Nashoba Valley Amateur Radio Club

SIGNAL

A club since 1992

Since 1993

Since 1996

de N1NC June 2021 Volume 30 Number 6

In this Issue

NVARC Monthly Meetings

NVARC general meetings are scheduled for the third Thursday of the month at 2430 UTC (7:30pm, Eastern Time).

Non-members who are interested in attending may send an email to meetings@n1nc.org requesting the teleconference details.

NVARC thanks **Medtronic, Inc** for providing the teleconferencing services under their employee volunteer support program for non-profit organizations.

Last Month's Meeting

Carl Luetzelschwab K9LA, spoke at length on the topic "Cycle 25 Update and Understanding Space Weather". Carl's slides may be found at: http://n1nc.org/Members/2021/K9LA_Here_Comes_Solar_Cycle_25

This Month's Meeting

Where Radio Meets the Outdoors: Portable Ops
By Mindy Hull, KM1NDY

"Portable radio operation is becoming an increasingly prominent pursuit of amateur hobbyists, made practical by the advent and availability of lightweight batteries. Structured programs such as Parks-On-The-Air (POTA) and Summits-On-The-Air (SOTA) provide enticing opportunities for hams to get outdoors. While experienced hams may have plenty of technical radio experience, portable radio requires an intersection with the skills of the outdoorist.

Mindy's talk focuses on gear choices (both radio and outdoor), portable op strategies, and a bit of philosophy to hopefully give you all the information needed to get out there and do it yourself!"

Mindy relates: "Licensed in February 2019, I hold an extra class radio license. I have activated 34 peaks for SOTA, now tied for 30th in the W1 (New England) Association, and an active POTA participant. I am an urban ham, living in South Boston, and a hyperlocal traveler who takes pride in knowing every sidewalk crack. My longest hike was 12 days and 140 miles on the Northville-Placid Trail traversing the Adirondacks with my husband AA1F and dog. I am always up for a radio adventure and love to take people along!"

The President's Corner

***de* Bruce, K1BG**

When it comes to radio, I love to play. Always have, always will. It doesn't matter if I'm operating, building, fixing, Elmering, or just participating, I love "playing radio".

Radio captured my imagination when I was 14 years old, and it captures my imagination today.

Field Day, that annual test of emergency preparedness, was like the Christmas Day of the ham radio year.

Growing up, I couldn't sleep the week before Field Day. Getting away from my family, hanging out with a group of my peers (including and especially the responsible adults), and getting the opportunity to "play radio" with them is an experience I enjoy living over and over, every year. And these days I get to do it with fellow NVARC members and friends.

This year, when it comes to Field Day, NVARC and other clubs across the country are on the rebound.

I can feel the excitement building!

With the uncertainty over Covid's progress earlier in the year, the ARRL extended last year's rule waivers, allowing stations operating from home to contact each other for points.

There will also again be a club aggregate score, allowing these home stations, using their own calls, to contribute points to a club aggregate.

If *you* have concerns about attending the NVARC Field Day in person, please take the opportunity to contribute to the club aggregate score from home.

NVARC is making plans for a more traditional, although scaled down, Field Day this year in Pepperell's Heald Street Orchard.

Jim, AB1WQ, will reprise his role as Field Day Chairman for the seventh time!

We plan on one, or two transmitters (John, KK1X and K1BG, captains), plus a VHF station (Phil, W1PJE, captain), plus power and networking (supplied by Jim, N8VIM).

Because of restrictions regarding the sharing of food, the traditional barbecue and breakfast will not happen this year. But other than this, we should be rocking! BUT ONLY IF…

Players Wanted! More help is needed, so I'm asking you to volunteer in any way you can. To discuss needed help, please contact Jum, AB1WQ, at ab1wq@arrl.net.

Rules and general info for Field Day can be found at http://www.arrl.org/field-day. Questions can be asked and answered on the club email reflector, NVARC@N1NC.ORG, the weekly 2-meter net, the N1MNX repeater, or on our Facebook page.

Please BE A PLAYER and not just a fan.

Play, operate, contribute, Elmer, have fun, and most of all, have fun (I said that already!).

With NVARC. On Field Day.

I hope to see you there!

-*de* Bruce, K1BG

Field Day 2021: Let the Games Begin!

***de* Jim, AB1WQ**

Mark your calendars now for Field Day, June 26-27!

Planning for Field Day 2021 is in full swing. We'll be at our usual place on the knoll at Heald Street Orchard in Pepperell. We'll be operating Class 2A with antennas on 80, 40, 20, 10, 6, 2, and 0.7 meters. All members and guests are welcome to attend.

Complete schedule and other information is to follow via the club email reflector and Bruce K1BG's email list.

Here are the people making it happen:

NVARC:
Bruce Blain K1BG - HF Station Captain #1, QSO Logmeister, Chief Chief

John Griswold KK1X - HF Station Captain #2, Antenna Team

Phil Erickson W1PJE - VHF Station Captain, Ionosphere Manager

Jessica Kedziora WU3C - FD Point Wrangler, Sunday Breakfast Commander, GOTA Station Controller, Antenna Team

Dan Pedtke KW2T - FD Entry Submitter

Leo Hunter K1LK - Chief Shade Officer, Infrastructure King

Jim Hein N8VIM - FD Safety Officer, Rural Electrification Manager

<Your name & call sign here> - Antenna MASTer : This position is open. Coordinate the Antenna Team's setup and connection of HF antennas. Antennas and supports will be provided. If interested email AB1WQ@arrl.net

Jim Wilber, FD Coordinator, Keeper of the Book, Dignitary Inviter, Porta-john Arranger

Town of Pepperell:
Paula Terrasi - Conservation Commission Administrator

Rob Rand - Chief Orchard Mowing Officer

Field Day Generator Updates
***de* Jim, N8VIM**

For many years now, I have supplied the NVARC Field Day power by way of my generator, an Onan Diesel 6kw twin cylinder air cooled (with a reverse cooling flow), and a 16-gallon fuel tank.

This has proven extremely reliable, starting up an hour or two before the official start and not shutting down until after the contest ends.

Reliable power can be very underappreciated by all, because “it just works”.

I have been making several updates in the last year or two, but many have been in the last few months.

Here are some of the updates:

1. **Blower housing repairs:**

   The blower housing had been damaged before I bought the generator. The outlet of the blower housing sits below the mounting points, so whomever removed the generator before me had set it down on the ground without blocking the engine up and had crushed the outlet.

I have used some sheet metal, angle aluminum, and a few rivets to repair it.

2. **Meter updates:**

   When I originally bought the generator, it was only the generator/engine. I added the trailer, meters, outlets, fuel tank, battery (and solar panel to keep it charged), and the enclosure.

   The meters I had on it, bought from Ebay, were a simple analog voltage and frequency meter (which showed drifting the last couple years).

I updated it to two digital panel meters that measure voltage, frequency, current, power factor, wattage, and kWh. This will enable us to finally measure total field day power consumption (and who left the coffee pot on!)

   The Amazon listing for the digital meters is:
   https://www.amazon.com/gp/product/B07YC1XHKQ/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&psc=1

3. **Added soundproofing:**

   While I had the housing panels off, I sanded and resealed the wood, then added Noico soundproofing designed for cars.

The first layer is 80mil butyl rubber with foil covering, and the second layer is 150mil foam. This should make a substantial improvement in the noise levels during Field Day this year. One thing I forgot to do was a sound measurement before I started the updates, but once I had the side panels off to remove the blower housing, I did not want to reassemble everything until I was finished (I had not planned on doing the sealing and soundproofing when I started, but one thing led to another).

"If you've done everything right, no one will know you've done anything at all" - Futurama

Here's to another great Field Day!

-*de* James, N8VIM

Monday 2m NVARC Information Net

The NVARC Information Net is held Monday nights at 7:30pm Eastern time on the 2m Pepperell repeater, N1MNX: 147.345MHz, PL: +100. Recent activity has been steady, with a dozen or so checkins.

NCS duties have been on an informal rotating basis. Bruce, K1BG has expertly done duty for several recent sessions.

An Update on Dan, KW2T's, Amateur Licensing Classes

Dan, KW2T, received an inquiry at work from some young engineers about getting a ham radio license.

He got permission from the company to offer a class, and was surprised to get 11 people signed up.

With coaching from Bruce, K1BG, he ran 8 2-hour sessions on-line, using Google Meet, and following the latest Tech license manual.

They finished up last Wednesday, June 2.

Through arrangement with Dan, MIT offered on-line testing sessions on June 3, 8, and 10th.

Two of his students signed up for June 3, and passed the test with flying colors (34 and 35 out of 35!) Dan informs us that a third has now taken the test and again, aced it! 35 out of 35!

So, so far, there are 3 new hams in the area from the class (KC1PKB, KC1PKC, and KC1PKJ).

Dan is hopeful he will get all 11 through testing over the next couple of weeks.

Dan is a W5YI VEC[1] himself, and has gotten over 30 new people licensed over the years. Wouldn't it be cool if we all did that: the hobby would come alive!

NVARC Outgoing QSL Service

One of the benefits of being a NVARC member is that the club will pay for sending DX QSL cards to the ARRL Outgoing bureau.

In previous years, Rod, WA1TAC, has collected cards from members (along with proof of ARRL membership) and sent them to the league. The club pays the fee and postage.

Rod will start this service again after in-person club meetings begin.

If a member is in a hurry to send cards, the W1 bureau will likely have a booth at the September ARRL convention in Marlborough where outgoing QSLs can be dropped off.

Wanted: ARC 5 Radios, Dead or Alive!

Rod, WA1TAC, is in the process of rebuilding three WW2 ARC-5 receivers and is looking for more. If anyone has one of these antiques collecting dust somewhere, Rod would be interested.

[1] https://w5yi.org/

A Follow-Up to Carl, K9LA's, presentation at Last Month's NVARC General Meeting

***de* Phil, W1PJE**

[Ed: Phil first published this article on the N1NC eMail reflector. It is reprinted here so as to reach those Signal readers that are yet to become NVARC members.]

Hi all,

<Hemispheric physics hat on:>

Those of you who heard Carl, K9LA, speak at the last NVARC meeting heard a reference to the 'outlier' study linked below in this article.

It's contrary to the Solar Cycle 25 Prediction Panel (the "Consensus"), but Scott McIntosh of the University Corporation for Atmospheric Research, UCAR, and colleagues are sticking to their story. We'll see what happens.

I personally am voting with the Consensus panel.

As a tiny supplement to Carl's excellent material, current monthly smoothed 10.7 cm solar flux is attached herewith.

Note that we're lifted a bit off baseline but nothing remotely like McIntosh et al's predictions. Also evident is the late fall 2020 spike in solar flux that got a bunch excited (including great propagation during the November SSB Sweepstakes) but alas it was transitory.

Consensus panel prediction:

https://www.swpc.noaa.gov/news/solar-cycle-25-forecast-update

McIntosh et al outlier:

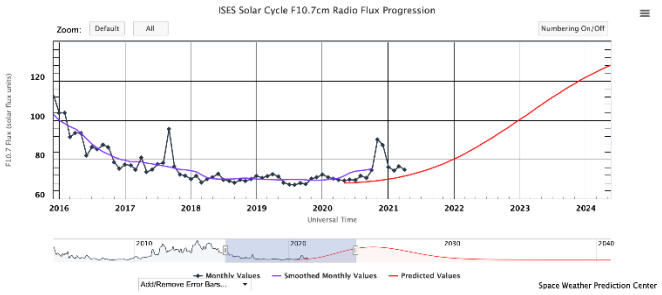
https://news.ucar.edu/132771/new-sunspot-cycle-could-be-one-strongest-record

Furthermore, Carl gives some very interesting updates to the story here:

https://k9la.us/Dec20_ZD7FT_on_10m_and_Comments_on_Big_Cycle_25_Prediction_-_Rev_1_and_Rev_2.pdf

Here is an excerpt from Carl's comments at the above link:

> "But per Dr. Scott McIntosh's presentation of November 11, 2020, the termination date for Cycle 24 did not occur in April 2020. As the date moves out, the predicted magnitude of Cycle 25 goes down.
>
> An update from Steve McDonald, VE7SL, in early December on the top band reflector indicates that Dr. McIntosh believes the termination date for Cycle 24 was in early November [2020]. Thus, the difference between the Cycle 23 termination date and the Cycle 24 termination date would be 9 years and 10 months.



> From the figure above, that still gives a larger-than-average solar cycle – around 210."

<hemispheric physics hat off>

-*de* Phil, W1PJE

Simple Remote Operation – Part 2

***de* Bruce, K1BG**

Last month, I talked about how to simply and effectively operate a station remotely using the same software that controls your rig, remote desktop software, and an audio connection.

This month I'm going to talk about solving "other" station problems: how to interface paddles, rotators, and an antenna switch.

Paddles:

K1EL produces keyer products that many contesters use for a CW interface between their computer, keyer, and paddles.

You can use these products as traditional keyers – the paddles control the automatic sending of dits and dahs to the transceiver. Additionally, the computer can send ASCII characters and speed control to the keyer, via a USB connection, which then convert the ASCII characts to dits and dahs for keying the rig.

This is how programs like N1MM send CW exchanges.

This protocol is call "Winkeyer". What most people don't know is that the communications is bi-directional. Speed and ASCII characters also go from the keyer back to the computer.

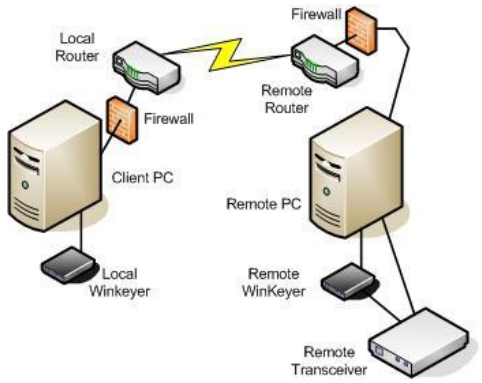
BTW, besides K1EL, there are a number of other suppliers of Winkeyer compatible keyers.

K1EL has written a client/server application called WKremote, which allows the user to connect a keyer at each end of a connection.

The local operator sends Morse using their paddles, employing a sidetone on the sending keyer to a Winkeyer, which then sends an ASCII character to the Winkeyer at the remote transmitter location.

This Winkeyer then converts the ASCII character to the dits and dahs that the transceiver needs.

https://hamcrafters2.com/WKremoteX.html.



Rotators:

There are many commercial rotators that will interface to computers using USB connections, and virtually all of the popular brands have options that allow this.

Many software programs (like N1MM) will allow you to control these rotators.

However, rather than buying commercial, I simply wired an Arduino to a relay board, and mounted the assembly in the bottom of my TailTwister rotator control box.

For software, I downloaded the program available at the "Radio Artisan".

https://blog.radioartisan.com/yaesu-rotator-computer-serial-interface/.

K3NG, who's responsible for both the page referenced above, and the software, provides some great Arduino project solutions for amateur applications (BTW, including a Winkeyer keyer).

For under $20, computer control of the remote rotator can be accomplished. Now I can rotate my antennas!

Anyone who has attended an NVARC Field Day has seen the 2x6 antenna switch that we use. This switch is controlled by an N1MM station.

N1MM is programmed with antenna selections based on the band of operation, with a lot of functionality as to how they are selected.

The important feature when using a switch is the ability to control the switch via rig software, which is something that is critical for proper operation of a 2x6 switch.

We use the KK1L kit: http://kk1l.com/kk1l_2x6switch on Field Day, but if you prefer one that is commercially made, Array Solutions also has a good one:

https://www.arraysolutions.com/sixpak-so-dual-rc

This is as far as I have progressed with remotely operating my station. Next month I'll talk briefly about the problems that I have not yet tried to solve: powering up a station and band switching an amplifier – from another location. Stay tuned!

-*de* Bruce, K1BG

Some Software Defined Radio Projects to Watch – Part 1

***de* Phil, W1PJE**

In recent years, the use of software defined radio architectures for both reception and transmission has greatly accelerated flexibility and capabilities available to the amateur radio operator[2]

The benefits are many. Waterfall spectral displays are now readily deployed and have become a game changer for band awareness in both contest and casual mode.

Multi-slice receivers, able to monitor several bands at once, provide even more information and fuel such exotic pursuits as 2BSIQ and SO3R that push the limits of human response[3].

Realized SDRs for amateur radio were pioneered by such offerings as the FlexRadio series beginning with the SDR-1000 in 2002 from Gerald Youngblood K5SDR and colleagues, the OpenHPSDR architecture in the mid-2000s driv-

[2] Software radio was first coined by e-Systems (now part of Raytheon) in 1984, followed by DARPA's SpeakEasy design in 1991 and Dr. Joe Mitola's landmark IEEE conference paper in 1992. An analog to this concept, software radar, has been pursued in the DoD world. The first unclassified software radar implementation, as an open system for large aperture high power UHF systems, was designed by Dr. John Holt and colleagues at MIT Haystack Observatory beginning in the late 1980s.

[3] https://www.contestuniversity.com/wp-content/uploads/2019/05/3-N6MJ-2BSIQ-and-SO3R_-Riding-the-edge-of-Human-Capabilities.pdf

en by the Tucson Amateur Packet Radio (TAPR) collective's designers such as Scotty Cowling WA2DFI and John Ackermann N8UR[4], and the wildly successful iComm IC-7300.

I have been following software radio architectures for a while now[5], and try to keep up with community trends and projects to construct affordable, hackable, yet high performing software defined radio systems that can send as well as receive[6]

Some of these bear watching, especially if you are not afraid to dive into some software and you are homebrew oriented.

I'll briefly cover one of these projects in this article, and will follow up with a second one in the next Signal.

Hermes-Lite 2

Hermes-Lite 2 direct conversion QRP transceiver. From https://github.com/softerhardware/Hermes-Lite2/wiki/Group-Buy

The Hermes-Lite 2 (HL2)[7] is a low-cost direct down/up conversion software defined amateur radio HF transceiver, based on a broadband modem chip and the earlier Hermes SDR project[8].

It is entirely open source, available through Github, and open hardware, including the tools used for design and fabrication files.

The design is labeled "Lite" because it does not completely implement all the capabilities of its Hermes namesake, but it is quite feature-rich and sports a good size floating point gate array (FPGA) processor along with Gigabit ethernet connectivity - a key asset[9]. A few hundred have been made as of this writing.

The core engine of the HL2 is the inexpensive, commodity Analog Devices AD9866, a 3.3 V CMOS modem transceiver chip with a 12-bit digital to analog converter for transmit (200 million sample per second (MSPS) maximum update rate), and a 12 bit analog to digital converter (80 MSPS). The internal programmable low pass filters, an internal PLL clock multiplier, and many other features of this chip are integrated into the HL2's design choices. Frequency coverage spans the core HF frequencies, 0 to 38.4 MHz.

Due to filtering, there may be some attenuation in the 30 to 38.4 MHz range, and alterations to the hardware or software may be required for successful VLF use below 130kHz (although presumably it should be able to handle 2200 meters!).

HL2 is a QRP transceiver and achieves 5 W out, so an outboard amplifier would be required to go farther. There is a secondary low power instrumentation output that provides a maximum 17 dBm for those interested in using external transverters. Either power output can be lowered by up to 7.5 dB using internal attenuation of the AD9866.

In keeping with its SDR heritage, up to 4 simultaneous receiver slices at maximum 384 kHz bandwidth are supported. (Other firmware variants have been produced with more slices but less bandwidth per slice.)

Additionally, raw ADC samples are sent to the host PC periodically providing a good snapshot of the entire HF spectrum.

Unlike a traditional radio, there is no audio out on the HL2. As in all OpenHPSDR based architectures, SDR frontend software running on the

[4] http://openhpsdr.org/index.php

[5] The author implemented core elements of a general workstation-based software radar at Haystack in 1998 for ionospheric research.

[6] I have skipped the ubiquitous RTL-SDR USB "dongle" here, and all the other commercially available receive-only hardware such as the SDRPlay, ADALM Pluto, etc. See for example http://www.rtl-sdr.com.

[7] http://www.hermeslite.com

[8] Created by OpenHPSDR efforts within TAPR, Hermes was a single board Digital Up and Down Conversion (DUC/DDC) full duplex HF + 6m multi-mode transceiver. See http://openhpsdr.org/wiki/index.php?title=HERMES

[9] Ethernet architectures are significantly preferred for software radio designs over USB, which can suffer unpredictable timeouts in data delivery depending on operating system whims. By contrast, Ethernet software stacks are very predictable and arguably are one of the most battle tested code sets of all time stretching back 5+ decades. High end software radios such as the Ettus USRP series almost exclusively use Ethernet connectivity.

host PC does the final processing to audio frequencies.

This also allows the HL2 to be fully remote (even if it's merely in another part of your shack) as long as you have reasonable bandwidth to the Ethernet switch or WiFi access point where the HL2 is connected. The platform feeds multi-receiver slice data to several popular and quite usable SDR transceiver front end packages including OpenHPSDR, SparkSDR, and Quisk.

The HL2 project has a very active mailing list[10] including some people who are hacking on the design to add new capabilities such as keyers.

A tiny minority are even altering the 'gateware' loaded into the FPGA, although that would require significant Verilog expertise, fastidious attention to timing loops, and other very non-trivial work.

A recent effort uses deliberate aliasing - RF above fundamental Nyquist zone - with undersampling (and presumably outboard preselector filters) to extend the HL2's capabilities past 10-meter bands, since the 80 MSPS sampling rate of the ADC precludes direct sampling of 6 meters and above. Reports are that 6- and 4-meters work well.

If, after reading further, all of this intrigues you enough to consider a purchase - for example, it would make an excellent multiband standalone QRP digital mode transceiver - the project has contracted with Makerfabs[11] to offer three essential components, each fully assembled and tested: the HL2 itself, a switchable low-pass output filter card designed by N2ADR, and a machined case. Total cost for full functionality is just about $300 USD. Happy hacking!

Next time: The creator of the BiTX series, Ashhar Farhan VU2ESE, goes hybrid with the sBiTX project.

de Phil, W1PJE

Board Meeting 3JUN2021

The meeting was called to order at 7:30 PM by President Bruce Blain, K1BG

The secretary's report was accepted as printed in Signal.

The treasurer's report was accepted.

Newsletter/Social Media – There was a brief discussion regarding the Signal newsletters that are available for the public at Ham Radio Outlet and Electronics Plus.

Phil W1PJE is still investigating a program to interface with Facebook, Twitter, and Instagram simultaneously.

Speakers – Mindy KM1NDY will be our June Speaker. She will talk about portable SOTA/POTA activations.

Ward Silver, N0AX, has agreed to speak in the fall on the YASME Foundation.

QSL Sorting - Jim, AB1WQ, and Bruce, K1BG, collected the QSL sorting boxes from Stan, KD1LE, for use in the November QSL sort.

Community Center - Jim, AB1WQ, met with an official from Pepperell concerning the Community Center. Jim is waiting for a response from the town selectmen. He wrote to Nancy Archer at the park and rec department who had been the Community Center Coordinator. Nancy provided the name of the new coordinator and said that the community center was still closed.

She related that when the community center does reopen there will be rental/user fees. However, the rental fees have not been determined, but the intended usage fee is tentatively targeted for $50/hour.

Jim made contact with the chair of the select board Linda Pezerski, and indicated that $50/meeting would cost the club all the dues money for the year. Jim indicated it would be a disservice for the community center to become a profit center for the town. Linda agreed. Linda will take it up with the town manager Andrew Mc Claine.

Bruce Blain asked if there was any loosening up of the Public Safety Center and doing a Technician Class with emphasis in inserting Public Safety People in Pepperell. Bruce asked Jim Wilbur to approach the town SERT program manager David Coursey whether NVARC could teach an Amateur Radio Technician Class at the facility. However, David indicated that the public safety building was not to be used by the public.

[10] https://groups.google.com/g/hermes-lite

[11] https://www.makerfabs.com/hermes-lite-2.html

So maybe the proper place may be the Community Center. Maybe David could take NVARC under his wing and the rental fees would come out of his Public Safety Department.

Our Monday Net Meeting last Monday the repeater did not function well and was a bit frustrating to use.

Saturday Breakfast: at Tiny's is back to normal now.

Paddle Kits: - Jim Hein has enough parts to build 50 CW keys. However, he may no longer support the effort without help and support. He has a busy schedule. He needs a project manager if the program is to continue.

1860 battery challenge: there are 6 people involved. The end date is Field Day.

Field Day: Jim Wilbur said he will compose information to the Reflector. Jim would like to perform the duties of FD coordinator, but will not do all of the work. We need volunteers to step up to the plate and make it a club effort. Jim sent a list of the roles he would like to see filled: Station Captains, Points Wrangler (guests, presentations, brochures, CW operating scripts etc.

There will be telescoping masts and wire antennas.

However, we need to encourage people to come and participate in FD. We need to make some chatter on the Reflector for people to take on these FD roles.

Jim suggested we approach qualified people and persuade them to participate. George mentioned that we should meet people face-to-face. Jim and Bruce will work on this.

Jim suggested that the Board approve a FD budget. Jim has reviewed the last 3 years budget which came within $600 each of those years. Ralph indicated the club must vote on budget items over $200. Ralph would also like to see line-items on the budget. There were a bunch of line items last year the club did not spend. Jim suggested doing a budget via email.

There was a long discussion on FD planning and managing issues.

NVARC Picnic: The club is looking for volunteers for the club picnic. Bruce said he will work on this.

Newly Donated Equipment: Bruce got an email from Dave AA1VX who is in the process of downsizing and wishes to donate gear to the club. Dave supplied a list of equipment. This would be a great opportunity for a fund raiser. Bruce paid a visit and said it all very good stuff. Dave wants to be out by the end of September so we have plenty of time to make up a fundraising project for the club.

New England ARRL Convention: September 10, 11 and 12 is the New England ARRL Convention in Marlboro, MA. Do we want set up a table there? One of our esteemed members, Phil, W1PJE will be a keynote speaker.

June VHF contest: - Bruce updated the list for members that are eligible to submit to the club scores on the ARRL Website. A notice of this will be on the reflector.

Summer Recess: NVARC will suspend July and August General Meetings as is usually done.

Skip asked if club members would be interested in summer online guest speaker meetings or social meetings.

-*de* John, K1JEB

Have **YOU** paid your NVARC Dues? See:
http://n1nc.org/Members/Roster
for your renewal month.

Treasurer's Report

Income for May was $75 in membership renewals. Expenditures were $200 for the annual lia-

bility insurance premium and $1.61 in PayPal fees, leaving a net balance decrease of $126.61.

Current balances:

General fund	$2,678.82
Community fund	$5,948.25

As of 3June we have 43 members who are current with their dues and 30 renewals outstanding. Thank you to those of you who mail your renewals or use PayPal. Renewal months are in the member list on the N1NC.org server at http://n1nc.org/Members/Roster.

To pay membership dues via PayPal see the instructions at http://n1nc.org/Members/dues.

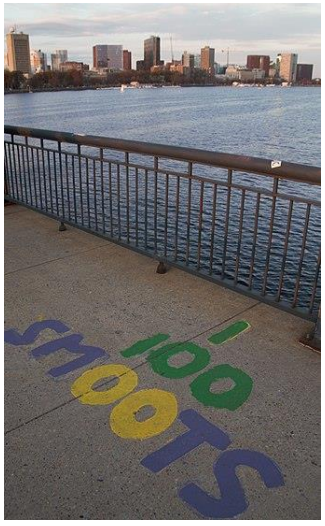
If you are joining ARRL or renewing your membership please consider letting Ralph send in the paperwork for you. The Club will buy the stamp and will get a commission from ARRL. As a Special Service Club, the ARRL expects a majority of Club members to also be ARRL members. Contact Ralph for further information if you need it.

de Ralph, KD1SM

STRAYS

Many of us from an engineering background know the story of Oliver Reed Smoot, Jr. Here's a summary:

As a Lambda Chi Alpha fraternity prank at MIT in 1958, Smoot allowed himself to be used as a nonstandard unit of measure.



His fraternity brothers repeatedly laid him out toe-to-head on the sidewalk across the Harvard Bridge, marking off the "smoots" as they went. They determined that the bridge is some 364.4 "smoots" long (+/- an error factor).

In 2011, the American Heritage Dictionary included "smoot" as one of 10,000 new words added to their fifth edition.

Ironically, Smoot himself became Chairman of the American National Standards Institute from 2001-2002, and President of ISO from 2003-2004[12].

Tnx to John, KK1X, for suggesting this bit of Boston History

Sponsors

[12] [Ed: Here's a link to Wikipedia's Smoot entry: https://en.wikipedia.org/wiki/Smoot]

Nashoba Valley
Amateur Radio Club
PO Box # 900
Pepperell Mass 01463-0900
http://www.n1nc.org/

President: Bruce Blane, K1BG
Vice President: Phil Erickson, W1PJE
Secretary: John Bielefeld, K1JEB
Treasurer: Ralph Swick, KD1SM

Board Members:
Bruce Blain, K1BG, 2018-2021
Jim Wilber, AB1WQ, 2019-2022
Skip Youngberg, K1NKR, 2020-2023
Jim Hein, N8VIM 2021-2024

Property Master: John Griswold, KK1X
Librarian: Peter Nordberg, N1ZRG
N1NC Trustee: Bruce Blain, K1BG

Join NVARC! Annual membership dues are $15; $20 for a family.

NVARC general meetings are scheduled for the third Thursday of the month at 2330 UTC (7:30pm, Eastern Time). Non-members interested in attending may send an email to meetings@n1nc.org requesting the teleconference details. NVARC thanks Medtronic, Inc for providing the teleconferencing services under their employee volunteer support program for non-profit organizations.

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: editor@n1nc.org.
Articles and graphics in most PC-compatible formats are OK.

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