NVARC
Nashoba Valley
Amateur Radio Club

SIGNAL

VOL.XXXII. . . No.1 WWW.N1NC.ORG JANUARY 2023

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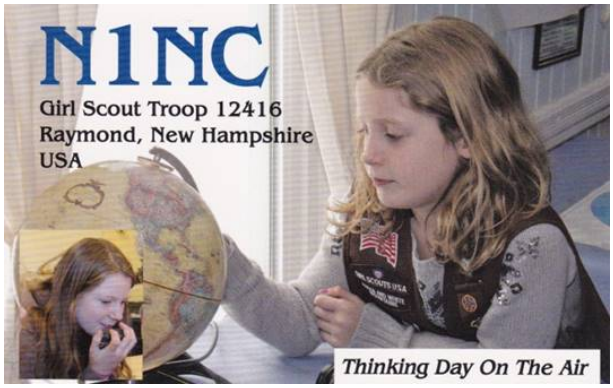


From The President

de BRUCE K1BG

Happy New Year! Like every New Year, I commit myself to a series of New Year's resolutions. And like every year, I have some wins and I have some losses. Usually, the losses nothing to cry over! One of the things I'm resolved to work on this year is the club's Facebook page. While many of you may not be active on social media, Facebook and other outlets are the main way organizations get free publicity and notoriety (good or bad) in the modern world. NVARC's YouTube page, club meetings announcements, license classes, and other activities need the exposure that Facebook provides (and as a side note, several newer members found us through our Facebook page). I'll make membership aware of Facebook additions as they take place – have a look and give us feedback.

Another thing I need to do more of is make membership aware of the excellent work that Jim, N8VIM, is doing on the club's YouTube page - https://www.youtube.com/@nvarc. Club meetings and activities are recorded, edited, and placed there for future reference. If you missed a meeting, or if there is something you want to revisit, or simply want to see how NVARC does Field Day, go to the YouTube page. Let your friends know. And please leave comments! Pre-covid, NVARC annually sponsored "Thinking Day On The Air", an annual activity that is sponsored by the World Association of Girl Guides and Girl Scouts. Many of you have participated in the past, and if you have, THANK YOU! An excellent write up on a previous TDOTAs by Skip, K1NKR, can be found https://www.n1nc.org/Events/2017/GSTDOTA/article. It's an exciting, rewarding activity, and YOU can take part. This year, TDOTA will take place on Saturday, February 18. We'll be working

with the Girl Scout troop in Lunenburg, MA. Details as to where it will take place are still being finalized, but we are looking for volunteers. If you are interested in helping, please contact me – Bruce, K1BG, or Skip, K1NKR. Don't miss this months meeting on January 19. Traditionally, January has been "Short Subjects Night", but this year we will depart from the norm. Dom Mallozzi, N1DM, will talk about DMR. For those of you who don't know, DMR – Digital Mobile Radio – is a digital radio standard that is quite popular worldwide. If you have an interest in DMR, or in digital radio, plan on being at the meeting. BTW, we may have short subjects night at a future meeting. One of my resolutions for 2022 was for the club to begin having in person Technician classes again. NVARC had great success with this in 2022, with 11 new hams and at least 4 new NVARC members. I'd like to run Technician classes again at the Pepperell Community Center starting sometime in February. Again, in order for this to work, we need some volunteers to help with the classes. Classes will run twice a week for four weeks. Please let me know if you are interested in helping. As the sunspot cycle continues on the upswing, conditions continue to be exceptional. Openings on 10 and 15 meters are now a daily thing. The FT8WW DXpedition to Crozet Island is in full swing, with Thierry, F6CUK, being the sole operator. For those of you who are not aware, Crozet was the third most wanted country on the DXCC (DX Century Club) countries list. Several club members (including myself) worked Crozet for an ATNO (All Time New One). Thank you Thierry and your support team for making this happen.

That's it for January! See you at the club meeting on the 19^{th}.

Best & 73
de Bruce, K1BG

ARDC funds DLARC – should NVARC participate?

Earlier this year, the Amateur Radio Digital Communications (ARDC), a private foundation, funded the Digital Library of Amateur Radio and Communications (DLARC), which will be a massive online library of materials and collections related to amateur radio and early digital communications. The library will be a free online resource that combines archived digitized print materials, born-digital content, websites, oral histories, personal collections, and other related records and publications. The goals of the DLARC are to document the history of amateur radio and to provide freely

available educational resources for researchers, students, and the general public. This innovative project includes:

* A program to digitize print materials, such as newsletters, journals, books, pamphlets, physical ephemera, and other records from both institutions, groups, and individuals.

* A digital archiving program to archive, curate, and provide access to "born-digital" materials, such as digital photos, websites, videos, and podcasts.

* A personal archiving campaign to ensure the preservation and future access of both print and digital archives of notable individuals and stakeholders in the amateur radio community.

* Conducting oral history interviews with key members of the community.

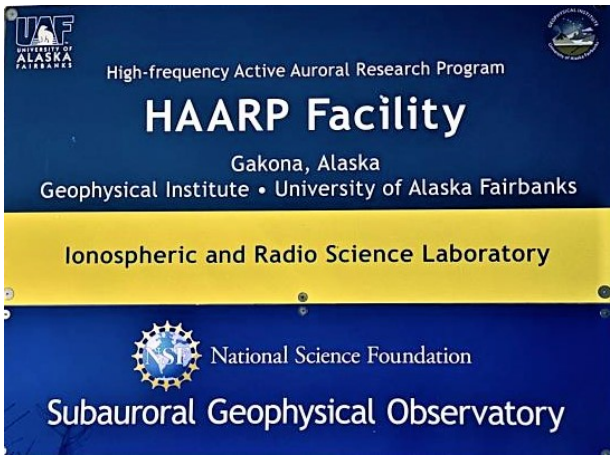
* Preservation of all physical and print collections donated to the Internet Archive.

NVARC has a long history of creating digital content and storing it as part of our on-line content, accessible through N1NC.org. I'd personally like to see NVARC participating in DLARC by supplying the archive of our Signal newsletters and other digital content stored on our website. The documents would become more widely available to the amateur radio community, provide publicity to both NVARC and the creators of the digital content, and be preserved for future generations. What are your thoughts regarding this? I'd like to know. It's something NVARC's board of directors should consider, but membership input is valuable. Please let me, or one of the other board members know what your thoughts are. Thanking you in advance –

de Bruce, K1BG

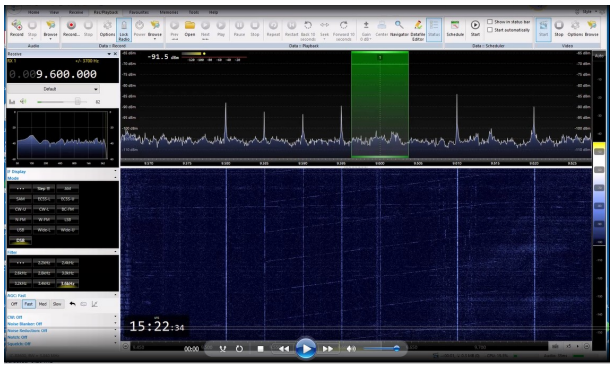
HAARP and Radio JOVE

de VLAD, W1MTI



As many of you know there is a number of Natural Science programs and experiments where general public and amateur scientists can participate. The majority of them are products of public outreach programs done by universities and US Government sponsored organizations. One such program is High frequency Active Auroral Research Program (HAARP), administered by University of Alaska Fairbanks Geophysical Institute. HAARP's main facility is 33 acres research site containing 180 crossed-dipole antenna-transmitter units forming a phase array capable of transmitting within 2.7-10

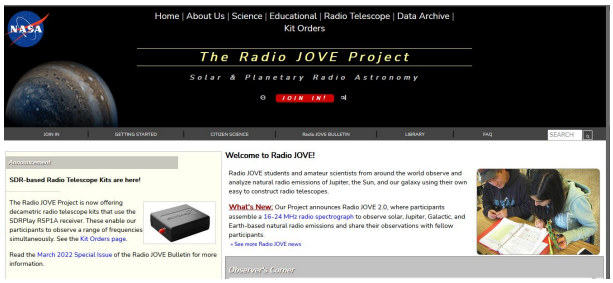
MHz with 3.6 megawatt ERP. Powered by its own power plant, the transmitter operates several times a year. The latest experiment started on 02:00 UTC December 27, 2022 and lasted for 12 hors. The main stated objective of the experiment was to test feasibility of imaging interior of the asteroids passing within close proximity to Earth. The asteroid named 2010 XC15 was passing Earth within approximately 850,000 km, and measured about 250 meters in diameter. NASA Jet Propulsion Laboratory, the University of New Mexico Long Wavelength Array near Socorro, New Mexico, and the Owens Valley Radio Observatory Long Wavelength Array near Bishop, California, also participated in the experiment.



Reception of HAARP on December 27, 2022.

An NVARC member and an avid radio amateur Joe Dzekevich, K1YOW received the HAARP signals related to the asteroid bounce experiment. His report on NVARC reflector was rather short: " I was able to copy the HAARP Tx signal this morning. Not gang busters but it was there. Joe, K1YOW ". The signals were received at 9.6 MHz. His set up was: Icom R8600 10 kHz to 3 GHz Rx, OCF dipole and VHF/UHF log periodic antennas, and SDR Console software. He likes SDR Console because it supports the R8600 and can record MP4, WAV and CSV data files, so it is very useful for sharing Rx signal information. He also thinks that using SDR software is a good learning experience and the software is free. HDSDR can connect to many rigs.

But there is yet more than meets the eye. Besides the Ionospheric Research Instrument, which is currently world's most powerful HF transmitter, HAARP has a number of research facilities that include VLF receivers, induction magnetomenters, a variety of cooled CCD and high speed EMCCD cameras, spectrometers etc. This wealth of equipment and research facilities is available not only to the Universities and Government labs, but also to private companies and public organizations. One such orgainzation affiliated with HAARP is NASA's Radio JOVE.



Radio JOVE is NASA curated citizen science program aimed at informing and educating general public and students fron high school through college in the areas of Radio Astronomy and Space Physics. The project bagan in 1999, and in 2016 it was expanded to include research in Heliophysics. The goals of the program inclede enabling access to online observatories and real data, providing hands on experience in radio astronomy, and expanding a network of radio telescopes for advance projects. Currently five public colleges and a number of government and private organizations are involved in the project.

Should NVARC as a *club* participate in either of these two programs?

References:

- HAARP
- NASA and HAARP conclude asteroid experiment
- Radio JOVE
- RJ 2.0 Radio Telescope
- Radio Telescope Kit

Modulation, We Want Modulation

de SKIP, K1NKR

(with apologies to that 1960's cult TV classic, The Prisoner—"Information, we want information.")

'Tis the holiday season. Time for one-horse open sleighs. Imagine, a vehicle with only one horsepower. It's archaic, like the days of steam–powered radio. Today's radios run on software and modern modulation techniques can do things never before imagined. Speaking of "never before imagined," did you know that image transmission is showing up on HF? Not just slow-scan (SSTV), where it takes half a minute for a single noisy frame. Or the three minutes that it takes for a single hi-res JPEG frame. This is real-time, full-motion, high-definition television. Here in the US, the bands which legally accommodate the wide bandwidths necessary for ATV and DATV are 420 MHz and above. Generally speaking, we must limit bandwidth in the HF, VHF, and low UHF bands to the equivalent of a phone transmission. British Amateur rules allow them to experiment in the 10 meter band with various digital TV modes. G0MJW, M0DTS, and G4XAT are leading this effort. All the testing thus far has been done using DVB-S at 18 kHz bandwidth. DVB-S (digital video broadcasting-satellite) is the coding and modulation standard for space-to-ground video transmission. Especially good for constant signal strength paths, it has become the primary DATV standard used by European Amateurs. Now here's the key point. While we US Amateurs are not allowed to transmit wideband signals on 10m, the Brits are. And of course, there are no limits here on what we can receive. Using little more than an SDR dongle and some software, John Kozak; K0ZAK/3, of Reisterstown MD, has been able to decode the signals from G0MJW, M0DTS, and G4XAT. He described his results early in the experiment as "random captured video frames rather than actual moving video." But on the fifth of December 2022 testing went better. After de-

coding more random images from M0DTS and G4XAT, he was able to tweak the decoder enough to eventually capture about 10 seconds of full motion video from Mike, G0MJW. John was quite surprised, as the band was shifting around quite a bit. So that day's testing finally proved that usable full motion video is achievable on HF. Having succeeded, the Brits are now setting up to try DVB-T at 150 kHz bandwidth. DVB-T is the terrestrial standard and is better suited to variable-strength paths. DVB-T use (typically at 2 MHz bandwidth) predominates here in the US. Hams in Colorado, Arizona, and California (the hotbeds of US DATV activity) have experimented with both DBV-T and DVB-S from 420 MHz to 10 GHz. Just over 100 years ago "The Transatlantics" were conducted on CW. Now they're being done on video.

NVARC's Home Brew Night

John, KK1X

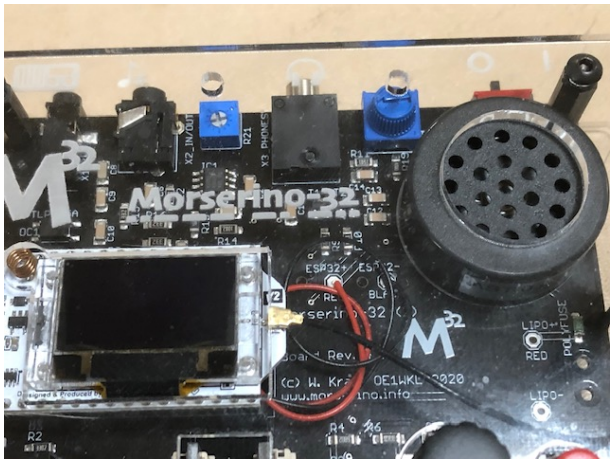
The annual Home Brew Night started with Bruce, K1BG querying the audience about possible general meeting topics and prospective speakers. The response was quite lively, producing enough suggestions to cover entire year. Then Bruce K1BG went over a complaint from the new management of Pepperell Community Center about purported unclean condition of the center that the club left after the last meeting. After the brief discussion it was decided that the club need more specifics from the center management about what actually needs to be done, but as a precaution will sweep the floors clean after the meeting.

The first presenter was John KK1X who showed a couple of baluns and a battery box that he made for the portable operations.

Bill, K1NS

Then Bill, K1NS demonstrated a vintage globe with axis of rotation re-positioned to go through his QTH. This clever trick allows him to visualize the direction to which he needs to point his antenna during a QSO.

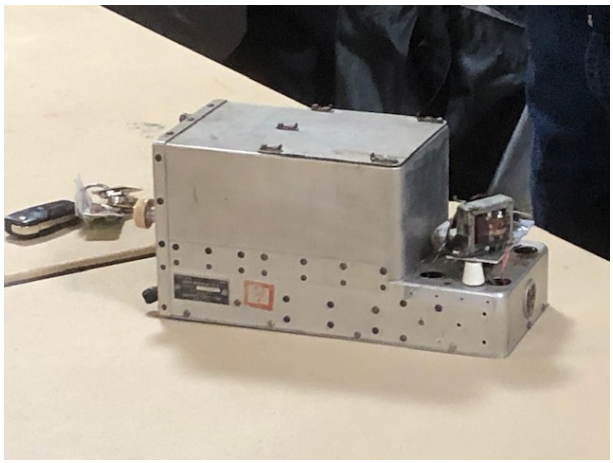
Bruce K1BG demonstrated Morserino-32, a CW training device that combines a paddle, keyer and Wi-FI transmitter, and therefore could be used as a networked CW transceiver as well.



Morserino-32 a multi-functional Morse device. It is ideal for learning and practicing Morse code, useful for everybody from beginner to the pro.

Bruce, K1BG

Rod WA1TAC gave a talk about reconstructing WWII era US Army Signal Corps. radio receiver BC-453-B aka ARC-5, and answered numerous questions.



BC-453-B S/N 2007 manufactured by Colonial Radio Corp Buffalo, New York. It is an airborne AM and CW receiver with continous 190 - 550 KHz tuning range. IF is 85 KHz. Was used for ground to air and air to air communications.

Rod, WA1TAC talking passionately about ARC-5.

Les, N1SV has shown and described in details the transmitter, matching gear and an antenna coil for his LF project. The antenna tuning coil was impressive both in size and the ingenuity of construction.

Les, N1SV talking about challenges of constructing LF equipment.

Antenna matching coil for LF transceiver. Sorry, no USB-C connections, but it can hold 731 iPhones inside.

Finally James N8VIM has shown his collection of 3D-printed breakout units with Anderson Pole connectors.

James, N8VIM

Chief Filmmaker.

Assistant operator.

The meeting was video recorded by James N8VIM and is available on the NVARC's YouTube Channel .

de Vlad, W1MTI

Next General Meeting

The next General meeting will be held in person at the Pepperell Community Center, 2 Hollis St, Pepperell, MA 01463 on January 19, 2023. Dom Mallozzi, N1DM, will talk about Digital Mobile Radio (DMR).

The Treasurer's Report

Income for December 2022 was $90 in membership fees. There were no expenses for the month.

Current balances:

General fund	$2,757.31
Community fund	$6,628.25

As of 5 January we have 38 members who are current with their dues and 41 renewals outstanding. Renewal months are in the member list on www.n1nc.org in the Member's area; check yours on https://www.n1nc.org/Members/Roster or you may also email me. Thank you to those of you who mail your renewals or use PayPal without a reminder.

To pay membership dues via PayPal see the instructions in the same Members area.

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 an 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

NVARC Board Meeting

Attendees:

Bruce, K1BG,	John, K1JEB,
Ralph, KD1SM,	James, N8VIM
Skip, K1NKR,	Vlad, W1MTI

Call to Order: 7:31pm

Ralph, KD1SM presented Treasurer's report (see above).

The club's mail box is due for renewal. The board approved $106.00 to renew the USPS Mail Box for another six months.

Vlad W1MTI indicated that he received positive feedback for the new Signal format.

Jim N8VIM indicated that there were 53 subscribers and 2100 views on the club's YouTube page.

Skip K1NKR reported that our next January meeting's guest speaker, Dom Mallozzi, N1DM is ready.

The Club's 2-meter weekly Monday night Net is averaging between 5 to 11 check-ins. Jim N8VIM is working on replacing the batteries and to also install a battery charge controller at the repeater site.

Bruce K1BG has reserved the Community Center in Pepperell, MA for the months of January through June to hold. He is also considering a new round of Technician license classes. The classes may be held on Mondays and Wednesday from 7 to 8pm for 4 weeks. Bruce is requesting volunteers to help in running the class.

On February 19th NVARC will be conducting a Thinking Day On The Air a program the club the club conducted for a number of years before COVID. At this year event club members will introduce Ham Radio to the Girl Scouts at the Lunenburg Library. We will need a number of volunteers to help during the event.
Adjournment: 8:17pm

de John, K1JEB

NVARC's 2 meter Net

The NVARC Information Net is held Monday nights at 7:30pm, Eastern time on the 2m Pepperell repeater, N1MNX: 147.345MHz +100.

NVARC General Meetings

NVARC General Meetings are scheduled for the third Thursday of the month at 2430 UTC (7:30pm, Eastern Time), except for July and August, when no General Meetings are held. When held, meetings are at the Pepperell Community center.

Calendar

JANUARY

9 4 States QRP Group Sprint
14 YB DX Contest
15 NRAU-Baltic Contest
21 ARRL January VHF Contest
25 Australia Day Contest
28/29 Winter Field Day

FEBRUARY

2 NRAU 10m Activity Contest
4 Mexico RTTY International Contest
4 Minnesota QSO Party
4 EurAsia HF Championship
4/5 Vermont QSO Party
4/5 British Columbia QSO Party
6 RSGB 80m Club Championship, SSB
11/12 CQ WW RTTY WPX Contest

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http://www.n1nc.org/
www.youtube.com/@nvarc

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). 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.
$442.900(+), 100Hz$
$147.345(+), 100Hz$
$53.890(-), 100Hz$

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.

Editor: Vladimir A. Goncharov, W1MTI

Have YOU Paid Your NVARC Dues?

See: http://www.n1nc.org/MembersRoste for your reneval month.

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