



Radio Amateur News & Views

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RANV HOLIDAY PARTY

Join Us December 9th
For An Evening of Celebration

The RANV Holiday Party will be Tuesday, December 9th at the QTH of W1SJ and W1DEB in Essex. Festivities will get underway at 5:30 and usually run until past 9:00. Arrive at any time, but no food guarantees are made if you show up late! If you need directions, contact W1SJ.

As in past parties, the key activity will be eating. Other activities include the telling of tall tales, on-air debauchery, playing with computers, viewing bad videos and other party favorites. Everyone is encouraged to bring a guest so that the non-ham and ham-lite folks will have someone to talk to about normal stuff.

It is key that you let Mitch know how many are coming. As soon as you read this, please send him an E-mail and count up the number of attendees who are likely "definite" and the number of attendees who are likely "maybe". This information is needed by December 4th so that the proper amount of food can be ordered. Failure to do this stresses out the host!

We will have the meat platter, the meatballs in sauce, cocktail franks and fries. The following items are up for grabs: salad, fruit, wings, cheese & crackers, chips, pretzels, soda, desserts and any other dish you can think of. If you are bringing food or drink, please be there at 5:30. If you are coming later, bring dessert. Let Mitch know what you are planning.

We look forward to seeing all of you at the RANV Holiday Party!

MILTON HAMFEST

by Mitch W1SJ

The Milton Hamfest and ARRL Vermont State Convention will be Saturday, February 28th, 2004.

For those of you who go to other hamfests, it is no surprise that all hamfests have been getting smaller and smaller over the last few years. At the Milton show, we were growing in leaps and bounds in the 90's. However, the attendance dropped a little and then leveled off for a few years. Last year, we saw another slip. The big drop was from local hams.

The main attraction of a hamfest is the buying and selling of equipment. Socializing runs a close second. At Milton, we have built up other activities as well, such as Forums, Demonstrations and Exams. These other activities have done well, but are not as popular as the flea market. However, sales of equipment have been falling dramatically over the last few years, for several reasons. First, amateurs do not buy as much used equipment anymore. The price of new equipment, particularly handheld and mobile units, is so competitive that the deals on used equipment are often not worth it. Amateurs are moving away from building and modifying equipment, meaning that sales of parts are dropping. Finally, on-line auction services, such as E-bay have captured a sizeable share of the used equipment market. With fewer buyers, there are now fewer vendors.

MILTON... continued on Page 5

IN THIS ISSUE...

Milton Hamfest
Software Radios
First Geekfest
Shootout at the SS
Ten Meter Contest
Prez Sez

ELECTION RESULTS

It was unanimous!

President: Brian N1BQ
Vice-President: Bob KB1FRW
Secretary: Dave W1DEC

Thank you to everyone who took part in the election process!

OUR LAST RANV MEETING

by Dave W1DEC, Sec'y

The meeting was attended by approximately 20 RANV members, including a first time guest, Neal WB1QCW.

Brian N1BQ opened the meeting at 7:00. A short discussion took place about the Essex Technical Center Radio Club. This club is in the process of re-organizing. We discussed offering assistance to members and also to the club to help relocate the shack and run feed lines into the newly designated radio room.

On November 15th, the newly formed Linux group met at the home of Bob KB1FRW. A total of 8 computers were set up with Linux.

The RANV Holiday party will take place on Tuesday, December 9, 2003, at the home of Mitch and Debbie in Essex. Jeff KB1IWK, seconded by Bob KB1FRW moved the appropriation of up to \$200 to underwrite the expense of this party, which passed unanimously.

Paul AA1SU passed along the news that RANV has been renewed as an ARRL Special Service Club.

Johannes KB1JDT, assisted by Kayle KB1JOO, made an excellent presentation on the subject of wireless communications. Johannes is the proprietor of Summit Technologies, which provides commercial installation and maintenance of wireless networks, IT systems integration and related hardware and software.

Assisted by a fine power point production and using many pieces of state-of-the-art equipment, Johannes and Kayle presented a detailed and graphic synopsis of Wireless Communications. Starting with the subject of Workplace Safety, the rundown included RF basics, Interface Models, 2.4 and 5.x GHz Microwave frequency ranges, a description of the frequency allocations, Wireless-3 Technologies [802.11b-Worldwide, 802.11- US, and 802.11g-worldwide], multiple wireless standards, WLAN L2 roaming services, antennas, etc. This scribe couldn't scribble fast enough to record all of the details, but their presentation was very informative and well received by all.

THE PREZ SEZ

by Brian N1BQ, President

RANV has about a hundred members and regularly draws 15-30 members to monthly meetings and presentations. At these meetings, we have built things, operated things, learned how to do new things and how to do old things better, we have had a picnic and we are about to have our annual holiday party. We held a successful hamfest that adequately funded our activities. Our ARRL Special Service Club status was renewed with high praise from the League's state officials. RANV members have been active in Field Day, major contests, ARES, Jamboree on the Air, public service events like the Vermont City Marathon, MS-150 bike tour and the ADA Tour-de-Cure. All in all we can look back on this year with pride.

We shouldn't kick back and rest on our laurels. The reward for doing a good job is more work to do. The Scouting demonstration we did at Shelburne has generated a class of eight prospective

hamsters I will be teaching beginning in December. This will call for several people to help these new hams get on the air. There are other new hams in the area – reach out to them help them get on the air.

In the months ahead, we will have a presentation and demonstration of Software Defined Radios in January, how to build CW keys in February, the latest AMSAT launch project, AMSAT-Echo, in March, and another building session in April.

As most of you know, this past summer saw a major happening at the World Administrative Radio Council. The Morse Code proficiency requirement for radio amateurs operating on HF bands was dropped. It was left up to the governing bodies in the individual countries to determine if they would retain or drop the requirement. Some twelve countries dropped the Morse Code requirement by summer's end. Right before Labor Day, the FCC circulated seven petitions calling for the removal or drastic modification of the Morse Code testing requirement for U.S. radio amateurs. Foremost among them was a petition by the National Conference of VECs (NCVEC) calling for immediate abolishment of the Morse Code testing. This was decided by the NCVEC on July 25th by an overwhelming majority.

Understandably, there were a lot of people upset by this move. In December *CQ Magazine*, the four hams appointed to prepare the petition (*W5YI, W3BE, W4WW, KL7CC*) explain the NCVEC vision for ham radio in the coming years and how this petition fits in. The article, entitled, *Amateur Radio in the 21st Century: The National Conference of VEC's Master Plan* is well worth the obtaining *CQ* if you do not subscribe to it.

Contacting RANV

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W1SJ/W1DEB QTH

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

SOFTWARE DEFINED RADIOS I

by *Brian N1BQ*

As I have been poring over a lot of reference material on Software Defined Radios (SDR) over the last two months, it became apparent to me that a lot of authors aren't quite clear about just what constitutes an SDR. Quite simply put, a Software Defined Radio isn't anything but a down-converter until the software comes up and defines what function it will execute.

I have heard any number of people respond to my comments on SDRs with comments on devices like the Ten-Tec Pegasus or the Icom PC100 radios. These are essentially black boxes with a cable to a PC where a program is run that provides a software defined front panel. Strictly speaking, this is no different than any of the more conventional radios that have alternate controls provided by serial line interfaces to a computer. These are not software *defined*, but are really software *controlled* radios. Their functionality is defined in the hardware and the software is just there to remotely flip switches.

Many high-end radios have Digital Signal Processors (DSP) that permit them to do sophisticated filtering on all modes. While the core of an SDR is a DSP, these radios are still hardware defined and the DSP is just a very fancy filter.

DSP used to be quite expensive, but as with anything that is mass-produced, the price just keeps coming down. The explosion of personal computers with sound cards has brought the price of a fairly good DSP engine down from several thousand dollars all the way down to \$100 or less. The average PC sound card today has a working bandwidth of 48-96 KHz and is capable of sampling rates of 44.1 kHz. Now if you will recall the Nyquist theorem, it states that you can reconstruct any signal if you sample at a rate that is at least twice the frequency of the signal at which you are looking. This leaves us in a bit of a hole; the sound card samples at 44.1 KHz so we are stuck at 22 kHz, thus throwing away a lot of good bandwidth. Dan Tayloe, N7VE hit on the idea of sampling the signal in such a way as to produce two outputs from the same signal which he calls "I", the 'in-phase' signal and "Q" the 'quadrature' signal (*90 degrees out of phase*). So now we have twice as many samples for the same sampling rate and we get the use of the full bandwidth of the average sound card.

We come out of the downconverter, which takes us from signal frequency down to a 40 kHz wide baseband which we then feed to an Analog to Digital Converter and we have a digital numerical series representing what we are hearing. All the stuff we have just heard is now converted to long strings of 1's and 0's or high and low voltages. Now it's the computer's turn to make sense of this. In the extreme, the computer will evaluate the series, apply a number of different criteria and then come back and tell you what it is receiving. AM, FM, CW, SSB, PSK31, RTTY and WSJT each have unique characteristics. Yes, I know that you can tune noise in say, Digipan, and get some kind of gibberish character output, but each mode can be mathematically modeled and a given unknown signal can be 'scored' against the theoretical clean signal of a given mode and the winner declared. In the more common everyday use, you tell the SDR what you want it to do and then it does it. While you are at it, the same software can filter out noise, interfering signals, etc. One more trip back to the extreme, SDRs are finding a real home in very weak signal work and EME. SDRs and sophisticated DSPs are being used to do weak signal work at formerly unheard of lower power levels since it can discern a CW signal that is several dB below the noise, much weaker than what we can discern.

Next month, we will look at several of the current SDR implementations.

FIRST GEEKFEST A SUCCESS

by *Brian N1BQ*

On November 15th, six RANV members gathered at the home of Bob KB1FRW for a first meeting and Linux *Installfest*. Present were Bob KB1FRW, Brian N1BQ, Dave W1DEC, Jeff KB1IWK, Fran KM1Z and Mo N1ZBH.

Since it was the initial gathering, it took us an hour or so to get set up. We spread out, filling Bob's kitchen table and dining table and a six-foot table brought by N1BQ. We ran a 50 foot Ethernet cable upstairs plugging into KB1FRW's DSL fed home network and then hooked it to an eight port high speed switch duct-taped to the kitchen table. All told, we set up eight computers successfully installing Linux or Linux/Windows dual boot on all of them.

We copied and distributed the various Linux distributions that we used and enjoyed a round of pizza for lunch. It almost seems trite to say that a good time was had by all but that is the way it was. We gained a lot of experience if partitioning drives for multiple boot systems and deciphering subtle differences in how the various distributions set themselves up. *SuSE* Linux was the most installed along with *Knoppix*. We also looked at *Slackware* and *FreeBSD*.

A second meeting is tentatively scheduled for December 13th at the QTH of Jeff KB1IWK in Essex Junction. The goal of this gathering is to take the existing installations we have and install ham radio oriented applications. We will have installation materials on hand for people who didn't make the first meeting. Contact Brian at n1bq@wulfden.org or 899-4527 for more details and confirmation of the date and location.



SHOOTOUT AT THE SS

by Mitch WISJ

I have been operating in the ARRL Sweepstakes continuously for 33 years. Way back when I was a teenybopper in 1971 a friend of mine said, "let's operate the SS." At the time, I thought contests were stupid, but relented. We had a blazing 300 watts to a roof mounted vertical and low dipoles. After a long Saturday, my friend threw in the towel and went home. For some dumb reason, I kept operating and racked up 387 QSO's. Not bad considering that I didn't have a computer (what computer?) nor did I have a clue as to what I was doing. Just like a designer drug, I was hooked, and every November, I operated in the SS.

In 1976, I operated from Vermont and won low power for the first time. After 2 years, I got an amp and moved to high power and managed to find myself on the top of the heap each year. Not that there was much of a heap. There was little to no competition in Vermont. Oh, some years, a hired gun would show up and create a scare, but I managed to prevail. In the last 10 years, I've even managed to catch the New England top score. Unfortunately, Top Ten is only a dream. Propagation in the SS is so heavily lopsided toward the South and West that the last time a high-powered Northeast station made top ten was in the early 80's.

The rare Vermont section in phone SS is no more. Over the last few years we have built a strong contesting community with good operators and good stations. Big DX stations have popped up in various spots in Vermont and "hired" guns have arrived from elsewhere to man them. Competition is fierce.

Non-contesters do not have any idea of the preparation which goes into a competitive effort. Equipment, antenna and operator must be prepared to be and stay in peak performance for the 30-hour SS period. This is really crucial with ancient

equipment (25+ years) and an ancient operator (50+ years). Nothing will ruin the contest more than equipment or operator failure. After 2-3 hours of sleep, the hardest thing in the world is to jump up, start operating and be completely focused. In the early days, I would often oversleep, or wake up and be in fog for most of the day.

This year's shootout included Ron KK1L who grew some new antennas this summer, including a TH6 at 90 feet and 2-element 40 meter yagi at 100 feet. That's a scary combination. Grant K1KD was using a similar alignment to mine, a tribander at 50 feet and dipoles. Just before the contest, I learned that big gun DXer K1XX was operating at NT1Y's DX station in Topsham which included big yagis at big heights. Oh joy, more competition! The race was on.

"They were all doing great and I was getting a royal butt kicking."

Everyone had their stations perfectly tweaked and settled into their favorite bands to start the contest at 4:00. I decided to start on 20 meters. Right away, things were going bad. I couldn't seem to find and hold a clear spot. Stations were coming in spurts, very unusual for the start of a contest. The first hour I ended up with 89 QSO's - rather paltry when you compare it to my average of 110-120. OK, let's dig in for the second hour and redeem ourselves. Things are starting to pick up. Then at 5:30, I hit the wall. I couldn't buy a contact. I kept pressing and managed to salvage the hour with 74 QSO's - very far off pace. Something had to be done since the rates were dismal. I hit the button and jumped to 80 meters. I always manage to jump down there, dig in for the night and have 100+ hours. Not this time. An-

other 75-QSO hour. Heck, I could have stayed on 20 meters. Worse yet, a check with the other New England stations confirmed my worst fears. They were all about 100 QSO's ahead of me. They were all doing great and I was getting a royal butt kicking.

One of the key attributes one trains for as a contester is to shed all emotion. The first emotion one comes up against is panic. That will drive one to do stupid things like trying weird strategies which would put one in a worst position. The second emotion might be despair, where one asks, "I got better things to do - why the hell am I doing this?" Upon asking that question, I sadly found that I didn't have anything better to do. My instinct and knowledge told me I was doing the right thing at the right time. So I stuck it out on 80 meters. Things continued to be poor.

Then they got better. And a little better after that. My QSO rate hovered at 70-80 QSO's per hour for many hours, instead of dropping off dramatically. Meanwhile, the competition all across New England got their butts kicked in the evening. By the wee hours of the morning, I had passed most and caught the rest. I was back in the saddle. But there was no time to celebrate. Conditions were still tough. By 3:00, 80 meters sputtered to halt - that never happens!

Contesting is a sport. And sportsmen excel because they can evaluate the situation and make changes necessary to win. At least that's what I always hear on TV. On the packet cluster, I saw evidence of auroras and storms in Europe. I know that I didn't do well on 20 meters. These pieces of data were used to help me chose the bands I needed to be on all day Sunday. I later learned that extreme solar activities shot high levels of energy toward the earth and fouled up the Earth's geomagnetic

SS... continued next page

SS... continued from previous page

field. When that happens, stations at high latitudes (*like Vermont*) get killed. I realized that there was no way I could be competitive with stations to the south. It became my mission to simply put as many contacts in the log, no matter how anyone else was doing and no matter how bad the conditions were.

On Sunday, I spent much of the day on 40 meters, a band that I dislike and have done poorly on over the years. This time, it was my salvation. For a little while, 20 meters produced some rates, but things were not normal. But I had adapted to the conditions and ended up making a normal number of contacts for a Sunday on SS. How bad were conditions? With 1476 contacts in the log, I was 300 behind my average and lowest since 1986. I missed two sections (*AK & NWT*), which simply could not be heard in the Northeast. Last time I missed a sweep was 1994. By the end of the contest, I was shouting "Never again!". However, when the contest was done, it appeared that I ended up 80 QSO's ahead of the nearest Vermont station. That is some comeback from 100 QSO's behind. We won't know the final outcome until the log checkers do their brutal task and pull out many busted contacts. Will I finally retire from the SS? Y'all will have to wait for next November to find out!

It was saddening to see how few casual operators got on from Vermont. The SS is a hard contest, but it pays great dividends in training you to be a great operator. If you can do the SS, you can do anything!

The 10 Meter contest is coming in 2 weeks. Get on the air! Push yourself to make more contacts and work more states and countries than you ever have before, even if conditions stink. It is said contesting builds character. Although we have lots of characters around here, we all can stand to improve our abilities.

10 METER CONTEST

by Mitch WISJ

The ARRL Ten Meter Contest will be the weekend of December 13-14th. Get on the air! We are quickly heading down the sunspot cycle. Conditions on 10 meters will get a lot worse over the next few years. After some weird high-level sun activity, the bands are returning to normal and 10 meters is getting hot again. A quick check during the middle of the week turned up a bunch of DX and U.S. stations. In the absence of any major propagation disruptions, contest weekend should produce some nice results.

If you are Technician Plus Class or higher and have a station at home, you are all set; just get on. If you are Technician Class or do not have a station, ask around. Chances are that someone is hosting a multiop effort and is looking for operators. If you don't have much of a station, building a good antenna for 10 meters is quite easy! The weather for antenna raising should be a perfect 20 degrees with snow and high winds. There are 4 categories (*cw, phone, mixed, multiop*) and 3 power levels (*high, low, QRP*) to choose from, so pick your poison.

The contest starts at 7 PM Friday night. Normally, not much is worked at this time, as propagation is already past. But you never know when a freak opening might occur. You should focus on daytime hours. Make sure you start in the morning – around 7 AM. That's when you will hear the European and African stations on. At first, they will be weak and hard to work. As the morning wears on, they will come up in strength. As the sun gets higher, the U.S. stations get stronger. Europe fades out in the afternoon, but there are lots of U.S. and Latin American stations around. Towards sunset, if you are lucky, you may bag a few Pacific stations. Sunday morning, the whole process repeats itself.

What happens if the band is dead? First make sure your antenna is OK! If it is, keep checking the band every half hour. Ten meters can be a strange band – dead one minute and wide open the next. Have patience throughout the weekend – you will work someone!

Let's see if we can get more than 10 stations from **RANV** on this weekend! Awards and bragging rights will go to the highest scoring non-contester!

MILTON... continued from page 1

Some hams always ask for large dealers to come. This won't happen. Ham Radio Outlet does not go to any shows except for Boxboro. Lentini will not come this far up. Other large vendors are more than 6 hours away and cannot make enough to even pay expenses at a small show.

Our goal at Milton is to put on a quality ham radio show, vendors or not. The message is clear that the emphasis on sales is becoming less and less. We must replace this emphasis with something else.

In order to move the Milton Hamfest into the future, we need to know what activities will make you interested in attending. Each year, Milton draws around 500. We know that there are around 2000 hams in the immediate Burlington and Plattsburgh area and a total of 5000 hams within 2 hours drive time. We can do better! When folks do not come to Milton, they often say things like, "I had nothing I wanted to buy" or "I forgot". That's not very encouraging. So, what would have to happen at the Milton Hamfest to make you want to attend? What activities would make the Milton Hamfest so important that no one would forget to come? Please help us by sharing your ideas with me!

Please share information about the Hamfest with everyone you speak with. And mark February 28, 2004 on your calendar for the Milton Hamfest.

**NEXT MEETING:
“RANV Holiday Party”
Tuesday, December 9th, 5:30 PM
W1SJ/W1DEB QTH**

RANV

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