

The Monitor

October 2003



Upcoming Events

- TSRC Meeting** Oct. 11, 2003, 9:00am
Regency Inn, WRJ, VT
- TSRC Meeting** Nov. 8, 2003, 9:00am
Regency Inn, WRJ, VT

Repeater Notes

Dave Colter WA1ZCN, Repeater Manager

As most 145.33 repeater users are aware, we've been busy doing various work on the machine in the last two months. First, as voted upon by the club back in May, we added continuous tone coded squelch (CTCSS, PL, etc) encode and decode in mid-August with a frequency of 131.8 Hz. The four month delay in implementing the tone system was to allow any members with older radios to add encoders.

When we turned on the tone decoder, it immediately eliminated all the noise and intermod related key-ups and interference. We also turned on the encoder, which allows anyone with a decoder in their radio to keep it quiet except when receiving the repeater. This mode defeats the lotto-machine locator feature in your radio.

Since that time, Dave N1HAC discovered that the decoder was "bouncing" on key-up and clipping off the first word of initial transmissions, so we have temporarily disabled the decode feature only. Encoding is still on. When we find another decoder or fix the one we have, it will be turned back on.

Also, we have been experiencing variable performance with the machine's coverage in general for quite a while. I climbed up the tower a few weeks ago when a brief break in the weather permitted, and removed what was left of the 222 antenna, replacing it with a small home-made coaxial dipole in a PVC radome temporarily. It seems that the original Antennex model did not shatter as we had supposed, but unscrewed itself from the base tube, probably due to wind vibration. The guts of the antenna were intact and dangling. I have it at home with an eye toward constructing a new radome. We searched the woods for the original without luck.

After installing the 222 antenna, I took a look at the 2m/70cm Stationmaster antenna. I tested the jumper and connections for noise without result. However, when I gently tapped the antenna's radome I could hear the weak signal from N1HAC's HT pop in and out. It seems that we have a break in the antenna's internal elements. That explains why we have times when the repeater's sensitivity goes down

the tubes. My suspicion is that it was damaged during the tower reinforcing work by Nelson Communications two winters ago, during which they left it dangling by ropes and chains for several weeks of bad weather in which they did not climb. Unfortunately, as non-paying tenants, we really have no financial recourse with either NHPTV or Nelson. The repeater committee has been discussing this via email and will work on a proposal for a more robust replacement system for all three bands at our next meeting.

Another "New" Mission for Amateur Radio?

By Dave Colter, WA1ZCN

Well, calling it a "new" mission may be overstating it a bit, but it could certainly rate as a greatly expanded mission. What I'm referring to is helping authorities hunt for activated Personal Locator Beacons, or "PLBs". These emergency beacon transmitters are intended for use by snowmobilers, hikers and others working or traveling in remote areas. The PLB is designed to be a last-resort tool for use only in life or death situations when no other means of calling for help is available.

PLBs are the latest in a series of emergency locator beacons. First came the Emergency Locator Transmitter (ELT) used for finding downed aircraft. Then came the Emergency Position Indicating Radio Beacon (EPIRB) for boats. The technology being introduced in the PLB will also be used in all new ELTs and EPIRBs. The old system will be phased out entirely by 2009.

The current ELTs and most EPIRBs transmit on two radio frequencies – 121.5 and 243 MHz, the civilian and military aircraft distress frequencies, respectively. Land-based monitoring receivers, dedicated receivers in commercial aircraft, and low-earth-orbit (LEO) satellites are used to detect beacon activations. With the old system, it takes the SARSAT satellites about 6-8 hours to reconfirm and roughly localize a signal using Doppler techniques – too slow to save lives in most cases. And that doesn't include the time it takes to notify the Coast Guard or the US Air Force Rescue Coordination Center, and then local authorities, and then to get searchers into the field and find the beacon.

The new system will transmit the familiar continuous warble tone at 75-100mw on 121.5/243.0 just like older ELTs. In addition, it sends a half-second data burst at 5 watts once every minute on one of two new international emergency beacon data channels, 406.025 and 406.028 MHz. The data burst includes information on the specific identity of the PLB and its owner, and may also include GPS position data with pricier models. Without the GPS data, the Air Force will be able to quickly localize the signal to within an elliptical area of 7 miles north to south and 15 miles east to west. With the GPS data, transmitted locations will be precise to within a few feet.

In addition to the new transmitters, the countries participating in the project will be launching a new fleet of advanced digital SRSATS. These countries include most of Europe, Canada, Russia, Australia, and the United States. The new satellites will only monitor the two new 406 MHz frequencies. The old 121.5/243.0 MHz frequencies will be used for ground or aircraft-based direction finding.

One of the perennial challenges offered by all emergency radio beacon systems has been finding the transmitter once it has been activated. While this may be alleviated somewhat by GPS equipped beacons, the significant difference in cost may mean that many users opt for the non-GPS PLBs. ACR, one of the manufacturers of emergency beacons, predicts initial prices from \$300 for a non-GPS beacon to \$700 for the GPS models. With an increasing number of emboldened and inexperienced back-country users carrying the basic PLBs, search and rescue organizations across the country are bracing for a significant upsurge in their workload.

Hams who are already equipped to hunt for 121.5 MHz beacons will have to do nothing new – just sharpen their skills and be ready for the onslaught of yuppies “lost” in the woods. And we thought cell phones in the back country were a problem! The “good” news is that intentional false activations can result in up to 6 years in prison and a quarter-million dollar fine, plus restitution to responding agencies for any costs incurred.

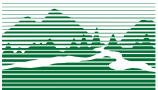
CLUB OFFICERS

President: Verne Burden N5IEP (802) 295-7533
vburden57@aol.com
VP: Dave Colter WA1ZCN (603) 526-7120
dbcolter@rcn.com
Secretary: Nancy Maynard N1QW (802) 295-6080
Lensmaam@mindpictures.com
Treasurer: David Haseman KE1IW (603) 675-2678
David.B.Haseman@dartmouth.edu
Trustee: Dave Landry KA1CRP (603) 448-5788
JDLandry@innevi.com
Editor: Mike Maynard, K1IH (802) 295-2650
Lensman@mindpictures.com

ELECTRONIC ADDRESSES

*ARRL Website <http://www.arrl.org/>
*NH ARRL Home Page: <http://www.nhradio.org/>
*Tom Frenaye K1KI-NE Div. Dir. k1ki@arrl.org
*Al Shuman, N1FIK, NH SM n1fik@arrl.org
*Dale Drake, AA1QD, NH ACC aa1qd@arrl.net
*Paul N. Gayet, AA1SU, VT SM aa1su@arrl.org
Part 97 <http://www.arrl.org/field/regulations/news/part97/>

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Twin State Radio Club, Inc.
PO Box 5078
Hanover, NH 03755