

The Monitor

Voice of the Twin State Radio Club

June 2008



Message from the President

Field Day!

Yes, it's that time of year again. I get to pretend to be a contester for 24 hours. More importantly, TSRC has the privilege of showcasing ham radio to the community. Matt Bradford, KB1HZP, has stepped up to fill the role of PR Liaison. Matt has drafted a press release and submitted it to area media outlets. We are hoping to have some news crews at our site during setup so as to hopefully get on Friday night's newscasts. In any event, we are putting forth a sincere effort to reach out to the community and invite them to join us.

As with every field day, there is a great deal of effort involved. This month's club meeting will be devoted to the discussion and planning of the event. Many people have already confirmed their participation but if you still haven't please do so at your earliest convenience.

In addition to his role in PR Matt will also be managing a barbeque on Saturday. We haven't done this in several years so I think this year's event will be especially enticing.

Please consider joining us even if you don't intend to operate. Of course I would encourage everyone to take a turn at the key/mic! We will be operating 3A with the intention

Don't miss the excellent article by Bill Brown, KB1MOV, on the recent Greencube project balloon launch!

Upcoming Events

TSRC Meeting	June 14, 2008, 9:00 am EBA's, Hanover, NH
TSRC Meeting	July 19, 2008, 9:00 am EBA's, Hanover, NH

of having one station geared toward RTTY/PSK. As always we can mix things up and operate all three on phone (on different bands of course) or during periods where only one band is active we can have everyone on a different mode!

Field Day is always a learning event. If you are interested in the computer and rig setup, come help Friday pm and so how it all happens. If you want to learn about tower erection, Friday and Saturday morning will be the time to participate. If you want to learn how CW ops work the pile-up, come anytime Dean, WB9MHI, is on the key. It's all there at W1FN Field Day 2008!

See you at the meeting!

William Daugherty
KX1Y

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Greencube

As you may recall the Twin State Radio Club was helping Dartmouth senior Parker Fagrelus with her balloon project team under the direction of Prof Kristina Lynch. The general idea is to use a balloon to simulate the edge of space at over 90,000 feet to test out a payload that will eventually go into a rocket to shoot up during a good Aurora Borealis display. The first flight occurred on 3 June 2008 from Newport, VT with a landing just west of Rangely, ME. Key to the test was testing telemetry, as well as tracking and recovery of the payload.

Key to this project is radio comms, and as a result three of the students got their Amateur Radio licenses. The TSRC helped the students design the telemetry and tracking systems, representing TSRC were Dave McGaw, Bill Brown, Rex Carr, and William Daugherty and probably some others we don't know about. The radio systems consisted of an APRS track-

ing system and an aircraft emergency locator beacon (ELT) on a test frequency of 121.775 mhz. The APRS tracking system consisted of a:

- Garmin GPS-15 feeding a
- Tracker2 TNC feeding a
- Yaesu VX-3R running at 1.5 watts with the standard HT antenna at 144.390 mhz. The recovery team was waiting 50 miles from the launch point in Milan, NH just north of Berlin and as soon as the balloon got up to 20,000 feet we could hear both the APRS tracker and the ELT before they even crossed the NH border.

The APRS tracker was received on a radio that was one of the three WINLINK cache radios that Rex has for SGARES. It consisted of a:

- VHR mobile transceiver, a
- Kantronics TNC, a
- mag mount antenna, and - full set of power cables and
- data cables to hook up to a laptop.



Complete track of the project. Note the westward track once above the Jetstream.

On the receiving laptop we ran UI-View to plot the position on a map. In addition, since we were using the standard APRS frequency, the signal was received over the radio footprint and put into the Internet APRS-IS database servers and available to view on-line in real time. You can see the track on-line by going to <http://www.aprs.fi/?call=W1ET> but make sure you don't use Firefox as your browser. IE works fine. You will only see part of the track so click on the right hand side where it says "Select a Day" and drill down to 3 June to see the whole track. You can also click on any point and see the speed and altitude. The balloon burst by design at 93,000 feet and then descended under parachute.

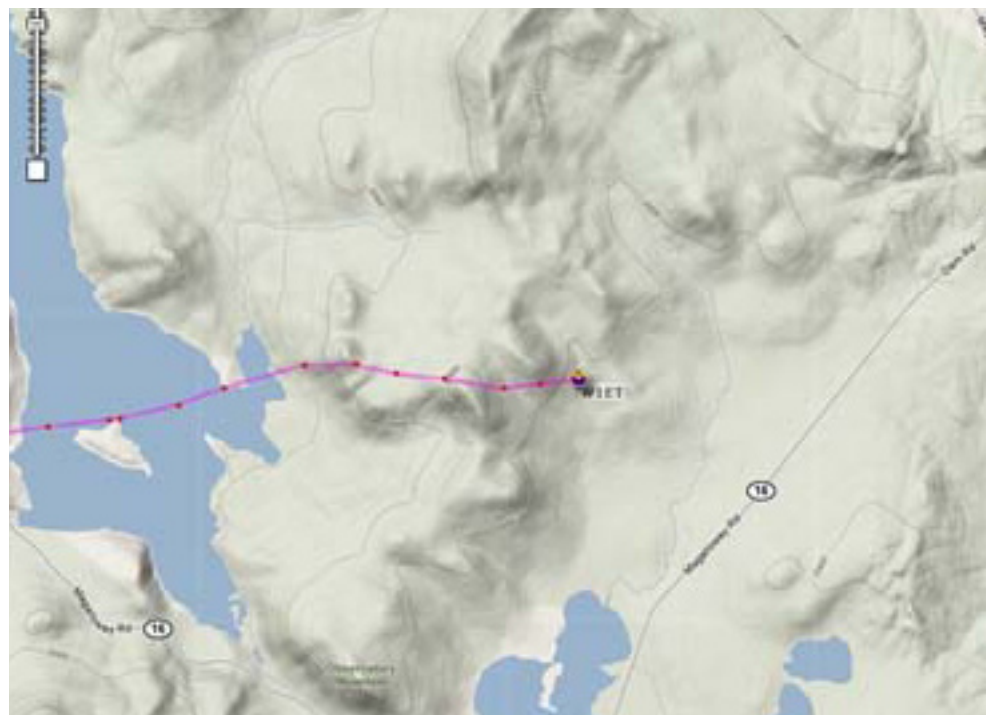
The recovery team got the last signal at about 5,000 feet and drove near to that location. Our recovery team consisted of:

- Dave Collins, Dartmouth Physics Department and Upper Valley Wilderness Rescue Team,
- Robyn Millan, Dartmouth Physics Professor and New England K-9 Search and Rescue Team,
- Alex Crew, Dartmouth Physics Student,
- Tim Smith, Dartmouth Physics Professor, Hanover Boy Scout Leader and husband to Prof Kristina Lynch, and
- Bill Brown, TSRC.

As we approached within about 4 miles we could hear the ELT very faintly, indicating it was probably on the other side of a hill. Using topo maps we found the hill and started to drive to the other side. Within about 3 miles we heard the

APRS signal again, but of course this time it was not moving. We also could hear the ELT beacon and were able to confirm the DF along the same bearing as the GPS location. Piece of cake to drive up a nice logging road to retrieve it. Thank goodness it was not floating in the nearby lake.

Unfortunately, the Maine woods are really low scrub 10-15 feet high up there and the straight line approach was difficult, very difficult but we finally made it to the GPS location. However, there was no parachute or payload in sight and our visual range was about 10 feet. We pulled out an HT and dialed up the practice ELT frequency (121.775 mhz AM) and used body shielding to find a bearing to the ELT (however, next time when the signal gets too strong we will tune to a harmonic frequency as a way to attenuate the signal; we will also remember to open up the squelch to make a more consistent signal). Sure enough, searching down that bearing yielded the payload within 75 feet, but it took about 15 minutes to walk that far. We then found an easier path out



of the woods, scaring one large moose along the way. All in all, a nice day for a walk in the woods retrieving the balloon, parachute, and payloads.

This project was certainly a lot of fun and we felt guilty for not sharing the fun with more people, but will do so for the next launch. It is interesting to note that this kind of an activity does not have to be limited to college students. The FAA allows anyone to launch a balloon as long as the payload is wrapped in styrofoam

and weighs less than 12 pounds. Costs are really reasonable if you recover everything. The balloon is about \$70, the parachute also \$70, not sure about the cost of a helium bottle, and then there is the cost of the radios (less if you recover them). But you could put all sorts of things up there at the edge of space. A camera will show the curvature of the earth and the black of the sky up there. A cross band repeater would be fun also. The possibilities are endless.

Bill Brown, KB1MOV

Club email reflector:
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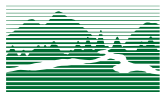
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Don't forget to check the TSRC Home Page!
Make it your default start page!
<http://www.w1fn.org>



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