

SIGNAL



de N1NC

February 2016 Volume 25 Number 2

The President's Corner

Hello again !

Hope all of you got through the snowstorm successfully and without any physical issues. Winter has arrived in February this year and that may be considered good fortune. If you see some of our members who have not been seen at meetings or breakfast, be sure to greet them and perhaps remind them that they are missed and we would like to see them. While Field Day seems far off, give it a thought and think about participating. We had great leadership last year and although the weather was a severe test the weekend was an outstanding success. I came across the following " poem " and wanted to share it with all of you. A little philosophical, perhaps, but food for thought.

While you get all you want in your struggle for self,
And the world makes you king for a day,
Then go to the mirror and look at yourself,
And see what that guy has to say.

For it isn't your Father, your Mother, or Wife,
Whose judgment you must pass,
But the feller whose verdict counts most in your life
Is the guy staring back from the glass.

He's the feller to please, never mind all the rest,
For he's with you clear up to the end,
And you've passed your most dangerous, difficult test
If the guy in the glass is your friend.

You may be like Jack Horner and " chisel " a plum,
And think you're a wonderful guy,
But the guy in the glass says you're only a bum
If you can't look him straight in the eye.

You can fool the whole world down the pathway of years,
And get pats on the back as you pass,
But the final reward will be heartaches and tears
If you've cheated the guy in the glass.

- DALE WIMBROW (1895 - 1954)

Hope to see all of you at the next club meeting.

Pete Nordberg, N1ZRG

NVARC QSL Bureau

Rod, WA1TAC, is preparing to send a shipment of QSL cards to the ARRL outbound bureau. If you have any outbound DX QSL cards, bring them to the February meeting, along with proof of ARRL membership (e.g., QST mailing label), give them to Rod and he will forward them to the ARRL. NVARC pays the fee for members in good standing.

This Month's Program

Antenna Design and Modeling

When it comes to antennas for the HF bands many Hams go to HRO or wherever and buy a wire antenna. The only thing they know for sure about the antenna is how much it cost and maybe how long it is. They put the antenna up and use it not knowing what to expect. Since "all antennas radiate - some just work better than others" to quote (or misquote) W1XP the user never knows if the antenna and the way it is installed is the best for what the user wants to do.

At the next level amateurs pick a band or a frequency, get out paper and pencil or a calculator and using a simple formula determine the proper length and build their own antenna. As with the first case they put it up at some height not really knowing what

characteristics it has. Some additional information could be gained by doing some measurements with an antenna analyzer but getting quantitative data on the antenna performance isn't easy. None of us has an antenna range with instrumentation and signal reports from other stations are notoriously biased and inaccurate not to mention the vagaries of propagation.

In both of these cases they get on the air and other than being able to "tune up" on the antenna and push some power in to it they have no idea why they did or did not work that station they were trying to work.

But what if you had a specific purpose in mind for the antenna such as regional communications, DX, or some other use? How would you choose the antenna and how would you mount it?

I started this project with several goals. One was to improve my antenna modeling skill. The other was to design an antenna or antenna system for Automatic Link Establishment (ALE) operation. I wanted to know more than whether I could get the radio to put a few watts into it. I can't cover much about ALE in this presentation but for those interested you can Google ALE or PCALE. PCALE is a software package used to run a system of a computer and radio in the ALE mode. I will just say that ALE frequency hops by band to determine the best frequency/band to contact a specific station. With that being the desired mode the follow are of interest or required for of the antenna system.

2-30 MHz frequency operation.

Low SWR across the frequency range or high speed tuning which has to be able switch, tune and operate at a rate of one or more frequencies/bands per second on a continuous basis.

Best efficiency possible

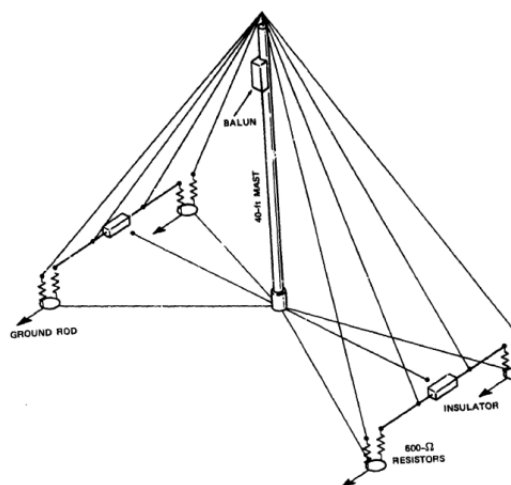
Cloud warmer – Maximum radiation straight up for regional communications.

Because there is no free lunch some of the above desirable characteristics result in tradeoff decisions.

In order to establish some baselines I created models of an 80 Meter Dipole and a 160 meter Terminated Folded Dipole such as the B & W T2FD.

I then set down to create the models of the two antennas I had in mind. The basic configuration of these antennas was found in documents on the Web. One was used in the development of Rockwell Collins SELCAL in the 1980's which led to ALE. The other antenna is a model sold to the military. Unfortunately the design specifics and performance

data were not available for either antenna. The sketch below was what I had to work with when I started on one of the antenna designs.



Creating a model of a dipole is easy. Multi wire complex antennas can take some time as all the wires and connections must be calculated and plotted in three dimensional space.

At the February meeting I will try to cover three subjects any one of which could take hours. First some more explanation of why you would want to model an antenna. Then to take some of the mystery out of the models I'll explain how a model is created. The finally I will show some of the models I created in the modeling software (EZNEC) and some of the things modeling can show you. It will only be a quick look at the subjects of which many books are written. But I hope it will encourage members to think about more than if the wire is stranded or solid, insulated or bare, black or white, etc.

Stan KD1LE

Last Month's Meeting

Last month's meeting program was Member's Short Subjects. Members presented on upcoming events, local activities and projects they were working on.



Photo Courtesy KD1LE

Mark K1MGY spoke about the upcoming Boston Marathon, the need for 300 volunteers this year and the types of jobs people might choose from.



Photo Courtesy KD1LE

Faisal KB1SGE spoke about a new “makerspace” recently formed in Littleton. The location is just off the Littleton Common and the Website is www.lcmakers.com.



Photo Courtesy KD1LE

Jill KB1SWV spoke about last year’s International Girl Scout event the club supported and the excitement it generated. More than 80 girls attended last year and some additional groups have been invited this year. She has scheduled the event again this year and is hoping for club support. The event will happen Saturday February 20th. Besides putting an HF station on the air so some girls could make a contact, there was teaching on phonetics, Morse Code, world time zones, and an opportunity for the girls to send their name or whatever they wanted on Morse Code oscillators. Though the program isn’t finalized yet there may be other subjects to be covered depending on the requirements for the girls. We set up the tower with a tri-band, 80 meter and 40 meter dipoles in a winter Field Day like event.



Photo Courtesy KD1LE

Skip K1NKR spoke about the equipment and set up of the equipment he and Fred AB1OC went through to get on the air with amateur television.



Photo Courtesy KD1LE

Bob W1XP spoke about his visit and data collection at a Photo Voltaic farm in W. Newbury, Ma. The visit was prompted by the fact the company is starting construction of a 2 Mw plant in Groton not too far from his location and even closer to MIT's Millstone Hill location.



Photo Courtesy KD1LE

Rod WA1TAC reported that the Groton Public Library has acquired a 3D printer for public use. The availability and costs are yet to be determined.



Photo Courtesy KD1LE

Bruce K1BG talked about the Reverse Beacon Network (reversebeacon.net), what it is and how he uses it to compare antennas. The demonstration included running his home station from the meeting.

In Attendance

Jim AB1WQ, Bill AB1XB, Jean K1AVM, Bruce K1BG, John K1JEB, Dennis K1LGQ, Skip K1NKR, Gary K1YTS, Phil KB1JKL, Jill KB1SWV, Faisel KB1SZE, Joe KC1EHM, Charlie KC1EIQ, Stan KD1LE, John KK1X, Dan KW2T, Ed N1YFK, Peter N1ZRG, Ken N3BGN, Jim N8VIM, George W1JHR, Bob W1XP, Rod WA1TAC, Bob W1XP, Gene WW4EN, Greg WY1X

Tech Night

Tech Night was held Thursday January 14th at 7:30 PM downstairs at the Pepperell Community Center. Bob discussed a loop antenna Rod WA1TAC made to check for noise emissions at a solar farm owned by the company which is building one in Groton, not far from Bobs QTH.

Skip K1NKR talked about his progress in the Amateur TV project he and Fred AB1OC have been working on.

Stan KD1LE discussed why you might want to model and antenna and how it was useful for new antenna designs. He showed some of the results of modeling of a wide band HF antenna he has been working on for ALE.

Meeting Coffee Bar

Many thanks to Ed N1YFK for running the coffee "bar" at the meetings. There's been an incremental increase in socializing, and that's what we meet for.

Don't forget to leave a donation if you partake.

January Board Meeting Notes

None

NVARC Club Net

The NVARC Club Net meet's every Monday evening at 8 PM on the 442.900 Pepperell repeater. Stop in and bring your input and questions. Recent nets have been run by George KB1HFT/NCS. Attendees; Stan KD1LE, Skip K1NKR, Larry W1ESR, Leo K1LK, Jim N8VIM, Bob W1XP, Peter N1ZRG Dan K1RAU.

February Treasurers Report

Income for January was \$15 from Club membership dues. Expenses were \$19.60 for newsletter postage, leaving a net expense of \$4.60. I am still working to get a receipt for one Field Day expense from 2015.

Current balances:

General fund	\$3,457.56
Community fund	\$4,886.41

As of 4 February we have 49 members who are current with their dues and 15 renewals outstanding. Thank you to those of you who hand in your dues before Ralph comes to you. Please check your renewal status on the roster circulated at the monthly meeting or ask Ralph.

If you are joining ARRL or renewing your membership please consider letting Ralph send in the paperwork for you. The Club will buy the stamp and will get a commission from ARRL. ARRL membership checks should be made payable to NVARC; Ralph deducts the Club commission before forwarding your paperwork to Newington. As an Special Service Club, the ARRL expects a majority of Club members to also be ARRL members.

Ralph KD1SM

Strays

In 2013 a study by the Federal Energy Regulatory Commission (FERC) using confidential and inside information determined shutting down only nine power substations would result in a US wide loss of power.

More recently, according to an article in Information Weekly (see link below), research by a group/project called Gridstrike collected enough information from publicly available information to identify 15 power substations in the US which if disabled either by cyber or physical attack would result in loss of power to the entire US.

BTW there are some 55,000 substations across the US.

<http://www.darkreading.com/threat-intelligence/project-gridstrike-finds-substations-to-hit-for-a-us-power-grid-blackout/d/d-id/1323788?>

For those who grew up with and love BASIC the esp8266 is a microcontroller running BASIC. The development board sells for 19.95. The system is programmed using built in WIFI. It is pre-programmed with ESP Basic Firmware, is powered from 5v micro USB and uses micro usb for the serial interface. It has a built-in Web Server and wireless. All programming and configuration is available via WIFI. The system has commands for one wire temperature sensors, servo control, GPIO, PWM. It has commands for analog input, 10 GPIO pins, 1 analog input pin.

See <http://www.esp8266basic.com/>

A little bit of humor from CQ-DATV Magazine (<http://cq-datv.mobi/ebooks.php>)

I have been in many places, but I've never been in Cahoots. Apparently, you can't go alone. You have to be in Cahoots with someone. I've also never been in Cognito. I hear no one recognizes you there. I have been in tolerable, but they couldn't put up with me there. I have, however, been in Sane. They don't have an airport? You have to be driven there. I have made several trips there, thanks to my friends, family and work. I would like to go to Conclusions, but you have to jump, and I'm not too much on physical activity anymore. I have also been in Doubt. That is a sad place to go, and I try not to visit there too often. I've been in Flexible, but only when it was very important to stand firm.

Sometimes I'm in Capable, and I go there more often as I'm getting older. One of my favorite places to be is in Suspense! It really gets the adrenalin flowing and pumps up the old heart! At my age I need all the stimuli I can get! I may have been in Continent, I don't remember what country I was in. It's an age thing.

2016 Flea Markets/Hamfests

February

13 Algonquin ARC, Marlborough MA
27 Vermont State Convention, S. Burlington VT

March

13 CVRC Flea Market Henniker NH
19 Amateur Radio Fleamarket Dayville CT
20 Southington ARA Fleamarket CT
25 Maine State Convention, Lewiston ME

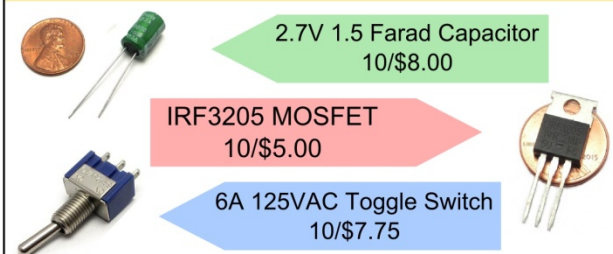
April

10 Framingham ARA Flea Market, Framingham MA
16 PAWA Hamfest, South Portland ME
16 RASON Auction, Gales Ferry CT

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2016 Upcoming Contests

February

8-12 School Club Roundup
20-21 International DX CW

March

5-6 International DX Phone

April

17 Rookie Roundup Phone

June

11-13 June VHF

18 Kids Day
25-26 Field Day

July
9-10 IARU World Championship

August
6-7 August UHF
20-21 10 GHz & Up Round 1
21 Rookie Roundup RTTY

September
10-12 September VHF
17-19 10 GHz & Up Round 2
24-25 EME 2.3 GHz & Up

Your Article

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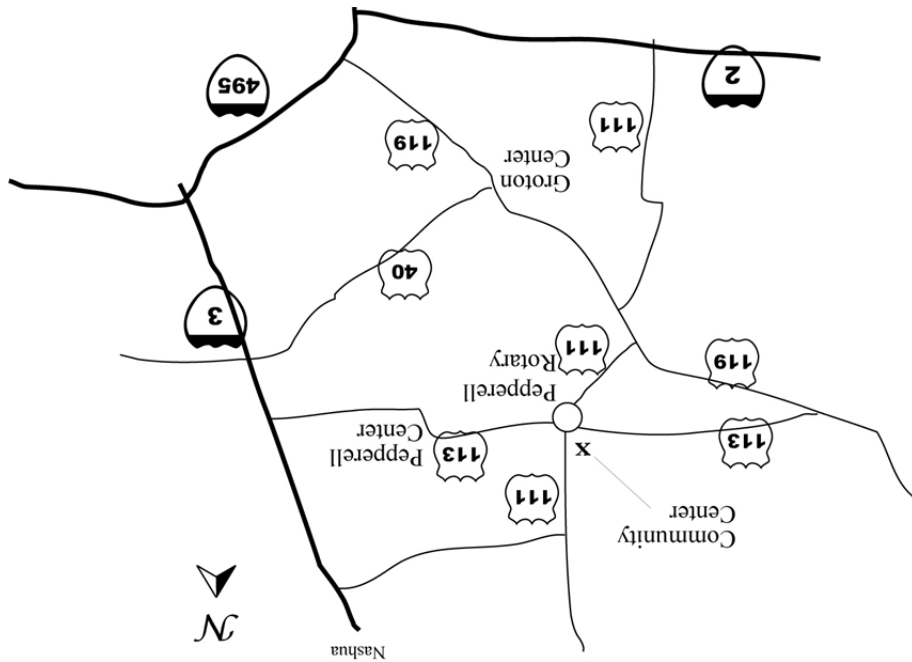
Nashoba Valley Amateur Radio Club

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<http://www.n1nc.org/>

President: Peter Nordberg N1ZRG
Vice President: Jim Hein N8VIM
Secretary: John Griswold KK1X
Treasurer: Ralph Swick KD1SM
Board Members:
Bob Reif: W1XP 2013-2016
Ed Snapp N1YFK 2014-2017
Rod Hersh WA1TAC 2015-2018

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PIO: Roland Guilmet NR1G
Librarian: Peter Nordberg N1ZRG
Property Master: John Griswold KK1X
N1NC Trustee: Bruce Blain K1BG
Annual membership dues are \$15; \$20 for a family
Meetings are held on the 3rd Thursday of the month
7:30 p.m. - Pepperell Community Ctr.
Talk-in 146.490 simplex
442.900 + 100Hz Repeater Emerg Pwr
147.345 + 100 Hz Repeater Emerg Pwr
53.890 - 100Hz Repeater Emerg Pwr
This newsletter is published monthly. Submissions,
corrections and inquiries should be directed to the
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