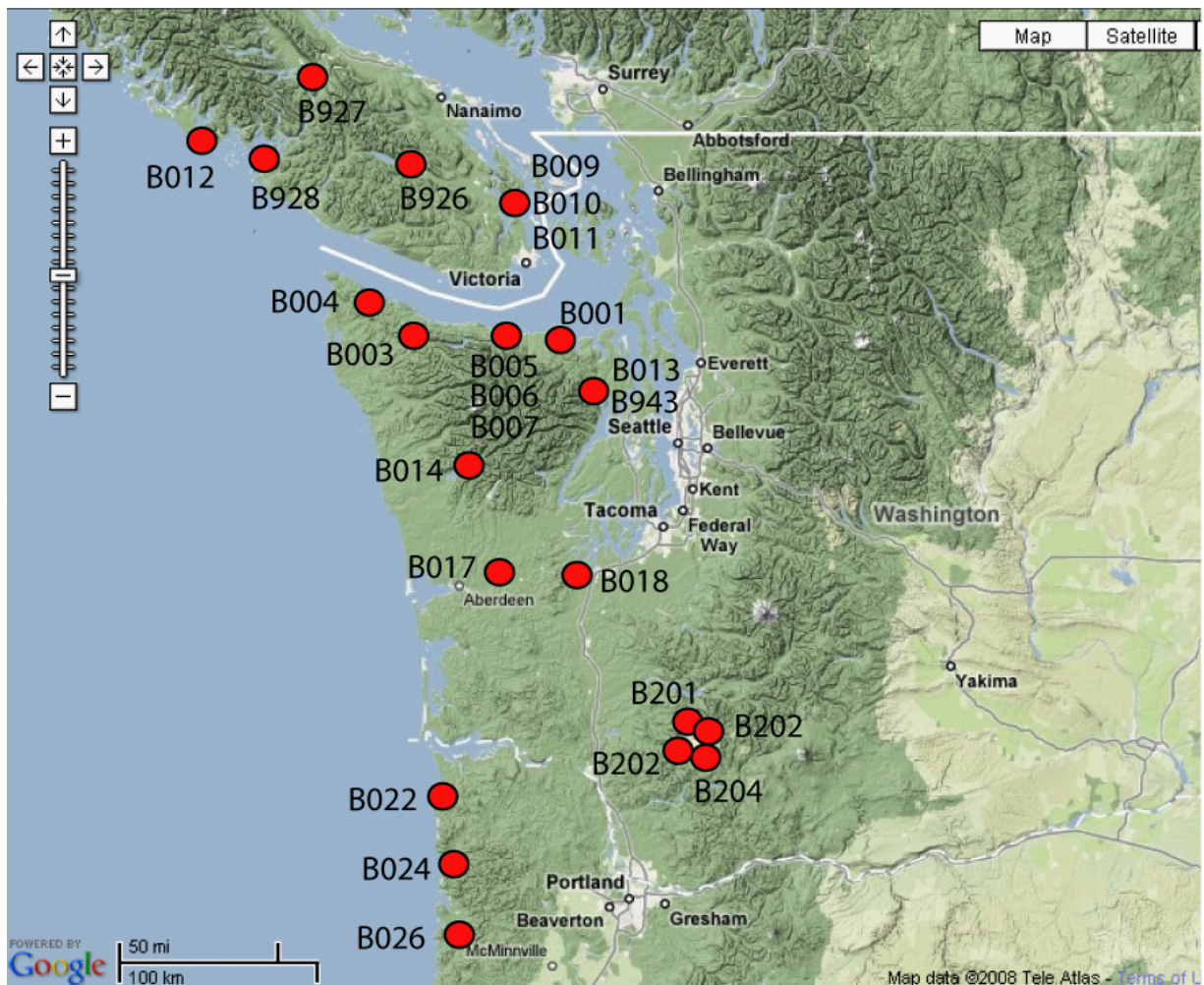


Station Notes for B014, quintl014bwa2008

Latitude:	47.5133 (WGS 84)
Longitude:	-123.8125 (WGS 84)
Elevation:	64.7 m / 212 ft
Install Depth:	225.2 m / 739 ft
Orientations:	CH0=256.3, CH1=196.3, CH2=136.3, CH3=106.3
Install Date:	March 4, 2008
GTSM Technologies #:	US65
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	www.unavco.org/instrumentation/networks/status/pbo/overview/B014
Notes Last Updated:	October 20, 2019

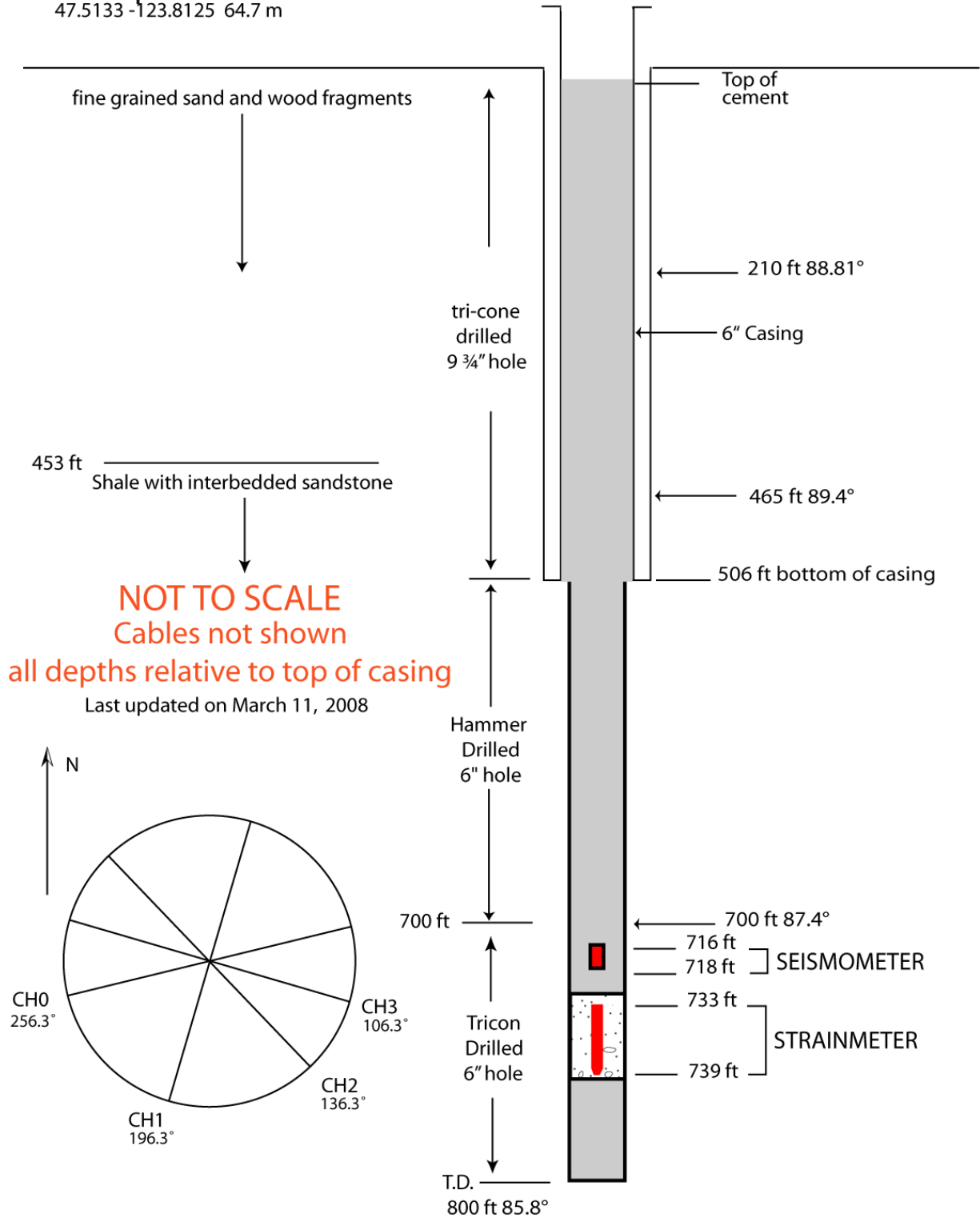
·Install depth is from the top of the casing to the bottom of the strainmeter.

·Orientations are in degrees East of North.



Pacific Northwest PBO strainmeter network, March 10, 2008

B014 quint014bwa2008
47.5133 -123.8125 64.7 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	1.42925E-4

1. Installation notes

March 3, 2008 – Move equipment to Quinault, put US65 on test, and sound hole (TD = 741').

March 4, 2008 UTC

15:45 - Onsite.

16:00 - Setup bailer, mixer, capstan, and get water. Look at GTSM test data (looks good, channel 0 looks slightly noisier but it was also right near the door).

17:45 - Perform compass test.

17:48 - Hole total depth (measured w/ bailer) = 741'3". The bailer tripped successfully.

17:59 - Start mixing PennGrout with 5 quarts of ~80° F water per sack. Grout had been stored at room temperature over night. The mixer was warmed prior to mixing and the ambient air temperature was a sunny 41° F, and warming up. The grout was mixed using the new standard practice - 5 minutes on, 1 min off, 2 minutes on.

18:11 - Lowering dump bailer.

18:16 - Trip at total depth.

18:27 - Lowering GTSM.

18:39 - Tie off GTSM at target depth of 739' (account for 0.4 meters of cable stretch).

18:43 - GTSM turned on, renamed, and called good. Rest of day spent cleaning up, trenching for VSAT Cable, and building forms.

February 5, 2008 UTC

18:30 - Onsite, pull data of strainmeter, data looks good.

19:55 - 20:25 - Lower seismometer #91 to a depth of 718'.

20:50 - 21:00 - Trip in, tag grout at 722'3" (grout plus instrument total 19'3").

23:13 - 00:55 - Pumping cement (5.5 yds, got return to surface).

02:00 - 03:30 - Digging pit, burying cable, and pouring pad. When burying the cable a pipe was found in the ground right next to the well head. It was determined it was not a power line, it contained a rusty looking sludge. The cable was buried over the top of it.

March 7, 2008 UTC

15:30 - Onsite, shut down GTSM to install enclosure.

16:20 - Cut support straps on GTSM cable and seismometer to install GPS.

~18:00 - GTSM back online.

22:10 - Adjust downhole temperature to 1.164V.

2. General Information

- Co-located with the GPS station P400.
- Sensitivities of all EH channels corrected on March 4, 2010.

3. Strainmeter Maintenance

- March 23, 2009 – Logger software upgraded to 2.02.2
- July 29, 2009 – Korey Dausz upgraded the RT boards to 1.20 and adjusted the quadrature.
- August 8, 2009 – Ken Austin visited the site to perform maintenance on the GPS station P400. When he arrived the doors to the strainmeter enclosure were both unlocked.
- May 20 -21, 2010 – Liz Van Boskirk visited the site to fix the VSAT cable. VSAT cable had been chewed by an elk and was replaced. Protective tubing was placed over the cable ends up to the connections on the ODU. It was also noticed the elk chewed through the rain gauge cable. The cable was repaired by soldering, and a new hole was drilled at the base of the rain gauge to prevent future elk problems.
- February 15, 2011 – Temporary broadband seismometer deployed, and borehole seismometer metadata collected with the Birddog.
- September 16, 2011 – The site was visited September 16 to check for further damage from the elk in preparation for winter. No further elk damage. The GPS antenna for the Q330 was moved around to track more satellites and the rain gauge was cleaned.
- September 29, 2011 – Checked communications by pinging within the site and the VSAT system status. The VSAT receive was at 56% and the transmit had failed. The dish had to be adjusted to return dataflow. The receive is now at 89% and transmit at 67%. The 4-port fiber optic data port was the older model and was replaced.
- July 17, 2012 – Liz deployed a temporary broadband seismometer. The seismometer will be onsite for 24 hours.
- June 4, 2014 – Added diatomaceous earth and adjusted the GTSM chops and quads, very minor adjustments and very little to no drift. Refreshed desiccants in GTSM. Took equipment pictures and metadata for the MDM and DIMS. Filled out station document. Secured all equipment, and replaced rusty locks.
- October 8, 2015 – Adjusted quads and chops. CH0 was in gain 2 upon arrival, power cycling board fixed the issue. Cleaned rain gauge. Moved GPS comms over to VSAT due to weak cell signal.
- November 16, 2016 – VSAT comms replaced with CDMA.

- June 20, 2017 – Dropped by site, LVD2 was flipped off and all equipment was powered down. Flipped LVD2 on and it began smoking and smelled of burning plastic. Flipped back off. Snake has been living on power panel and it was covered in snake skin.
- June 22, 2017 – Replaced batteries with 10 new batteries. Adjusted chops and quads, CH2 was difficult to adjust. Replaced and rewired panel. LVD2 still clicked off. Replaced surge protector/power strip. After some time LVD2 stayed on. The only equipment that powered on was the CDMA. The Marmot, Q330, and Septentrio were dead. GTSM was isolated and system was good. Swapped out Marmot with spare and removed GPS Receiver.
- July 6, 2017 – Swapped Q330 and set up new one. Added LDO channel for Setra. Tested Setra and seismic data. Tested GPS tracking and time. Replaced Setra, the one onsite had been damaged in power surge. Added a second 4-port data port, which will help with site check. Started to remove VSAT dish but noticed bear droppings. Bring bear spray.
- October 4, 2017 – Removed VSAT dish.
- February 9, 2018 – Site had experienced intermittent comms, probably due to heavy storms over the last month. Needed to check CDMA and directional antenna. Tested CDMA comms. The directional antenna on-site was slow and listed as being on the VZN 2G network. New antenna connected to VZN 3G network and could load web pages quicker. Swapped out directional antenna and cable. Swapped out second 4-port FODP with 5-port ethernet switch. Sites with CDMA and co-located with GPS need a second ethernet switch to connect to all equipment for testing on-site.
- December 5, 2018 – The cell coms were very marginal and are affected by poor weather. Needed to raise antenna height and try repointing. Site has been mostly offline for a few weeks. Site was very icy, hoar frost on everything. Locks were frozen, had to heat up to open. RV50 was functional, very bad connection. Installed taller pole for Wilson antenna. Adjusted direction of pointing. Inconsistent results, mostly 3G (-97 to -103), sometimes dropping to 2G. Speed tests mostly failed, occasional could get a test to go through showing < 0.5 mbps down/up. Pointing perpendicular to hut seemed best. Left antenna high and perpendicular, speed test 0.83 down 0.42 up. This was the best we saw all day.
- August 26, 2019 – Upgraded RV50 from 4.5 to 4.12. Signal strength was very low, even with Wilson antenna.