



Radio Amateur News & Views

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10 Great Years of RANV

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ANTENNA MODELING



The September 11th RANV Meeting

One of the most fascinating parts of amateur radio is designing and building antennas. Unlike integrated electronics, where you would need a 100 million-dollar facility to build the latest electronics, high performance antennas can be built in any garage or backyard. While there are all sorts of fancy instruments to test antennas, the ultimate test is how well someone hears you on the air – and we all can find that out easy enough. In the old days, we took bits of antenna theory out of a textbook, hammered together something, tested it, changed it, tested it and kept doing this until we got the desired performance or got tired. Today, we plug all of the antenna parameters into a computer program and it tells us how well the darn thing will work. Then we get to build the antenna once. Maybe.

For our September meeting, Dave WX1C will give a talk on antenna modeling programs and how to use them. Dave changed his call from KD1SG a couple of years ago. He operated with us at Field Day a few years back and is always heard on the air talking about designing antennas of some sort. He is a technical guy and will talk about a technical subject, but he will put antenna technology in simpler terminology. More over, he will stress the “Why bother?” question when it comes to designing a better antenna. The answer is, of course, to put out a better signal, which is so important to making and maintaining contact. An efficient antenna is also a time saver. The whole talk will be a great educational tool for HF and VHF hams alike.

So, join us for the September 11th RANV meeting on Antenna Modeling. The meeting takes place at the O'Brien Civic Center, 113 Patchen Road, South Burlington and starts at 7 PM sharp. Pre-meeting festivities and feeding frenzy will be 6 PM at Zach's on Williston Road.

VHF QSO PARTY

It's time to get fired up on the VHF/UHF bands this weekend for the VHF QSO Party. The contest starts at 2 PM Saturday and runs until 11 PM Sunday. Peak times are usually 6-9 PM both nights, although activity increases with any opening. This contest is open to all on all all frequencies above 50 MHz, which means virtually everyone in the club can take part. If you've never done this contest before, get on and have some fun.

If you have a combo radio, like an IC-706 II, you're all set. These radios will do 6 and 2 meter SSB and FM. Remember that you have to use a horizontal antenna for SSB and vertical antenna for FM, since that is the prevailing trend. Failure to follow the trend means big attenuation. If you don't have a 6 meter antenna, a 40 meter dipole will work in a pinch. Or, have some fun and build a dipole or delta loop. Some readers may have 6 meter SSB available to them, but not 2 meters, and some may have only FM. Go with

what you have and make some contacts! On 6 meters, look for activity at 50.12-50.18 MHz and on 2 meters check 144.18-144.22 MHz. On FM, monitor 146.55 MHz.

If you live in a low spot, or don't have much of an antenna, consider mountaintopping for the day. That lowly whip on your car can pick up 30 db of gain simply by driving to the right spot. Some popular local high spots: Mt. Philo in Charlotte and Mt. Mansfield in Stowe.

I'll be active as WB1GQR from Mt. Equinox in Southern Vermont. You should have no trouble hearing me, but I may not hear you if the beam is pointing away from you (*which is usually is*). I point the beams up this this direction at the top of the hour, so if you can't get through, simply wait for the beam to come around and I'll pull you out of the QRM.

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OUR LAST RANV MEETING

by Grant K1KD, Sec'y

The last RANV "meeting" was actually our annual summer picnic held on August 4th at Knight's Point State Park. We were fortunate to have a nice sunny day for the event and there was a great turn out of 30+ people.

The picnic started around 11 AM and included plenty of good food – barbecue chicken, hamburgers, and hot dogs. We had a couple of HF stations on the air. Mitch W1SJ had a DX-70T tied to a 20-meter dipole in the trees. He worked about 20 stations on the *County Hunters Net* and made several other contacts. Others, including Paul AA1SU and Alex N1ALX took turns at the radio. Brian N1BQ had a FT-817 QRP setup complete with battery and solar panel. He and a few others made contacts with special event lighthouse stations. In addition to HF activity, several participated in a park-wide transmitter hunt. Four 2-meter transmitters were hid; some of which were buried in some dense brush. Some of the hams who found transmitters were N1ALX, W1RL, and N1SRC. Tony WA2LRE, a late visitor, found one of the transmitters and re-hid it, causing W1SJ to hold a fox hunt to find his transmitter (*which he did*).

Later in the afternoon, there was a regional meeting of the *Yankee Clipper Contest Club*. This is a club for contest and DX enthusiasts. Although there was no formal agenda, we did have good discussions on a variety of topics. Since I recently bought a house where towers are a possibility, I was interested in steering the discussion towards HF antenna installation. Several hams contributed their own personal experience on tower building, optimal antenna configurations, and covenants.

The last of the hearty picnic goes left around 6 PM after a great day of fun in the sun.

THE PREZ SEZ

by Paul AA1SU, President

The RANV Summer Picnic was a great success, as usual. We had so many hams that it was like a Hamfest with a cookout. This is a good thing, as we all need to meet and keep in touch with the faces that we talk to on the air. Everybody was rag chewing, and having a good old time. We had at least 3 grills and 2 radios going, and several picnic tables were occupied. We did get some odd looks however, when we were tying off a dipole near a sunbather. Oh well, you'll have that with this hobby; especially with our group.

With the end of summer approaching, I want to remind everyone to get those antenna improvements under your belt. You'd be amazed how hard it is to see a maroon arrow hanging from a fishing line in the thick of the fall foliage. Believe me, I know! With so many members now having HF privileges, RANV should be one of the more predominant clubs on the air, on any given night, or weekend.

Believe it or not, elections are coming up this Fall, in November. If you are interested in running for one of the offices, you are definitely encouraged to do so. We have three club officers: President, Vice President/Treasurer, and Secretary. All are up for reelection, and the position of Secretary will be wide open for the picking. Nominations are in October, so that is why we are bringing this up now. If you are interested in one of these prestigious positions, please send E-mail to Mitch or me. You can also bring up nominations at the next meeting.

Please continue to come to as many meetings as you can. With an average of 25 members attending each meeting, the club has been extremely successful. Just the other day, a ham was telling me that he thought we still had about 7 attendees per meeting. I told him that those days were in the past, and that he should come by for a pleasant surprise. I hope that he does.

Welcome To RANV

Matthew KB1EXM of Johnson, also from Exeter, NH, goes to Johnson State College. He was one of our VHF operators at Field Day.

Oliver KB1FLG of Randolph, lives and works with fellow RANV members N1IRO and N1NTT and shares their enthusiasm for Fox Hunts.

Steve KB1GRJ of St. Albans, just attended his first RANV function – the picnic! He lives with Tracy KB1GUN.

Mort W1UQ of Brookline, MA and Sint Maarten, joins son **Ed W1RES** as a family member. He owns the W1FCC repeater down there. Love that callsign!

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O'Brien Civic Center
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Please send submissions for the newsletter to the editor, W1SJ.

EASY SATELLITE CONTACTS

by Mitch WISJ

There have been numerous articles on how to make contacts on the various amateur radio satellites. Unfortunately, most satellite operation requires expensive specialized equipment and fancy antennas. This article will focus on only one satellite, which can be worked with a duoband radio or separate 146 and 440 MHz radios, using a relatively simple antenna, like a duoband mobile whip or using separate VHF and UHF antennas.

This satellite is called *UO-14*. It was built by the University of Surrey, in England and put into orbit in January, 1990, making it quite old in satellite years. It spent most of its years as a digital store and forward message satellite. In early 2000, it was reconfigured for FM voice operation and has become amateur radio's most popular satellite. There is also another FM voice satellite, called *AO-27*. However, it suffers from weak batteries, requiring the satellite to be turned off whenever it is dark and at other times. *UO-14* has a far stronger signal – about 7 db (*more than an S-unit*) allowing contacts from mobiles to be made.

From an operations standpoint, *UO-14* is just like a FM voice repeater. Its input is 145.975 MHz and its output is 435.07 MHz. However, this “repeater” is hurtling around earth at high rates of speed, and is only visible a short period of time each day. There are 2 or 3 usable 15-minute passes in the morning, between 9 AM and noon, and 2 or 3 more in the evening, between 7 and 10 PM. The morning passes go from north to south and are called *descending* passes. The passes are spaced about 95 minutes apart. The first pass is usually out towards the East and the last one is out towards the West. During the afternoon, the satellite is not visible to us on the East Coast. In the evening, the cycle is reversed: passes go from south to north (*ascending*). Where the satellite is travelling is important. An east-

ern track will bring in European contacts while a western track will bring in stateside contacts (*and a boatload of QRM!*).

If you are using a simple vertical antenna, you really don't have to worry too much about where the satellite is. Monitor the output frequency of 435.07 MHz and eventually you will hear people yapping away. However, there is a better way – satellite prediction software. I use a simple DOS program called *Predict*. You simply run the program and the program will list out times the satellite can be seen, along with azimuth (*N,E,S,W*) and elevation angles. This will tell you when to listen and where to point the antenna, if you use a yagi. Remember that you have to correctly convert from UTC! I have put *Predict* on the **RANV** Web Site Contest page.

Now that you know where and when to listen, it is time to consider other weird things objects in orbit do. Because a satellite moves towards and away from you at high speeds, it is subject to the laws of Doppler Shift. Both its transmit and receive frequency are affected – by different amounts, because they are on different bands. Typically, the UHF side will shift 10 kHz and the VHF side 3 kHz. A simple trick FM satellite operators do is to store 3 frequency pairs in memory:

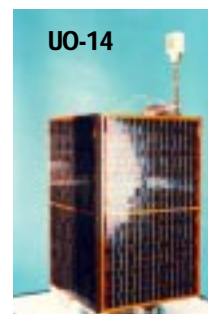
```
145.980 in 435.08 out start of pass
145.975 in 435.07 out middle of pass
145.970 in 435.06 out end of pass.
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While *UO-14* can be worked with a cartop mobile antenna when in the clear, it is very limiting. You will hear the satellite only a few minutes out of the 15-minute pass. While a 50-100 watt mobile will have no problem getting through, hearing the satellite can sometimes be tough. A better way to hear the satellite is to use a good UHF yagi. A linear yagi is good, a crossed yagi is better, as it reduces the fading observed when the satellite spins to a different polarization. Be careful with the length

of coax. Anything over 30 feet of RG-8 is excessive and will noticeably reduce the signal. Generally, if you can hear the satellite well, you should have no problem getting into it. Contacts can be made with an HT and small yagi, but realize that many other operators will be stronger than you and you will get chopped off much of the time. With patience, a 25-watt transceiver in the car will produce contacts at the middle of a high elevation pass.

There are a few tricks to be a better FM satellite operator. Learn to pick your passes. When the satellite is coming in from the Northeast, operators in Vermont (*and the Maritimes*) will get the first crack at the satellite. Once the satellite gets into range of the dense pack of the rest of the Northeast, there will be many strong signals competing. Remember, only the strongest signal gets to be heard! Once the satellite is out to the West, the QRM level makes it very difficult to get a word in edgewise. When you start out on the satellite, spend a few days just listening and observing what stations are getting through and how they make contacts. Then, when you are ready to transmit through the satellite, pick weekday morning passes, as there is less traffic (*your boss will understand!*). Avoid the weekends until you have gotten experience and antennas – it can be frustrating!

I want to encourage everyone to try some satellite FM operating. If you don't have UHF equipment, see if you can borrow some to give it a try. You might love it so much, that you might want to move up to the other FM satellite, the SSB satellites, the 10-meter satellites, or even *AO-40* on 2 Get out there and enjoy some of the best of amateur radio.



CONTEST CORNER

by Paul AAISU

As we approach the thick of the contest season, there is not a lot of big contesting activity on the calendar.

If you get this in time, there is the *VHF QSO Party* on the weekend of September 8-9th. There are a lot of 6-meter radios out there. If you have one, attach it to a good antenna and make contacts. If you are otherwise stranded on 2-meter FM, tune to 146.55 MHz and call CQ and beg, borrow and steal any contacts you can.

The weekend of September 15-16th has a couple of state QSO Parties, including the *Washington State Salmon Run*, and the *Scandinavian CW Activity Contest*.

The following weekend has a quick contest called the *North American SSB Sprint*. This one has the quirky QSY feature, where you must change frequencies after every other QSO. It starts at 8:00 PM on September 16th, and ends four hours later. Exchange is name and state. For some reason, this event is not mentioned in QST, and CQ Magazine shows the wrong date.

The last weekend in the month is the *CQ/RJ WW DX RTTY Contest*. This is a major digital test. If you want to get a few RTTY contacts under your belt, this is the weekend to do it in. It is a 48-hour event starting at 8:00 PM on Friday. You send RST, State, and CQ Zone number, which is 5. A good RTTY contesting program is "RTTY by WF1B". It costs a few bucks, but it is one of the best on the market. However, it is not the only one.

Moving on to the first weekend in October is the best QSO Party of them all – the *California QSO Party*. These guys put on a great contest, and they have many awards, including a bottle of wine! The hours are from 12 Noon on October 16th, until 4 AM Sunday. You send QSO number and state, and they send QSO number and county. There are 58 counties in all, and it is possible to work all of them in one weekend! By the way, these state QSO Parties are nice to work in case you ever want to chase counties. But, that's another story. T-shirts are available for a price, if you work a minimum of 100 California stations. Ron KK1L and I have worn them!

Well that's all for now. Next month, we get ready for the king of contests, the *CQ Worldwide*.

MY SWEEPSTAKES 2000

by Steve WINEK

As the days drew nearer to the *ARRL November Sweepstakes Contest*, I found myself more and more anxious to ensure everything was just right. Or at least as right as my station could be!

After moving back home to Caledonia County from 20 years in Montana, I couldn't wait to get on the air. I found that there is very little VHF activity in my area of the Northeast Kingdom. So, I was hoping to find comfort in HF operations. But I had left my tower, a 56' Rohn, still standing in Central Montana! Fortunately, the primary factor in my search for a house to buy was altitude and location! I have a pretty good spot just north of St. Johnsbury. The old farmhouse I own has a cupola on the roof, making the total height about 30 feet.

I was able to secure my antenna mast, with my 3-element tri-band, to the chimney standing a couple of feet above the top of the cupola. But this would mean that unless I wanted to climb out windows onto the roof at all hours of the weekend, I wouldn't be rotating my antenna to assist with making contacts. OK, I'll just try to deal with it and see how the contacts come in.

I also don't have a desk mike yet (*few contesters do -ed*). So to make it easier to key the contacts into the computer logging software, I grabbed a plastic gallon jug of bleach (full, for the weight!) to put on my desk. Then I duct taped the microphone to the jug, and had it sitting right in front of me. With the VOX settings adjusted, I was ready to go.

My main goal in participating in the Sweepstakes was to beat my score from 1999. Operating in Montana, in my first serious involvement in any contest, I scored third in the state in the low power, single operator category. Working only 10 meters, I scored something around 44,000 points. This year I was going to be operating multi-band from the other side of the country.

I did actually go climb out on the roof a couple times during the contest. And I had some comical comments come back to me as well. I worked a station in Massachusetts on 80 meters. He said that was the first time he worked anybody on 80 who was using a yagi! OK, so I didn't have wire dipole stretched at the time!

When it was all said and done, I missed a clean sweep by seven sections. I did work every state except Maine. More importantly, I met my personal goal of topping my score from the previous year. After an adjustment at ARRL, I still scored a respectable 58,108 points. That was enough to place me first in the low-power, single-op, category in the Vermont section.

Now here it is August of 2001, and I've found a great deal on a tower in southern New Hampshire. So with a little luck (*and cash!*) by November, I'll have a tower and rotor supporting my yagi, and a dipole stretched somewhere across my back yard. Perhaps I'll even find a used desk mike somewhere! But with or without a desk mike, I'll still be looking for my first clean sweep.

(*Sweepstakes is November 3-4 CW and November 17-18 SSB.*)

THE 2001 GREEN MOUNTAIN GETAWAY

by Paul AAISU

On August 11-12th, ham radio operators participated in the MS-150 Bike Tour, also known as the Green Mountain Getaway. We provided communications between rest stops, and other course officials from the *Multiple Sclerosis Society*. In all, we had 16 amateur radio operators on the air.

Riders left early Saturday morning from Sandbar State Park in Milton, and proceeded along one of four available courses. They were the 100 mile, 75 mile, 40 mile, and Mountain Bike 40 mile routes. There were six rest stops along the way to keep the bikers hydrated and fed. They ended the day's ride at Johnson State College in Johnson. Here, they were treated to a cookout, concert, and other fun activities.

On Sunday morning, the riders awoke, had a nice breakfast, and then proceeded back to Sandbar, but along slightly different routes. There was not supposed to be a 100-mile ride on this day, but a few diehards rode the extra 25 miles anyway. There were also six rest stops on this day, but two of them were changed to accommodate the slightly different course.

Repeater coverage for an event this large is a challenge, as you might expect. A couple of months ago, I drove around to the different rest stops and performed repeater tests from each one. The 145.23 MHz St. Albans repeater turned out to have the best coverage along the route. However, since that test, some of the rest stops changed slightly, and both repeaters on Mt. Mansfield were restored to service. They had been down for an extended period, so having them back on the air for this event would be a plus. As it turned out, something went wrong with the primary repeater. It was cutting our transmissions off constantly. This was towards the end of the day on Saturday. On Sunday morning, the early birds checked into the frequency, and found things quickly deteriorating. We immediately switched to the 146.94 MHz repeater. This repeater did a great job for most of the way. We did need to move a mobile in St. Albans to the 147.15 MHz repeater in Plattsburgh for a while. We had checked with their club ahead of time just to let them know that it might be needed and we were glad to be able to use it.

My sincere thanks to all those that helped out, including:

Mitch W1SJ	Matthew KB1EXM	Bob KB1FRW
Deb W1DEB	Dave KB1GIL	Steve N1UKT
Ed N1PEA	Moe N1ZBH	Brian N1BQ
Sara W1SLR	Scott AA1VF	Earl K1YLB
Fran KM1Z	Jeff N1MZE	Steve KB1GRJ

This was the first time covering an event for Matthew KB1EXM. He was stationed at Johnson State College because he lives there. On Sunday morning, he was empowered to be Net Control Operator for a few hours. He did an outstanding job, just by copying the good techniques of Mitch W1SJ. Mitch's input on repeater coverage was a great help also. He is the Repeater Coordinator for Vermont, and he has access to a modeling program that shows repeater coverage for our mountainous terrain.

By the way, the weather was beautiful on both days, and everyone had a good time. Keeping that in mind, we will need help from you next year when we do this again!

HAM RADIO CLASSES THIS OCTOBER

The Weekend Ham Radio Class will take place on October 13-14th in Essex Junction. The class is divided into two parts: Technician, taught on Saturday and General, taught on Sunday. Non-amateurs and Novices can choose to get their Technician license on Saturday, or come both days and pass the written tests for the General. Technician class amateurs can come on Sunday for a General class upgrade course. The classes meet 8:30 until 6 on both days. Exams are given at the conclusion of the day at 6:00.

All classes require pre-enrollment. Upon enrolling, students are sent a course book and workbook to help learn the details found in each course. General class students are also sent CW practice software. At class, everything is taught and demonstrated in detail on a ham station in the classroom. And with electronic examining, the license is issued days after the end of the course.

The growth of amateur radio this year has been pathetic. Here in Vermont, one of the fastest growing ham radio states, we have had only 40 new hams this year, with only 20 in the Burlington area. That's a modest 2% growth, but coupled with the number of hams who have not been renewing their licenses, that growth drops to less than 1%. Many states have shown loss in amateur radio operators over the last few years. If our hobby dies due to attrition, we have no one to blame but ourselves. What does this all mean? It means that as an amateur radio operator, you are automatically elected to be a spokesperson for the hobby, selling its great points and encouraging interested people to get their licenses. We have the books, study materials and the classes. Now let's make sure all of these are being used!

**SEPTEMBER MEETING:
“Antenna Modeling Programs” with WX1C
Tuesday, September 11th, 7PM
O’Brien Civic Center**

RANV

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