



Radio Amateur News & Views

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HD RADIO IN VERMONT: Mount Mansfield Consolidation Project

The summer of 2006 was an exciting one for Vermont Public Radio. Mount Mansfield is the home of WVPS-FM which broadcasts at 107.9 MHz. This is one of the primary signals for Vermont Public Radio.

The Consolidation Project involves new towers and several master antennas that will allow multiple Radio and TV stations to broadcast simultaneously from the summit.

For Vermont Public Radio, this was the start of our upgrade to provide HD FM to the Champlain Valley and beyond.

Over the course of the summer, three new towers rose over the summit of the mountain. This was followed by the construction of a new multi-station FM panel antenna.

At the next RANV meeting, we'll look at the project and go into detail on the workings of HD FM. This will include a live demonstration of "multicasting" on 107.9 MHz. I hope you can join us in this very interesting presentation on the latest in technology.

The meeting will be at 7 PM on Tuesday, May 8th at the O'Brien Civic Center, 113 Patchen Road South Burlington. Pre-meeting dinner will be at Zach's on Williston Road, starting at 6.

FIELD DAY!

Field Day is a mere 7 weeks away from the time you read this. Start making plans now to be free the weekend of June 23rd-24th and partake in the best of amateur radio.

We had a tremendous Field Day last year. RANV won all the marbles, taking the top spot in the super competitive 2A category. To do this took great skill, dedication and luck (*good propagation for us!*). While we cannot control the luck, we certainly can work on skill and dedication. Each year, we need to recruit new operators to replace those who have left the area or cannot make it. We need operators, but we also need set up and take down people, assistants, wranglers and food chefs. Field Day doesn't happen by some miracle; it is a lot of work, which hopefully is spread amongst many people.

The schedule for Field Day starts with the final planning meeting on Monday, June 18th at W1SJ, site setup at 2 PM Friday, June 22nd and the Field event, starting at 10 AM Saturday June 23rd. Pick the role you want to play and sign up early!



Why is this box wrapped in plastic on a sled?
See Page 5 for answer!

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OUR LAST RANV MEETING

by Carl AB1DD, Sec'y

Since President Brian N1BQ could not attend this month, Vice President Bob KB1FRW called the meeting to order at 7:05. There were 23 members and guests in attendance.

The first piece of news was not good. The speaker scheduled for this meeting could not attend due to illness. We will reschedule this meeting for a later date.

After a round of introductions, John K1JCM gave a presentation on the trip Brian, Bob and himself took to the Mount Norris Scout Camp. This was to scope out the area where the antenna installation of the HF antennas will go. John had some good pictures of the layout, although some wondered why the trip was needed, because there were already antennas in the photos. In reality, John drew them in so we could see where they were to go. There was a lot of helpful discussion on how the antennas could be erected.

Next, Mitch reported that the duplexer has been ordered, and will be in soon. (*Note: It has arrived, and been installed.*)

Other announcements included the need for help for the MS Walk on the 21st of April, The March of Dimes walk on the 28th, and the upcoming Memorial Day Parade.

Once again, Paul, AA1SU was volunteered to bring snacks.

AB1DD asked if there would be any interest in running a special event station in the future. There was interest, and a couple of events are in the works for the near future. One event will be to celebrate Samuel Champlain's "discovery" of his lake. The other event is the Light-houses on the air event during the summer. More information will follow.

The formal meeting ended at 8:15, leaving a lot of time for snack consumption and general rag chewing which ended after 9:00.

LONG, LONG TIME AGO AND NOT SO FAR AWAY

My Time As a Novice

by Bob W4YFJ

I was in explorer scouts with several school friends. One of the guys was Dick Calvert. Dick took me home to meet his father who was a ham. Looking at the Collins 75A-1 and 32V-1 one time and I was hooked. I would say that before mentors were known as Elmers, Dick's father, Frederick Calvert taught me what I needed to know for the theory and code. I wish that I could remember his call. He was an amazing operator. He could copy CW at 45 words per minute, work with his stamp collection and talk to you all at the same time. He spent the World War II years as a radio operator in the U. S. Navy. He had a paper tape machine that I could listen to, so I could learn the code.

I lived in Arlington Virginia and rode the bus into Washington D.C. to the FCC to take my test. I flunked the code the first time that I went. I went back about 90 days later and passed. I do not remember how long that it took to actually get the ticket (*license*), however, I was very happy to get it. WN4FXO was my first call.

My station was a Hallicrafters S20-R and the transmitter was home brew with a 6L6 as the final. I used a Windom antenna with television twin-lead that ran from the tree in the front yard and the garage in the backyard. I only had two crystals: 7189 and 7194 kHz. Radio Moscow was on 7190 kHz at that time and my only option was to get up in the morning before school and work the hams out in the midwest. I was naturally excited with every contact.

The S20-R was in perfect shape for one built back in the late '30's. It had no scratches, rust or dust. The only thing wrong was for some reason it had white paint on the line cord as if some one painted a room

and did not move the cord when they painted. I lent this receiver to a friend of mine in the early 60's in order for him to learn the code. We never got it back. For some strange reason, I wanted a S20-R when I was about 65 years old. I had been looking for one in good shape at ham-fests and simply could not find one. I placed a query out on the Internet looking for one in good shape. I got an answer from some one out in California and he said that he had 15 of them. He said send me \$100 and I will send you my best one. I got it in the mail in perfect shape, no scratches, no rust, no dust and it worked. Only one thing wrong – it had white paint on the line cord! I surely wish that I had kept track of the serial number.

Contacting RANV

In Person: Meeting, May 8, 7pm,
O'Brien Civic Center
113 Patchen Rd, So. Burlington

By Mail: PO Box 9392,
So. Burlington, VT 05403

By Radio: 145.15 repeater

WW Web: <http://www.ranv.org>

President: Brian N1BQ 899-4527
n1bq@wulfden.org

VP/Tres Bob KB1FRW 434-2517
mcamp@gmavt.net

Secretary: Carl AB1DD 482-3878
ab1dd@arrl.net

Editor: Mitch W1SJ 879-6589
w1sj@arrl.net

Please send submissions for the newsletter to the editor, W1SJ.

ZEN AND THE ART OF MOBILE RADIO INSTALLATION

by Stuart ND1H

Not having a heated garage, I had all winter to think about how to install a mobile rig for the car we bought in January. Though painful, the extra time helped in avoiding the urge to do a quick, but not optimal, installation. Since some of what I learned may be useful to others, I'll share the experience here.

The radio for the new car is a Kenwood D700, a dual-bander with built in TNC for APRS (*location reporting*) use. In addition to the normal antenna, power and microphone issues, I had to think about where to install the GPS "puck" that gives location information to the rig.

Since I wasn't about to go out and fool around with the installation in January temperatures, I decided to get to know the radio in the warmth of our house. This was helpful on a number of fronts. I got to program the radio with all desired local repeaters and test those out. I was able to play around with the GPS connections and programming to make sure everything was operational, as well as to find out how much of a sky view the GPS really needs to reliably acquire a position fix. I was able to measure the actual current draw of the radio to see if the published specification is accurate. I found that the actual draw at high power is significantly lower than the specifications on both VHF and UHF. This last consideration was important because when I did brave the cold temperatures to look at the power feed possibilities it was very discouraging. Some of today's cars don't present great options for poking holes in the firewall or running power safely to the back of the car. Many articles have been written about car fires that have started from bad aftermarket power lead routing. Even though fusing the leads close to the battery would have taken care of the safety issue, I still wanted to see if I could use factory wiring for

power. My measurements showed that the radio's power requirements would be well within the capacity of the factory accessory power outlet.

Next, I thought about where to locate the rig. Like many modern radios, it has a detachable head unit, so I needed to think about where the head unit would mount as well as where the main unit would mount. Under the dash, there was one spot that was a good possibility. Another great location was under the hatch floor near the tire jack. There were plusses and minuses to both. Mounting the radio up front made sense because I would be able to use the radio's internal speaker, and would only have to run the antenna cable from the front of the car to the back. On the other hand, putting the radio in the back let me avoid a lossy coaxial extension, and let me put the radio where it would be more easily accessible for connection to a laptop for reprogramming.

Before making any of those decisions, I did some research and found that Toyota has a website that allows you to buy access to all of the service manuals for my car. I bought a one-day pass on that site and scoured it for information showing how to remove dash panels, where there might be room for cable routing, etc. Knowing how the interior pieces fit together from an exploded drawing certainly helps prevent my usual result of snapping a plastic piece when trying to disassemble something. Anyone planning on doing an installation in a car should try to locate the appropriate service manual pages. Another reason this is so important: The service manuals give very helpful information about things you might not be considering. Modern air bags, for instance, are timed to remain active for a period of time even after the car is turned off (*probably so they will*

still work even if the ignition line is ripped in an accident). Without reading that warning, I might have monkeyed around with a dash panel that has an airbag sensor, perhaps with the ignition switch in the accessory position. Could have been a bad day! Even closer to a ham's heart, the Toyota service manual warned that installation of two-way radios could result in unintended airbag deployment, presumably due to RF interference looking like a trigger signal. All of this information from the service manual led me to the conclusion that the radio would live in the back of the car.

Now, what about the antennas? I actually don't mind the idea of drilling holes in brand-new, expensive things. But in this instance, I took a good hard look and determined that a magnetic mount would be a great solution. There was a nice, clean routing for the coax in the back hatch area, and the benefit of taking the antenna off for a car wash or when parking in a city (whether in a garage or outside) convinced me to go that route. On the GPS side, modern GPS receivers have become so sensitive that they actually now operate very well even without a clear view of the sky. A pane of glass, a quarter-inch of fiberglass, or a layer of plastic dash material doesn't bother them much at all. As the weather warmed, I poked around under the dash and found a spot that presented a pretty clear view of the sky through just plastic dash material and the windshield. Getting the puck completely hidden was a major accomplishment for me.

On to the head unit. I wanted the installation to look as unobtrusive as possible, and to be as "reversible" as possible so that the car wouldn't look horrible if we got a different type of radio. The service manual drawings showed that the car's center console disassembles

ZEN... continued on Page 4

ZEN... continued from page 3

fairly easily, though a special interior fastener removal tool is recommended to pop out the large plastic rivets that hold pieces together. Since it was still cold out, I had time to find a source for those installer's tools on the web and bought an assortment. Feel free to give me a shout if you would like to borrow them.

Another hint from the service manual suggested that my waiting for warmer weather was a good idea. Plastic dash parts are much more forgiving of your tugging and pulling when they are warm. Plastic that cracks when it's cold just bends nicely when it's warm. When we got one of those nice, warm days in April, I put the car out in the sun, removed all the mats, carpets and other assorted junk from the car and let it warm up for an hour or so before ripping the console apart. To my delight, I found that everything came apart easily without breaking, and by removing the pivoting cover for the ashtray, I had just enough room to mount the head unit in that space. I screwed a plastic strap to the back of the head unit, taped to that strap a piece of foam that I cut to fit the ashtray, and used that as a head unit mount. Now, it just slides securely into the ashtray and can be removed anytime I like. A non-ham friend actually thought it was some factory-installed accessory.

The center console has a second large storage bin that has a pivoting cover, and with the console apart I was able to cut a hole for the microphone cord in the bottom of that bin. I made the hole big enough to take three other cords (an iPod charger cord and two cell phone charger cords). All of those are now connected with wiring that runs inside the console, with no messy cables running from the factory 12 volt accessory outlets.

I can't quite explain why the problem-solving that is involved in putting a radio in a car can be so satisfying, but in some strange way I got a tremendous amount of joy from spending four months putting a radio in a car. Not many others may understand that sort of satisfaction, but hams do.

HAMS NEEDED: VERMONT CITY MARATHON

by Mitch WISJ

The communications team for the Vermont City Marathon (VCM) is the largest ham radio public service team assembled in Vermont. Last year 43 hams served as the communications network which kept thousands of runners and spectators safe. This year we need even more hams.

The VCM is a full 26.1 mile marathon run on the streets of Burlington. It is actually multiple races. Not only is it a traditional marathon, but there are 2 and 4 person relay teams which run the race and all sorts of logistics have to be in place to get people to the appointed relay transfer points. All of this takes place on Sunday, May 27th. This is Memorial Day weekend, which makes recruitment particularly difficult.

Over the years, the VCM communications team has become quite experienced. Unfortunately, this year, many of those experienced operators have conflicts and are not able to attend. Recruiting new operators and getting them up to speed is a key goal for the smooth running of the communications.

The operators fall into a number of categories. Aid station operators remain in the general area of an aid station – a location with water and medical services for runners. These operators are the eyes, ears and voice of the race officials at each of these locations. Vehicle operators are either in supply vehicles or busses and help coordinate the movements of these key pieces. These operators have to interface their mobile stations into a vehicle for the day. Bike patrollers ride the course looking for runners in distress. Patrollers have to be able to operate a radio and ride a bike at the same time! Shadows follow key race officials around providing instant access to our communications network. As most of these officials are runners, that means the shadows will spend part of their day moving quite fast. And last but not least, there is an acute need for Net Control operators. Given the amount of traffic and speed which it must be moved at, the Net Control operator must be the best there is, and be absolutely unflappable when things go wrong (*and they do*).

After reading the above list, you will see that there is something for everyone – new operators to experienced operators. All you need is a license, a radio and a willingness to learn a lot of stuff. The skills and experience you will gain in this event are invaluable.

To participate in the Marathon Communications team, go to: www.hamclass.net/vcm.htm and fill out the registration form. Or you can call me at 879-6589 in the afternoon. We must get operators on board this week, so if you are interested, don't delay!

ESSEX MEMORIAL PARADE

by Mitch WISJ

The Essex Memorial Parade is the morning of Saturday, May 26th. Hams are needed to serve as Parade Marshalls who insure the smooth lineup and spacing in the Parade. This is a low-key event and is an excellent opportunity for inexperienced hams to get their feet wet in their first public service event. The operators meet at 7:30 and get everyone lined up for the parade which starts at 9. Everyone is done by noon, allowing for a leisurely lunch afterwards.

If interested, call Mitch at 879-6589.

REPEATER NEWS

by Mitch WISJ

In the last installment, I underscored the need for a new duplexer. Lots of research and phone calls to factories and discussions with other repeater owners led me to choose a particular model. More phone calls and research and I decided on how we were going to purchase the unit. Getting it up to the mountain was another story.

You may not know this, but it wasn't the groundhog's fault! You can blame me for all the snow and wintry weather we had all throughout April. I embarked on a serious snow dance and this had nothing to do with spring skiing. The reasoning was simple. The easiest way to get equipment to the repeater site is on a sled behind a snowmobile. With packed snow, the trip is fairly smooth. When there is no snow, you either carry stuff on your back or haul it up on an All Terrain Vehicle. On the rough trail, an ATV ride is a buck and bronco affair at best. It is improbable that the duplexer would stay tuned after being bounced around like that. I know my insides get untuned!

So, we had to get a couple of snowmobiles, a sled and the personnel needed to make all of this happen. As usual, working around everyone's schedules and the weather is tricky at best. The good news was the foot of snow which fell on April 14th. OK, it was only good for us. More good news was that the trail was groomed right after that, making a nice smooth access. Shortly after that the duplexer finally came in. But then the bad news – it was warming up fast. Warm weather makes corn snow, which starts to have the same consistency as sand. This would not be good to get equipment up on. We had to move fast.

I picked up the duplexer and notice it was in a tremendous box. It was large enough so that it didn't really fit on the toboggan we were planning to use. So now we had to come up with a sled. This almost came down to grabbing a pair of old skis and some 2x4's to make a makeshift sled! Fortunately, Chris N1GBB had

access to a sled and Bob KB1FRW was dispatched to grab it and move it into position for our ascent.

Monday, April 23rd was a bright sunny day. The forecast was for temperatures in the 80's. Great day for the beach. I wasn't so sure about a snowmobile ride! John K1JCM, his friend Tom and I met in the base area and proceeded to pack the box and the rest of the equipment on the sled. There was certainly plenty of snow up there. The ride up was fairly smooth (*and slippery*), until we got to the steep part, which I affectionately call Heartbreak Hill. John and I, in the lead sled, noticed that the second sled was nowhere to be seen, so we went back to rescue him. Tom bogged down in the loose snow. We unhitched the sled and hauled it up over the steep part. When Tom went to start up the machine, the pull rope came out! Oh boy, better not stall out now!

We got up to the site and the snowmobile did stall out, raising questions as to how we were going to get it down. While John and Tom worked on the machine, I wrestled the duplexer through the deep snow into the building. Fortunately, the snowmobile had a tool kit with a spare pull rope, allowing us to get the machine running and out of there.

The new duplexer was installed and the desense magically went away! The rest of the time was spent tweaking things and measuring power, loss levels and SWR. We were later joined by Chris N1GBB who walked up with his two dogs. We packed the old duplexer out and called it a day!

After a week of use, the repeater appears to be running great. There seems to be days when it is super and other days when it is a little deaf, but measurements indicate that this is due to widely varying path loss. The only major problem appears to be lack of activity, but that is not something which can be solved by a trip to the site!

BURLINGTON

MS WALK

by Bob KB1FRW

The fund-raising "walks" are upon us as spring is trying to appear. I thought we all may be watching the walkers in this year's Burlington Multiple Sclerosis Walk put on cross country skis or snowshoes in order to participate.

As you may know this is an important fundraiser for the MS Society. It also serves to raise awareness of MS in the community with the hope we finally find the cure for multiple sclerosis. This is why they walk.

Several amateur radio volunteers descended upon Burlington High School at 7:30 Saturday, April 21st to assist in the smooth execution of this event, practice their communications skills and have a bit of fun. The group included: John N1LXI, Jeff N1YD, John K1JCM, Robert W1RFM, Amy KB1KYF, Thomas KB1KVY and Bob KB1FRW.

Amy and Thomas brought their bikes and were trail and lead bike mobiles. Robert was the director's shadow again and I think he is getting faster each year as he tries to keep up with her as she runs around putting out fires. Jeff was at rest stop #1 and John N1LXI, covered rest stop #2 mentioning something about the fudge there. John K1JCM went to cover the band they had at the corner of Church and Main Streets and then help with finding the end of the walk. For some reason, walkers tend to wander off and then appear out of nowhere and then straggle way behind. Bob wandered around in circles in the parking lot at the High School trying to act like a Net Control when needed. Fortunately, this was a low-key event that didn't need a lot of direction.

The event went quite smoothly and was pretty much over at around 11:30 so we all got our lunch and t-shirt, hung around awhile and chatted. Thanks to all who participated.

**NEXT MEETING:
“HD Radio in Vermont”
Tuesday, May 8th, 7 PM
O’Brien Civic Center**

RANV

P.O. Box 9392

South Burlington, Vt 05407

<http://www.RANV.org>