



Radio Amateur News & Views

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AUGUST 2001

10 Great Years of RANV

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RANV SUMMER PICNIC AUGUST 4th

This Saturday, August 4th, is the date of the **RANV Summer Picnic** at Knight's Point State Park. Festivities get underway at 11 AM. **RANV** will again invite all area amateur operators and families to join us in this event. We will provide admission to the park, soda, and charcoal for the grills. You bring the rest! We also have a limited number of hot dogs and buns.

There are a number of activities at the picnic to take part in. First and foremost is barbecuing and **eating**, something I know we are all experts in. This is an amateur radio event, and therefore, there will be **radios** and antennae setup for casual contacts. We plan to have an HF transceiver and dipole in the trees. In addition, we are also planning a full-blown satellite station (*with tracking rotor*). Anyone interested in bringing a PSK-31 setup?

At 1 PM will be the regional meeting of the *Yankee Clipper Contest Club*. This is a club for contest and DX enthusiasts. The meeting will be short, but there will be plenty of opportunity to pick the brains of contesters.

There are also many activities for normal people! The short list includes swimming, paddleboating, fishing, volleyball, soccer, etc. Bring any necessary sporting goods.

Knight's Point State Park is located on North Hero Island. Take Route 2 to the Champlain Islands and go through South Hero and Grand Isle and cross the drawbridge onto North Hero. The park entrance is a few hundred feet past the bridge on the left. Tell the attendant you are with the Radio Club. Be sure to bring all necessary play items, sporting goods, clothing, towels, food and garbage bags. Do not bring any pets since they are not allowed in the park.

Please let Paul AA1SU (aa1su@arrl.net) know how many in your party are coming so we can get an accurate count for planning.

FOX HUNTS COMING!

Join us for a pair of great Fox Hunts this month!

We start off with the fox hunt at the **RANV Summer Picnic**, this Saturday, August 4th. This hunt will be on foot, and will be more or less confined to the area around Knight's Point State Park. Several unattended transmitters on various frequencies will be hidden. The first hunter to successfully find all transmitters will be the winner.

On Friday, August 10th will be the regular **RANV** Summer Fox Hunt on 145.15 MHz. Bill N1IRO and accomplices will ferret out a spot somewhere in Chittenden County. They will be located in a public accessible spot, will transmit at least 10 seconds out of every minute and will have at least an S-1 signal at I-89 Exit 14. They also promise to give us a lot of fun and probably cause us a lot of frustration!

WE NEED YOUR INPUT!

News & Views is always looking for information and stories about amateur radio in our area. It is hard for the editor alone to fill the pages of our newsletter with quality material. You don't have to be a novelist or an electrical engineer to write for the newsletter. Articles fit into two general areas: information and entertainment. Information articles focus on something you know about which would be useful to share with the rest of the club. Entertainment articles are stories about your activities in amateur radio. We look for articles which are fairly unique. Information which can generally be found on the Web or in other publications are not as useful in the newsletter. Our proofreading staff will make sure your article will be worded just right. Articles are best submitted as a E-mail, text file or Word97 Document file sent to w1sj@arrl.net. Material can also be submitted in person to W1SJ on a diskette.

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OUR LAST RANV MEETING

by Grant K1KD, Sec'y

The last **RANV** meeting was called to order at 7:15 PM on July 10th. Twenty hams attended the meeting.

Paul AA1SU gave us a quick reminder about the **RANV Summer Picnic** coming up on August 4th. Then, Mitch W1SJ showed us a computer generated 145.15 coverage map of the Champlain Valley. Based on terrain and power level, the software generates a map that identifies "dead spots" where repeater coverage might be poor, and places where you could expect the repeater to be very strong.

The main topic for the meeting was *Fox Hunting Techniques*, presented by Mitch W1SJ. A Fox Hunt is the art of finding a transmitter by using only a receiver. The purpose in finding hidden transmitters might be to find a missing person, find someone who is transmitting an interfering signal, or just for fun!

As we learned, finding a hidden transmitter doesn't happen by chance – although good luck helps! There are a number of techniques that can be used to narrow in on a transmitter. First, take your first reading from home or a good high spot, where you presumably have your best antenna. Get a first reading using a highly directional yagi antenna. Make sure that the reading yields a clear, single lobe. Signals peaking from several directions suggest a scattering effect and no clear direction can be deduced. From the initial reading, use a map to plot a course defined by the beam width of your yagi. Signal strength usually equates to the distance the transmitter is away, but don't be fooled by terrain effects, i.e. – a high signal reading at the top of a hill might not necessarily mean you are close! As

THE PREZ SEZ

by Paul AA1SU, President

Ham radio activity seems to be growing in our area. This is a good thing. Lately, I seem to meet at least one new person a month on the local repeaters. Meeting new people on the air can make you a little nervous at first. You may not be sure what to say, etc. But just be yourself; offer your name, QTH, and what you are up to. This breaks the ice and leads to other topics. Before you know it, you'll know just what to say when you bump into that person again. We have all made many new friends this way.

I am very encouraged when I see so many of you at the monthly meetings. However, I would like to meet more of our members, particularly the ones that can't make it every month, but continue to support the club through their dues. If you can make it down to a meeting, we would all enjoy having you there. See what

you get closer to the transmitter location, the signal will become too strong to be displayed on your S-meter. Here, it is very important to have an attenuator that can help reduce the signal entering your receiver. When very near the transmitter, it can be helpful to use a paper clip for an antenna or even no antenna at all!

The meeting was eventually moved outdoors where everyone got a chance to apply the skills that Mitch described to us. Like a herd of grazing Vermont dairy cows, we wondered around the park with antennas in hand looking for several transmitters that Mitch hid from us. We learned a lot about good Fox Hunting techniques, and we all had fun in the process.

you can do. The club officers and I continue to come up with some interesting topics which you are missing out on. That leads me to a good point: we are in need of ideas for meetings in the fall months. If there is something that you would like to hear about, please let us know, and our crack research team will come up with a plan. If there is a radio topic that you would like to give a talk on, so much the better. We can help you with the presentation, if necessary.

Summer is moving right along, and it is time for the **RANV Summer Picnic**. This is a time for area hams to gather, socialize, meet each other and have fun. You get to see the faces of those that you have chatted with, but never met. It is fun to put the voice with a face. I hope to see many of you there.

Contacting RANV

In Person: Picnic, Sat. August 4th
Knight's Point State Park
North Hero, VT

By Mail: PO Box 9392,
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Please send submissions for the newsletter to the editor, W1SJ.

CONTESTING CORNER

by Paul AA1SU

After a brief hiatus from this column, I am back with a look at what is happening in the world of ham radio contesting. Starting with the weekend of the **RANV Summer Picnic**, one could work the SSB *Ten-Ten Summer QSO Party*. It is a 48 hour contest that starts at 8 PM Friday. Since 10 Meters is typically only open during the day, you can still get your sleep. The exchange is call sign, name, state, and 10-10 number (*if member*). If you are not a member, it is still okay to work this one. Just say "no number". They will appreciate the points. And, if you are interested in learning more about the organization, you could ask a ham on the air, or go to www.ten-ten.org. We will try to work this one a little from the picnic.

Moving onto the next weekend, August 11-12th, there is not much activity. This is a good thing, as we will need hams for the MS-150 Bike Tour. Please E-mail me (aa1su@arrl.net) for details.

On the weekend of August 18-19th, there is the SSB *North American QSO Party*. It is a 12-hour contest that starts at 2 PM on Saturday. Single operators can only work 10 hours, and the power limit is 100 watts or less. The exchange is name and state. Not a lot of DX during this test, but you will hear some. This is a fun contest to get you started on your *Worked All States Award*.

For the last weekend in August, there are three state QSO Parties, including Ohio, South Dakota, and Hawaii. The hours vary, but these are good for building up your search & pounce skills. On September 1st, you will find some good DX in the *All-Asian SSB DX Contest*. It starts 8 PM Friday night, and is a 48-hour contest. Work Asian stations only on 10 through 160 Meters. The exchange is signal report, and a 2-digit number denoting the operator's age. Operators not wishing to disclose age may send 00. The scoring details are in June *QST* page 108.

On September 9, is the phone *Worked All Europe Contest*. Operate 36 of the 48 hours, and work Europeans only. Exchange signal report and serial number. This contest has the QTC feature. It is hard to explain here; the August *QST* kind of sums it up.

Here are some recent contest sightings for **RANV** members. The phone *ARRL November Sweepstakes* was good to Mitch W1SJ, who took First Place for New England and all of the Northeast, operating as WB1GQR. Ted K1HD and Ron KK1L also posted nice scores. The *ARRL January VHF Sweepstakes* had one local favorite participating. Mike N1JEZ with Beau N1MJD gave it their best shot in the Rover category. It was a brutal winter, so our hats are off to them. In the *ARRL 160-Meter Contest*, Mitch W1SJ and myself slugged it out. Mitch worked with high power and I with low. Our scores were in the middle of the pack. In the *CQWW DX SSB Contest*, Ron KK1L put out a great first time Multi-Single effort with Grant K1KD, and Bob WJ1Z. They placed 5th among other New Englanders in this category. I also participated as Single-Op low power, and managed to hold my own.

Next month: it's CQP time!

DC POWER

by Mitch W1SJ

It's been a quiet month after the Field Day activity last month. I have used this time to catch up on a lot of radio projects. One of the projects is to check and fix the DC feeds in my mobile installations.

A common problem in mobile radio installations is insufficient wiring for the amount of current drawn by the transmitter. At a nominal voltage of 12 volts, radio transmitters draw a lot of current. For example, a 25-watt transceiver might draw 6 amps and a 100-watt transceiver might draw as much as 25 amps. If you remember Ohm's Law, the current, multiplied by the resistance of the wire will equal the voltage drop of the wire – the voltage *subtracted* from the radio! Simply stated, if you have 13 volts at the battery with the engine running, a cable resistance of as little as 0.1 ohm will produce only 12 volts at the radio, if it is drawing 10 amps. However, if the engine is off, the battery voltage will be around 12 volts and the radio voltage will be around 11 volts. Radios start to act very funny at these low voltages. In fact, most amateur transceivers would rather see voltages around 13 volts – that is where you usually get your specified power output. A 50-watt radio will quickly drop to around 30 watts when the voltage is below 12 volts.

The key to keeping the voltage drop low is to use short lengths of large wire. The smallest wire to be used should be 16 AWG (AWG= *American Wire Gauge*). In fact, 14 AWG is better. Be careful of the wire supplied with the radio – it may be too small! Some books recommend running this wire all the way to the battery in the engine compartment. This creates problems like finding a safe place to go through the firewall of the vehicle. When done wrong, you can create a wiring and fire hazard. I prefer to find a high current point in the fuse block. Often the fuse block has extra spots for optional equipment. It will take some probing around with a voltmeter, but look for a spot which always has 12 volts (*not on the ignition circuit*) and which is fused for over 20 amps. DO NOT use the cigarette lighter for anything other than a temporary connection. Make your wiring a little longer than needed, but not too long, as this will drop valuable volts. All leads should be fused. Be sure to use high current fuses above 10 amps. Small fuses create more voltage drop. I have a power cord using spade fuses. The spades get dirty after passing high current and need to be cleaned every so often. These are not a good choice! When you think you are done, check the voltage right at the radio, with the engine running. If it is below 12.5 volts, you probably have excessive voltage drop.

MANGLED LOOP TAKE II

by Eric NISRC

In the last episode of the mangled loop, I undid the loop into an 80 meter dipole. Jim VE2DYA was one of the intended targets for a contact but his antenna was a 20-foot random wire. A wire this short, particularly without a good ground plane, is a very poor antenna. In addition, the short section of wire inside the house picked up a lot of QRM from the computer, monitor and answering machine. Operating from his place was not fun.

Jim lives on a small suburban lot and has power lines on two sides of his property. This really limits antenna height because he does not want anything conductive that might fall, get blown into or otherwise contact those lines. We have turned over a number of possibilities but finally, after fiddling with my portable dipole, we stared at his clothesline. It runs from the back door of his aluminum sided house to a wooden pole about 50 feet away. We had read about off-center fed dipoles in July 1998 QST as a way to avoid using a tuner. The design called for a resonant dipole.

In this case, we skipped the usual design steps. We knew it was too short for 40 meters and was only about 8 feet off the ground. With one end just inches from the aluminum siding on the house we knew that this would alter the resonances significantly. For 40 meters, we wanted it as long as possible, so we just used the existing length.

The line was a stranded steel cable covered with vinyl. We therefore just undid the coupling and replaced the metal pulley on the house with a plastic one. We stripped the ends of the cable, and inserted an insulator made of polyester rope. Then we tightened it back up with the little ratchet device the line had. We stripped the end of some RG-8U coax to attach to the bare ends of the clothesline.

Attaching copper to steel is always a challenge. We tried wire nuts,

but they don't grip steel very well. In the end we took some number 12 wire, wound it in a tight spiral around the wires to be joined and crimped it. We then coated the exposed joints, braid and center conductor with some sealing cement to try to keep water out. Copper and steel joints will corrode very fast if they are not protected.

We had about 50 feet of coax. This was enough to allow the full use of the clothesline because it still had to be used to dry clothes. One end ran in to the antenna tuner, and when the feed is in the middle, the excess coax is made into a coil. This was our only attempt at a balun but that was an excuse we invented after just coiling up so as not to trip on it. We know that any asymmetric antenna will have antenna currents on the feed line, but we figured it had to be less than on the end fed wire.

We started with the feed line near the center. It was easy to tune up on 40 to 10 meters. The tuner is an old L network, which has its limitations. It did not like the short circuit it saw on 80 meters. The calculated resonance of the antenna was around 9.6 MHz, but the actual resonance was near 7.6 MHz. This is likely due to the increased capacitance at the near end and to the ground.

The folded dipole has 4 times the impedance of a plain dipole. In free space that would be about 300 ohms and suggests use of twin lead and a 4:1 balun. However, dipoles have lower impedance near the ground. Our guess that we could get away with a 50 ohm feed was justified by the easy matching. In any case the RG-8 will minimize feedline loss and was already available.

We experimented with moving the feed point, but it did not seem to do much good for matching. It changed the settings needed on the tuner, but the tuner was still needed. We marked the line near the pulley so that the position could be easily reproduced. To dry clothes the line has to be reeled in and then run back

out since the joint is now normally halfway to the end of its travel.

We worked a bunch of stations during the Canada Day contest. Our signal was not good enough to break pileups, but we got good reports. The signals were at least 20 dB better than before and the QRM from the house was almost gone. Then the wind came up.

The strong wind had no effect on the antenna, but it caused the power lines to produce an S9 noise. I took a tour of the area with my HT tuned to the aircraft band, where it uses AM detection, and found that the noise was only on the phase that fed his house. I could see that the line feeding the houses 2 blocks over were on different phases. There were peaks and valleys in the noise all over the place as the noisy line snaked through the area. Some peaks fell near transformers, but most were just along the wires. I finally got in my truck and made a larger survey. By listening on 11 meters and on an AM radio I was able to find an area where the noise was clearly louder, but could not pinpoint the source. The lesson from this is that power lines do not have to be noisy but when they are, the noise can carry for miles. When it comes back, again we may be able to continue the search.

I now have renewed appreciation for being able to hoist an 80 meter dipole and not have to worry about looming power lines. I worked Jim from home on 40 meters and we had about S5 signals. Very readable as long as the power line behaves itself. Our earlier antennas had given an S1 or S2, just barely above the noise. This new antenna shows the value of getting the antenna outside the house and that you don't need an ideal antenna to have fun. On 20 meters, Jim has worked Poland, Bulgaria, and Ukraine and even broken into some DX pileups. The antenna may well have some gain due to all the extra metal and wire around it.

WHY I LIKE BRAINLESS PHONES

by Eric NISRC

My recent adventures in suburbia reminded me of appliance RFI. I hope you can avoid some of my past mistakes and profit from them.

In the olden days when phones were made of carbon, steel, copper, and insulation and Ma Bell was a monopoly, the phones themselves were very resistant to RFI. Now many phones are filled with all sorts of rectifiers and amplifiers that make a fair radio receiver. This is not good for hams. What is worse, many, many modern appliances have oscillators in them that scream RF back at us.

However, there are phones and other appliances that are much better than others. The manufacturer will likely not tell you which is which. QST did a phone review a while back, but it was out of date before the ink dried.

I have learned the hard way. Before you buy an appliance or a car, listen to it in the frequency ranges you are concerned about. If you find birdies, then you can decide if you want to fix them or avoid them. This extends to anything with a microprocessor oscillator in it, which can now include just about anything more advanced than a garden trowel.

I have found that the Radio Shack phones with real bells in them and minimal features seem to be very resistant to RFI. A good RF resistant phone can help you track down telephone RFI. If the good phone does not hear the interference when the other one would, you can assume that the problem is in the other phone. If the problem is due to a diodic connection in the wiring or some other device on the line then even a completely RF resistant phone will still hear the interference. We inherited an ATT phone with lots of features on it. That one got WEZF as a faint background and 10 meter SSB came through loud enough to drown out the incoming call when the

brainless phone was not bothered. The fancy phone is no longer with us. There are RF filters for phones, but in this case, it was cheaper to replace the whole phone.

It helps a lot to have a well-shielded coax inside the house or car and an external antenna. In some cases, the location of the antenna can be adjusted to find a null in the noise.

In extreme cases, a second antenna can be used to sense the noise and then subtract it from the signal. This requires a means to adjust the phase and strength of the noise signal and perform the subtraction. These devices must be readjusted whenever anything alters the noise signal or there is a frequency change. It can only deal with one noise source at a time.

Computer monitors can be real screamers. Sometimes you can move the birdies by changing the monitor settings for refresh rate and resolution. You can also try to add chokes and filters. W1RFI has a whole book on this stuff if you want to work on it. Car engine controllers make all sorts of RF noises. Many come and go depending on functions in use.

If you look at the fine print on many appliances, they say that the user must accept interference and must not create any. This does not help much when your family (or the guy next door) gets blasted, or is blasting your radio. The best control is to avoid the bad actors as best you can. Some companies will actually help with RFI, but not many. I know what happened when I called Saturn about the birdie on 146.52 in our car. Pleasant, but clueless. We just can't use that frequency in that car while it is running. So, when we got our most recent car we checked all our favorite 2 meter frequencies. It was wonderfully silent. You can bet that our future vehicles and appliances will be tested as well.

WHAT WILL WE DO THIS FALL?

Well, that seems to be a silly question to ask right smack in the middle of summer.

Actually, now is the perfect time to ask. It gives us time to discuss ideas and to plan strategies. Please jump in on the discussion at any time. E-mail your thoughts to the various club officers or use the **RANV** reflector, ranv@wpi.edu.

We have 3 meetings this Fall and then the Holiday Party. What shall we do at these meetings? We have vague idea or two, but that's it. Any interest in another construction night? Currently, I'm working on building a passive attenuator. It might be a nice meeting project - if I can finish it, if I can get it to work, if I can find the right parts, etc.

Is there interest in upgrading and helping others to upgrade? I will do the 1-day courses for Technician and General, but there has not been enough interest for Extra. And it seems like lots of people want to learn code. Perhaps someone would like to run a code course or practice session? Or we might run a "graduate" program, covering topics above and beyond licensing. For any of this to happen, there has to be clear interest shown by a number of people.

How about contesting? With 4 major phone contests this fall, there are many opportunities for folks to get involved in contesting. We might have a group operation (*called a multioperator effort*), but that requires a number of people to commit to operating (*just like Field Day!*). And every contest is uniquely different. We used to field a solid team to operate the *VHF QSO Party* but I have been doing that pretty much alone the last year. The next VHF contest is September 8-9th.

Yes, there is a central theme to this mass of rambling: **Get involved in stuff**. It makes our organization and ham radio stronger, and is a load of fun!

RANV SUMMER PICNIC
Saturday, August 4th, 11AM-6PM
Knight's Point State Park

RANV

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