NVARC
Nashoba Valley Amateur Radio Club

SIGNAL

A club since 1992
Since 1993
Since 1996

de N1NC November 2017 Volume 26 Number 11

This Month's Meeting

Club member Rod, WA1TAC, will tell us about some of "the other things" involved in power generation. Rod is on the Groton Power Commission—so he has a systems perspective in addition to his technical skill—and has been closely following the possible introduction of RFI from the community's new solar farm.

As usual: third Thursday of the month, 7:30pm, at the Pepperell Community Center.

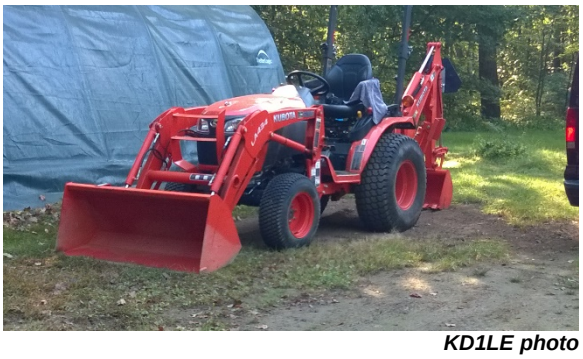
The President's Corner

Well another month has passed and I find myself behind on my monthly column. Not surprising with the number of home projects I have running.

For most of a week, I have been participating in an Army MARS exercise based on the scenario of the Carrington event which happened in 1859. You can find plenty of detail on the event and what effect it would have on us today if you Google it. The MARS services have been tasked to reach out to Amateurs to collect the status of various infrastructures after a major event such as this. A major coronal mass ejection would damage much electronic equipment and electrical systems. Modern satellite technology allows us some warning of such an event though it is on the order of a day or less. So, the exercise and future planning involved notification of the event to Amateurs to protect their equipment. Again, plenty is written on the subject so I won't cover it, but think EMP. If you want more details on the exercise there was an ARRL Bulletin that explained in more detail.

For those who have helped me move the "black box" for Field Day I have good news. I excavated the area of the rickety cement block steps with my new tool. In the widened space created by that excavation I built a wall and a multi-level deck for a stair replacement to make it easier for two people to move things like the sorting boxes or black box in and out of the garage.

What new tool do you suppose I got to make that work possible?



KD1LE photo

In the process of the excavation, I had to pull out six eight-foot ground rods used for my tower and coax entrance panel. The same tool made that relatively easy work. All of those ground rods were in pretty good shape so they were reused. But in another project I pulled up some twenty year old ground rods that are nothing but rusted metal at this point. Probably not the conductor we hope for our ground rods.

Another handy tool is a demolition hammer. Nothing more than a hammer drill on

steroids. With the proper bit made for driving steel rods it made quick work of putting the ground rods back in their new locations. That was with the help of Skip K1NKR holding the rods while the hammer drove them in.

Remember the December (Homebrew) and January (Members Short Subjects) meetings are member driven so we need everyone's participation to make them interesting.

73, Stan KD1LE

News and Happenings

Eclipse/HamSCI Follow-up

All of the SEQP [Solar Eclipse QSO Party *Ed.*] data is in, and there is a lot of it! This includes RBN, WSPRNet, and PSKReporter spots, as well as the data uploaded to **https://zenodo.org/communities/hamsci/**. You can see some summary number in the table below. I'm working on analysis here at NJIT and preparing presentations for the upcoming American Geophysical Union (AGU) meeting in December and the American Meteorological Society (AMS) meeting in January. In addition to this, we are planning on having a HamSCI meeting at NJIT this February. See **http://hamsci.org/article/hamsci-workshop-2018-interest-survey**. [Some NVARC'ers plan on attending. *Ed.*]

de Nathaniel, W2NAF

Boy Scout JOTA

This year was the sixtieth anniversary of the Boy Scouts' Jamboree On The Air (JOTA). NVARC joined two other clubs, The Montachusett ARA and the Mohawk ARC, in supporting the local event at the Lancaster Scout hut. We made good use of the experience we've gained during past years' Girl Scout Thinking Days On The Air—providing tower and antennas and Morse Code introduction. In preparation for this year's TDOTA, we proofed-out radio direction finding exercise.

Boy Scouts and Girl Scouts, NVARC supports youth.

There's Always an Elmer Somewhere

Phil, W1PJE, needed help in installing a wire antenna. He queried the Reflector and a Saturday "antenna party" resulted.

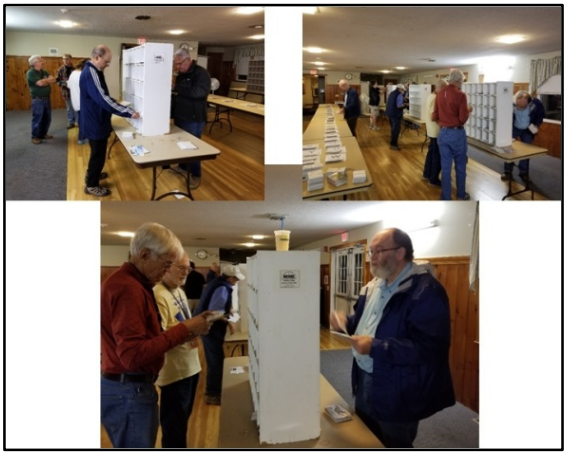
The "partiers" included Jim AB1WQ, Bruce K1BG, and Forrest Filler, KD2MZH (a possible new NVARC member). Bruce was enlisted for his general experience in putting up antennas and superior chops in soldering PL-259 connectors on the ends of coax feedlines. CW Academy student, Forrest, KD2MZH, came along since he had expressed interested in seeing a pneumatic launcher in action, particularly in the process of putting up an HF dipole antenna.

The group arrived promptly at 9am one Saturday and had their first line fixed high up in a tree by 9:30am. The other lines quickly followed, including the highest at approximately 70 ft. They fabricated a 40 meter dipole using Phil's center insulator and wire, and connected it to about 100 ft. of RG-214 supplied by Rod, WA1TAC.

Last Month's Meeting

The QSL sort went well. No surprise. What was different was the quantity. We usually sort upwards of 17,000 cards. This year QSLing has apparently slowed down; fourteen members and four guests sorted about

13,200 cards. We're efficient, though. It only took a bit over an hour.



KD1SM photos

…and the month before.

If you missed the "expose" of bugs by Andy, WA1GTT, you missed a good one!

Editor's Note

I sat down at the keyboard thinking there might not be enough material to fill the newsletter this month. And I was concerned that it might be topically one-sided. I'm now wondering whether there's room left for pictures to graphically "spice it up."

What a breadth of activity! Technical, operating, Elmering, public service. All in one month! This truly is an all-interest, all-service club. And one with many connections

So, what did you recognize as having been done in NVARC this month? Here are some ideas to prime the pump:

The basis of the Amateur Service is to provide a radio service having a fundamental purpose as expressed in the following principles:

(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.

(e) Continuation and extension of the amateur's unique ability to enhance international goodwill.

[47USC, Vol 5, Part 97.1]

And what might you do next month?

73, Skip K1NKR

On the Air

EME

Will, KD4FOV, operated during the November 4-5 weekend of the EME contest, using a rig from W1XP and the 150-foot dish at Haystack. Will estimates that SWR and line loss may have kept the power at the antenna as low as 8-10 watts.

Per Phil, W1PJE: Will led a very successful 70 cm EME two-way run during last weekend's contest and gets all the credit. CW, SSB, and JT65-B were all covered, both for TX and RX. It was clear that we still have some TX match problems but we're trying to investigate those and we can update further later.

Per Will: "I'm just sitting here working the likes of HB9Q and DF3RU on 432.1 SSB EME at the moment."

Digital Modes General Interest/General News (*Continued from last month*)

Getting on the air.

The MSK144 K1JT mode has made a major impact on 6 and 2m meteor scatter contacts. MSK144 is a 2.4 kHz wide broad band signal that repeats its forward error correction code message every 72 ms for a 15 second cycle. Thus, the odds are very good that a few of the 72 ms data packages are going to find and bounce off of a meteor trail that can only last fractions to a couple of seconds at most.

Now, the earlier rag chew digital modes, such as PSK31, MFSK16, RTTY, Hellscriber, Olivia, and so forth, are still out there. But when you think about it, many DX contacts on those modes are passing exactly what is passed on the K1JT modes: call letters, location, a signal report, confirmation of the reception of the information, and 73. While it is still very nice to have rag chews on the other digital modes, FT8 has taken off because it is doing what many folks did on

the rag chew modes: a minimal QSO for DXCC and WAS credit—but at a much lower S/N level. Thus one can make more contacts under adverse conditions.

Now, getting onto a digital mode is not hard, but it can get a tad messy doing the initial communications setup between a computer and the radio. If you have a newer transceiver with a USB cable port, you are in great shape. These radios were designed for a computer interface. If you have an older radio, such as an ICOM-746 vintage (14 or so years old), you can still connect and use the digital modes, but you may need one of the many interface boxes out there, or maybe simply some cables.

For the earlier modes like PSK, MFSK, RTTY, all you needed was a few cables and you could just drive the rig's VOX. However, for the newer modes, it is much nicer to also have the computer controlling the radio's frequency and other functions via its CAT interface.

The new modes like FT8 are like JT65 on steroids: make quick double clicks and the CAT interface will move your frequency around while making sure your digital transmit signal is always centered within your Transmit SSB filter pass band, and eliminating clipping.

For the earlier modes like PSK, MFSK, RTTY, timing is not that critical, and with programs like fldigi, the fldigi AFC will track the signal on the waterfall, so frequency is not that critical as well. For the K1JT modes, depending on the mode, either frequency or timing are critical, or both. For FT8, your computer clock has to be accurate to within a second or so. This can be a problem with Windows, which was not designed to be a real-time operating system. While I'm writing this is my laptop is 2.6 seconds off. My shack's dual boot Quad i5 core on Windows 10, when booted, comes-up 4 to 6 seconds off. When I boot into the LINUX side, the clock comes-up dead-on. (If I put the LINUX system to sleep, the next morning it can be 0.4 seconds off, which is still OK for FT8.)

Frequency is not critical for FT8, since the decoder will decode all signals within the waterfall. However, for the MSK144 meteor scatter mode, timing is less critical because the 72 ms message repeats over and over within the 15 second window; however, the frequency is very critical. Depending on your computer horsepower, there is a frequency tolerance setting of 50 Hz, 100 Hz or 200 Hz. If you are set to a "F Tol" of 100 Hz and each station is off in the opposite direction by 50 Hz at 50.260 Mhz, you will not decode. If you want to see how far off your time is, go to **https://time.is/** and it will tell you how accurate your computer clock is.

To fix the clock issues, there are routines out there called Domension-4 and NTP that will keep the Windows clock on the money and correct it as often as every 15 seconds. LINUX has NTP built-in, so nothing is needed unless you want to add more time servers. There are also dongles that set the time on the money using GPS as well. To fix frequency issues, WSJT-X has a frequency measurement routine, where you can tune any signal and see how off you are in frequency. My TS-590SG was 4.8 Hz low at the 15 Mhz WWV, so it was more than fine for 50.260 MHz MSK144 meteor scatter. Now, if I were off, let's say 50 Hz, in WSJT-X, I could correct the frequency for each band, and WSJT-X would make the adjustment using CAT.

More later.

de Joe, K1YOW

Hints and Kinks

Ham Radio Web Resources – OR- My favorite Web Sites

The web offers ham radio freaks like me a plethora of web sites for a multitude of activities. Whether it's gaining general knowledge, answering specific questions, or just general amusement, there is a huge amount of information out there. So on an irregular basis, I thought I would share some of these interesting web pages with the NVARC membership.

As many of you know, I've recently been researching entry level licensing requirements. There are two really cool sites for doing research on old radio. The first—and most people aren't aware of this—is the ARRL website. For ARRL members (You

are an ARRL member, aren't you?), the entire archive of QST articles is not only searchable, but you can download individual articles in .PDF format. Here is the link: **http://www.arrl.org/arrl-periodicals-archive-search** (the site may tell you that you have to be an ARRL member. If it does, try again!). For club old-timers, there is an article in the May 1995 QST written by a former NVARC member which will bring back a lot of fond memories. Log onto the ARRL website as a member, go to the QST search page above, and enter "Pepper Hill's Flying Field Day" into the search window. For club newbies, try to guess which member is which person in the article.

A great site for old radio buffs is **http://www.americanradiohistory.com**. It's a virtual library of old periodicals, which are categorized and searchable. Every issue of Hugo Gernsback's Radio News is archived there, but that's just a small sampling of what you will find. Interested in building an old Novice tube style transmitter? Just do a search and you will find it.

YouTube offers great opportunities for entertainment. While not factually correct, I've found this short film entertaining every time I've watched it: **https://www.youtube.com/watch?v=AkXO99Xqkfg**. There is a line at exactly 4:20 in that makes me laugh every time I watch it! Another film that I love is the independent film "The Last Signals" (**https://www.youtube.com/watch?v=7-AWbrdNo58**), a film about the radio room in the H.M.S. Titanic during her final hours. Ignore the broken wire to the headphones! YouTube has a tremendous amount of film material for both ham radio enthusiasts and Titanic buffs.

Have any interesting internet sites you would like to share? Let me know and I'll include them in future articles. Or get off your butt and write your own article!

de Bruce K1BG

Strays

We Now Know What SOS Really Stands For

Source: Brandon Spektor, Readers Digest

"Save Our Ship!"

"Save Our Souls!"

"Save On Socks (at Sal's Irregular Sock Emporium)!"

These are all things that "SOS," the international abbreviation for distress, does not stand for. Best known for its appearances in desert island **cartoons**, maritime movies, and earworms by **ABBA** and Rihanna [*URL omitted. Ed*], the letters SOS have been used as a code for emergency since 1905. But what does SOS stand for, actually? The answer, dear readers, is nothing—and that's exactly why it's important.

Unlike **WD-40, CVS, and TASER**, SOS is not even an acronym: It's a Morse code sequence, deliberately introduced by the German government in a 1905 set of radio regulations to stand out from less important telegraph transmissions. Translated to Morse code, SOS looks like this: "**. . . – – – . . .**"

Three dots, three dashes, three dots. At a time when international ships increasingly filled the seas, and Morse code was the only instantaneous way to communicate between them, vessels needed a quick and unmistakable way to signal that trouble was afoot. At first, different nations used different codes. Britain, for example, favored CQD; as the Titanic sunk into the ocean in April 1912, **it broadcast a mix of CQD and SOS calls** (the resulting confusion helped take CQD out of use for good).

The sequence of triplet dots and dashes proposed by the German government soon became the international favorite for its elegant simplicity. Transmitted without pause and repeated every few seconds, the message of SOS was unmistakable, specifically because it didn't form any known word or abbreviation.

There was also a visual appeal. While the same series of dots and dashes could also just as easily translate to the Morse code sequences for VTB, SMB, and others, SOS had an instantly-recognizable symmetry.

Not only is SOS a palindrome (a word that reads the same backwards and forwards, like civic, deified, and these other **everyday palindromes hiding in plain sight**) it's also an ambigram, a word that looks identical whether read upside-down or right-side-up. When carved into a snowbank, say, or spelled out in boulders on a beach, SOS still looks like SOS no matter which way the rescue chopper approaches.

By 1908, the code we know and love took effect as the official international radio distress signal, and remained that way until 1999, when Morse code was declared all but dead. Today, a ship can signal distress with the touch of a button, the lift of a phone, the launch of a rocket, or—if they're feeling nostalgic—flashing a good ol' SOS via light signals across the waves. Remember it fondly, and then memorize these other mnemonic devices that could save your life [*URL omitted. Ed*].

OK now. Be honest. How many of those "URL ratholes" (embedded multi-level URLs that seem to go on forever) did you follow and how much time did you waste? Ed

From the North East Weak Signal Group's reflector: *Millenials unearth an amazing hack to get free TV.*

https://www.wsj.com/articles/millennials-unearth-an-amazing-hack-to-get-free-tv-the-antenna-1501686958. "I was just kind of surprised that this is technology that exists," says Mr. Sisco, 28 years old. "It's been awesome. It doesn't log out and it doesn't skip."

What next?

And check out this article from IEEE Spectrum: **https://spectrum.ieee.org/green-tech/conservation/why-we-must-fight-for-the-right-to-repair-our-electronics**. Scary.

Treasurer's Report

Income for October was $95 from membership fees and $20 from PowerPole connector sales to members. Expenses were $19.60 for newsletter postage and $67.01 for the October QSL sort pizza and soda, leaving a net income of $28.39 for the month.

Welcome to new member Joseph Nicosia KB1HCT.

Current balances:

General fund $2,798.29

Community fund $5,061.52

As of 2 November we have 39 members who are current with their dues and 23 renewals outstanding. Thank you to those of you who hand in your dues before I come to you. Please check your renewal status on the roster circulated at the monthly meeting or ask me

de Ralph KD1SM

Board Meeting Notes

Board meeting 11/2/2017

Attending: Stan KD1LE, Jim N8VIM, John KK1X, Ralph KD1SM, Rod WA1TAC, Jim AB1WQ, Ed N1YFK. Observing: Skip K1NKR.

- JOTA went well, but labor was unevenly distributed. Takedown help is needed!
- MARS is doing a "Carrington-event" exercise. This might reflect in local nets.
- Rod still planning to talk at the meeting, subject is EMI from solar farms.
- Tech night has been phased out due to lack of interest.
- Arduino group has decided on continuing as an open-ended support group.
- Phil now has the club radio & power supply.
- AB1WQ trying to get Steve from HRO to talk about ARES and go-kits.
- Internet in the Community Center is iffy - limits out ability to get a Skype presentation.

Respectfully submitted,

de John KK1X

Club Services

NVARC Property List. As of: 11/2/2017

Call Sign	Name	Qty	Property Description

KD1LE	Stan Pozerski	32	Safety Vests
KD1LE	Stan Pozerski	3	5-ft brown folding tables
KD1LE	Stan Pozerski	5	Code Practice Oscillators
KD1SM	Ralph Swick	1	Swingline M711 Stapler
KD1SM	Ralph Swick	1	NVARC banner 3x5-ft
KK1X	John Griswold	1	Badge punch
KK1X	John Griswold	1	Laminator
W1PJE	Phil Erickson	1	Kenwood TS-450S transceiver, SN 61000025
AB1WQ	Jim Wilber	1	Cushcraft R-7 antenna
W1PJE	Phil Erickson	1	Astron RS-35M power supply, SN 9506184

Outgoing QSL Service. The last batch went out at the Boxboro convention. Rod, WA1TAC, expects the next batch to go out in about April. See him.

Calendar

Upcoming Events

November
Quiet times

December
21 NVARC HomeBrew Night

January
21 NVARC Short Subjects Night

Upcoming Operating Activities

November
18-20 Phone Sweepstakes

December
1-3 160 Meter Contest
9/10 10 Meter Contest
17 Rookie Roundup CW

Are you a "contest nut?" See http://www.arrl.org/contest-calendar (Contest Corral) for month-by-month listings of both ARRL and non-ARRL contests.

Advertisers

NVARC

Nashoba Valley
Amateur Radio Club
PO Box # 900
Pepperell Mass 01463-0900

http://www.n1nc.org/

Join NVARC! Annual membership dues are $15; $20 for a family.
Meetings are held on the 3rd Thursday of the month at 7:30 p.m. in the Pepperell Community Center.

Contact us on the N1MNX repeater.
442.900 (+), 100Hz
147.345 (+), 100 Hz
53.890 (–), 100Hz

This newsletter is published monthly. Submissions, corrections and inquiries should be directed to the newsletter editor. Articles and graphics in most PC-compatible formats are OK.

Nashoba Valley Amateur Radio Club
PO Box 900
Pepperell, MA 01463-0900