

F.C.A.R.C. Inc.
P.O. Box 773
Greenfield, MA 01302



FIRST CLASS MAIL



THE COMMUNICATOR

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December 2014

Upcoming Events

- E-Board Meeting: Monday Dec 8, 7:00 p.m. : Location TBA
- Club Breakfast: Saturday Dec 13, 8:00 a.m.: Denny's, Greenfield
- Holiday Potluck: Monday Dec 17, 6:00 p.m. : GHS Cafeteria
- New Year's net: Wednesday Dec 31, 11:50 pm. : 146.985 MHz
- Sawmill River Race: Thursday, Jan 1, 9:00 a.m. for radio ops: Montague Center
- E-Board Meeting: Monday, Jan 12, 6:00 p.m.
- Program Meeting: Monday, Jan 12, 7:15 p.m.
- Club Breakfast: Saturday, Jan 17, 8:00 a.m.: Denny's, Greenfield

December 2014

Calendar

FCARC HOLIDAY PARTY: GHS CAFETERIA, WEDNESDAY DECEMBER 17, 6:00 P.M.

It is a club tradition to have a Holiday Potluck Party instead of a regular meeting in December. We will continue that tradition (and say goodbye to the soon-to-be-demolished old GHS cafeteria) this year. However, because of a new GHS policy of not allowing use of the cafeteria on nights with basketball games, the party will be on Wednesday evening, December 17th rather than Monday of that week as originally planned.

This will be a true potluck - bring what you like, a few people may be asked to make sure that important dishes are provided.

Secretary's Report

E-BOARD AND PROGRAM MEETINGS, MONDAY, NOVEMBER 17, 2014 – CHRIS MYERS KB1NEK

The e-board met prior to the club meeting, in Room 301S at Greenfield Community College. Chris reported that so far three surplus radios had been sold, for a total gain to the club treasury of \$900. There was some discussion about placing the LDG AT-1000 automatic antenna tuner up for sale. While it is a good tuner, and worked well during Field Day, it is rated for 1000W, far more than the club would use at Field Day or an emergency. It was pointed out that an equally good tuner with the LDG brand, rated at 150 watts can be bought for about \$175 new. So the consensus was to put the AT-1000 up for sale on the club's web page.

After pricing it initially for \$450, we have reduced the asking price to \$350, as a result of seeing new ones offered for about \$425.

During the meeting, Ted Merrill, a Shelburne Falls resident, who used to be a licensed ham, and who had met Chris a couple of days earlier, arrived to donate some of his old equipment. The most interesting items were a Kenwood TS-440S, with a bill of sale nearly 25 years ago, and an Astron RS-20 power supply. Roy, K1LKY bought the power supply on the spot, and said he would like to buy the TS-440 if it proved to be in working order, and if we could settle on a fair price. This morning, before writing this article, I sold the TS-440 to Roy after checking it out extensively. It has a flaw in its RF power output control, but otherwise works surprisingly well.

During the e-board meeting, Jeanne Dodge told us about the technician license class she is taking in Gardner, taught by Paul Topolski, W1SEX. Paul is the emergency manager for the city of Gardner, and is known to a few of us who helped with emergency radio work there after the ice storm in 2008. The general meeting began at 7:15 with a report on the repair work we are doing on the club's repeaters. Al spoke of the testing he and Bob Dickerman had done on the control circuit of the 2m repeater on Frizzell Hill in Leyden. They narrowed the problem down to a small circuit board used to sense the sub-audible tone used to trigger transmissions. The circuit board simply does not respond to tones, but allows all incoming transmissions from the receiver to be passed to the transmitter. For this reason, transmission from repeaters in New Hampshire, and occasionally Rhode Island, are being sent through our repeater when they should be stopped because they don't have the right sub-audible tone.

Al also mentioned that while the town of Greenfield has finally replaced the tower on Rocky Mount, where we have a 440 repeater, our equipment is not working properly, and we had to turn it off. Repair of the 440 equipment will have to wait until we can fix the main 2m repeater in Leyden.

Al made a presentation on the subject of antenna testing by using internet sites dedicated to sending reception reports. An indoor ham-stick style antenna was set up in the hopes it would be adequate to transmit a detectable signal to one of the sites. Unfortunately, the GCC building is constructed with enough steel framing and other metal, that Al's signal was not detected at any of the remote sites. Nevertheless, he demonstrated current activity at some of the sites and explained more about how they work.

Added notes by Al: The other problem with my tests was that at almost three hours after sunset 20 meters was not expected to be open and I tried to do my tests on 40 meters. An antenna of the same size for 20 meters would be much more efficient. I hope to try this demo again at a meeting in the spring with daylight propagation conditions and coax long enough to put the antenna outside the building.

The PowerPoint file and a text file with notes and links to the websites demonstrated are posted on the website. Look for the article about the November meeting on the www.fcarc.org home page. [Editor's note: Al's presentation notes are below].

News, Activities & Articles

NOVEMBER 24TH VE SESSION

This was a very busy VE session, we administered 16 tests. One candidate passed Tech, General, and Extra for a new Extra license. Two others passed Tech and General tests to earn new General licenses. Another upgraded from Tech to General, and two others earned new Technician licenses. More info will be posted when callsigns appear on the FCC database - this will take longer than usual because of the Thanksgiving holiday.

A NEW AMATEUR IN THE FAMILY: UPDATE

Another member of the family of Keith KU1N and grandson Keith KC1BZB has been licensed. Say hello to Anne, KC1CRS, when you hear her on the air.

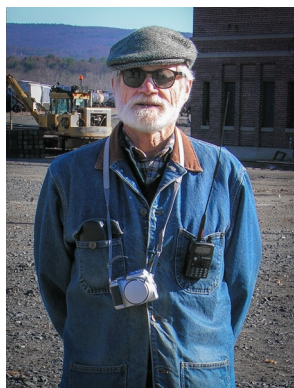
Update: Congratulations are due: less than a month after passing her Technician license test Anne upgraded to General at a VE session in Holyoke on November 22

FCARC FOX HUNT, SATURDAY NOV 15, 2014

Chris Myers KB1NEK (A.K.A. the Fox)



After the monthly breakfast at Denny's in November, seven or eight of us went off to hunt a fox. The fox was placed at a site near the West Deerfield Railroad yard by Chris, KB1NEK. Three teams assembled at the Poet's Seat in Greenfield to track down the fox's signal. It took about three hours for the team of Bob Solosko, W1SRB, and Roy Morgan, K1LKY to find it (and as a result, Bob gets to be the next fox).



While the railroad yard is not next to a building, as was the case in last year's hunt, where the fox was put near a building owned by Deerfield Academy, it proved to send a signal that was tricky to zero in on. Maybe all the steel rails or the old bridge across the Connecticut River that has been converted into a bike trail distorted the path of the signal.





While waiting for the fox to be discovered, Chris talked to a rail fan who had driven over from North Adams to look at the equipment on site.



The rail fan explained the use of the track inspection car, which was on loan to examine the new welded rails that have been installed to allow Amtrak service via Northampton, Deerfield and Greenfield, which is supposed to begin on December 29.

Bob Solosko W1SRB:

Our reading from Poets Seat was SE, but looking at the map when I got home, the bearing to the fox was about 30 deg closer to south, which put it in an almost direct line with the ridge where Poets Seat is located, and the ridge essentially blocked a direct view/path to the fox. After we left Poets Seat, we were all over the place – along the power canal, almost to Montague, and in the fields just north of Old Deerfield. Actually, our second reading from along the power canal was fairly close, but it was so inconsistent with the Poets Seat reading that we didn't believe it and went off to Turners Falls/Montague to try another bearing. Except for that, the bearings didn't make much sense, but the power levels varied widely, and that's what led us to the rail yard and the end of the bike trail – we decided that it had to be somewhere near there and as we pulled into that parking lot to take another reading, there was Chris! But we still had to find the fox where Chris hid it in the woods along the bike path. Using the "body blocking" techniques, we were able to find the fox fairly quickly.

Al Woodhull N1AW:

Bob left by the time I actually returned from finding the foxbox down the trail (with prompting from Chris and Roy). Then it was another few minutes before Keith & family arrived. I think I heard Carter say on the radio he was giving up and going home well before the end, not too long after he was told he was too far south. It must have been at least an hour before I got there.

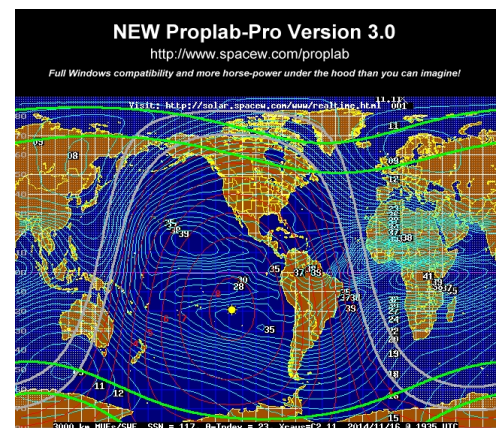
I was absolutely sure of my first direction reading from Poets Seat, directly east - it just seemed natural that in a high place a direct signal would come in. But Bob's reading toward the SE was probably just right. My second reading was at the north end of the bike trail bridge and it was right on, but I didn't believe it because it was so incompatible with my first. I was all over the place, at some point realized that signal strength told me more than any attempt to direction find. I had the RR yard in mind as a logical possibility for quite a while, but took a devious route to try to get bearings from some additional locations.

ANTENNA EXPERIMENTS AND EXPLANATIONS- NOTES FROM AL WOODHULL N1AW PRESENTATION AT THE FCARC MEETING ON NOV 17

The original PowerPoint AntennaTalk141116.ppt shown at the meeting is a large file. It was written using OpenOffice, but it was saved as a Microsoft PowerPoint. So it should be readable with either program.

If you don't want to download the large PowerPoint file this page contains the references and some other information from the presentation.

Maximum Usable Frequency predictions:
<http://www.spacew.com/www/realtime.php>



Critical Frequency predictions: <http://www.spacew.com/www/fof2.html> RBN (Reverse Beacon Network) <http://www.reversebeacon.net>

WebSDR: list of all sites: <http://www.websdr.org>

Al's favorite webSDR site (New Jersey): <http://96.225.100.244:8902> (Note he uses a dynamic DNS service, if this doesn't work look for the current address on the main webSDR site.)

Additional notes on using RBN:

- You can select a station to look for as DX. I showed an example where I looked for my own call to see where it was detected.

- You can select another station you would like to contact - the example I used was W1AW/5, the current W1AW portable operation, in Mississippi this week. Once you see what frequencies the station is on you can then look for a local listening post - K1TTT, the superstation in Peru MA is a good choice - and see how well it hears the station you want to contact (look in the SNR column). I have found that if K1TTT hears a station with a signal to noise ratio of 30 dB or more I can probably work that station even though I am using only 5 watts and a modest antenna.

- You can also use a wildcard, for instance W1AW* to find all of the current W1AW portable operations (in any week there are at least two, sometimes three). Or you could, for instance, look for GJ* to find any station operating from the English Channel Isle of Jersey.

no filter selected, showing all spots							rows to show: 20
search spot by <input type="text" value="callsign"/>							
de	dx	freq	cq/dx	snr	speed	time	
HC7J	 N6EV	21055.0	CW CQ	28 dB	16 wpm	2019z 16 Nov	
EA4TX	 4X/R1CC	7015.9	CW CQ	15 dB	28 wpm	2019z 16 Nov	
H7TR	 W6JL	7041.0	CW CQ	6 dB	22 wpm	2019z 16 Nov	
EI0PL	 DK1EY	7027.2	CW CQ [LoTW]	36 dB	29 wpm	2019z 16 Nov	
AA4VV	 XE2O/B	28166.1	CW BCN	7 dB	13 wpm	2019z 16 Nov	
W4KKH	 W7PFR/B	28230.9	CW BCN	11 dB	20 wpm	2019z 16 Nov	

Additional note about WebSDR:

These stations may be capable of accommodating only a limited number of users at a time. If the one you wanted to look at can't handle you, scroll to the very bottom of the main WebSDR site to see a map that locates all of the listed stations and choose one that is near your first choice.

PART 2 - The Magic of 1/4 wavelength wires

I found the various pictures of J-Pole antennas by Googling "j-pole images". Each image has a link to view the image full size and another link to the web page where the image is located.

How long is a 1/4 wavelength?

Quarter wave (ft.) = 234 / freq (MHz) 3.5 MHz 67' 7.0 MHz 33' 10 MHz 23' 14 MHz 16' 18 MHz 13' 21 MHz 11' 25 MHz 9' 28 MHz 8' 50 MHz ~5' 146 MHz ~19" 440 MHz ~6.4"



Butternut, the company that designed the HF6V vertical antenna, is now owned by Bencher. They have lots of manuals and technical notes for Butternut antennas, as well as some general information on vertical antennas on their website at http://www.bencher.com/pdf_download.html.

The HF6V antenna is designed to operate on the 80, 40, 30, 20, 15, and 10 meter bands. The multiband radials I showed a sketch of are intended to work on 40, 20, 15, and 10 meters. How is it resonant on 10 meters? I still haven't figured that one out. You may have noticed in the pictures I showed of my antenna I have a lot of radials. I use two of the multiband ones, but I also have three cut as quarter waves on 80 meters, and two additional radials for each of the 40, 20, 15, and 10 meter bands. So I have a total of 13 radials. But only those that are 1/4 wavelength long are effective on a particular band. And, I realized in preparing for this talk that I don't have any radials for the 30 meter band, so I should add these.

The manual for the HF6V with the plans for the multiband radial is at <http://www.bencher.com/pdfs/003661ZV.pdf>.

VOTING BEGINS IN ONE MONTH FOR TWO-METER BANDPLAN – Al Woodhull N1AW

At the time of the vote last year, I voted against the changes, primarily because I thought the process was awful - the NESMC doesn't represent much of anyone but repeater owners, and in response to criticisms of the initial proposal changes were made before the final vote that were even less well publicized than the initial proposal. On a more theoretical level I think a region as small as four of the New England states ought to have a band plan better coordinated with the other two states and preferably should follow the national ARRL bandplan.

Two-meter Bandplan from Dave Bushong, KZ1O, Nov 30, 2014:

In just over a month from today, voting will begin regarding the new two-meter bandplan with NESMC. This bandplan was approved by the NESMC membership on a trial basis in December 2013. This second vote is to make the bandplan change permanent.

You are being included in this reminder because your callsign (and your email address) are included in the database list at <http://nesmc.org>. All individuals with FCC addresses in NH, MA, ME, and RI, and who were registered with NESMC on or before July 31, 2014 are eligible to vote.

The NESMC board hopes to address repeater owners with systems in our service area, but with residences outside our service area, so that they may vote in future NESMC proceeding (this however, would require a by-law change).

As a review, the band plan currently in effect as a trial added ten new repeater channels, with inputs and outputs offset by 1.5 MHz as follows. Six channels are reserved for narrowband emissions - 9K00 or less. With current technology, this would restrict them to narrowband digital emissions such as DStar, DMR, NXDN, etc.

Input	Output
144.91	146.41*
144.92	146.42
144.93	146.43*
144.94	146.44
144.95	146.45*
144.96	146.46

144.97 146.47*
144.98 146.48
144.99 146.49*
145.00 146.50*

*9K00 bandwidth or less

During the trial period five repeaters that were already operating in the 146.4 - 146.6 / 147.4 - 147.6 range were offered the choice to move to one of the new trial channels. All five accepted. Additionally three owners on the 2m waiting list were offered frequencies. All but one system were in operation by May 26th. One system changed from 146.445 to 146.44 on September 14th. As of this date, NESMC has received no complaints concerning these systems.

	Frequency	Status	Previous Frequency
Freetown, MA	146.41 (-1.5MHz) DStar	Operating 2/03	147.575 (-1 MHz)
Acton, MA	146.42 (-1.5MHz) DMR	Operating 5/14	n/a
Assonet, MA	146.44 (-1.5MHz) NXDN	Operating 3/11	n/a
Milford, NH	146.44 (-1.5MHz)	Operating 9/14	146.445 (+1 MHz)
Lincoln, RI	146.46 (-1.5MHz)	Operating 1/01	146.460 (+1 MHz)
Worcester, MA	146.48 (-1.5MHz) FM/P25	Operating 5/11	146.485 (+1 MHz)
Malden, MA	146.49 (-1.5MHz) DMR	Operating 4/06	n/a
Hudson, NH	146.50 (-1.5MHz) DStar	Operating 5/26	n/a

If the vote passes, additional coordination may be made in this range on an as-needed basis (after all 600 KHz pair have been exhausted in an area).

To summarize, voting will be open from January 1st, 2015 through 8pm January 31st, 2015. A vote of YEA means that the trial bandplan should be made permanent. A vote of NAY means that the bandplan will revert to its previous state and all systems operating under the trial will have to relocate or lose coordination.

FREE STUFF! - DAN ROMANCHIK, KB6NU

I'm a sucker for free stuff. Below, you'll find links to a free transistor amplifier design program, a free printed circuit board design program, and a free tutorial on antennas. All of these look to be worth a look.

TransistorAmp 1.1

This is free software for designing bipolar transistor amplifiers. I found the link to this software (<http://en.transistoramp.de/>) on the AMRAD mailing list. Phil, M1GWZ, who posted the link, says, "A transistor circuit that I'm developing needed a 5x voltage gain stage. I could have thrown in a single op amp with split power rails and all that DIL8 real estate, but a single transistor stage would suffice. Trouble is, I'm an EE by inclination, not training, and all those calculations - working out those capacitor reactance values - well, I don't do them often enough for them to be easy. And I want voltage gain, not current. And then I found Transistor Amp 1.1."

"It's a nice piece of software," says Phil, "It installs easily and did the job for me quickly and easily. Oh, and when I built the circuit for real - voltage gain of 5x!"

[NOTE: A screen shot of the software that you can use for the article can be found at <http://www.kb6nu.com/wp-content/uploads/2014/11/specify-common-base-circuit.png>.....Dan]

Altium CircuitMaker

CircuitMaker (<http://www.circuitmaker.com>) is a free printed circuit board design tool for hobbyists, people like you and me. Maxfield Parrish of EETimes says, "one key aspect of CircuitMaker is its intuitive and easy-to-use interface -- all of the important "stuff" is presented in an easily accessible manner in a ribbon at the top of the display. Another major consideration is that Altium has decided to make CircuitMaker all about "Community," so users can easily share ideas and designs, comment on designs and offer suggestions for improvement, and generally help each other along the way."

Free antenna tutorial

For a limited time, Rohde & Schwartz and the IEEE Communications Society are offering a free tutorial on Antenna Basics (<http://www.comsoc.org/form/tutorial-registration-antenna-basics>). This tutorial explains the basic functionality of an antenna, starting with Hertz's antenna model. It also includes a short introduction to the fundamentals of wave propagation, the important general characteristics of an antenna and parameters, such as antenna gain, radiation pattern, bandwidth or VSWR. A more detailed explanation of the functionality of some selected antenna types (e.g. dipole or monopole) is also given.

Maik Reckeweg, Product Manager Antennas, Rohde & Schwarz GmbH, Munich, Germany, who is responsible for all the company's monitoring, measurement and communications antennas is the tutorials.

The video is kind of dry, but I think Reckeweg does a pretty good job of discussing antenna basics. The video is also accompanied by a white paper that delves into these topics a little more completely. Overall, there's a bit more math than in most amateur radio discussions of antennas, but this makes the discussion a little more comprehensive.

THE COMMUNICATOR is an informational publication for members of the Franklin County Amateur Radio Club. Officers: President: Al Woodhull, N1AW (n1aw@arrl.net), Vice President: Ron Niswander, K8HSF (reniswander@gmail.com), Treasurer: Howard Field, N1LUP (howfield@comcast.net), Secretary: Chris Myers, KB1NEK (camyers1@verizon.net), Director: Belle Dyer, KB1NOG (bdyer58@mtdata.com), Director: Bruce Fuller KB1TLX, perkinsdowns@yahoo.com. This is your newsletter! Amateur radio information of general interest, club member project descriptions and doings, radio applications to other activities, corrections, or suggestions are all welcome. Individual submissions make for variety! We need more writers! Send submissions to Bob Solosko at w1srb@arrl.net.