



Radio Amateur News & Views

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COMPUTER SECURITY: The March 8th RANV Meeting

Every day we hear about computer attacks of Spam, Phishing, Viruses and Identity theft. It's probable that everyone reading this on a computer has dealt with Spam and Viruses several times. We have had an article on this recently right in this newsletter! The Internet is a tremendously powerful resource, yet it really is the wild, wild west out there with an endless supply of bad guys trying to hack our computers. Our Government seems unable, in fact, unwilling to do much about it. The fact that some of my best Spam comes from the Republican National Committee speaks volumes about how computers are being misused.

Since there is no knight on a white horse about to ride up and protect the honest hard-working citizens of the Internet, we must do it ourselves. And yes, it is possible to provide a great deal of computer protection if people know what they are doing and are willing to take some time to protect their valuable resources.

Our guest for the March RANV meeting is Rich Parker. Rich is the Chief Engineer of Vermont Public Radio and is also an expert at computer security. He will discuss the various forms of attacks on computers which occur and proper methods to protect ourselves from computer damage and identity theft. And, we might even get in some radio discussion as well!

Activities on meeting night, March 8th, as always, kick off with a wonderful feast at Zach's on Williston Road at 6. The meeting will start at 7 and will be held at the O'Brien Civic Center on Patchen Road in South Burlington. Hope to see you all there, especially some of our newest members!

WINTER BRUNCH

We have been kicking around the idea of a weekend brunch to provide a meeting for our members and friends who cannot make the Tuesday night meetings. And besides, we have found that eating events are always the most popular! I think we have come up with a winner here!

The RANV Winter Brunch will be Saturday, March 26th at Ponderosa, 2572 Shelburne Road, Shelburne, next to Travelodge. We will set the activity up for 10 AM until noon, but we can certainly start earlier or end later. Ponderosa runs a breakfast buffet until 11 at which time they switch it around to a lunch buffet. The buffet costs a very reasonable \$6.99. So, you can choose the type of food you would like by the time you attend. They have a nice dinner buffet on Sunday as well, but several members cited schedule conflicts so we will give the Saturday time a try.

What do we do at this event? Well, we do the two best things we are all qualified for: eating and talking. If you want to bring radios to show off, or make a speech, you are free to do that, too. Just don't expect anyone to stop eating!

If we get a good turnout at this event, we will set up another one sometime later. If only a few show up, we will eat your portion for you.

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In Part II of our
Antennas series,
Ed N1UR looks at
terrain modeling

OUR LAST RANV MEETING

by Carl AB1DD, Sec'y

The February 8th RANV meeting got underway at 7 PM. There were 28 members and guests in attendance. After a round of introductions, there was some discussion on the upcoming Milton hamfest and several key work positions were filled. In addition, Mitch talked about the importance of promoting the hamfest far and wide.

A motion to allocate up to \$300 for payment for use of the school for the hamfest was made by Brian N1BQ, seconded by Paul AA1SU and passed by a voice vote.

Brian N1BQ talked about the importance for everyone to subscribe to the RANV reflector to aid in club communications. There is information on how to subscribe on the RANV web site.

Many months we borrow a computer video projector that belongs to the Mac Users Group. A motion to purchase a protective hard shell case for \$21 was made by Jeff KB1IWK, seconded by Paul AA1SU and passed by voice vote.

Paul AA1SU talked about the PRB-1 legislation bill that has been introduced in the Vermont Senate. It is labeled S-65. The House version is H.12. Paul will send out a bullet letter so we can write to our representatives and support this bill.

The March meeting will be on computer security. Richard will provide refreshments.

The main topic was Antenna Basics, presented by Mitch W1SJ. This was a very informative presentation on antenna basics. The topic was covered in a way that let everyone get something out of it, whether a new ham or one with a lot of experience. The PowerPoint presentation and show-and-tell covered such topics as Radiation, Impedance, SWR, Gain, Directivity and Ground Effects. Details of several popular antennas were discussed, and the live

THE PREZ SEZ

by Brian N1BQ, President

Another great hamfest under our belt! We had four hundred customers and from what little time I had to schmooze with the vendors afterwards, enough flea market money was spent so that they were happy, too.

I was quite busy doing two forums and didn't get a chance to look closely, but they all seemed to be well attended. I will take a small bow myself and thank all the presenters for the fine jobs they did. I heard from many attendees who came up to me to say what a great time they had and I made it a point to approach people I didn't know, introduce myself and ask how they enjoyed the event. The only complaint I heard was one guy who came up to me and told me that he really enjoyed my talk but I went 15 minutes over the scheduled time. Sigh.

The usual round of applause should go to Mitch W1SJ, who once again produced an affair to remember. The coffers have been refilled for another year of operation.

I want to award a special round of thanks and appreciation to Carl AB1DD and Bob KB1FRW, who put on the fantastic radio remote control demonstration in the lobby. A note of appreciation to Jeff KB1IWK, who patiently walked many newcomers

examples included various sizes of 2-meter verticals and a very strange looking hard-hat with a whip mounted on top! There will be more on this topic later in the spring.

Last month's trivia question on the size of the National Radio Protection Zone was correctly answered by Leela KB1EZD. Enjoy your prize!

This month's question: What was the most important law in antenna design?

The meeting was adjourned around 9, and refreshments were enjoyed by all.

through the fine points of IRLP and Echolink. In addition to helping the massive effort to setup and take down the flea market, they had a whole truckload of gear for their demo that they had to setup and take down, too. They spent the last two months preparing this demo, which was quite impressive.

I don't remember offhand everyone who helped out. You know who you are, but thank you! You have helped the club and the local ham community once again.

I had several club presidents from around the region approach me and tell me what a great job I was doing. It's easy to look good when you have a good active membership. We had three trucks and seven sets of hands doing tables and transport and another half dozen sets of hands at the high school for the unloading and setup. The ticket booth, the club table, the raffle, the back doors were all manned. Come Saturday afternoon, take down went smoothly and we were out the door not long after 2:00.

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

MILTON HAMFEST – ANOTHER SUCCESS!

by Mitch WISJ

By all measuring sticks, Milton 2005 was another success. Cold, but clear weather served as a nice backdrop and removed any worries about winter storms. Attendance was right around 400, a few percent down from last year and about at the 2003 levels. With all hamfests dropping at the rate of 5-10% per year, this is not that bad, but we could have certainly done better.

The flea market was a very big concern. We had all sorts of problems, including vendors going out of business and some having schedule conflicts. Other problems included loss of 20 available tables and loss of part of the flea market space due to a wrestling mat positioned in the cafeteria. Don't get me going on why wrestling takes place in a room designed for food consumption. When all was said and done, the flea market turned out fine. It was slow in getting going in the morning, but eventually, 75 tables were filled with stuff – about the same as last year. A quick glance confirmed that there was still some pretty good stuff to be had. Everyone attending a ham radio flea market needs to realize that these events are waning in popularity for a variety of reasons. This is why we put so much energy into the educational programs at the Milton Hamfest.

The **RANV** Table was a very busy place once again. Because we lost our book vendors this year, we obtained a small consignment of books from the ARRL thanks to Tom K1KI. Several hundred dollars of books were sold, in addition to Vermont Directories flying off the table and scores of back issues of **News & Views** being snapped up.

This year, Milton offered an insane number of forums. It's insane when you realize the logistics of running 10 different forums in the space of only 4 hours at a relatively small show. By comparison, Boxboro runs about 25 forums, but it is the New

England Convention and serves 5 times as many attendees. But, with so many forums, we like to think that we had something for everyone who attended – even non-hams! The forums at mid-morning seemed to pull the largest crowds – over 20 people each. I was pleasantly surprised to have 9 folks quite interested in getting their licenses at the New Ham Forum.

The myriad demonstrations at the front of the school had the ambience of a 3-ring circus. Quite a crowd gathered to see the Satellite demonstration at 10:00. The triple threat of Radio Remote Control, PSK-31 and IRLP had a gaggle of onlookers around it all day. My only regret is that I had no time to stop by and check it out. But, we will have information available about Radio Remote Control on the **RANV** web.

The VE session drew 9 candidates and produced 3 new licensees and 4 upgrades, including Don N1QKH to Extra. By hamfest standards, this was a tiny session. But, I was very happy, since I had to get out early this year and the small session was over in about an hour.

A high note this year was the return of media coverage for the event. A number of us worked long and hard and finally, we got a small piece in Saturday's Free Press. Several weekly papers, including the Essex Reporter, Colchester Sun, Milton Independent, Mountain Times, Seven Days and Buyer's Digest had small pieces or calendar listings. I spent about 10 minutes with Charlie and Ernie on WVMT Friday morning talking up the show and ham radio. Channel 5 sent over a crew to the fest and we got about a minute of coverage at the tail end of the 6:00 news, including some nice shots of the demonstration stations. It's a good thing they came over, because it seemed like everyone forgot their cameras and we don't have pictures. If you did snap a few pix, please feel

free to send those along. Also, please let me know if you have seen or heard any hamfest publicity and how it looked or sounded. We can never get enough good publicity!

Back in the olden days of Milton, there were 3 guys who ran the whole show. That doesn't happen anymore. Things have gotten much more complicated, from the movement of tables, dual hamfest entrances and expanded program.

Thank you goes out to our crew!

Setup: AA1SU, K1HD WA1RMS, AB1DD, KB1FRW, W4YFJ;

Tables: N1BQ, KB1EQH, KB1LAX, KK1L;

Ticket sales: W1DEB, K1CRS, KB1FRW, WB2JIX;

RANV Table: W4YFJ, WB2JIX, K1JCM, W1RFM, KB1KVY, KB1KXF, KB1LIE;

Demo: AB1DD, KB1FRW, KB1IWK;

VE: KM1Z, K1HD, K1JC, N1PEA, AB1DD;

Speakers: N1BQ, VE2EQL, N1JEZ, KE1FO, AA1SU, K1KI, K1TWF, WB8IMY.

If you are keeping count, that's 29 folks, including that W1SJ character who cracks the whip. I think all would agree that that hard work was well worth it when you consider all the happy hamsters and potential hamsters who visited the 23rd annual Northern Vermont Winter Hamfest!

VERMONT DIRECTORY

Despite printing extra copies, the Vermont Amateur Radio Directory sold out by 9:30 at Milton. The result was that many people never got a copy. I will do a second printing to take care of the many requests.

The directories will be available by pre-paid mail order only. Send \$6.50 for the Directory and shipping and handling to this address: 14 Kimberly Dr, Essex Junction, VT 05452. The deadline for this is March 15th. The books will be printed and shipped shortly after that.

PROTECT EQUIPMENT FROM INRUSH CURRENT

by Mitch WISJ

Inrush current or start-up surge current is a problem that all electronic devices have to deal with. Depending on the components in the circuit, the inrush current will be many times the normal current. This surge of current stresses various components in equipment and eventually leads to component failure. Ever notice that when something fails, it is usually when you first turn it on? That is due to inrush current. If something could be done to limit the inrush current, equipment failure would be reduced.

The classic case of inrush current is found with the ordinary incandescent light bulb. The tungsten filament in a light bulb has a very low resistance when it is at room temperature. When it heats up, the resistance increases quickly. For example, the cold resistance of a 60-watt light bulb is about 18 ohms. When 120 volts is hooked across this, Ohm's Law tells us that the current will be 6.7 amps, which is considerable for a small light bulb. However, in a fraction of second the resistance increases to 240 ohms and the current drops to 0.5 amps, the normal current drawn by this size light bulb. The extra current won't affect your electric bill, but the brief 6.7 amp surge stresses the filament each time it is powered up from a cold start. A light bulb almost always fails when you turn it on. For a buck, you buy a new one. However, this casual attitude won't fly when considering the filament in a high power vacuum tube. It too, has a surge current which shortens the life of the filament and the tube. However, at a replacement cost of hundreds of dollars, tube longevity is something which is carefully considered.

Another danger area from inrush current is found in power supplies. A typical power supply has a transformer, a group of diodes and rather large capacitors. When voltage is

applied to a discharged capacitor, there is a large surge current which flows momentarily in the capacitor, charging it up. When you consider a high power amplifier, we are talking 2500 volts or more, which is a lot of energy. Diodes, being semiconductor devices, have a specific current limit and won't take all that much abuse before they fail. It is safe to say that the surge current stresses the diodes. However, it also stresses the power transformer. If you power on a piece of equipment and hear a thump coming from it, that is the big kick of current going through the transformer.

This article comes from a project I am doing to rebuild the power supply in my Dentrion amplifier. The capacitors are old and unreliable and are being replaced. But, while I am doing this, I am also looking at limiting the inrush current. When I rebuilt my Heath SB-200 amplifier some years ago, I put in an available inrush current limiting circuit called a "soft-start". No longer do I hear a loud thump when this amplifier is switched on. That amplifier is 40 years old and anything that can be done to extend component life is good.

There are 3 basic types of inrush current limiters. The circuit in the Heath is simply a pair of 20-ohm resistors, each bridged by a relay run off a delay circuit. Initially, voltage is applied to the resistors which limit the surge current by dropping the available voltage. After a short delay (*a second*), the timing circuit closes the relays which bypass the resistors and all is back to normal. A second type of inrush current limiter uses thyristors or triacs as the resistive element. Finally, I came upon a company which makes devices specifically tailored for limiting surge current. These devices are thermistors.

A thermistor is a resistor which changes value in a predictable way when it heats up. A Nevada company, *Ametherm*, makes a couple of lines of thermistors with specifications suitable for inrush current limiting. These thermistors have a room temperature resistance of around 1-100 ohms. Upon the application of current, the thermistor heats up and the resistance drops to a fraction of an ohm. The beauty of the thermistor application is that you only need 2 thermistors (*one for each leg of the line*). In the Dentrion amplifier, there is no room for 2 power resistors, 2 relays and a timing circuit, so the thermistor solution became desirable.

Choosing the correct thermistor for the application takes a little knowledge of circuit theory. The thermistors have to be robust enough to deal with the significant amount of energy flowing through them when 2500 volts suddenly start to charge 50 microfarads of capacitance and they also have to withstand a total of 8 amps of current on voice peaks. More importantly, they have to have the correct resistance on startup but also must go low enough in resistance so as not to cause a significant voltage drop into the amplifier. A thermistor dropping to 0.2 ohms is not quite as good as a relay which is 0 ohms. The result is a loss of 4-5 volts out of 240 volts and about 10 watts of power loss. With the amplifier running at 850 watts output, this amounts to a .05 db or a drop of .01 S-units. I can live with that!

Ametherm makes a variety of thermistors in different values and sizes and they are reasonably priced. These thermistors are placed just before the power transformer and can be used to protect any piece of electronic equipment. They can also be used to lengthen the life of light bulbs! For more information and some great technical explanations, go to www.ametherm.com.

THE HAM RADIO FORECAST – GLOOMY?

editorial by Mitch WISJ

With all of the euphoria floating around about our success at Milton, it is also important to also look at some items which are less than pleasant. The Milton Hamfest article is the “glass half full” analysis. We would be remiss to ignore the “glass half empty” analysis. It is real and it is here now, sad to say.

Publishing the *Vermont Amateur Radio Directory* lets me see firsthand, the trends in amateur radio growth and decline in Vermont. Since the first edition in 1990, I’ve seen the entire “no-code” bubble and tremendous growth of the early 90’s. Now, I’m seeing that bubble go bust. Vermont, along with New Hampshire, both have been the fastest growing ham radio states in the East for many years. This year, Vermont posted a net loss of 30 (-1.5%), the third straight year of a net loss. As one of the “faster” growing ham radio states, that means that amateur radio is in real trouble in the more populated areas. The loss is attributable to two basic reasons: 1. very few new people are getting ham licenses, and 2. many hams are not renewing their licenses. Here is an alarming statistic: in January 2005, of the 44 Vermont licenses which came up for renewal 25, or 58% were renewed, and **19 or 42% were not**. These are now expired and will drop out of the database entirely after 2 years. This data is consistent with what I have been seeing for the last few years. And not only no-code Technician licenses are lapsing; a good number of higher class licenses are also going away. Meanwhile, students for ham radio classes have been as rare as the rarest DX countries. Reasons boil down to lack of time, lack of money, and most important, lack of interest. “Hey, I got my cell phone and Internet – what do I need a ham radio for?”

Amateur radio activity is also getting quite weak. While HF activity remains strong on weekends, other activities are showing losses. The logs submitted in VHF contests have dropped so much that the ARRL is looking into changing the rules to promote more activity. Activity on repeaters is way down. We don’t notice it as much in our area where we have an active repeater, but I have noticed that activity is way off all over the rest of New England and the Northeast. Organizers of public service events are working harder and harder to staff their events and numbers often seem to be dropping anyway.

Hamfests may soon be on the endangered list. All hamfests, Hosstraders and Dayton included, have shown noticeable drops in attendance in the last few years. Milton attendance dropped off a few years ago, but has bounced around at around the same level for a few years. But how long will it remain viable?

“When you consider that only 150 out of the 1000 hams located within 30 minutes of Milton actually attended, you might conclude that the attendance wasn't all that good.”

We need to address attendance at our remaining ham radio show. With great weather and a great hamfest program, there is no reason why the attendance decreased this year. Club support was certainly there. About half of all **RANV** members were seen at the show. We got a considerable number of non-hams to check the show out and always a good sample of people who drive a long distance. But when you consider that only 150 out of the 1000 hams located within 30 minutes of Milton actually attended, you might conclude that the attendance wasn’t all that good. True, a lot of active

hams were in attendance, but a lot of other active hams were not seen. Some of the “repeater talk” I’ve heard before the hamfest indicated a rather laid-back attitude about attending and opting to do something else instead. A personal choice about attendance is nothing any of us can second guess. However, the warning here is crystal clear: If more folks don’t start considering this show important enough, it will eventually go away, just like every other hamfest in Vermont has. And when that happens, the loudest bellyaching will be from those who did not attend very many shows. It is no secret when Milton occurs. Next year’s show will be February 25th. Unless you have an emergency or a hard work or vacation commitment, make sure you are there. The folks who do all of the hard work to put this thing on deserve a strong following from everyone in the the ham community, at the very least.

I don’t have the answers for any of this. I point these “dark” facts out, so that we all are aware of what is occurring and we all can have a stake in building our service. There is no secret solution, except what we have been doing all along. That is, knowing what we really enjoy in all of this and working hard so that we all can enjoy it more. In **RANV**, we have been “getting the job done” and this is very evident when one looks at amateur radio in other areas. But we must never, never get smug and take our eye off the cheese. The margin between success and failure of an organization is rather slim. And yes, I am, for the most part, preaching to the choir here. But I also know that our newsletter is viewed by many hams outside our area and if these words help make a difference, then it justifies the time it took to beat them out of the keyboard.

**NEXT MEETING:
“Computer Security”
Tuesday, March 8th, 7 PM
O’Brien Civic Center**

RANV

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