



# Radio Amateur News & Views

The Official Journal of the Radio Amateurs of Northern Vermont

NOVEMBER 2004

Vol. 14 No. 11

## MICROPROCESSORS IN THE HAMSHACK

### The November 9<sup>th</sup> RANV Meeting

More and more products and gadgets have microprocessors built into them. Few ham shacks exist totally devoid of microprocessors. Personal computers, transceivers, rotor controls, TNCs and even clocks have processors built in. And there are dozens of products around the home which also have them. Being able to understand and even design some microprocessor functions is a great advantage.

Brian N1BQ will do a presentation aimed at acquainting hams with simple microprocessor projects that can be applied to amateur radio. He will start out with a brief overview of how they work and then describe how they can be put to use by the average ham without needing an advanced degree in programming. The presentation will introduce *Peripheral Interface Controller (PIC)* Microprocessors and Basic Stamps. Several live circuits will be shown and there will be time to get your hands dirty playing with the circuits.

November is our annual election. Ballots for RANV officers will be counted at the beginning of the meeting. Be sure to choose the very best for the future of our club.

Running a serious meeting like this requires serious fuel. Be sure to join us at Zachary's on Williston Road at 6 for the pre-meeting fueling. The meeting will start at 7 PM Tuesday, November 9<sup>th</sup> at the O'Brien Civic Center, 113 Patchen Road, South Burlington.

## RANV HOLIDAY PARTY

Mark Tuesday, **December 14<sup>th</sup>** on your calendar! That is the date of the Gala RANV Holiday Party. The Party will once again be hosted by Mitch and Debbie at their Essex QTH. RANV will be providing the eats. We are always open for suggestions for novel and interesting munchies! Activity will get underway at 5:30 PM and will include eating, telling tall tales, eating, playing with radios, eating, watching videos and eating. We will even have videos of TV news coverage of Field Day. Over the next few weeks please let Mitch know who is coming and what you would like to bring. This is very important to allow us to plan the correct amount of goodies.

See you at the Holiday Party!

## ELECTIONS

Pursuant to the By-Laws of the Radio Amateurs of Northern Vermont, enclosed in this month's newsletter is your ballot for election of officers. Families receiving one newsletter will receive the correct number of bonafide ballots.

Nominations for officers come from the membership, or (*much of the time*) people are asked to run. We have found one candidate for each office. However, any club member in good standing, who agrees, can be written in.

Brian N1BQ has agreed to continue as president. Bob KB1FRW has agreed to continue as VP/Treasurer and Carl AB1DD will run for Secretary.

Please show your support for our officers by voting. Either bring your ballot to the meeting, vote by E-mail, or immediately mail your ballot.

And remember our motto, *vote early and vote often!*

## IN THIS ISSUE...

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# OUR LAST RANV MEETING

by *Bob KB1FRW*

President Brian called the meeting to order at 7:26, after attendees spent some time checking out the various items in the Show and Tell presentation.

Bob KB1FRW requested volunteers for the Veterans Day Parade in Burlington on November. 6<sup>th</sup>.

Elections are coming up next month. Brian said he was returning to run for President and Bob is returning for a chance at another grueling year as VP.

Brian gave some details on the pluses and minuses of becoming a non-profit corporation, known as a 501(c)(3).

Brian pointed out that meeting ideas are hard to come by and encouraged members to submit ideas for meeting entertainment.

Paul AA1SU volunteered for snacks for the November meeting.

The main activity for this meeting was Show and Tell where various hams brought their favorite projects and described them.

The first display was **Bob KB1FRW** with a laptop slide show of the future ham shack that is being built at the family compound in Richmond. This is a 10' x 12' stand-alone structure with heat, electricity, phone and Internet.

Next was **Jerry KB1KPO**, with his three 2-meter radios that he has bought and learned to operate in the last year. He discussed the features of each radio and their uses.

**Paul AA1SU** brought a Zenith Trans-Oceanic portable short wave receiver that he borrowed from Bob WE1U. It was the Royal 2000 model, Zenith's first solid-state model. Paul explained that Zenith had made this line for many years starting with tube type units and eventually moved into transistor based radios only to become non-competitive when the company wouldn't use modern construction practices when building their equipment.

**Mitch W1SJ** demonstrated his "Training Antenna" for new hams who may need some assistance when getting on the air for the first

few times. The antenna elements consisted of HO scale model train track and the tuning stub was actually a model train. He showed that it actually was a working antenna. It was pretty funny!

**Bob W4YFJ** showed us pictures of and described his modular approach to ham station furniture, working with a limited budget and space he has created some pretty functional pieces on wheels that can be expanded by adding more modules.

**Bob KB1LAX** had a couple of South Burlington Police Department handhelds that showed that we really have no idea how much you can spend on a radio if you put your mind to it. These combined digital and analog HTs cost \$3500 each!

**John/Leela/Leo KB1EZC/D/E** found a very old portable rig that they weren't quite sure what frequency it transmitted on but it made noise when it was turned on and was a good example of early attempts at creating handhelds. We guessed it was an early CB HT. Mitch called CQ but there was no answer.

**John VE2EQL** had a little 4-band QRP kit radio he was building that fit in a small enclosure, I unfortunately missed who's design it was and didn't get a lot of details.

**Brian N1BQ** brought along his new Shuttle mini computer. This unit is in a case 8"H x 8.75"W x 13"D. It has a multi-type memory card reader in the front as a replacement for the floppy drive and 2 serial ports.

We then had our usual snacks provided by John, Leo and Leela, looked over the electronic goodies closely and went our merry way.

## ATTENUATOR KITS

We still have three kits from last Spring's building project available if anyone wishes to purchase them. The cost of each kit is \$17 each plus \$3 shipping. Contact Brian at [n1bq@wulfden.org](mailto:n1bq@wulfden.org) or at 899-4527.

# THE PREZ SEZ

by *Brian N1BQ, President*

November is election month. Please remember to post your ballots that you received with this newsletter prior to the meeting or bring them to the meeting. Follow the instructions on the ballot. Replacement ballots will not be available.

Show and tell type meetings, as we had at our October meeting, are often looked upon with great trepidation by club officers because of their potential to be gigantic flops! Not so at this last meeting. I want to take yet another opportunity to say thanks to all the people who brought things large and small and overcame any stage fright to get up and speak about their items. There was a lot of networking going on after the formal presentations were made.

I realize that most club members do not take part in our other mode of club communication: the RANV Reflector. A reflector is simply a mailing list. You mail to a single E-mail address and it is reflected back out to all the members of the list. In the past three weeks I personally have listed about 15 items for sale on the RANV and NVQS reflectors and sold more than half of the items.

On a reflector it is appropriate to buy or sell items. Good etiquette also dictates that negotiations beyond the initial offering take place off list.

Beyond shack cleaning, the reflector is where you can let other member know about upcoming happenings and impromptu activities. The key to making it work is that more members need to sign up. Some heavy Internet users may groan and say that they "don't need yet another list to load their mailbox!" The RANV Reflector is low volume. Try it, you will like it! If you do and for some reason you feel it's not worth it you can always get off the list. The easiest way to get on the RANV Reflector is via the RANV Web. Click on the appropriate link and you will be set up to send an E-mail to subscribe you to the Reflector.

## YOUR IDEAS NEEDED!

by Mitch WISJ

With elections (*thankfully over by the time you read this*), war, the questionable economy and what I perceive to be “general malaise”, keeping the club strong and active is harder than ever. We are doing well, but things have clearly slowed down. Other volunteer organizations are reporting less activity and less contribution. That is why it is important, even crucial for you to be active and support ham radio and your local radio club. After all, you joined because you have a love of the hobby, right? So don't let whatever else is going on in the world affect your activity. Get involved in activities and get on the air often.

**Milton is coming!** I've confirmed February 26<sup>th</sup> for the Milton Hamfest. Last year at this time, we did quite a bit of soul searching to bring the hamfest into the future. As a result, the enthusiasm at Milton 2003 was amazing. But we cannot rest on our laurels or take our eye off the ball. As chairman, I need a continual stream of good ideas from the attendees. It was clear that the forums and demonstrations were the highlight of the show and will be continued. But, forums and demonstrations on what topics? This is where I need ideas from you. The worst thing to do is to create a carbon copy of the show each year to the point where everyone gets bored.

In December we will be having our annual holiday party. Again, ideas are needed so that we don't do the same thing year after year. What new foods or activities should there be? Or should we do the same thing?

And, on subject of club meetings, what new things should we be doing? I know Brian asked this in his column and it bears asking again. What about the newsletter? The last thing we want is something to parrot back what anyone can read on the Internet. What unique story can we tell or what unique information can be tendered?

**ARRL Sweepstakes** is coming up on Novmeber 20<sup>th</sup>. It is the king of stateside contests. If you can do well in the SS, you can operate anywhere. Every year, 3 of us in **RANV** get on in a massive shootout to collect the most points. It's a contester thing and I can't explain it to civilians. But I can encourage you to get on and operate for several hours. Half the club has General class or higher licenses, so that's around 50 people who can get on. Give it a try. See if you can work all 80 ARRL sections or 200 contacts or whatever. I predict that you will have a great time. Prove me wrong.

## FOX HUNT

by Mitch WISJ

I had all sorts of diabolical ideas to hide in far away galaxies like Huntington or Underhill, but realized I would be sitting alone in the woods waiting hours for someone to find me. Instead, I opted for a spot literally right down the street. I ignored Debbie's suggestion to hide on Williston Road. Whatever spot I pick, I like to have a catch to it. I ended up in a spot close to everything, but hard to get to unless you know what you are doing. I ended up in on Countryclub Drive in South Burlington, on the back side (*National Guard*) of the airport and just over the river from Essex and Colchester. I picked a spot where some homes were under construction and parked in one of the driveways so we looked like we fit in.

Hunters KB1FRW, KB1LIE, N1RL and KB1KPO made a valient effort. Jon KB1LIE blew by and I thought we were found, but he kept going past us, around the cul-de-sac and back past us again. We teased the group with taunts like, “in the last 15 minutes, someone was VERY close,” but it didn't help. By 8:30, the hints came out in full force. Bob KB1FRW was the only finder, at 8:45 – well over 2½ hours into the hunt. The other hunters were close by but didn't get there. Since the site was within a mile of spots in Essex (*Hiawatha School*), Colchester (*St. Michael's*), Williston (*2A*) and the main aiport terminal, there was a lot of disjointed ground to cover. The missing skill appears to be the ability to determine approximate range to the target after a beam heading is taken. Perhaps this should be the topic of an upcoming meeting!

## REPEATER NEWS

by Mitch WISJ

There has been a number instances where an unknown party (*or parties*) has accessed the Internet links with tones while not identifying. This has occurred at various times during the day and recently occurred at 3 in the morning. After these attempts, the person is asked to identify and they do not. Sometimes links are brought up and dropped, and at other times, invalid codes are sent and rejected.

I'm probably preaching to the choir as I don't believe that the perpetrator is a club member (*I really hope*). However, everyone has to realize that this behavior is unacceptable and if it continues, public access to the Internet links will be closed. That would be a shame because WB1GQR is one of the few wide area 2-meter repeaters which allows open access. I really don't understand the motive behind this behavior, since the links are totally open. All that is required is to identify and to follow the linking rules. If you happen to be involved in this annoying activity, then stop it. If you know someone who is involved, encourage him or her to stop it. If you are unclear of the repeater or linking rules, then contact me.

Last week, I heard a station locking down the repeater for the better part of 15 minutes. A lock-down is when something manages to hold someone's transmitter on for a period of time, blocking access to and eventually timing out the repeater. ALL users are requested to have a safe place for their mobile microphones, such as a hook, so that objects cannot lean against the PTT switch on the microphone. In addition, ALL users are requested to turn OFF their radios when they are not present (*i.e. power down when you leave the car*). These are very simple steps to avoid embarrassing yourself when you lock up the repeater (*and we all hear your private conversation*) and also to avoid my wrath if I have to go out and DF you.

# FREQUENCY COORDINATION

by Mitch WISJ

VIRCC

Frequency coordination is a topic that is covered on both the Technician and General class exams. It is a topic that a lot of hams talk about. Unfortunately, it is a topic which few hams understand.

The purpose of Frequency Coordination is to have a systematic method of choosing frequencies for services, like repeaters, which cannot easily change frequency. If you choose a frequency on 20 meters and find it is in use, it is a simple matter to bump the VFO a little and find another frequency. Not so with repeaters. A frequency change involves ordering and paying for a new set of specially ground crystals which then have to be installed in the repeater. Or, on newer units, a computer has to be brought to the site to program a new frequency. In addition, the duplexer and any other cavities have to be tuned, either using signal generators or network analyzers costing thousands of dollars. It is crucial to keep frequency changes to a minimum!

Frequency coordination takes place on bands where repeaters are found, which are the frequencies above 29 MHz. Besides repeaters, coordination can also include links, packet and beacon operations. Operation on the amateur VHF and UHF bands are divided up by band plans put together by volunteers over the years. These band plans keep repeater inputs, repeater outputs, packet and beacon operations apart from each other. Some band plans are followed across the U.S. and Canada, while others are regional. While the ARRL Repeater Directory lists the "national" band plans, there is no way for amateurs to know all of the regional and local band plans. One of the classical local band plans is the New York 1 MHz split 2-meter repeater channels placed across the frequencies normally used for simplex operations. So while 146.49 MHz is a statewide Vermont simplex frequency, it is an active repeater output in New Jersey.

Because band plans and repeaters are local in nature, amateurs have set up coordination bodies to be local as well. This is why there is no "national" coordinator. In the early days, a designated ham in each state informally performed coordination. About 20 years ago, a group was formed to provide coordination services in all of New England. A majority of the repeater owners in Vermont voted to form their own coordination body, the Vermont Independent Repeater Coordinating Committee (VIRCC). There were a lot of reasons why this was done, but the primary reason was that the new body was focused on low elevation repeaters dotting the landscape around Boston and had no experience dealing with the repeaters on 4000-foot mountains in Vermont. It was also decided to have Vermont coordinate the Northeast corner of New York State surround-

*"Frequency coordination is for a specific frequency pair to be used at a specific location."*

ing Plattsburgh. The coordination bodies and regions in the Northeast are a patchwork of boundaries based on geography and history.

Often, a request for coordination is often in the form of an informal E-mail which often reads something like, "can you reserve me a frequency pair for a repeater I may put on the air one day." Such a statement underlines the misconceptions regarding coordination. Frequency coordination is for a specific frequency pair to be used at a specific location. The key is that there needs to be a fixed location and there needs to be usage. A coordination is not granted for the lifetime of the user, it cannot be moved to a new location and it is certainly not passed on in your will. Some folks have tried to do this!

The first test to determine if a coordination request is real is the application process. The application

asks some very hard questions, like exact location, latitude and longitude, height above sea level, projected coverage, types of equipment and antennas and methods of control. If an applicant is unable or unwilling to answer these questions, then he or she is not ready for frequency coordination. This is important because this information is used to determine frequencies which will work for this applicant. An applicant is not given coordination unless it can be shown that a frequency can be used which won't cause interference to the normal coverage area of an existing repeater.

Applications for frequencies in Vermont are usually sent via E-mail. The application is checked for all of the pertinent information. Then the proposed location is plotted on a computer-based topographic map and the elevation is checked. VIRCC has general guidelines to determine necessary spacing to the nearest repeater on the same frequency. In general we look for 160 miles spacing for the wide area repeaters (*above 3000 feet*) and 100 miles for average area repeaters. Sometimes, a repeater can be "short-spaced" on a channel if a number of criteria are in place to assure no interference is given or received. Since radio signals do not end at state lines or coordination boundaries, coordinators have to work together to make sure we are all on the same page. In general, all new coordinations within 75 miles of a boundary need to be "cross-coordinated". Every area of Vermont is within 75 miles of a boundary!

When a suitable frequency has been found and cross-coordinated, the applicant is sent a coordination letter spelling out the details. The coordination is temporary and conditional. If there is interference, the applicant will be directed to take steps to reduce the interference. The coordination is only good for 6 months. After that time the coordination is cancelled. It doesn't work

Coordination... continued next page

# OFFICIAL RANV 2004 ELECTION BALLOTS

## THREE WAYS TO CAST BALLOT:

- Deposit in voting box at start of November 9th meeting
  - Mail to RANV PO Box 9392, South Burlington, VT 05407 **no later than Saturday, November 6th**
  - E-mail to ranv@sover.net **no later than noon Tuesday**. You must include serial number in E-mail
- Write-ins must be: a real living person, a member of RANV, agreeable to accepting the office

Vote early and vote often!



There are TWO ballots on this sheet for use by family members.  
Only ballots with bonafide serial number will be counted.

<p><b>President</b></p> <p><input type="checkbox"/> Brian Riley N1BQ</p> <p><input type="checkbox"/> Write In _____</p> <p><b>Vice President - Treasurer</b></p> <p><input type="checkbox"/> Bob Allen KB1FRW</p> <p><input type="checkbox"/> Write In _____</p> <p><b>Secretary</b></p> <p><input type="checkbox"/> Carl Dow AB1DD</p> <p><input type="checkbox"/> Write In _____</p> <p style="text-align: right;">ranv_____</p>	<p><b>President</b></p> <p><input type="checkbox"/> Brian Riley N1BQ</p> <p><input type="checkbox"/> Write In _____</p> <p><b>Vice President - Treasurer</b></p> <p><input type="checkbox"/> Bob Allen KB1FRW</p> <p><input type="checkbox"/> Write In _____</p> <p><b>Secretary</b></p> <p><input type="checkbox"/> Carl Dow AB1DD</p> <p><input type="checkbox"/> Write In _____</p> <p style="text-align: right;">ranv_____</p>
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**CUT HERE!** - otherwise your name will show on the back!

### Coordination... from previous page

to grant coordination to an applicant who waits 5 years to put a system on the air. In that time, many new repeaters have come on the air and conditions have changed.

Not only are frequencies coordinated, but also they need to be decoordinated when they are no longer used. When a repeater goes off the air, it is given a reasonable amount of time to get operational. When it is clear that it is not coming back, the frequencies are returned to the database and made available for new applicants. This is a problem in other coordination bodies where dead repeaters lock up frequencies for years.

Today, in Vermont, we have reached the unenviable position where some applicants have to be told that there are no suitable frequencies. In particular, 2 meters has

become very difficult to find new frequencies on. With the glut of repeaters on the air, there are few spots where a repeater can come on a frequency without causing someone interference. In addition, the receivers in radios and repeaters are a lot more sensitive than those of years ago and repeater range has increased. It is not unusual to get 50-mile mobile range out of most repeaters at good sites. Hence, that is why 100-mile separation is necessary. Both Montreal and Albany have repeater activity on virtually every 2-meter channel. If one draws a 100-mile circle around these locations, most of Vermont is covered, except for a small wedge around Orange County. That is the kind of problem we are dealing with. Over the years, we have done a lot of careful shoehorning to fit repeaters in, but we are running out of miracles. The problem is worse when a new repeater on a mountain is proposed. A group wants to put a repeater on

from Stratton Mountain, a 3900 foot site, just to the east of Mt. Equinox. Such a site will play into Albany, Hartford and much of the western suburbs of Boston. What frequency will this repeater go on? We don't know. Every channel has something.

The good news is that there is plenty of room for activity on 50, 222 and 440 MHz. But few applicants want to go to these bands. The other issue that a spectrum manager must raise is that with some 40 working repeaters in Vermont, few get any regular use. In fact, considering that there are hundreds of repeaters in New England, few are used. Most repeaters can measure their usage in minutes per week. If the activity level is so low, why are all these repeaters needed? That is something we all must consider and answer for ourselves. The nonrenewable resource known as 2-meter spectrum really has no room for inactive and closed repeaters any more.

## **Contacting RANV**

In Person: Meeting, Nov 9, 7pm,  
O'Brien Civic Center  
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By Radio: 145.15 repeater

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

**NEXT MEETING:  
“MICROPROCESSORS  
IN THE HAM SHACK”  
Tuesday, November 9<sup>th</sup>, 7 PM  
O'Brien Civic Center**

**FIELD DAY 2004 RESULTS:  
3RD PLACE National Finish!  
Details Next Month**

# **RANV**

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