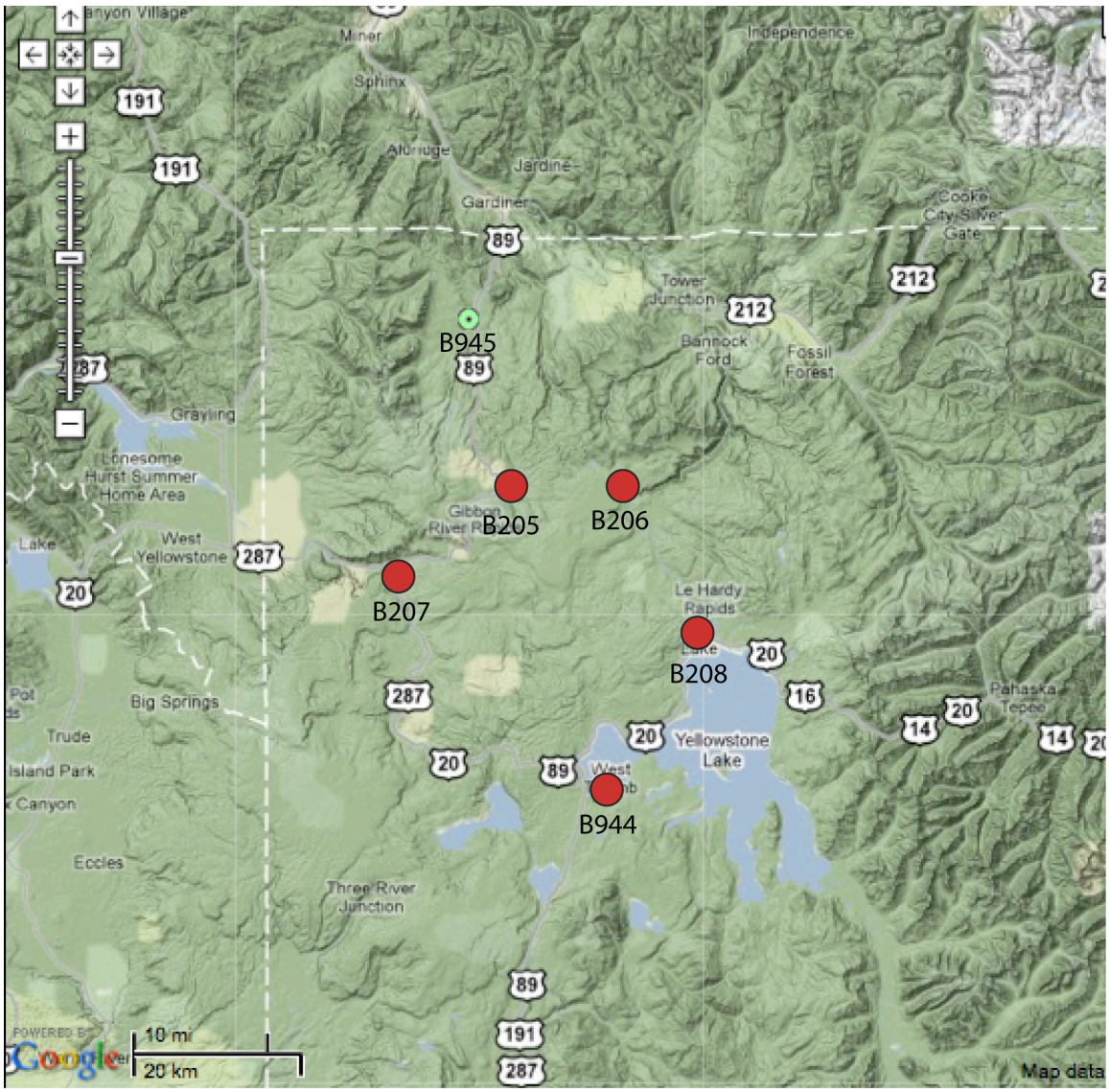
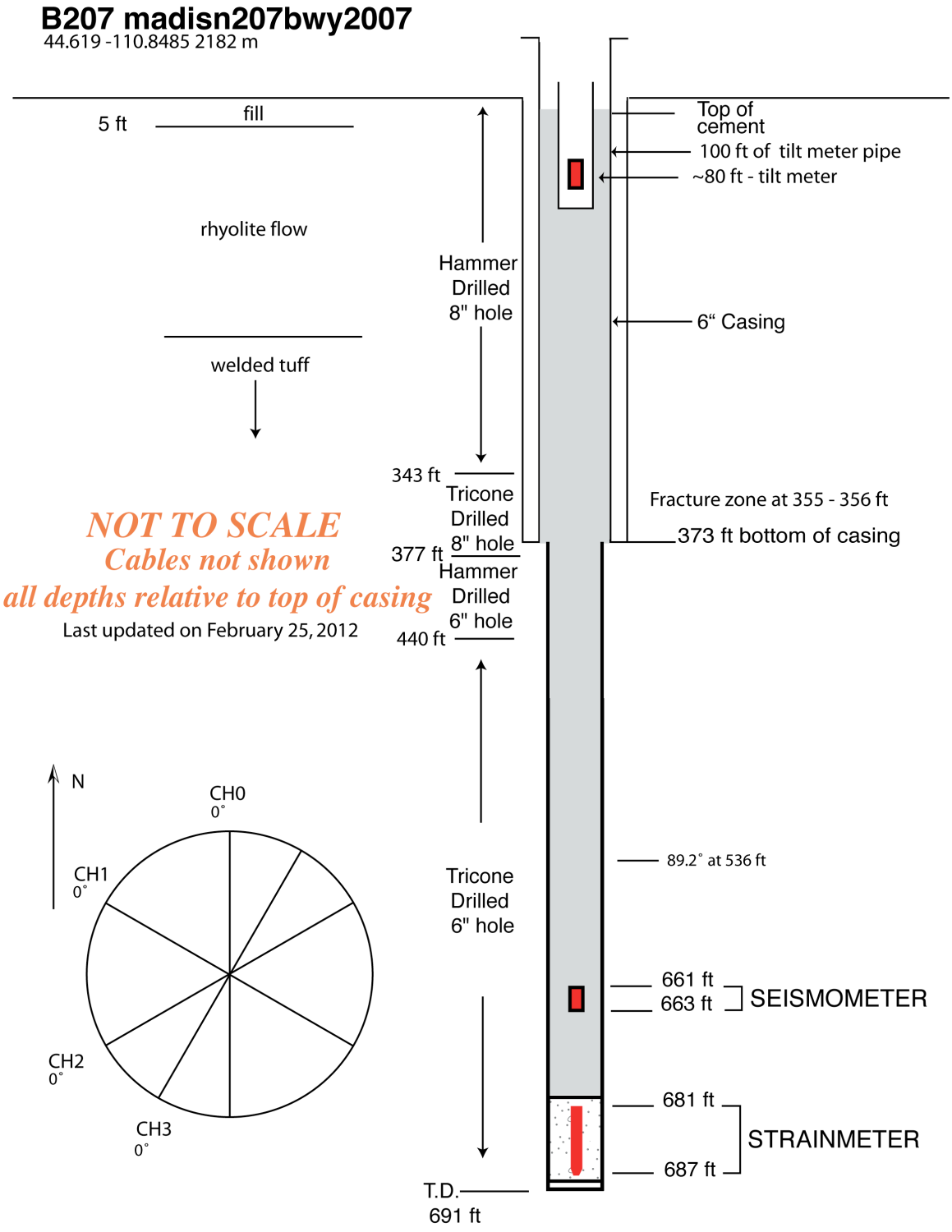
Station Notes for B207, madisn207bwy2007

Latitude:	44.619 (WGS 84)
Longitude:	-110.8485 (WGS 84)
Elevation:	2182 m / 7159 ft
Install Depth:[1]	209.4 m / 687 ft
Orientations:[2]	CH0=0, CH1=0, CH2=0, CH3=0
Install Date:	October 17, 2007
GTSM Technologies #:	US55
Executive Process Software:	Version 1.14
Logger Software:	Version 2.02.2
Home Page:	http://pbo.unavco.org/station/overview/B207
Notes Last Updated:	March 27, 2018

[1]Install depth is from the top of the casing to the bottom of the strainmeter.
[2]Orientations are in degrees East of North.



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


B207 madisn207bwy2007
44.619 -110.8485 2182 m
5 ft
fill
rhyolite flow
welded tuff
Hammer
Drilled
8" hole
343 ft
Tricone
Drilled
8" hole
377 ft
Hammer
Drilled
6" hole
440 ft
Tricone
Drilled
6" hole
T.D.
691 ft
Top of
cement
100 ft of tilt meter pipe
~80 ft - tilt meter
6“ Casing
Fracture zone at 355 - 356 ft
373 ft bottom of casing
89.2˚ at 536 ft
661 ft
663 ft
SEISMOMETER
681 ft
687 ft
STRAINMETER
NOT TO SCALE
Cables not shown
all depths relative to top of casing
Last updated on February 25, 2012
N
CH0
0˚
CH1
0˚
CH2
0˚
CH3
0˚

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

October 16, 2007
The install crew sounded the hole with an open bottom dump baler and measured a depth of 690' 8". They then sounded the hole with a closed bottom dump baler and recorded a depth of 690' 6", indicating 2" of mud on top. They calculated it would take 1.023 cubic feet of set grout to bring the hole up to 685'. The strainmeter was kept warm by keeping it in the trailer and using a 150W lamp and 250W heat lamp.

October 17, 2007
US55 was installed at 687' from the top of the casing. The install went smoothly. There were some issues with the compass test box, which delayed the install until late afternoon.

October 20, 2007 UTC
16:00 Arrive on site. Test Seismometer #108.
17:00 Lower seismometer on a coated steel cable.
18:48 Seismometer installed 5' off the bottom.
19:55 Install 1 1/4" pipe for heat measurements. Appears there is a leaky joint and pipe is filling with water.
19:20 600' of 1 1/4" pipe installed.
19:29 Shut down GTSM logger to adjust temperature settings.
19:40 Trip in 1 1/2" pipe.
21:45 Pipe at bottom of hole, 668.4', which puts the seismometer at 663.4'. Pull pipe back 4'.
22:00 Begin cementing hole.
23:17 Finished pumping 35 94lb bags of cement down hole, 1.5 cubic yards. This should lift the hole about 200'. Trip pipe back into casing. Flush pipe with water and clean up grouter.

October 21, 2007 UTC
00:15 Try to pull data off GTSM but can't get USB memory stick to work.
00:37 Off site.

October 22, 2007 UTC
17:00 Arrive on site. Begin working on VSAT assembly.
23:00 After a few equipment issues comms are up. Pull data off strainmeter and leave site.

October 23, 2007 UTC
15:20 Arrive on site.
15:45 Begin tripping in tiltmeter pipe.
16:15 100' of pipe installed. Add 5 gallons of sand to fill up the bottom 20' of the pipe.

This should stabilize the pipe when the hole is cement up.
18:15 Begin pumping cement.
19:00 After 25 94lb bags pumped trip out 200'. First 20' section got stuck. Had to use main line to get pipe out of hole. Return to sand line after first 20' section pulled.
19:30 Pumping cement.
19:50 Switch pallets. Trip out 80' after 15 more bags pumped.
20:45 Pipe plugged, fixing it.
21:00-23:00 Finish cementing. Getting good return to the surface.
October 24, 2007 UTC
00:40 Leave site.

October 24, 2007 UTC
16:00 On site. Dig cable pit.
17:30 Shut down GTSM to bury cable and to pour pad.
21:11 GTSM back online. Pack up pump hoist and grouting trailer.
22:20 Leave site.

2. General Information

- The gauge orientations are unknown.
- Sensitivities of all EH channels corrected on March 4, 2010.

3. Strainmeter Maintenance

- February 10, 2008 – Dave Mencin visited the site to get it back online. They arrived on-site at about 18:30 UTC. When they arrived the VSAT and hut were buried in snow. Upon digging out the hut it was discovered that there was on power. Power had failed at breaker in the outside junction box. Rime ice had built up in the breaker area and thrown the breaker. After cleaning out the ice and flipping the breaker, the site came back online. The GTSM batteries were completely destroyed and had to be replaced. After collecting all meta-data and downloading the data on the logger they attempted to mount a new heated surface VSAT dish. The mount was not compatible so they will have to return with a new mount. The site is now online and fully functional.

- February 18, 2008 UTC – Steve Smith and Karl Feaux visited the site to do some maintenance.
  22:20- Onsite, enclosure mostly dugout from previous visit. Snow is almost 3 feet deep.
  22:30 - Dig out ice shedding dish and AC distribution box.
  23:00 - Start removing old dish.
  23:15 - General housekeeping in the enclosure, all looks well.
  23:30 - Old dish removed along with old-style plastic mount.
  February 19, 2008 UTC
  00:15 - New dish physically installed.
  00:18 - GTSM off.
  00:21 - US SPARE4 power box swapped. ID of installed unit not available.
  00:23 - GTSM On.
  00:30 - New dish pointed and online.
  00:45 - Site checked in with Warren G.
  00:15 - Power cable for dish ice shedding heater installed, and heating element for feedhorn installed. Dish seems to be working and is warm to the touch.

01:45 - Wrapped AC distribution behind shed in sheet of 6 mil plastic, tie wrapped and duct taped at the bottom.
02:00 - Cleaned up and took pictures.
02:15 - Offsite.

- July 9, 2008 – Mike Jackson and Dave Mencin installed a tiltmeter around this time.

- January 13, 2009 - Mountain time.
  10:30 - Onsite.
  10:35 - AC power restored - not obvious cause for outage. Local Ranger says many power fluctuations at time off power loss. All equipment except the BSM come back up normally. Both BSM and Main batteries at 12.35 V. BSM Power Box was in fault mode, hit reset button and BSM boots up. All channels at G3 - operation nominal.
  11:00 - Install Setra. Verifed with Boulder that all operations are nominal, that Q330 is tracking GPS, and verify BSM environment and GPS is nominal. Voltage Mains 12.59 V, BSM 12.9 V.

- April 1, 2009 - The logger software was upgraded to 2.02.2

- May 2, 2010 – Mike Gottlieb and Korey Dausz visited the site. They removed the old Setra and installed a high altitude Setra. They also removed the old powerbox and installed a new high altitude powerbox.

- August 31, 2011 – Station stopped recording data for CH1, CH2, and CH3 at 15:00 UTC.

- September 13, 2011 – Tim Dittmann power cycled the site to get it back online. All channels are returning data normally again.

- April 10, 2012 – Attempted to reset the IDU, when this did not fix the problem the IDU was replaced.

- May 15, 2012 – Mike remotely sent the ColdStart command to fix the GPS time being invalid. Station had lost GPS time around December 27, 2011 and was ~408 seconds slow at the time of the restart.

- July 30, 2012 – The rain gauge was not working. The rain gauge and powerbox were swapped to try and fix the failure. Neither helped, so the original equipment was left on site.

- May 7, 2013 – Using the extender card, tested to see if the rain signal is getting to the logger board. It is not. Took apart the powerbox and confirmed that there is a signal leaving the powerbox. It is getting lost somewhere between the powerbox and the logger. Mike pulled the backplane out of the environmental box, but could not see any obvious loose connections. Replace environmental box?

- September 4, 2013 – Tiltmeter was rebooted, communications with the tiltmeter have been restored.

- February 4, 2014 – CH0 was in G2, tap step was bad (negative) and data quality had been getting worse. Replaced RT board and set quads. Everything got back to G3, but didn't fix tap

step. Data since swap shows no improvement, in fact it may have gotten worse. Should try to swap the backplane next summer.

- May 4, 2014 – The LVDs failed on March 21, 2014 and the station had been powered off since then. The last GTSM file on the logger was for day 81. Mike replaced the LVDs and the 2 GTSM batteries, which had been run down to 3 V. The mains side batteries were all fine.

- September 26, 2014 – RT0 had been flatlined since the last board replacement. Tried replacing the board again to see if the previous board was bad upon installation. The channel was still stuck in G1, and the board swap did not help this. Also, the quadrature adjustment did not work for this channel. Left new board in to see if it affected data at all, but will need to try a QB/ENV swap next.

- February 8, 2015 – Replaced oscillator board. Tried replacing the environmental box, but it did not resolve the tap step issue so the original box was left on site.

- July 19, 2017 – Visited site to investigate heated dish issues and CH0 problems on GTSM. Looked at heated VSAT dish, which did not seem to be heating last winter. The heating element on feedhorn had fallen off and was replaced. Attempted to cycle the heated dish on with button on back, but the light was not responding. Suspect dish is no longer heating and should be replaced. This will be a two person job. Also the feedhorn film is punctured.
  CH0 - only 250 mV change on Amp I/P with 1st decade RT change, should be 3V, which indicates a loss of down hole amplifier. CH0 has reduced quad control and the signal is no longer a true sin wave. Attached a load cell, all channels appear operational. Failure was determined to be downhole.

- October 3, 2017 – When tracing power cable for heated dish, discovered that someone had intentionally disconnected us from the breaker at the power panel. We rewired the cable and attached it to the same breaker going to our site. Lights on dish came back, appeared to be working. Set heater to auto. Adjusted chops and quads on all channels, and lubricated masterlocks.

- February 6, 2018 – No tilt data since December. Marmot was pingable, but refused ssh connections. Rebooted marmot. Ssh connectivity was restored. Logged on and confirmed tilt data was flowing. Checked marmot time, it thought it was Jan 10. Reset the time to correct, and then set the unavco ntp server.