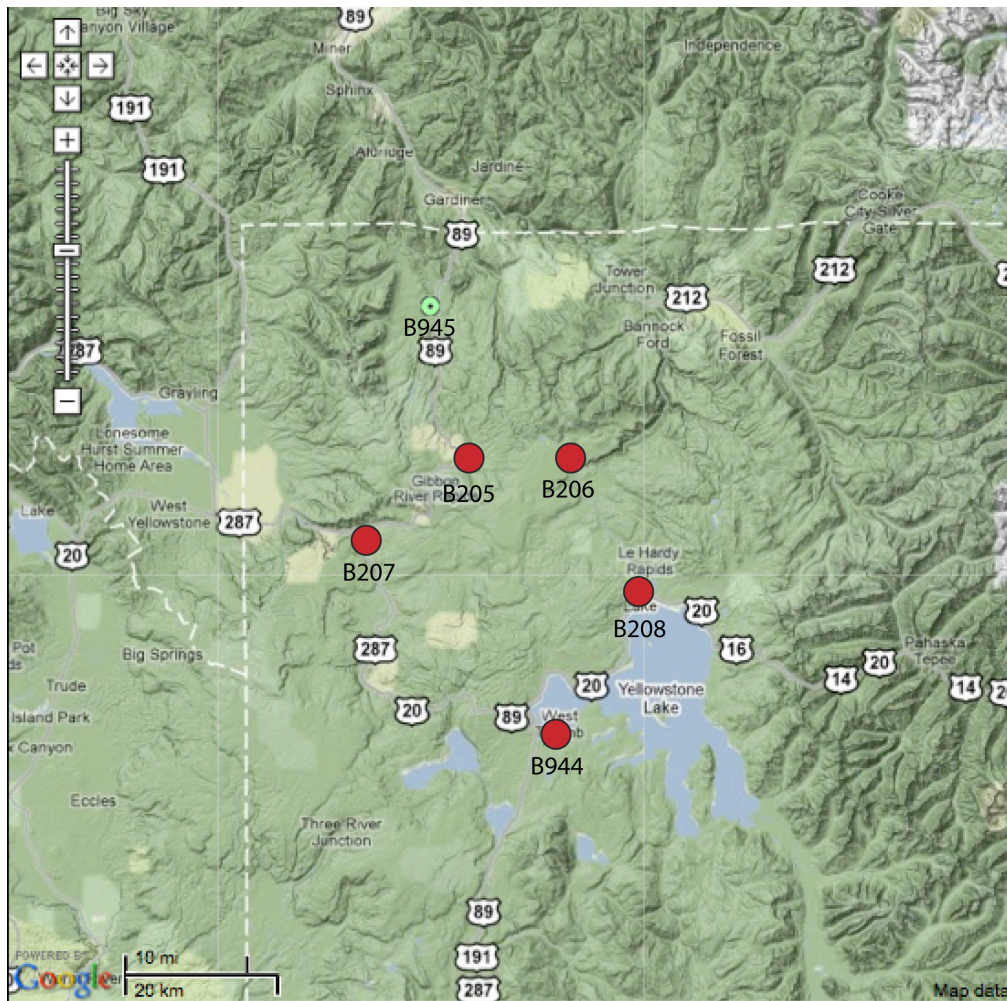


Station Notes for B944, grantt944bwy2008

Latitude: 44.3897 (WGS 84)
Longitude: -110.5438 (WGS 84)
Elevation: 2364.6 m / 7758 ft
Install Depth: 120.1 m / 394 ft
Orientations: CH0=325.1, CH1=265.1, CH2=205.1, CH3=175.1
Install Date: August 6, 2008
GTSM Technologies #: US74
Executive Process Version 1.14
Software:
Logger Software: Version 2.12
Home Page: www.unavco.org/instrumentation/networks/status/nota/overview/B944
Notes Last Updated: December 15, 2020

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

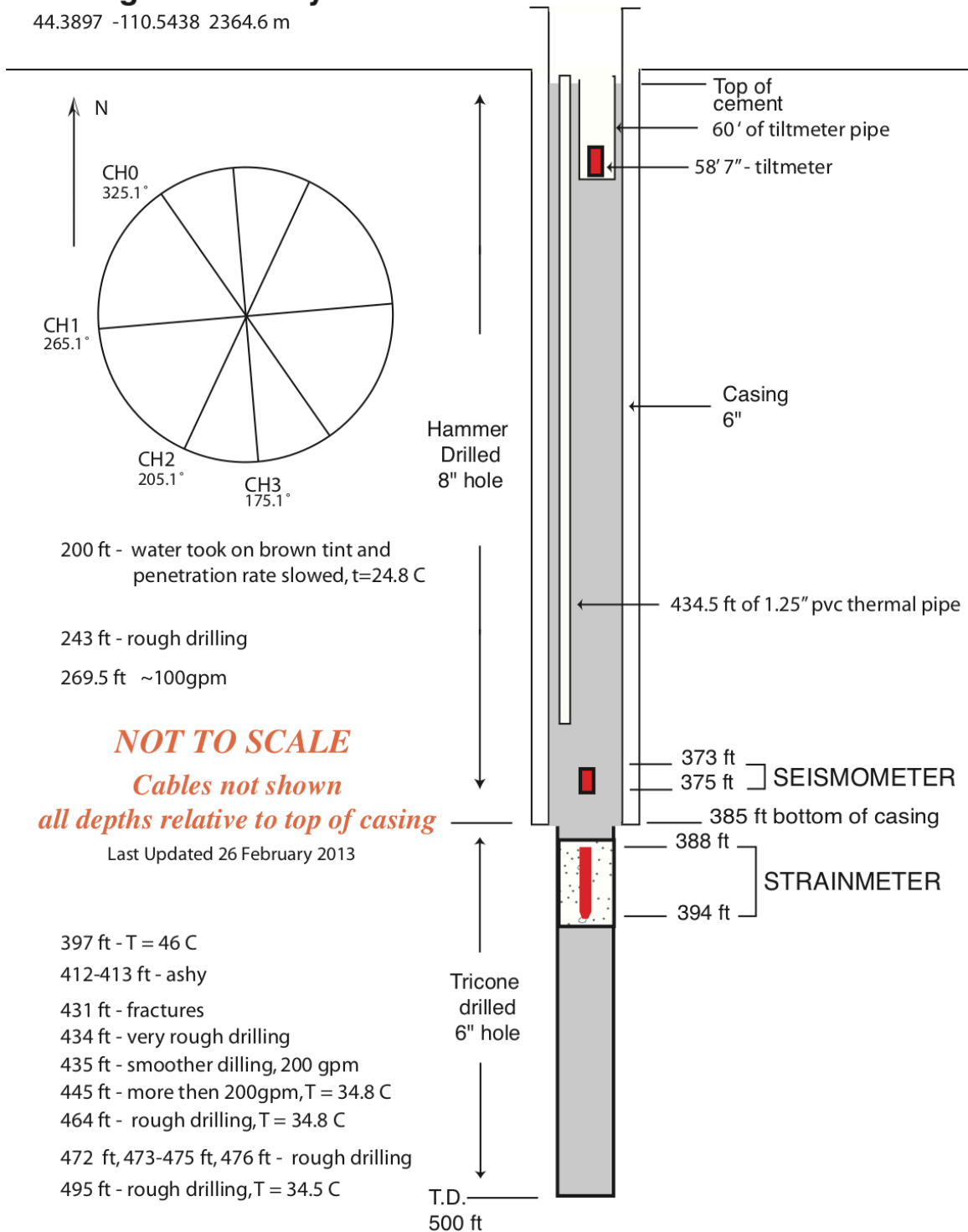
·Orientations are in degrees East of North.



Yellowstone PBO strainmeters, October 2008. Green dots represent boreholes that only have a seismometer.

B944 grantt944bwy2008

44.3897 -110.5438 2364.6 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	None Installed	

1. Installation notes

August 6, 2008 UTC

- 15:00 On Site, setting up for install and waiting for temperature logging. Water in well has only dropped 6 ft overnight.
- 18:30 US74 turned off, data looked good.
Compass Test
X: 2.285, 3.101
Y: 2.392, 3.180
- 19:30 Temperature logs look good, bottom temperature is ~36 C (96 F).
- 20:15 Sound bottom - 397'. Install zone is 385-395'. Decide to hang instrument 3 ft off bottom.
- 21:28 All grout and water added to mix. Batch DJ 805, with 5 qts/bag.
- 21:40 Grout going down the hole.
- 21:43 Grout dumped.
- 22:00 Tag bottom with strainmeter and pull back 3'. Strainmeter is at 394'.
- 22:05 Temperature is 4.222 and rising, initial X 3.11 Y 3.155.
- 22:10 Renamed B944.
- 23:00 Cleaned up and off Site.

August 7, 2008 UTC

- 22:00 On site.
- 22:30 Lower seismometer #131 to 2' off bottom (375').
COM - inf
V - 2.537
H1 - 2.523
H2 - 2.507
- 22:45 Lower submersible pump down inside casing 55'.
- 00:20 Water level down to 47'. Pull pump.
- 00:30 Off site.

August 8, 2008 UTC

- 14:30 On site.
- 15:15 Tripped in 60' of tiltmeter pipe.
- 16:15 Tripped in 360' of thermal pipe.
- 17:10 Tripped in tremie, tag grout at 377' (20' grout + instrument).
- 17:45 – 20:00 Pumped 54 bags Portland cement, got return to surface.
- 21:00 Strainmeter off.
- 23:40 Strainmeter back on, pad poured, VSAT post in.
- 00:00 Off site.

2. General Information

- Sensitivities of all EH channels corrected on March 4, 2010.

3. Strainmeter Maintenance

- September 10, 2008 – Tim Dittmann visited the site to install a tiltmeter. Tiltmeter #7861 was installed, +X oriented to 355 degrees magnetic.
- April 1, 2009 – The logger software was upgraded to 2.02.2
- April 3, 2010 – Installed a metpack at station to monitor weather data. Removed the old Setra and installed a new high altitude Setra. Removed old powerbox and installed a high altitude powerbox, and replaced the cisco.
- September 25-26, 2010 – Temporary broadband seismometer was installed at the sight, and the Birddog was run. Quads and chop were adjusted.
- August 21, 2011 – New cable was installed, and met data is now being collected. The tiltmeter at Grant had stopped responding remotely. The visit confirmed that the tiltmeter is non-responsive. Power cycling and connecting directly to it did not help. It needs to be replaced, but the GPS borehole mount is in the way. This mount will need to be removed/possibly modified to make access to the borehole possible.
- May 15, 2012 – Sent coldstart command.
- July 29, 2012 – The powerbox was replaced because the station did not have GPS time. The GTSM clock was ~625 seconds slow when the powerbox was replaced and had not had GPS lock since December 21, 2011. It is now tracking satellites. The pressure offset was set to 70 since this is a high altitude modified powerbox. The tiltmeter was replaced, and was installed at a depth of 58' 7". The tilt meter has the same cable and pigtail, and has a new inline surge suppressor.
- October 17, 2012 – Mike Gottlieb replaced the marmot and tiltmeter. The tiltmeter is installed 13" higher than the previous one. The new tiltmeter has the same orientation as the old one.
- October 29, 2012 – Station was not recording data. The logger was rebooted, which seemed to resolve the problem.
- November 11, 2012 – Station stopped recording data again, and was remotely rebooted.
- November 15, 2012 – Reloaded firmware (bin files and strain-logger.conf).
- October 14, 2013 – Station had stopped collecting strain data on Oct 5, 2013. Mie Gottlieb remotely rebooted the logger, which fixed the problem.

- October 21, 2013 – Station had stopped collecting strain data again on October 16, 2013. Mike remotely rebooted the logger again, which once again fixed the problem for now, but the logger should be replaced.
- October 28, 2013 – A new logger board was installed. The compact flash on the replacement board was bad so the card that was originally at the site was re-used.
- June 18, 2014 – Replaced GTSM logger due to failing compact flash card. Set quadratures on the GTSM.
- June 26, 2014 – Logger failed while upgrading firmware. Replaced with new logger running 2.12.
- July 15, 2014 – Checked comms between GTSM and 4-port FODP, which was the last point where the GTSM data flow was isolated. All connections were unplugged, looked at, and reset. Everything looks normal. Pinged all site equip and logged onto the GTSM through the 4-port FODP. Connected to GTSM to test serial to USB issue on field Air. Could log onto the GTSM with Parallels/Windows and Zterm. Station comms are still intermittent, should replace 4 port and 1 port fiber optic modems next visit.
- August 5, 2014 – Swapped out GTSM logger board.
- August 20, 2014 – Logger/compact flash card had failed. Swapped in new logger board and checked compact flash and other connections on board.
- September 17, 2014 – Chad had neglected to change the pressure offset in the strain-logger.conf file when he configured the new logger board. He modified the config file pressure offset from 80.50 to 70 to account for the high-altitude power box.
- June 26, 2015 – Adjusted quadrature and chops on all channels.
- September 14, 2015 – Replaced VSAT with LS300 comms. Removed cisco and installed LS300 as router. Setra was recording steps in the data that were not present on GTSM or metpack barometers so it was replaced. The new setra was a low altitude setra, and will bottom out below ~765 mbar.
- April 20, 2016 – Corrected file storage configurations from FW 2.12.
- July 19, 2016 – Cellular coms had been up and down, mostly down, for a few weeks. LS300 lights looked good, said that it was connected, but could not get online. Pinged ASA, 40 second ping. Showed RSSI -74 so that shouldn't be the problem. Replaced with Verizon RV50m, back online. Removed heated VSAT dish (no longer in use), all parts will be returned to boulder. This may also improve GPS data, as dish was at same height and directly south of antenna.
- July 19, 2017 – CDMA had failed and would not power on. It was replaced, and set to the identical settings. Receiver not pinging, rebooted. Before leaving site receiver appeared hung again, rebooted it a second time. Setra has been recording negative counts. Rewired cable to reverse polarity of signal and get a positive value. Looking at the data after this change, it

appears that wiring was not the issue. Post-change data trends were inverted when compared to met data, implying that the wiring was correct before. Negative counts appear to result from the pressure being out of range of this low altitude setra. Pressure appears to be ~760 mbar, with the minimum for this sensor at 800 mbar. The setra should be replaced with a high altitude version to fix this problem.

- July 27, 2017 – Setra was replaced with a new low altitude setra to fix the wiring. This setra will bottom out below ~765 mbar. Will need to be replaced with a high altitude setra at a later date.
- October 4, 2017 – There has been noise in the setra data for years. Swapping barometers has not helped. Replaced low altitude setra with a high altitude setra. Spikes were still visible on quickview, they would drop then rise about every 10 s. Determined this was related to GTSM float charging. Attempted to isolate with dc/dc inline power filter, but this didn't help. Powering q330 with dc/dc didn't help either. Traced the noise back to the GTSM charging somehow leaking into our signal, possibly through induction. Powered the setra from a 12V wall outlet and the spikes went away. Data now looks good. Set chops and quadrature.
- May 9, 2018 – Cellular Modem was offline. Modem was most likely OK - Antenna connections were completely loose at the antenna. Dave was able to remove with his hand by pulling straight down (no twisting). Replaced antenna, modem and cable as a safety precaution. Site returned to nominal.
- June 7, 2018 – Replaced batteries from station installation in 2008. 2 GTSM batteries and 2x3 mains batteries.
- August 20, 2018 – Tiltmeter was re-leveled at Mon Aug 20 at 16:25:50 UTC 2018.
- October 26, 2018 – Q330 was replaced after power surge that also killed the receiver and RV50.
- October 15, 2020 – Swapped out dead RV50.