



Radio Amateur News & Views

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SUNSPOTS AND PROPAGATION The November 10th RANV Meeting

We all know that there has been a lack of sunspots on the sun. We also know that radio propagation has been spotty (*pardon the pun*) for a long time. But do we know what is happening and why?

At our next meeting, some of the answers to these questions will be revealed. No tricks here, just a treat to have Mike Fortney, KB1MDA, from the University of Vermont come talk about sunspots, propagation and how the first affects the other. Mike has given a presentation before - remember the high altitude balloons?

The activities at the meeting might not solve the sunspot problem or the crappy conditions on 15 meters, but at least we will be more educated on the subject.

Festivities will get underway at around 6 on Tuesday, November 10th at Zack's on Williston Road. Hey, and where has everyone been lately? Suppertime attendance has been sparse. This is the most important part of the meeting! The less important part of the meeting starts at 7:00 sharp (*or dull*) at the O'Brien Civic Center, 113 Patchen Road, South Burlington. Hope to see you there!

SCHEMING AND PLOTTING

by Zach K1ZK

It's now November in Vermont. The days are getting short and the ol' mercury is not occupying as much volume in the graduated glass tube as it did about four months ago. And while winter is not a great time for antenna installations, I naturally find myself scheming and plotting; thinking about all the projects I'd like to do. Here's a short list:

Operating. Cold or foul weather can make outdoor antenna work difficult and even dangerous. But that doesn't mean your ham radio activities have to come to a stop. I recently moved to a condo in South Burlington that has very restrictive rules about outdoor antennas. These rules don't make a great deal of sense to me, since everyone would be better off from an RF standpoint if I installed antennas outside and as high up as possible, rather than indoors. In any case, whether your face restrictions or not, there are ways to put up a semi-permanent stealth antenna, or you can rely on a temporary portable setup each time you operate. In short, now is a great time to get on the air and operate! I plan to get some solid operating time in this winter, notwithstanding my less-than-optimal living arrangements.

Scheming... Continued page 3

COMING UP!

This Fall is Contest Season. There is no better way to sharpen your skills than to operate in the **ARRL Sweepstakes**. The Phone SS is November 21ST. The phone affair has become the premier competition in Vermont and many high scores come from right here! You can get on with low power and work lots of stations and pick up valuable skills.

The **RANV** Holiday Party will be Tuesday, December 8th at the QTH of W1SJ/W1DEB. The format will be similar to previous years. Some food will be provided and the rest will be pot luck. **Please let Mitch know your attendance plans by December 4TH**. Any other ideas for food or activities is always appreciated.

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 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.

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

OUR LAST RANV MEETING

by Carl AB1DD, Sec'y

The October meeting took place at the QTH of Brian, N1BQ. Some 16 members braved the drive to the end of the world in Underhill to see how Brian manages his off the grid home.

We started off around 5:00 with a stack of pizza and a pile of soda. There wasn't any problem making short work of that!

The non-food part of the meeting kicked off around 7:00. There was a brief discussion about a new meeting place for the Steering Wheel. More discussion is needed.

Brian thanked Bob W4YFJ, Robin N1WWW, and Jim KE1AZ for their support by attending Steering Wheel meetings regularly.

Next month is annual elections. Ballots will be in the newsletter.

A comment was made to notify the club officers when there would be a pizza (or other meal) at a meeting.

Mitch was nominated to continue as newsletter editor. His comments deleted for decorum purposes.

HAM-COM will be February 27th. A motion for \$1187 for space rental was made by Bob KB1FRW, seconded by Bob, W4YFJ and was passed unanimously.

A motion to allocate up to \$200 for the Holiday Party was made by Carl AB1DD, seconded by Gene W1EBR and was passed.

The remainder of the meeting was the presentation by Brian N1BQ. Brian talked about how he developed his solar power system over the years. He now has about 1800 watts of solar arrays. Brian also led a short tour of his "inner workings", including batteries, controllers, solar panels, etc.

The meeting wound down around 9:00. Many thanks to Brian and Sara for opening up their home for us.

THE PREZ SEZ

by Brian N1BQ, President

My final "Prez Sez"! What do I say? "Goodbye"? But I am not going anywhere (at least I hope I am not!). I am just moving from the front of the room to the back!

I should start by saying thanks - specifically to Carl AB1DD, and Bob KB1FRW, our secretary and veep, who made being president far easier than it might have been.

Then there are "the usual suspects," the dozen or so people who can always be counted upon to show up for anything that needs doing. I guess next group I'll call The Baker Street Irregulars who, in addition to the first group, can always be counted on for bigger events like the hamfest, the picnic and Field Day. You all know who you are, take comfort in knowing your efforts are both noted and appreciated.

At the October meeting at my house the pre-meeting pizza gathering was well attended and I think everyone enjoyed themselves. The pepperoni-bacon pizza did an amazing vanishing act. Next time at least one more pepperoni-bacon and one less vegetable!

Where does the club go from here? Ham radio is viewed from the outside simply as a refuge for geeks. But from within we know we have communicators, rag chewers, builders, experimenters. Some are motivated by public service, contests, or pursuit of knowledge. Regardless of where you are in our hobby the club would like to have something to offer you. But we are not mind readers.

Over the last year we, the officers, have been joined at the Steering Wheel meetings on a regular basis by three or four rank and file members, who have been of enormous help in concrete suggestions and by the moral support of their presence. We have some great presentations

coming up between now and next summer. Tell the club officers what you want to see and hear about. Do it now so there's time to get it set up and done right.

And one last thought. It's the beginning of November. At best there's 3-4 weeks of weather hospitable to antenna work left before winter holds sway. It's no fun finding your 200 foot dipole down in a heap in a blizzard in January, particularly when it could have been fixed in November under far more pleasant conditions. Now don't tell me about how miserable November can be, I'll take a November cold drizzle to a January blizzard up here in Pleasant Valley any day!

My last "Do you know what shape your antenna is in?" pre-winter warning. So there!

Contacting RANV

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

BATTERIES: INSIDE THE BOX

By Brian NIBQ

During the course of my living-off-the-grid presentation at the last meeting I made a point about batteries that I had learned the hard way. However, the point applies equally whether you are talking about one of my 24 volt 875 Amp-Hour monster cells or a CR2036 3.3 volt lithium coin battery.

The most efficient use of electricity involves consuming it immediately as it is generated. Anything else means changing it to some other form for storage. When we store to a battery we are changing from electrical energy to chemical energy and when we take it back out to use it we reverse the process. In each direction we have loss. On top of that we have the losses in connectors, conductors, switches, etc. Fortunately for the purposes of this discussion we can quantify this and lump it all into one simple term and call it **Internal Resistance - R_i and the load current - I** .

$$\text{Total Power} = \text{Load Power} + I^2R_i$$

The first term is the net useable power and the second term is what was lost in the conversion process. This applies to charging the battery or discharging the battery. Let's throw some numbers here to give it some perspective.

In my home the water system is "two-stage". That is one pump is used to pump from the shallow well 300 feet away and 40 feet below the house to a cistern. This is a 120 Volt AC pump that causes the inverter to draw 40 amps at 24 volts from the batteries. The second stage is a smaller pump which pumps from the cistern and pressurizes the house plumbing. It draws 30 amps at 24 volts. Conveniently for this example, the net flow rates of the two pumps are identical, so I can simply force both pumps to run at once to lift and pressurize at once. BUT, do I really want to do that? In that instance current is 40+30 or 70 amps total.

$$\text{Total Power} = \text{Load Power} + 70^2R_i = \text{Load Power} + 4900R_i$$

Now if we instead run the first pump for 10 minutes and then run the second pump for 10 minutes, they will have both used the same power to do their job, but now look at the internal losses.

$$\text{Total Power} = \text{Load Power} + 1600R_i \quad (\text{pump \#1 - 40 amps})$$

$$\text{Total Power} = \text{Load Power} + 900R_i \quad (\text{pump \#2 - 30 amps})$$

By staggering the loads, in time, the losses are almost cut in half. $2500R_i$ versus $4900R_i$. Same work achieved, far less power used.

Now, we all have talkies and once you have been a ham for a while waiting for trickle recharge grows old so we start looking for a rapid charger. If we stop and think for a minute we realize that to get a battery up to full charge in 90 minutes as opposed to 12 hours we have boost the charging current. If you ever wondered why a freshly rapid charged battery was so warm, then review the numbers above and keep in mind power goes up as the square of the current.

If you ever took a rig out to run it off of a spare car battery but found it running down too quickly, you have two choices. You can get a bigger battery or get a second battery. Now with a second battery you can use one, then use the other or put them in parallel. When you use the two batteries sequentially, you are still running the load current through the internal resistance of the batteries and incurring loss, but if you parallel the two batteries you are splitting the current in half through each battery and the losses are halved.

Remember, this applies across a broad range of batteries, large to small.

Scheming... From page 1

Plans for Station Improvements.

Call me a dreamer, but even as I sit here in my restrictive condo, I am thinking about what I might do. What antenna workarounds can I employ? How will I set up my station? What new gear or functionality do I want in the short or long term? Even if, like me, you are on a budget and you are dealing with covenants, don't forget to make plans. Part of the fun, I've found, is setting goals and seeing if and how you can reach them.

Other Activities. There are lots of ham radio events happening in Northern Vermont. I can tell, and I haven't even been living in the Burlington area for more than a couple of months. There are some RACES trainings coming up. The ARRL November Sweepstakes are this month. Hopefully you are making plans now to attend HAM-CON. There are nets to check into, satellites passing overhead, and the next great gadget needs inventing. Heck, one could even spend an hour or two writing an article for the newsletter! More than enough to keep the plotter and schemer occupied!

Of course, this is not to say that we must all spend every waking moment involved in some ham radio activity. Far from it. Indeed, if no **RANV** member did anything except for ham radio, then we would be a far less interesting and diverse group. Speaking of which, I am trying to get back into making music and am trying to start or find a jazz combo or brass quartet/quintet in the area. I play trumpet (*rather poorly*). Anyone interested?

HAM-CON

HAM-CON will be Saturday, February 27th at the Hampton Inn Convention Center in Colchester. Mark your calendar! We have set aside more room for the Flea Market to make it a more comfortable space. Initial planning is underway and we are open for suggestions for forums, demonstrations and activities.

NEXT MEETING:
“Sunspots and Propagation”
Tuesday, November 10th, 7 PM
O'Brien Civic Center
113 Patchen Road, South Burlington

RANV

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