

SIGNAL



de N1NC

January 2016 Volume 25 Number 1

The President's Corner

Good Day Folks,

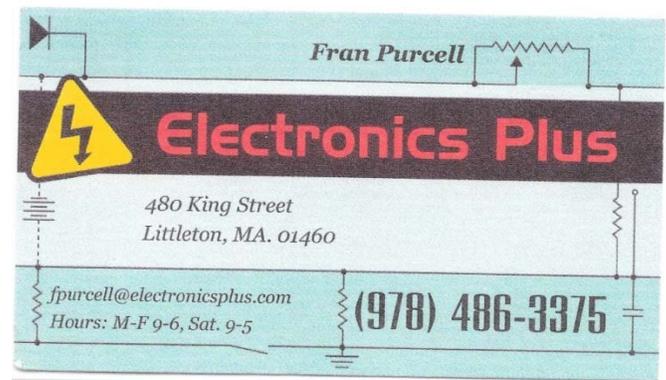
HAPPY LEAP YEAR ! Yep, it's another one of those. Looking forward to another day of winter. But on to more appropriate matters. The last Tech Night was a significant success, led by John Bielefeld, K1JEB " JEB", who brought significant amounts of test equipment, scopes, transistor testing equipment, meters, components, and the necessary equipment to connect it all up. John also visited the Electronics PLUS shop in Littleton and discussed his Tech Night project with Fran, the proprietor. Fran donated components that were useful in the evening's activities. It was very generous on Fran's part and the Board decided it would be appropriate to recognize Fran's generosity and run his business card in the Signal for this month's issue. Stop in and give Fran a "Thank You" and take a look at his stock. Many of us do make the habit of frequenting his shop for our projects and supporting a local merchant.

January is " SHORT SUBJECTS " night for the Club meeting. There are a number of members planning to give short subjects and you are invited to create your own talk. The format is " ad hoc ". The projector screen and projector are available and all you will need is a thumb drive to load your talk, if you desire. The Board is investigating several talks for the ensuing months. If you have a suggestion we would welcome your input. Looking forward to April, elections will be coming up and there will be a Board position open. Bob Reif W1XP, has served in many positions in the past and has decided to take a rest for a few terms. You are urged to consider how you can volunteer and add your knowledge and skill to the club activities.

The web site, allaboutcircuits.com, is interesting and rather extensive. You might find it useful for electronic subjects and projects associated with the new microprocessors, Arduino, etc.

See you at the meeting. And here is Fran's card.

73 Peter



This Month's Program

This month is also member based and is our annual Members Short Subjects Night. The subject can be anything that would be of interest to the membership and generally of five to fifteen minutes in length. Contact a club officer if you have something to present so they can plan for support and time

Last Month's Meeting

Last month's meeting program was Homebrew Night. Members brought in kits they built, things they designed and equipment they modified to show and talk about.



Photo Courtesy KD1SM

Bob W1XP holding the K1BG QSK amplifier switch



Photo Courtesy KD1SM

George W1JHR shows a dual Gunplexer he found on line surplus for projects

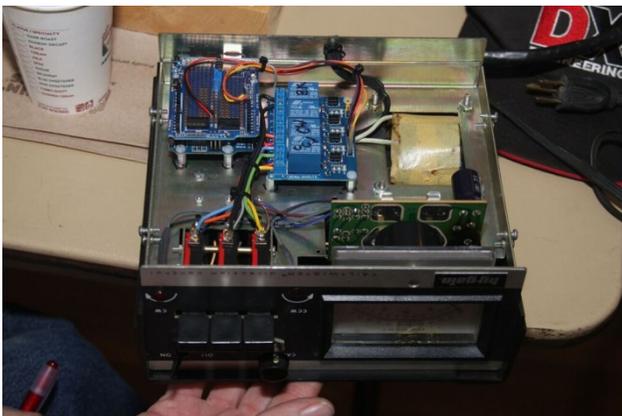


Photo Courtesy KD1SM

Bruce K1BG showed his Arduino project which is a computer interface to a rotator controller. He also showed a keyer (below) and QSK amplifier switch he built.



Photo Courtesy KD1SM



Photo Courtesy KD1SM



Photo Courtesy KD1SM

Bill K1NS modified a computer monitor stand to be used as a radio base with Powerpole connectors and fusing built in.



Photo Courtesy KD1SM

Dennis K1LGQ showed a transceiver kit he assembled (above), a QRP tuner, QRP SWR meter.



Photo Courtesy KD1SM

Phil KB1JKL displayed a battery charge protection circuit he designed and some commercial battery chargers that he modified with it.



Photo Courtesy KD1SM

Rod WA1TAC showed a grid dip meter he rehabilitated and documented.

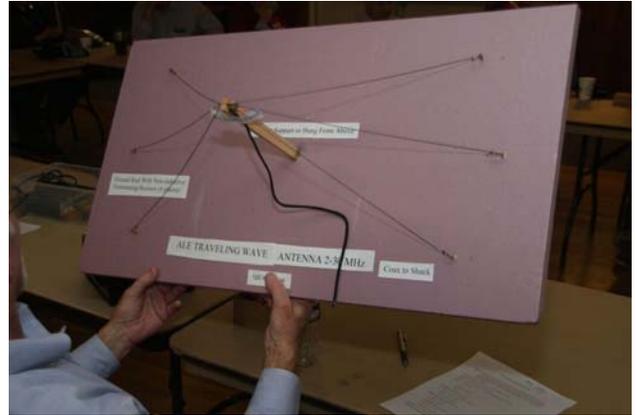


Photo Courtesy KD1SM

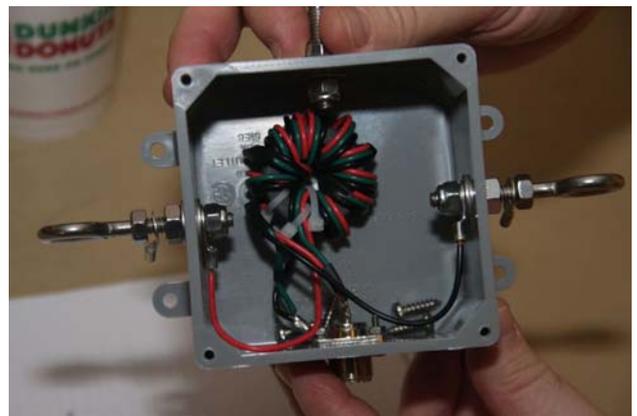


Photo Courtesy KD1SM



Photo Courtesy KD1SM

Stan KD1LE showed a model of wideband HF antenna he designed and modeled. The project includes winding the 9:1 matching transformer above, and ground rod mounted terminating resistors on heat sinks.

In Attendance

Jim AB1WQ, Bill AB1XB, Bruce K1BG, Dennis K1LGQ, Skip K1NKR, Bill K1NS, George KB1HFT, Phil KB1JKL, Stan KD1LE, Ralph KD1SM, John

KK1X, Dan KW2T, Les N1SV, Peter N1ZRG, N3BGN, Jim N8VIM, George W1JHR, Bob W1XP, Rod WA1TAC

Tech Night

Tech Night was held Thursday January 14th at 7:30 PM downstairs at the Pepperell Community Center.

Meeting Coffee Bar

Many thanks to Ken KB1UVP for picking up 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

Board Meeting 1/7/2016
Bob, Peter, Rod, Ralph, Jim, John, Ed attending

January Short Subjects:
Rod - 3D printer at the Groton library
Bob - maybe ugly filters
Faisal Mohamed - Ayer/Littleton Maker Space
Skip - TV perhaps
Stan - antennas

February appears open
March appears open
April elections coming up - Going over elections, Bob is standing down from the Board. We'll need a replacement for him. Four officers are willing to stand for another election, but all positions are open for others to run.

Peter to write letter thanking Fran from Electronics Plus

Ralph received a check from the Squannacook

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.

January Treasurers Report

Income for December was \$15 from Club membership dues, \$15 for advertising in the Signal, \$25 from PowerPole connector purchases, and \$8.60 in bank interest. Expenses were \$19.60 for newsletter postage, leaving a net income of \$44. There still remain some Field Day expenses for 2015 that have not been submitted for reimbursement.

We received a donation from the Squannacook River Runners in the amount of \$250. The Squannacook River Runners are the hosts of the Groton Road Race. This donation has been put in the Community Fund.

Current balances:

General fund	\$3,462.06
Community fund	\$4,886.41

Welcome to new members Peg Griswold KC1EIV (September) and Jill Galus KB1SWV (November).

As of 7 January we have 51 members who are current with their dues and 13 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 a 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
19 Amateur Radio Fleamarket Dayville CT
20 Southington ARA Fleamarket CT
25 Maine State Convention, Lewiston ME

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

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Antenna Design and Models

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. 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 short article but for those interested you can Google ALE or PCAL. PCAL is a software package used to run the computer and radio system 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

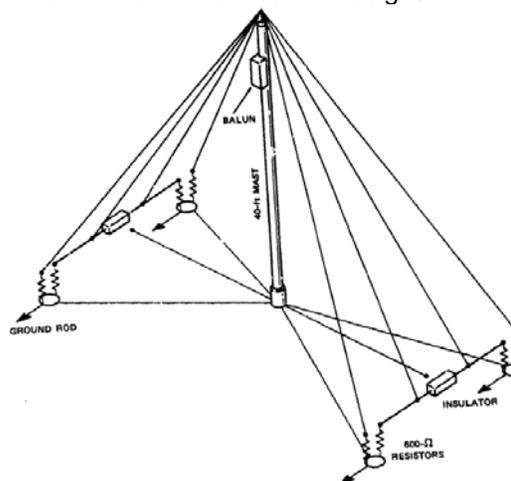
Cloud warmer – Maximum radiation straight up for regional communications.

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 January meeting I will show some of the models in 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

2016 Upcoming Contests

January

30-1 January VHF

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

Public Service Season

Volunteer registration is now open for the Boston Marathon. The Marathon will be run on April 18. It has positions for 283 Hams from start to finish, in the busses that transport runners who can't finish, in the sweep zones after finish to aid runners who collapse after finishing, and at Net Control.

Sign up now on the BAA's web site:
<http://www.baa.org/races/boston-marathon/event-information/volunteer-information.aspx>

This is the registration for all BAA volunteers, including Hams; be sure to request at least one ham radio assignment where the form asks your preferences.

If you would like more information, contact Ralph KD1SM. You can also email questions to the BAA Amateur Radio Communications Committee at contact@hamradioboston.org. Due to increased security measures, volunteer registration must close on 9 Feb. If you think you might be interested but won't be able to confirm until after the 9th, please go ahead and sign up and add in the registration comments the date when your plans will be more solid.

The Sunday after the Marathon – April 24 -- is the Groton Road Race. This is our largest local public service event; 40 Hams are needed around the courses that run through the town of Groton. Contact Ralph KD1SM also if you are interested in learning more.

de Ralph KD1SM

Your Article

Your article could still have been squeezed into this issue, which would have eliminated this blank space.



Nashoba Valley Amateur Radio Club

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

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Vice President: Jim Hein N8VIM

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Ed Snapp N1YFK 2014-2017

Rod Hersh WA1TAC 2015-2018

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Photographer: Ralph Swick KD1SM

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

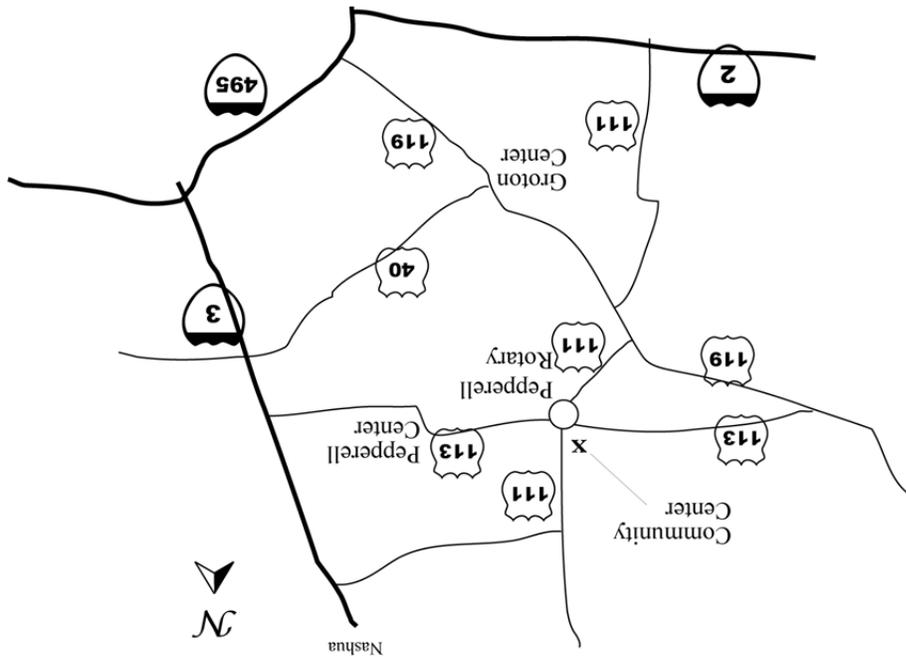
442.900 + 100Hz Repeater Emerg Pwr

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 newsletter editor. Articles and graphics in most IBM-PC formats are OK.

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