



NVARC

Signal



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More POTA stuff next month...

Next Meeting

This month's meeting will be held 7:30 PM on July 16 2026 at the Pepperell Community Center at 4 Hollis Street in Pepperell Massachusetts.

This workshop discussing one's initial amateur station should prove interesting to the current crop of newly-licensed hams!
See p. 16.

Weekly 2-meter Net

The NVARC Information Net is held Monday nights at 7:30PM local time on the 2m N1MNX repeater – 147.345MHz+100pL. An informal net on 28.400(+/-) may follow the VHF net.

President's Corner Les N1SV

Another Field Day is in the books, and I hope everyone had a lot of fun. I know I did. It was great to see all the participation, especially from some of our newer members. The weather was great with only a brief sprinkle Saturday evening. John KK1X really did an outstanding job with the chicken dinner on Saturday. It was finger licking good! Thanks to all who provided side dishes or just kept the troops well fed all weekend!

It was a pleasure to talk with so many folks who happened upon the Field Day site and were interested in learning more about amateur radio. Bruce did an outstanding job talking up the hobby with our visitors and introducing them to our different stations. Thanks to John K1JEB for setting up the GOTA station. I know John had some issues at the beginning but once they were solved, he was off and running. I had fun operating 6m FT8 with some nice sporadic-E conditions on Saturday afternoon and a little on Sunday morning.

Jim AB1WQ launched his first Pico balloon with the help of some of our members Saturday afternoon. I have a short video of it lifting off to the heavens. Unfortunately, there seems to have been some technical issues with it as Jim was unable to track it. Ed KA6PNL brought his satellite equipment but unfortunately there were no good passes to work.

We had visits from New England ARRL Director Tom Freneye K1KI, as well as Conservation Administrator Paula Terrasi who issued our permit for the site. Thanks to Jim N8VIM for bringing his large generator and providing power for the weekend. Jim also gave a tour of the NVARC repeater shack Sunday morning. Thanks, Jim!

By the time you read this 4th of July will be over and done with and you'll have realized that because of the holiday we didn't have a POTA event on the 1st Saturday of July. However, we'll try and put something



President's Corner
Les N1SV

together for next month Saturday August 1st. Stay tuned to the reflector for more details on this.

Just a reminder about some upcoming events.

First, don't forget about the two summer workshops coming up at the Community Center.

We have one on Station Design hosted by Bruce, K1BG on July 16th from 7:00-9:00 PM.

And then there is an Antenna Workshop on August 20th also from 7:00 – 9:00 PM hosted by me and John, K1JEB.

Bruce, K1BG has a field trip to the K1TTT superstation in Peru, MA on July 26th. There is also a trip to the Vintage Radio & Communications Museum in Windsor, CT on August 8th. If you're interested in either of these it's not too late to sign up - just let us know.

And finally, John K1JEB volunteered to host the NVARC picnic at his home in Littleton, MA on August 22nd. This is a potluck affair as was done last year. Please contact John K1JEB for further details. Wow, for a club that usually tries to take it easy during the summer we are certainly busy!

Radio Technical Assistant John K1JEB

Many amateur radio operators have heard of ChatGPT, but few realize how useful it can be for solving everyday ham radio problems. Think of ChatGPT as a knowledgeable assistant that can help research, explain concepts, perform calculations, generate construction plans, troubleshoot equipment, and even write software.

Starting With a Simple Question

Suppose you ask: "How do I build a 2-meter J-Pole antenna from copper pipe?"

ChatGPT can provide antenna dimensions, materials lists, feed-point location, assembly instructions, and tuning procedures.

The real power of ChatGPT comes from asking follow-up questions. You can ask why the feed point is located where it is, how impedance matching works, what height to mount the antenna, or how to troubleshoot a high SWR.

Other Ham Radio Uses

ChatGPT can assist with antenna design, station grounding, feed line calculations, baluns and transformers, vacuum tube circuits, Arduino projects, SDR applications, test equipment repair, and propagation studies.

Important Rule

Always verify critical information. ChatGPT is a valuable tool, but dimensions, frequencies, and circuit details should always be checked against trusted references.

Actual ChatGPT Conversation Example:

Ham: Design a 2-meter J-Pole antenna for 146.52 MHz using copper pipe.

ChatGPT: For a J-Pole centered on 146.52 MHz: Long element about 58 inches, short element about 19 inches, spacing 1 to 1.5 inches, feed point approximately 2 to 3 inches above the bottom.

Ham: Why isn't the feed point connected at the very bottom?

ChatGPT: The bottom of the matching section has very low impedance. Moving upward increases impedance until a point close to 50 ohms is reached.

Ham: I built the antenna, but the SWR is about 2:1. What should I check?

ChatGPT: Check feed-point position, element lengths, solder joints, nearby metal objects, and possible common-mode current on the coax.

Here is an example session:

Ham: Please, create the construction instructions for a 2-meter 450-ohm ladder line J-Pole antenna with check boxes for each step and check marks on how to test the antenna and mounting instructions.

ChatGBT: Beginner Project: 450-Ohm Ladder-Line J-Pole Antenna
Materials Required

- 60 inches of 450-ohm ladder line
- SO-239 connector or coax pigtail
- 50-ohm coax cable
- Soldering iron and solder

Radio Technical Assistant John K1JEB

- Wire cutters
- Measuring tape
- Heat shrink tubing or tape
- Nylon cord

Construction Checklist

- Cut ladder line to 58 inches.
- Strip insulation at the bottom.
- Solder the two conductors together at the bottom.
- Measure 2.5 inches above the short.
- Connect coax center conductor to one side.
- Connect coax shield to the other side.
- Insulate the connections.
- Attach a support loop at the top.
- Verify no accidental shorts.

Testing Checklist

- Connect antenna analyzer or SWR meter.
- Hang antenna vertically.
- Keep away from metal objects.
- Measure SWR at 146.52 MHz.
- Measure SWR at 144 and 148 MHz.
- Record results.

Tuning Checklist

- Move feed point slightly up or down to improve SWR.
- If resonance is low in frequency, shorten antenna slightly.
- Re-test after each adjustment.
- Continue until SWR is approximately 1.5:1 or better.

Permanent Mounting Checklist

- Mount vertically.
- Keep away from gutters and metal siding.
- Weatherproof all connections.
- Add a drip loop.
- Secure coax to support structure.
- Recheck SWR after installation.
- Test local repeater access.
- Make a simplex contact.

This simple ladder-line J-Pole is an excellent example for a first antenna project for a newly licensed amateur radio operator.

Getting Started with ChatGPT for Ham Radio

Fortunately, getting started is easy.

Step 1: Create a Free Account at <https://chatgpt.com/>

A paid Plus subscription is available, but many hams will find the free version useful for getting started.

Step 2: Ask Simple Questions

Think of ChatGPT as a knowledgeable Elmer who is available 24 hours a day.

Start with simple questions such as:

- How do I build a 2-meter J-Pole antenna?
- What is SWR?
- How does a balun work?
- How do I program a Baofeng radio?
- What is the difference between LSB and USB?
- How do I calculate the length of a dipole antenna?

Step 3: Ask Follow-Up Questions

The real power of ChatGPT comes from the conversation.

For example:

Ham: What is a balun?

ChatGPT: <Explains the purpose of a balun>.

Ham: Which balun should I use for a 40-meter dipole?

ChatGPT: <Recommends suitable options.>

Ham: Can I build one myself?

ChatGPT: <Provides construction information.>

Each answer can lead to another question.

Step 4: Use ChatGPT as a Learning Tool

ChatGPT can explain topics at different levels.

You might ask:

- Explain SWR as if I were a new Technician.
- Explain impedance matching with examples.
- Teach me how a superheterodyne receiver works.
- Explain vacuum tube amplifiers.

If an explanation is confusing, simply ask:
"Explain it another way."

Step 5: Use ChatGPT for Projects

ChatGPT can help with:

- Antenna construction
- Station grounding
- Feed line calculations
- RF transformers
- Arduino projects

Radio Technical Assistant John K1JEB

- Raspberry Pi projects
- SDR systems
- Test equipment repair
- Python programming
- Logging software
- And more...

Step 6: Verify Important Information

ChatGPT is a powerful tool, but it is not perfect.

Always verify:

- Antenna dimensions
- Circuit values
- Power supply voltages
- Component ratings
- Safety-related information

Think of ChatGPT as a very knowledgeable club member. It is usually helpful, but good engineering practice still requires checking the details.

The Most Important Tip

Don't ask one giant question.

Ask one question.

Read the answer.

Ask a follow-up question.

Continue the conversation.

That is where ChatGPT becomes most useful and can help both new and experienced amateur radio operators learn faster and solve technical problems more effectively.

Treasurer's Report Ralph KD1SM

Income for June was \$45.00 in membership fees. Expenses were \$0.90 in PayPal fees leaving a net income of \$44.10 for the month.

Current balances:

General fund	\$3,821.93
Community fund	\$7,243.25

As of 2 July we have 79 members who are current with their dues. NVARC dues are still a bargain at just \$15/year.

To pay membership dues via PayPal see the instructions in <https://n1nc.org/membership/>

If you are in doubt about your dues status please send me (Ralph) an email and I will be happy to answer your questions.

If you are joining ARRL or renewing your membership please note ARRL's instructions to enter your NVARC membership information. As an ARRL Special Service Club, the ARRL expects a majority of Club members to also be ARRL members and will send a portion of your new or renewal ARRL membership fee back to the Club. Contact me (Ralph) for further information if you need it.

Board Meeting Report John K1JEB

Les N1SV has brought up the restoration of the repeater shack. The South wall needs to be resided as the clapboards have rotted. There is a need for 300 linear feet of clapboard. John K1JEB will make a request for donation of materials needed for the project.

Les N1SV has reported that the Field Day went very well. The weather was good. The town did a great job mowing the site. Several new members joined to help put up and tear down the equipment. Bruce K1BG did a great job introducing non hams to ham radio. Everyone did a great job. The food was great.

Don N1NWE is working on getting new guest speakers for future club meetings.

July 16th is Station Design hands-on course.

August 20th is Antenna Design hands on course.

Bruce K1BG is planning a K1TTT open house in Peru, MAQ July 26th.

There will be no POTA event this July. There may be one in August.

Les N1SV has planned a Field Trip in August 8th to the Vintage Radio & Communications museum in Windsor, CT.

Reminder HamXposition is August 13th through 16th.

John K1JEB will be sponsoring the 2026 annual NVARC Picnic at his home on August 22nd.

Meeting Ended at 8:00 pm.

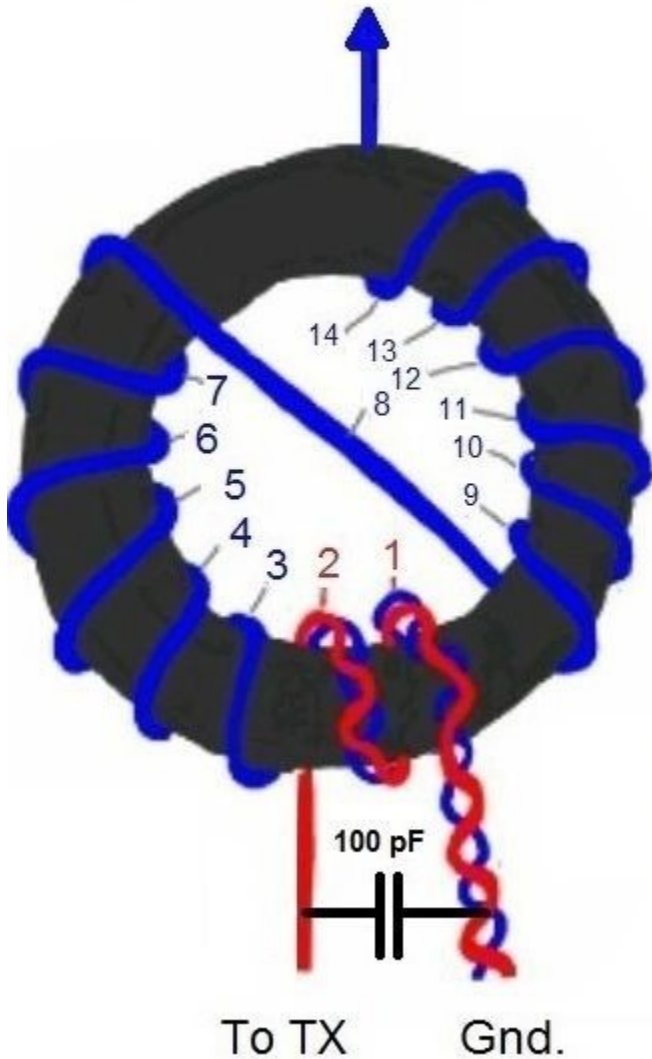
Revisiting the 49:1 Unun Les N1SV



Several years ago, I assembled an 80m End Fed Half Wave antenna including a 49:1 UNUN. Recently I wanted to make a 40m version for some QRP POTA operations. Instead of buying a UNUN kit, I decided to roll my own. Since the maximum power I would be pumping into the antenna would be 10W or less I decided to use a smaller FT-140-43 toroid core. I used some #22 magnet wire I had around and purchased some hardware locally and couple of small plastic cases on Amazon. The total cost of material for each UNUN was around \$15. I made two of these, one for me and one for Paul KC1YMR.

Revisiting the 49:1 Unun Les N1SV

To End Fed Half Wave Antenna.



The hardest part of the project was winding the core see the diagram left. The core uses two bifilar windings for the primary with 12 turns on the secondary. There was a little chassis work involved and then shoehorning everything into the cases. I found it useful to temporarily install the RF connector and the 100 pF capacitor to test everything before installing it in the case.

In this way I could measure its SWR using a 2450-ohm resistor and my trusty NanoVNA. The feed point impedance of an End Fed Half Wave antenna is between 2000 & 3000 ohms so 2450 is traditionally the value that people use. The actual feed point impedance is dependent on antenna length, wire diameter, and proximity to other metallic objects.

Fran Purcell



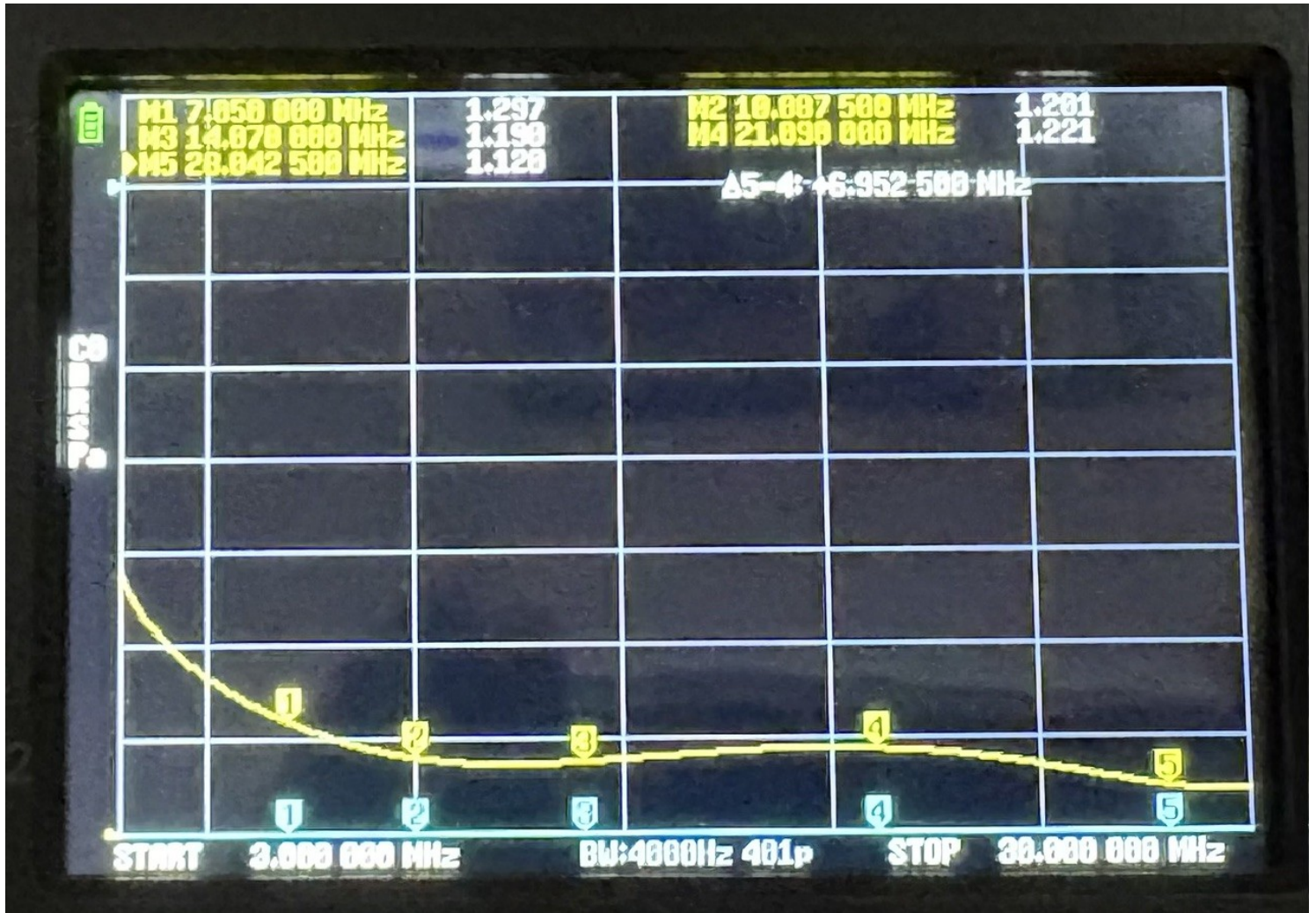
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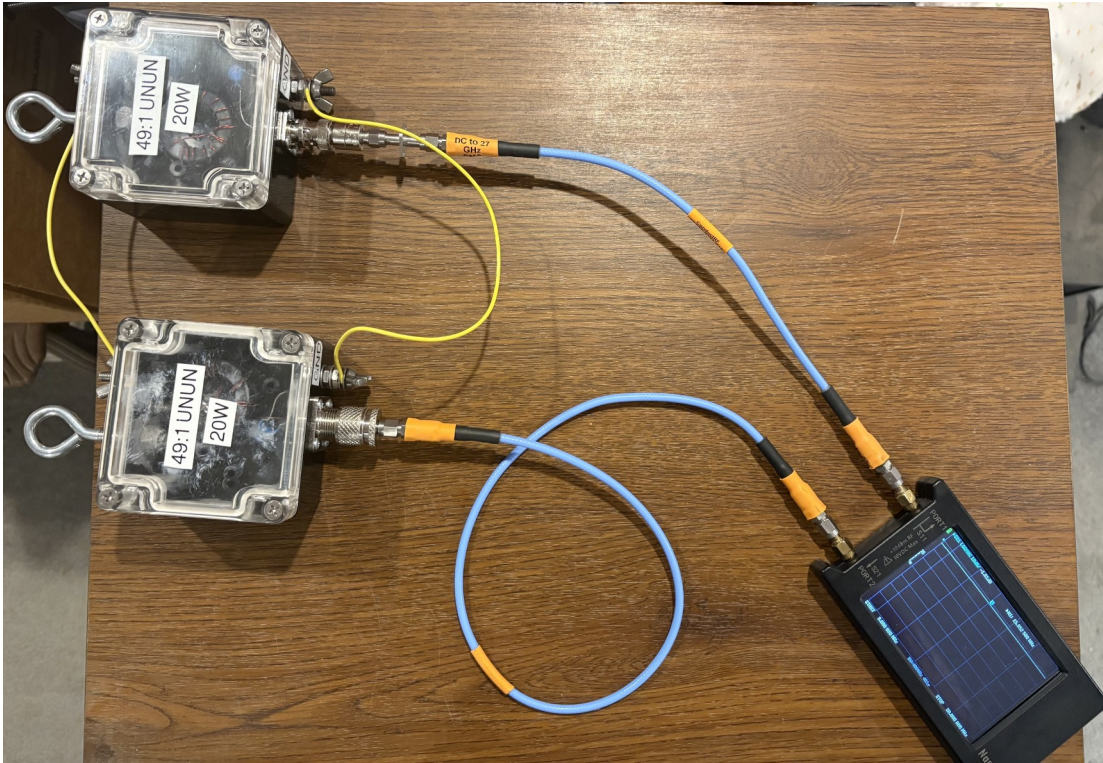


Here is a screenshot of one 49:1 UNUN's SWR before I installed it in a case. As you can see the SWR is relatively flat over most of the bands of interest, however it starts to increase rapidly below 40m. These SWR values were in family with those from my original 49:1 UNUN.

The purpose of the 100 pf capacitor across the input winding is to flatten the SWR curve and improve high frequency performance. If no capacitor is used the SWR above 10 MHz increases rapidly. Online information seems to indicate that experiments with other value capacitors like 120 or 150 pf produced better SWR on some bands and worse others. In general, not as flat SWR performance so 100 pf seems to work the best.

One of the benefits of building two UNUNs is that you can connect them antenna port to antenna port (back-to-back) in order to measure the insertion loss of the pair. By doing this you can then calculate the average insertion loss of each one (by dividing by two – Ed.)

Revisiting the 49:1 Unun Les N1SV



Again, online information I found seems to indicate that the expected insertion loss for each 49:1 UNUN should be less than 1.5 dB. The total insertion loss I measured for both UNUNs was 1.75 dB so the average insertion loss of each is one is about 0.875 dB. What does this mean, well if I apply 10w to the UNUN input approximately 8.17 watts will appear at its output. So, you lose about 1.83 watts or 18.3 % of my input power (81.7% efficiency). This power is lost in the form of heat. Online information also seems to indicate that you might be able to reduce the insertion loss a little by using higher quality capacitors however I haven't investigated this any further and what I have meets my current needs. I have some extra parts left if anyone wants to make their own 49:1 UNUNs.

Additional Resources:

1. [FT-140-43 Toroid Core](#)
2. [Project boxes](#)
3. <https://vk3il.net/projects-antenna/efhw-matching-unit/>
4. <https://www.youtube.com/watch?v=1TrS-IgpGDw>

Amateur Radio Station Workshop Bruce K1BG

July 16, 2026. 7:30 PM, Pepperell Community Center

As is customary, NVARC does not hold meetings in July or August. This year, in lieu of meetings, volunteers will hold workshops on those dates, focused on the needs of new radio amateurs.

For July, the subject will be “Amateur Radio Station Design”. Hosted by K1BG, the activity will be a group oriented interactive activity. By evening’s end, participants should be able to identify what equipment they need and what they need to do to get their first station on the air.

We encourage new or recently licensed hams, those thinking about getting an amateur license, and those experienced hams who want to mentor new hams to get involved.

The location will be the Pepperell Community Center (where we normally have our meetings).

Please let Bruce, K1BG, know if you are interested in participating (bruce.blain@charter.net).

NVARC Tables at HamXposition banquets.

The Northeast HamXposition takes place August 13 – 16 at the Best Western Royal Plaza Hotel & Trade Center in Marlborough.

<https://hamxposition.org/>.

NVARC members have reserved tables at both the Friday night DX/Contest Banquet and the Saturday night Grand Banquet. You certainly don’t want to miss HamX, and the dinners are a great way to socialize with your fellow club members. If you are interested in any of the activities, follow the “Get your tickets online! link on the website. Keep in mind, the dinners did sell-out last year.

Field Day 2026 Reflections

Bruce K1BG

2026 ARRL Field Day is now finished, and everyone comes up to me and asks: “How did we do?” And my answer is always a variation of the same. “We did great!”

We started Field Day off this year the way we usually do – breakfast. This year, at our usual spot, Tiny’s Restaurant in Ayer. We had a surprisingly large turnout, and we enjoyed breakfast. Then off to Pepperell’s Heald Street Orchard – NVARC’s Field Day location.

Kudos to whoever placed the signs on Friday night – I’m not sure who did this but thank you! Early arrivals had to contend with the traffic closure for the Pepperell 4th of July parade scheduled later Saturday morning. Floats for the parade were staged at the lower end of Heald Street, hence the closure. But with the signs in place, finding our Field Day location from the Townsend end of town was a snap.

The site was beautifully mowed by Chris Razzaboni (Pepperell Conservation, who maintains the orchard). He did an extraordinary job. It really enabled us to enjoy the site to its fullest. If you run into Chris (particularly if you are a Pepperell resident), please thank Chris.

We quickly set up the site, with a lot of volunteers helping. Two HF stations (one focused on Phone, one focused on CW), a VHF/UHF station, and a GOTA station – GOTA stands for “Get On-The Air”. It’s a station dedicated to unlicensed or newly licensed operators. Power and internet followed – like clockwork. We relaxed a little at lunch, sharing pizza and cold drinks.

At the crack of 2 PM, we were off and running! OK, there were some minor issues to work out, but in general we were making contacts and having fun!

Field Day 2026 Reflections

Bruce K1BG

Our “Educational Activity” (which earned us bonus points) was a balloon launch by Don, N1NWE, and Jim, AB1WQ. The balloon was beautifully prepared, loaded with Helium gas, and launched! It was last seen rising quickly over the orchard. Hopefully, we’ll hear more about this elsewhere in the Signal. I must confess, I’m at a loss to tell you more because I was demonstrating one of the stations with some unlicensed visitors and was unaware it was taking place until it was over!

John, KK1X, stepped up and prepared a great chicken dinner to keep everyone fed, and there was an assortment of baked goods, snacks, drinks, etc., to keep everyone fed and well hydrated for the weekend. Someone was operating throughout the night, and stations were active pretty much all of the 24 hours.

Some statistics –

We had a total of 48 people who signed the guestbook. I know there were more, but a few either didn’t want to sign in or we missed them. We made a total of 893 contacts, with 33 of those made on the GOTA station. 29 people in total made contacts, and 5 made contacts on the GOTA station. We welcomed 10 unlicensed people who made contacts, and another 9 operators who have been licensed for less than a year. Those people made a total of 90 contacts! I would say we had a terrific Field Day.

So how did we really do? While our final score still needs to be tabulated and submitted to the ARRL (I’ll report on that next month), NVARC generally doesn’t pay attention to the score. We setup working stations, showed what we can do to the public, got unlicensed and newly licensed people “on-the-air”, and had a great time. What else is there?

Field Day 2026 Reflections Bruce K1BG

I've recognized some people already, but I'll attempt to recognize everyone who contributed. I apologize if I leave anyone out.

Zack, KC1VUY - Field Day Chairman / Porta Potty Steward

Bruce, K1BG and John, KK1X – HF Station Captains

Les, N1SV - VHF/UHF Station Captain

John, K1JEB - GOTA Captain

Ed, KA6PNL - Satellite Station

Jim, N8VIM - Generator, Power, and Networking

Don, N1NWE, and Jim, AB1WQ - Educational Activity

John, KK1X - Chicken Dinner, Cold Drinks, etc.

Leo, K1LK - Public Gathering Area – Special thanks to Leo.

And whoever contributed baked goods, donuts, coffee, etc.

Volunteers! People who helped set-up and take-down. Antennas, tents, electrical cabling and outlets, CAT-5 for internet, etc., etc.

Paula Terrasi and Chris Razzaboni from Pepperell Conservation, who helped with permits and mowing.

Thank you everyone. See you for Field Day 2027!

Nashoba Valley Amateur Radio Club
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President: Les Peters N1SV
Vice President: Don Campbell N1NWE
Secretary: John Bielefeld K1JEB
Treasurer: Ralph Swick KD1SM

Board Members:
Jim Hein N8VIM (2024-2027)
Steve Davidson NA1T (2025-2028)
John Griswold KK1X (2024-2029)

N1NC Trustee: Bruce Blain K1BG

Join NVARC! Annual dues are
\$15 individual, \$20 family

Contact us on the N1MNX repeater:
442.900(+) PL100
147.345(+) PL100
53.890(-) PL100

This newsletter is published monthly. Submissions,
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