



Nashoba Valley  
Amateur Radio Club

# SIGNAL

A club since 1992



Since 1993



Since 1996

de N1NC

February 2017

Volume 26 Number 2

## This Month's Meeting

We had scheduled (and, unfortunately, announced) that the February meeting would have a talk on the Brendan Trophy. Due to arrangement difficulties, this has had to be cancelled.

**BUT! For the February meeting, we have...**

## The President's Corner

See the **special announcement** elsewhere in this newsletter!

This month we've been busy preparing for the Girl Scout event which has grown to two days and two sites. This year we added supporting the Girl Scouts from Groton, Dunstable, and Shirley from a site in Shirley MA on Saturday and Raymond NH on Sunday. We need six or seven people to staff the various activities for each day. For NVARC we can think of this operation as testing out our preparedness for a winter Field Day or emergency. It is also a fun and rewarding outreach activity.

We still have several important club positions to fill. The position of Public Information Officer (PIO) is important to reach out to the various media outlets to explain who and what NVARC is and in the big picture what Amateur Radio is. If someone is interested/curious talk to me. There aren't any strict requirements on what is done and anything we do will be better than what we are currently doing! The other position is Field Day Chairperson. I

would like to have that position filled in the February-March time frame and the Station Captains identified in the March-April period. That only gives the Station Captains a month to plan their stations, source equipment, and find volunteers to help set up and operate.

There will be a change of venue for the April meeting. We will discuss the details at this month's meeting. Also, April is the NVARC election meeting. The four Club Officers and one Board member position come up for election every April.

The Amateur Radio Parity Act bill has been refiled with the new Congress. Members should be on the lookout for requests from the League to contact your legislators.

Various other events will require our attention and support as we move into spring (hopefully). The Townsend Lions Club Canoe Race, Groton Road Race, Boston Marathon, and others. Under the guidance of Jim AB1WQ. Tech Night has done several sessions on programming and using handheld radios. If your new at public service events and need some help preparing for them I'm sure he would help you.

73, Stan KD1LE

## Last Month's Meeting

Short Subjects Night.



(left) Dennis, K1LGQ, on Building a Neophyte Receiver. (right) Tony KX1G, on Vibroplex Cable.



(left) Bruce, K1BG. The Novice Question Pool. (right) Stan KD1LE, on DC Voltage Booster Use.

Also speaking (no photo available), Skip K1NKR, on The Scale of the Ionosphere.

*All photos by K1NKR.*

## News and Happenings

### Two-inch vs 1.75-inch Terminals

Tony Di Cenzo KX1G recently found post-purchase that his truly “classic” 1936 Vibroplex bug doesn’t have the same terminal spacing as the so-called “original” ones. See <http://www.g3liv.co.uk/page14.html>. Because of this, he and G3LIV, the manufacturer of the “CableTidy” Vibroplex interface, graciously donated a CableTidy to the club at the January meeting. By acclamation, we passed it on to Peter N1ZRG, our budding CW op.

### N1NC Website

Due to unforeseen circumstances at work, Kayla W2IRY has had to back away from rejuvenating the club website. Is there anyone else who is interested in picking up the job? Talk to an officer or Board member.

### Outreach

We’ve become well known at the ARRL’s Education Department and have received a

solicitation to support Joel NO5FD’s Amateur Radio demonstrations at the Sci-Tech Academy’s summer camp in Byfield MA (June 27 to July 9).

Participation could be as little as a couple of hours. With a minimal commitment a volunteer could get firsthand experience in STEM outreach to youth—and bring it back to the club. Contact Skip K1NKR for additional information.

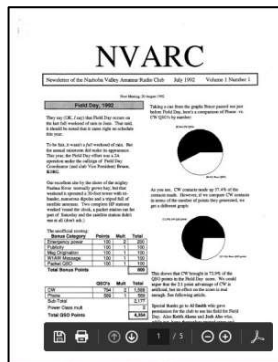
## Editor’s Note

Credit for this editorial goes to William Tramosch, Executive Director of the Nantucket Historical Association. Bill recently wrote about the Maori term “turangawaewae,” meaning a place that you have adopted as your own—something that has become a deep part of one’s identity. Bill goes on to cite Alexis de Tocqueville’s nineteenth century observations that, in American life, voluntary clubs, organizations, and associations were essential to the power of democracy. De Tocqueville worried that any tendency toward “aloneness” might threaten this fabric.

It may be a hard term to inject into casual conversations, but doesn’t turangawaewae really describe what we have in a local club like NVARC?

We’ve just come out of the two meetings purposely scheduled to rely entirely on member participation. Thanks to the weather, December’s HomeBrew Night was short on attendees but really long on Elmerism. On the other hand, January’s Short Subjects Night was exceptionally well attended. There were enough short talks for a full evening. The meeting even extended beyond one member’s bedtime! But as good as it was, it only covered a fraction of the club’s talent, skill, and interest.

More importantly though, both meetings brought people together who wanted to be together. Turangawaewae.



Along these same lines, you probably know that I'm a QST collector, all the way back to Volume 1 Issue 1—both analog and digital. Digital's fine for looking things up, but there's something wonderfully real about holding and reading an Armstrong (or Maxim, or Godley, or Reinartz) article in a historic QST. We can't quite do this with NVARC's Signal, but the digital archive is there. Go out to <http://www.n1nc.org> sometime and peruse the old newsletters. All but one issue have been found and captured there. They provide a great history of the club. The founding. Some great technical articles. Our activities. A partial resume (through article authorship) of our members' talents. Signal is NVARC's documentary of its own turangawaewae.

73, Skip K1NKR

## Public Service

Public Service season is around the corner! PS is one of the many pillars of NVARC's camaraderie (*turangawaewae?*) and identity. Are you ready to gear up for the Boston Marathon? The Townsend Canoe Race? The Groton Road Race? Any, or all, are rewarding experiences.

## On the Air

For the third year in a row, NVARC is supporting the World Association of Girl Scouts and Girl Guides' Thinking Day On The Air. We'll be in Shirley MA on 18 February and in Raymond NH on 19 February. To the best of our estimation, we are the most active US participant in this international event.

## The Technical Corner

### From the Amateur Extra Question Pool

**Which of the following digital modes is especially useful for EME communications? (E2D03)**

- A. FSK441
- B. PACTOR III
- C. Olivia
- D. JT65

**Which of the following digital modes is especially designed for use for meteor scatter signals? (E2D01)**

- A. WSPR
- B. FSK441
- C. Hellschreiber
- D. APRS

Since two questions (E2D01 and E2D03) are related, I thought I would cover them both. All the above modes require a radio, some sound interface or TNC, and a computer.

In question E2D03, answers A and D are modes in the WSJT software suite developed by Joe Taylor K1JT. FSK411 is the original WSJT mode and was designed for meteor shower communication. It is multi-frequency shift keying mode at a relatively high speed (441 baud) using four tones. Speed is needed for the short time propagation is possible on a meteor trail. It is generally used on the two meter and 70 centimeter bands.

The JT65 mode on the other hand is used when signals are weak but changing slowly, such as is found in an EME signal. JT65 can decode a signal that is well below the noise floor. JT65 uses forward error correction to enhance the probability of message reception which is transmitted using 65 tone MFSK. This is open source software. Therefore, "D" is the correct answer for question E2D03.

I'll explain the other E2D03 choices now. Pactor III (answer B) is a proprietary mode created by Special Communication Systems (SCS) and is licensed software. As far as I know, it is only available in Terminal Node Controllers (TNC) developed and sold by SCS. It uses a frequency shift-keying mode and is a speed improvement over Pactor I and Pactor II. Pactor is an Automatic Repeat ReQuest (ARQ) mode of transmitting messages, which means the receiving hardware "rogers" for the message when it is completely received. It is often used in handling

message type traffic such as email from ship to shore using BBS systems. It can also be used station to station if both stations have the required TNC. The sending station will send a packet to the receiving station until it is acknowledged and repeat the process until the entire message is sent and receipted for.

Olivia (answer C) is an Multiple Frequency Shift Keying (MFSK) mode typically used on HF frequencies. It has several options which are a combination of the number of tones and bandwidth. Generally, the wider bandwidth with more tones results in a higher baud rate (ranging from about 30 to 125 baud). Compared to Pactor III at 1800 baud that is pretty slow. Modes like Olivia and MT63 can take 2 KHz of bandwidth at the higher speeds. Olivia is a musical sounding mode and though relatively slow is useful on HF bands because it performs well under poor conditions.

Now on to question E2D01.

WSPR (answer A) is weak signal software also developed by Joe Taylor K1JT. It was developed to test MF and HF propagation paths. It is a FSK type transmission and uses a standardized message format at 1.5 baud. That's not what you would use for high speed communication!

I covered FSK441 above. It was designed for Meteor Scatter and is the correct answer to this question.

Hellschreiber (answer C) is a facsimile type mode developed in the 1920's and 30's. It was designed to send lines or a page of text to a mechanical teleprinter. Its use has been enhanced with the use of computers and sound card technology. It runs at between 100 and 200 baud

APRS (answer D) is the Automatic Packet Reporting System that was developed by Bob Bruninga WB4APR. It is typically used on VHF and UHF frequencies. A particular benefit of APRS is that the packets include position data. In mobile applications, this normally requires the addition of a GPS. In fixed location applications like weather station, reporting the location can be static so a GPS isn't required. When APRS is used for tracking vehicles it is usually used with some mapping software so that the transmitted data is displayed on a computer map to show the vehicle's location and track. Additionally, the

vehicle's instantaneous direction and speed data can be displayed. For wide area applications a fixed infrastructure of repeaters relay the packets being transmitted by the mobile stations. APRS stations that are used for weather reporting are usually unmanned while mobile configurations may or may not be actively manned. If the station is actively manned, typed messages can also be exchanged between stations.

de Stan KD1LE

## SPECIAL ANNOUNCEMENT

NVARC member Dr Phil Erickson W1PJE has invited the club to hold its 20 April meeting at the MIT Haystack Observatory. The Board voted to accept the invitation.

The meeting will have two highlights:

- A presentation by club member Joe K1YOW on sporadic-E propagation and
- An overview and tour of the Haystack radar and radioastronomy facility.

Phil will also be hosting Professor Julio Urbina, of Penn State University, and about 25 undergraduate students. NVARC's association with Haystack is burgeoning and this meeting is an excellent opportunity for us to explore joint projects, connect with radio/radar education at the collegiate level, and provide Joe's high quality work the kind of exposure that it deserves.

***Note that the April meeting is election night. Because of this, April's meeting constitutes a Special Meeting, per the club constitution. Considering that the meeting will not be held in the traditional location, announcements regarding provisions for absentee balloting will be made before the meeting.***

## Treasurer's Report

Income for January was \$115 from membership fees, \$2 from ARRL membership renewals, \$10 from PowerPole connector distribution, and \$5 for a Worked All Massachusetts Counties (WAMC) certificate. Expenses

were \$18.80 for newsletter postage and \$102 for the annual PO box fee, leaving a net income of \$11.20 for the month.

We received a \$250 donation from the Squannacook River Runners Association in appreciation for our assistance at the 2016 Groton Road Race. These donations go into the Community Fund.

Current balances:

General fund \$2,935.96

Community fund \$5,136.41

As of 2 February we have 53 members who are current with their dues and seven renewals outstanding.

*de* Ralph KD1SM

## Board Meeting Notes

Board meeting 2/2/2017

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

Offer to have April meeting at Haystack – plus 6m Sporadic E presentation – accepted with no objections.

April meeting - elections for officers.

Speaker for February meeting fell though. Can anybody do a presentation?

Treasurer's report: General fund, \$2,935.96; Community fund, \$5,136.41.

Girl Scouts 18th & 19th of February.

Kayla not able to work on web site.

Going to purchase 9V batteries for Code Practice Oscillators.

Jim AB1WQ is considering a J-pole antenna from twin lead project for Tech Night.

Respectfully submitted,

*de* John KK1X

## Club Services

### PowerPole Discounts

Need PowerPole connectors? Don't want to pay full price (or higher)? They're about a buck a set on the street; fifty cents a set (*i.e.*, one red plus one black, 30 amp) from NVARC

stock. See Ralph. He mostly packages on request, preferring multiples of five, but is willing to do other quantities.

### Meeting Coffee Bar

As always, continuing thanks to Ed N1YFK for running the coffee "bar" at the meetings.

## Calendar

### Upcoming Events

#### February

4 CVFMA Flea market, Springfield VT  
18 Algonquin ARC Flea, Marlboro MA  
18/19 NVARC's support of Girl Scout Thinking Day On The Air  
18 AARC Flea market, Marlboro MA  
25 Vermont State Convention, Burlington VT

#### March

5 NEARC Antiques XLVIII, now in Nashua NH  
19 Contookook Valley ARC flea market, Henniker NH  
31 Maine State Convention, Lewiston ME (through 1 April)

#### April

17 Boston Marathon  
20 NVARC election night  
23 Framingham ARA Flea & Exams  
20-23 Eastern VHF Conf., Manchester CT

#### May

5/6 NEARFest, Deerfield NH

### Upcoming Operating Activities

#### February

13-17 School Club Roundup  
18-19 ARRL DX - CW

#### March

4-5 ARRL DX – phone

#### April

16 Rookie Roundup – phone

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.

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## So...

Can you pronounce turangawaewae?

No? Well at least you can find it at the Community Center on the third Thursday of the month!



## Nashoba Valley Amateur Radio Club

PO Box # 900

Pepperell Mass 01463-0900

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

**President:** Stan Pozerski KD1LE

**Vice President:** Jim Hein N8VIM

**Secretary:** John Griswold KK1X

**Treasurer:** Ralph Swick KD1SM

**Board Members:**

Ed Snapp N1YFK, 2014-2017

Rod Hersh WA1TAC, 2015-2018

Jim Wilber AB1WQ, 2016-2019

Editor: Skip Youngberg K1NKR

Emergency Coordinator:

Photographer: Ralph Swick KD1SM

PIO:

Librarian: Peter Nordberg N1ZRG

Property Master: John Griswold KK1X

N1NC Trustee: Bruce Blain K1BG

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

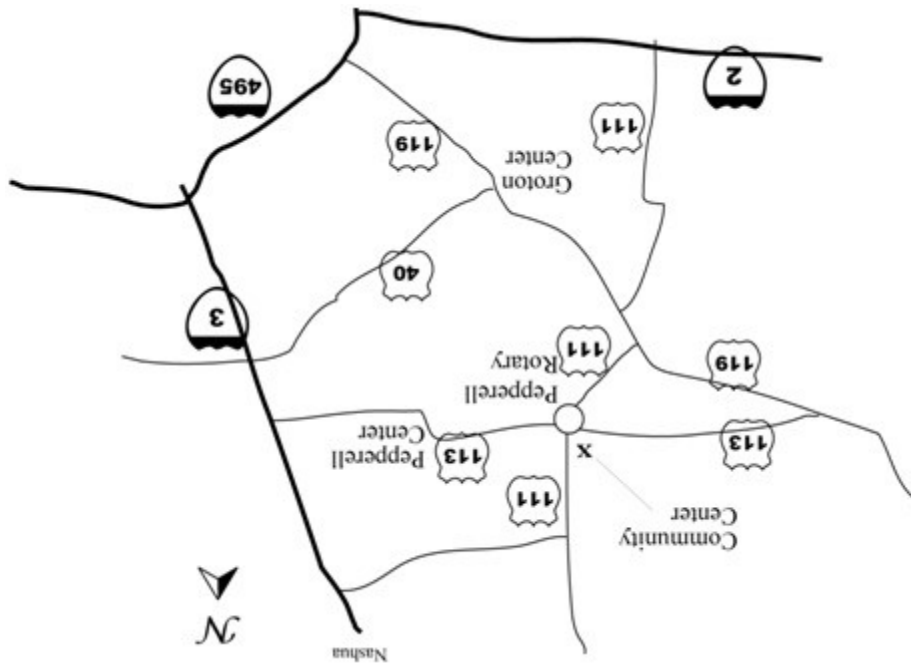
147.345 (+), 100 Hz

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.

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*PO Box 900*

*Pepperell, MA 01463-0900*

