the target zone. They had planed on going to the bottom and then lifting one meter, but due to the capstan failure they decided to just hang the strainmeter.

March 21, 2007 – The seismometer was installed at 762'. The top of the grout was at 770', and the screen section is at 708-728. They cemented the seismometer in with 5 bags of cement which should bring the bottom of the hole to 738 feet. The surface grout sample was very hard. They will bury the cable today.

2. General Information

- This station is part of a cluster that includes B027.
- Sensitivities of all EH channels corrected on March 4, 2010.
- The pore pressure sensor was installed at 127.4 feet, and no packer was installed.

3. Strainmeter Maintenance

- April 9, 2007. Wade Johnson installed a rain gauge.
- April 25, 2007. Wade Johnson rebooted the master radio.

- May 22, 2007. Sarah Venator met with an electrician to prepare the site for AC Power. They shut down the TEG, opened the enclosure, and detached the wires to the TEG from the panel. The electrician ran additional wire through the conduit and added an outlet inside the enclosure. The station was on battery power for 1.5 hours.
- October 4, 2007. Tim Dittmann visited site. He pulled the TEG for upcoming needs in the PNW. The power was swapped over to AC at 17:05 PST. Installed a radio-shack purchased UPS and surge protector. TEG is going to be freighted to Boulder.
- October 14, 2007. Michael Gladwin visited the site. He noted that the delays needed setup, and there was a very tight radius bend in the main GTSM cable (way less than 500 mm). He also noted loose battery terminals. He observed mains pulses at approximately 600 mV at Amp Out. These pulses remained with Vicor isolator switched off and with the DLS DC breaker open. It was necessary to disconnect DLS from mains socket to eliminate the pulses. He made no change to system during this visit.
- December 16, 2007. Chuck Kurnik visited the site at 23:32 UTC to get station metadata.
- March 20, 2008 UTC - Emily Seider and Elizabeth Van Boskirk visited the site.
23:30 - After a call to Warren they checked the station and realized there is no Marmot in the enclosure.
- April 30, 2008 UTC – Emily Seider and Elizabeth Van Boskirk visited the site after working on B027.
23:30 - Check station and realize there is no Marmot in the enclosure.
- May 6, 2008 UTC - Emily Seider visited the site to install a Marmot and investigate GPS timer problems.
16:58 - Arrive on site.
17:10 - Marmot is installed, programmed, and checked by Wade.
17:28 - Move GPS around and check the connection to the power box, then try resetting the logger board. Time is still invalid, may need a new GPS?
17:40 - Off site.
- December 3, 2008 – Wade Johnson replaced the fiber optic modem.
- March 27, 2009 – Logger software upgraded to 2.02.2
- May 6, 2009 – Marmot installed.
- Oct 21, 2009 – Wade Johnson rebooted the Marmot at 5pm PST. He installed a pore pressure sensor at 124.7', it is ~ 10 feet underwater. He will calculate a more accurate depth from the pressure reading later. The sensor and un-inflated packer are hanging from the signal cable. Warren and Wade calculated that the signal cable has more than enough strength to support the sensor and packer. The upper adapter that is usually used to hook a steel cable to was missing. Next time Wade is onsite he will bring an adapter. The worry that Warren and Wade have is that the cable will stretch more than a steel cable. The Clock was showing 100% on the Q330, but the time was invalid on the GTSM. Wade could not get it to lock. On the next site visit he will bring a new power box and antenna.
- Oct 22, 2009 – Wade ran back out to the site because he could no longer ping the station
- April 4, 2010 – 23:20 UTC, Tim Dittmann swapped out the GTSM Powerbox. 23:24, restarted GTSM with new powerbox and confirmed that GPS was tracking satellites.
- August 20, 2010 – Liz Van Boskirk was onsite from 16:00 – 18:00 PT. After arriving on site the IDU transmit and system lights were off. The receive was only at 59%. First all weeds were removed, as the VSAT dish in below in the field at the tall grass level. The dish was re-pointed with the receive now at 82% and the transmit at 67%.
- September 1, 2011 – The yogi antenna at the site was loose enough on the pole so that it could rotate with little force. The pole itself could rotate as well. It was most likely moved by strong gusts of wind. The antenna was moved until a receive strength of 85-95 was

reached. The antenna was tightened to the pole, and the pole against the enclosure was fastened with silicone adhesive where it is bolted to the hut. The reflected power at B028 was 13 or 22, varying with different days logged into the radio. The cable ends were terminated, adding new connectors. The reflected power is now 7 or 8.

- November 2, 2011 – Liz stopped by the site to document the cattle panels around the enclosure and VSAT. The panels were purchased on October 27, 2011 for the landowner to pick up and place around the enclosure.
- January 25, 2012 – Liz visited the site to try and get the strainmeters back online. The power was off to all equipment at the site. The GTSM was off and the batteries were at 11.6 Volts. She plugged in the laptop to observe the charge light and see if she needed to reset a breaker. She located the breaker on a pole up the hill between the two sites, which was labeled PBO upper and lower. After resetting the breaker, there was still no power to either site. She went down to the farmhouse to see if the power was on. The son was staying in a guesthouse while his parents were on vacation. His power worked, but informed her there was a windstorm and part of it snapped. There is a metal piece hanging from the pole, the power company will be contacted for repairs. All hornet nests were removed from enclosures and power boxes.
- February 1, 2012 – Liz met with the electrician, who confirmed what she had told the power company, there is no power at the drop. She called Consumer Power (note: She called Consumer Power over a week ago to report the broken fuse and power outage and was told they had visited the site and there was nothing for them to fix). A representative arrived at 10:30 local time. She showed him a fuse that broke on the line during the storm and where the power drop is. He replaced the fuse and drove up the hill to check the power drop and lines. Liz visited the site. Power was restored to the equipment. She pressed on the reset button on the GTSM power box and the GTSM turned on. She began organizing the wires and noticed the router was no longer on. The wire to the router had a long segment of exposed wire entering the panel. The old electrical tape on the wire had fallen off. She re-wrapped the wires entering the panel. To check the router Liz plugged in a spare power source to see if it would come on and power cycled it. She took a spare router and plugged it into the panel, which turned on. The router at the site had shorted out.
- February 2, 2012 11:00 - 11:30AM Pacific Time – Liz added the new router. The file for the Lester site was added to the router on Feb 1. She could ping all equipment at both sites and log into the GTSM at both sites when she left.
- March 5, 2012 – Liz arrived on site and found the fuse had blown and was dangling from the power pole. She called Consumers Power and left a message for them to repair the damage. Power was restored on March 6, 2012.
- October 24, 2012 – The antenna at both sites were re-pointed. The master radio read a 29% connection. Both had high reflective powers. The cable and connectors should be replaced. When Liz left site comms had not improved. The site came back on-line a few days later, but data flow from B027 was still sluggish.
- November 8, 2012 – Driving into the site (from afar) Liz could see both sites and picked a visual mid-point for antenna pointing. First She visited the lower site, which is the radio slave site and has the VSAT. She cannot ping the radio up the hill. She logged onto the EB-6 and the reflected power was 8. The yogi antenna was adjusted to the visual mid-point. The uphill site was visited next. She first pointed the antenna to the visual mid-point. After logging on to the master EB-6 I she continued to adjust the antenna until she could log into the slave site and reached maximum signal strength, which was 75%. She watched the signal strength for a few minutes to make sure it was consistent. The reflected power is 9. The lower site antenna was adjusted to find a stronger signal strength, but 70-75 % was the

max. She can ping all equipment at both sites from the lower site. Data flow will be monitored.

- November 13, 2012 – Liz visited the site. The reflected power is high (41). The LMR cable, connectors, and yagi antenna need to be replaced.
- November 21, 2012 – Replaced cable, all connectors, and yagi antenna. The reflected power was still at 41. Need to replace the EB-6.
- January 9, 2013 – Replaced EB-5. The Reflected power drops to 6, and the transmit was at 88%. The metal on the back of the old radio was warped. Site experiences high temperatures in the summer, and high moisture in the winter.
- January 22, 2013 – The ODU transmit portion of horn with film was replaced. The VSAT mount was filled with expansive foam.
- April 30, 2013 – Mike swapped 6 batteries with 10, adjusted the GTSM Chops and Quads, filled out the site Word document, and strapped all equipment to the equipment rack.
- May 14, 2013 – While Liz was on-site diatomaceous earth was added, photos taken, and GTSM chops and quads adjusted. All the channels were perfectly in phase with the exception of CHAN 3. It had drifted and the chops were adjusted. Liz tested a LanCell III with a Verizon card, it was slow.
- October 28, 2014 - IDU transmit and system lights were off on arrival. ODU feed horn had lots of condensation inside. Replaced ODU and re-terminated cable ends. Power cycled IDU, but it did not come back on. Swapped out IDU power inverter. Go through antenna pointing. Receive @ 80% and cross-pole passed at 70%. Replaced BSM site power strip/surge protector with BSM site standard.
- October 20, 2014 - Power cycled VSAT IDU and router. Had to go through basic dish pointing prompts to get transmit back.
- November 5-6, 2014 – Replaced VSAT comms with LanCell 3.
- July 7, 2015 – Adjusted quads and chops. Checked CDMA, at first no service. A few minutes after pinging and logging on Verizon service comes back up.
- July 16, 2015 – Re-connected the USB card to the Lancell III. Connections have always been sensitive. Logged onto the CDMA. Dataflow was back up.
- July 30, 2015 – Replaced failed Lancell III card with Sierra LS300 with Verizon.
- June 15, 2016 – Landowner's son placed a manufactured home by the strainmeter site. VSAT was removed.
- October 31, 2016 – Station had lost GPS time. Applied Cold Start command to correct timing.
- June 16, 2017 – Compact flash card was failing. Replaced 256 Mb compact flash card with a 1Gb card.
- June 19, 2017 – Changed memory calculations for 1GB CF card.
- October 10, 2017 – GTSM timing was invalid. Tried swapping out only the GPS antenna, no change. Swapped out GTSM Power Box, now tracking satellites. Updated strain-logger.conf file. Rain gauge was clogged, cleaned out funnel.
- December 21, 2017 – Arrived on-site and logger board lights looked ok. Connected laptop directly to GTSM ethernet and could not ping. It's the logger board from install, with a new compact flash card. Power cycled logger board. After power cycling Liz could ping and log onto the GTSM.
- March 13, 2018 – Site lost power. Called landowner for clues to decreasing power at site. Informed that the cows have completely rubbed the power meter off the pole and it is lying on the ground. Land moved cattle from the field for safety. Contacted the power company. They fix the power company portion. The landowner will put a fence up around the meter.

- November 29, 2018 – Upgraded site comms from LS300 to RV50. Adjusted GTSM chops and quads. CH0, CH1, and CH2 were all out of phase. Upgraded Redbull antenna to new black Redbull antenna.
- September 20, 2019 – On arrival GTSM was completely off. Tested power, GTSM battery bank was at 13.6V. Power was ok on back panel (with main equipment). GTSM power box appeared to be on. Hitting reset on the power box and reseating did not correct power issue. Swapped out power box and photo document inside of power box. GTSM now will power on. All GTSM boards had power and could ping the site remotely. After several minutes Liz attempted again and could not reach the GTSM. The logger board was bad. Can ping it after a power cycle, but within a few minutes it cannot be reached and goes into standby mode. This has been an issue with older logger boards and at this site with this board a year and half ago. Started swapping the logger board but ran out of time due to an appointment. Logger board will need to be swapped next visit.
- December 16, 2019 – Could not reach other end of radio link. Reflected power was 78. Found water in connector to 900 MHZ yagi. Replaced yagi, re terminate cable. Removed pigtail and lightning protector. Reflected power was better but still 28. Replaced LMR with 10' skinny pigtail cable. Now has a reflected power of 4. Coms back up and working well.
- April 10 – Site went offline with several other sites on Verizon service in OR and N. CA. Needed to manually power cycle RV50 to restore Verizon service. Set up watchdog settings.
- July 16, 2020 – Remotely upgraded logger to FW 2.4.
- August 17, 2020 – Turned on 3 second bottle NRT for firmware stress testing.