



NVARC

Signal



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Next Meeting

March's meeting will be held 7:30 PM on March 20 2025 at the Pepperell Community Center at 4 Hollis Street in Pepperell Massachusetts.

Our guest speaker will be Dale AF1T and his famous antenna presentation.

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.

N1MNX Silent Key

It is my sad duty to share that long-time NVARC member Dave Peabody N1MNX became a silent key on 11 February, 2025.

Dave was one of the very early members of NVARC, taking the role of Public Information Officer in 1993 and holding that post for two decades.

Dave also volunteered with Pepperell Emergency Management and served as the RACES Radio Officer for several years. Field Day was one of Dave's passions; when his health first prevented him from coming to Field Day at the Heald Street Orchard some Club members arranged transportation for him to visit the site. As his health declined further Dave was no longer able to visit or participate in other NVARC activities.

The three repeaters used by NVARC members and local area hams were another of Dave's passions. Originally built and maintained by former NVARC members Ben Akins KB1FJ and Erik Stromsted W1ZBT in 1990 at Erik's home in Pepperell, the repeaters were transferred to Dave in 1999 and relocated to their current site under agreement with the Pepperell Water Department with support from Pepperell Emergency Management. Dave kept an HT by his bed in the assisted living facility to keep an ear on the repeaters.

Outside of radio communications and public service, Dave's career was in cable TV. Dave wrote articles for the Signal including an explanation of cable TV (see Understanding Cable Television, September 1999).

No services are planned, per Dave's request.

In fellowship,
Ralph KD1SM

President's Corner Bruce K1BG

As the saying goes, “March comes in like a lion and goes out like a lamb”. I’m not even sure what that means! As for our hobby, it means that the ARRL DX contests and all indoor activities are behind us and the prospect of warmer weather offers us the chance to plan for outdoor activities. Meaning installing or fixing those antennas, hidden transmitter hunts, Parks on the Air activations, Field Day, etc. Let’s try to share the experiences with fellow club members and include the newer and new hams that are following our activities.

For those of us who follow propagation – those factors that allow radio waves to travel to other parts of the world – March is an interesting time. I tell my technician class students that “some frequency bands are daytime bands, and some are nighttime bands”. “Greyline” occurs at both dusk and dawn when propagation can have the magical effect of the best of both. March offers the solar equinox, where the greyline follows an exact north-south path and goes through both the north pole and the south pole. For propagation, I find that really interesting. So my advice to you is to get-on-the-air and see what you catch. You never know until you try!

Last week the annual Bromfield Science fair took place. Myself, Skip – K1NKR, John – KK1X, Dennis – K1LGQ, Libby – KC1RKH, Adam – KC1RVK, and Jim – AB1WQ, volunteered to judge. There were lots of interesting projects on display. NVARC awarded two “Youth Achievement Awards”. Leo Barrague & Som Dwivedi for their project “The Relationship Between the Thickness and Amount of Coils of Copper Wire to A DC Motor's RPM” and Eleanor Daly & Ellie Pulido for their project “Heart Rate 180, Battery 100”. Winners will receive an SDR-RTL software designed radio kit and a tour of Haystack Observatory conducted by Phil, W1PJE. Congratulations to the winners!

President's Corner cont'd

NVARC has a special treat in store for you at the March meeting. Dale Clement, AF1T, will be talking about antennas. NVARC has had Dale speak before, but we have enough new members and new hams that we just couldn't pass up the opportunity to have him speak again. Dale demonstrates practically and visually how and why antennas work. Trust me: He's entertaining, and you will learn a lot. Do not miss this.

At the March board of directors meeting, we discussed the status of the N1MNX repeater system and NVARC's stewardship of it. NVARC has not been a "repeater club" in the past, but we have been a major user of the repeater. The board will propose to the membership the results of the discussion and the direction the board feels the club should take.

About the same time you receive this Signal, the Contoocook Valley Radio Club (CVRC) will be holding their annual flea market. For some reason, I always enjoy going to this event. It's a pretty good flea market with a mix of old stuff from fellow hams basements to fairly new radios and parts.

They have a few talks, raffles, and a VE session for those of us who would like to upgrade. I get to see old friends and make new ones. Best of all, for some un-scientific reason that I don't understand, it either rains (making the trip miserable) or it's the first warm Sunday of the year. When the weather is good, I take the back roads and the drive is fantastic (windows down). It looks like this Sunday is the weather is good. I hope to see you there. More info can be found on the club email reflector.

Lundquist / Bunnell WWII Straight Key
Leo K1LK



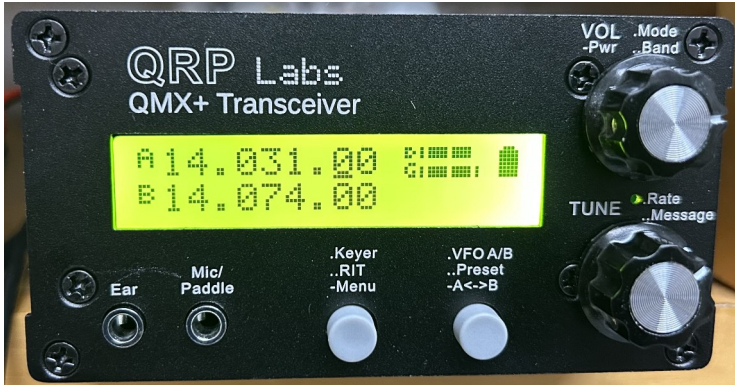
The key shown was manufactured by the Lundquist Tool Mfg. Worcester Massachusetts during WW2. The letter at the end of the model number identified the manufacturer, B being Lundquist, or A being the J.H. Bunnell Co. of New York. It was mounted at the radio operating position. It was use by new inexperienced signal corp operators. Senior operators were issued their own personal “Bugs “ and would be adjusted to their liking. The receptacle on the back left side of the straight key is for the “Bugs”, so it can connect to the radio without having to unplug the straight key. At the end of their shift they’d just unplug and go.



First Impressions of the QRP-LABS QMX+ Transceiver

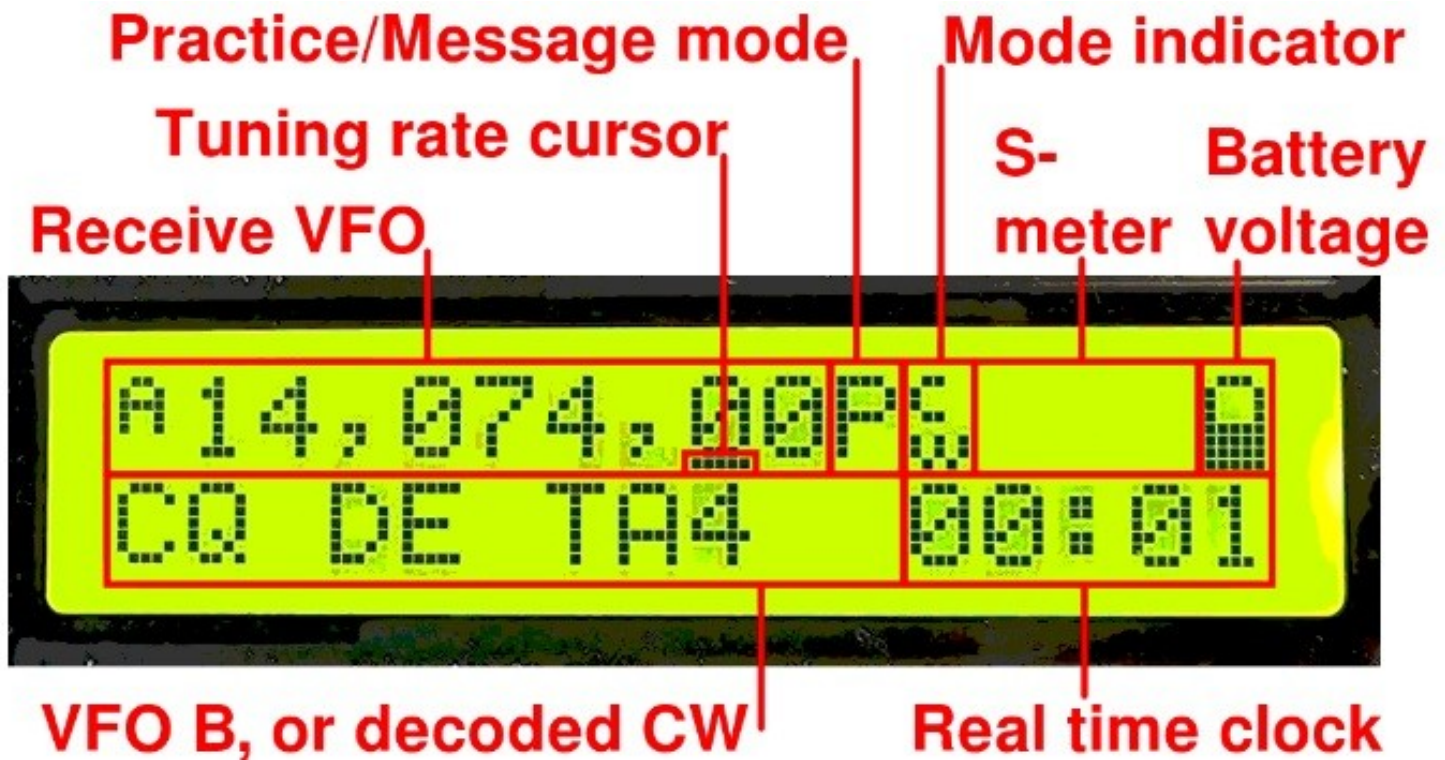
Les Peters, N1SV

QMX+ Front Panel



The QRP-LABS QMX+ transceiver is a 160 – 6m QRP transceiver that combines the single tone digital functionality found in the QDX transceiver with a basic CW transceiver. The QMX+ is larger than the QDX, but is still

relatively small measuring 4.1” W x 2.1” H x 5.7” D. On the front panel is a two row 16-character display that provides the operator with a lot of useful information including decoded CW.



On the rear panel are connections for RF (antenna), the optional GPS antenna (if the GPS options is installed), AUX, USB, PTT, and a DC power jack. I haven't quite figured out what the AUX connection is used for yet. I assume the PTT is used to key an amplifier. The transceiver doesn't come with a USB-A to USB-C cable for connecting to a computer, so you'll need to get your one. And while you can order the optional DC power cord its relatively short and has extremely small

stranded wires. After a couple of failed attempts trying to install power pole connectors on it, I gave up and used the power cord from my QDX transceiver.

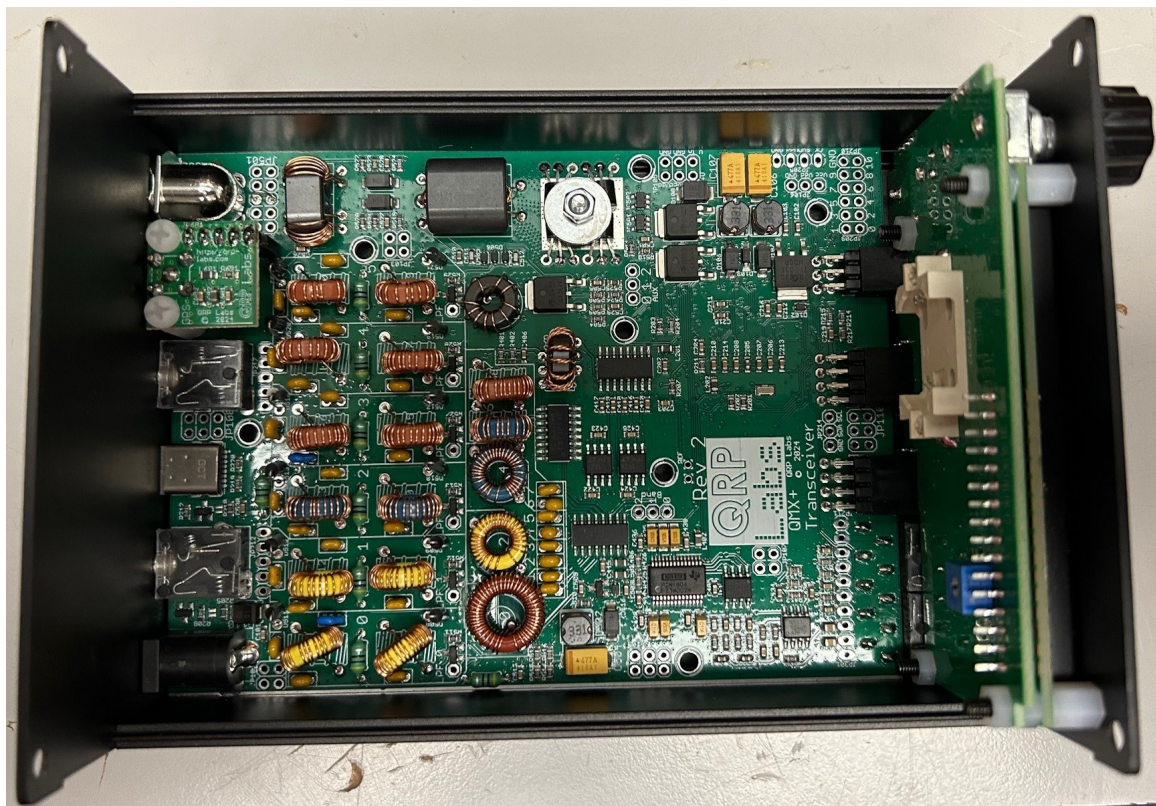


While QRP-LABS offers the basic transceiver as a kit for around \$150, they also offer assembly for an additional \$60. The assembly costs seemed like a bargain, when I realized there were more than 20 toroid coils that needed to be wound. The

kit can be ordered / built for operation from a 9V or a 12VDC source. Just a note, don't power the 12V version from a standard 13.8 VDC power supply. The operating manual warns of this, and if you're like me and overlook it, the transceiver's over voltage protection will prevent the transceiver from transmitting and the CW sidetone will not work either. The operating manual list an easy way to reduce the voltage by installing three 1N4001 diodes back-to-back in the supply line to drop the voltage by 1.8v. I decided to put a 12V regulator inline to solve the problem. With most people having a 13.8 VDC power supply, the designer should have found a better way to accommodate this in his design. I noticed that the transmit output power doesn't seem to be consistent on all the bands. A data sheet was shipped with my unit with the following output power measurements, see Table-1.

The knobs and buttons on the front panel have multi functions. While the operating manual tries to do a good job of explaining their functionality, there is a little bit of a learning curve to get the transceiver setup the way you want. The designer certainly packed a lot of features into such a small box.

Band	Power (W)
160m	4.9
80m	5.0
60m	4.6
40m	3.0
30m	4.8
20m	3.5
17m	3.1
15m	4.7
12m	3.2
10m	4.0
6m	3.9



I tried the QMX+ out on 40m CW making a few contacts with stations in Europe and stateside using my 2el yagi. I really liked the 300 Hz audio filter it's nice and sharp. The CW side tone volume control is unique in that it can be set relative to a percentage of the volume control via a menu setting or, as an absolute value from the menu. I also easily made some CW & FT8 contacts on 30m with my dipole antenna. Using the transceiver on FT8 was easy and worked well although I had to increase the radio poll value in WSJT-X to eliminate timeout errors.

The transceivers designer, Hans Summers G0UPL, has been working on firmware enhancements to add SSB to the QMX+. He is testing the changes out and has provided a demonstration of the Compressed Envelope SSB technique he's developed. Here is a link to a YouTube video of G0UPL demonstrating Compressed Envelope SSB (CESSB) with the QMX+ <https://www.youtube.com/watch?v=-vnJZ7-j6gc&t=3s> . I have no doubt that in 2025 there will be a new firmware upgrade that will add SSB operation to the QMX+. So far, I'm impressed with the level of functionality this radio has and the attractive price point and am looking forward to the addition of SSB. I think this may turn out to be my POTA radio!

Feed Line Feed-through Panel

John KK1X



While my house was undergoing an exterior renovation, I had to move feed lines out of the way. I had previously (so sadly) just run them through a partial window opening. Cosmetically awful, energy inefficient, and just overall horrible, I decided I needed to up my game. Just a little. I've constructed a pass-through panel that will sit in a nearly closed window, reducing air leaks while making it tolerable to look at.

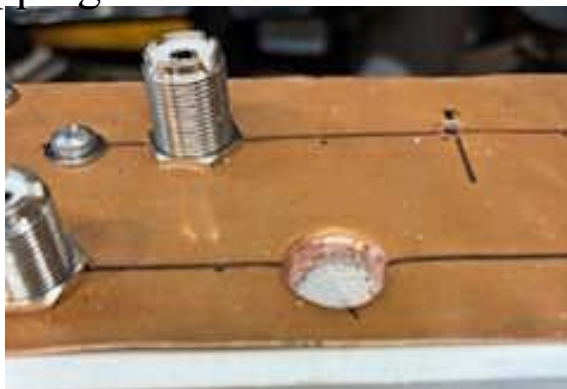
After measuring the window opening (twice!) I cut a piece of cellular PVC 1x4. To the actual correct dimension, proven by a test fit. I had a small sheet of 0.4mm copper that I liberated from a former employer that was closing down their hardware lab. I cut a strip of copper to fit the PVC as best I could and secured it in place with four stainless steel sheet metal screws. I also drilled through for two #10-32 stainless screws. These are held in place with a nut, and two washers and a wing nut, allowing easy grounding of all the UHF bulkhead connectors.

I laid out a grid for twelve UHF connectors on the copper sheet. The rows are spaced about 1.5", the connectors about 2" on center. I did use a ruler, but I also used a fat-tipped marker... Each of the twelve holes was then pilot-drilled with a 1/8" bit through the copper and PVC.



feed-through

I removed the copper and drilled the PVC with a 5/8" spade bit. I learned quickly that PVC chips quite badly, so the remaining eleven holes were drilled from both side to minimize the chipping.



I replaced the copper, but lacking a proper 5/8" bit for metal, I used one of those step drills. As the copper is so soft, it was not so much drilled as swaged into the opening. I'd like to think this provides more contact area for the bulkhead connectors.



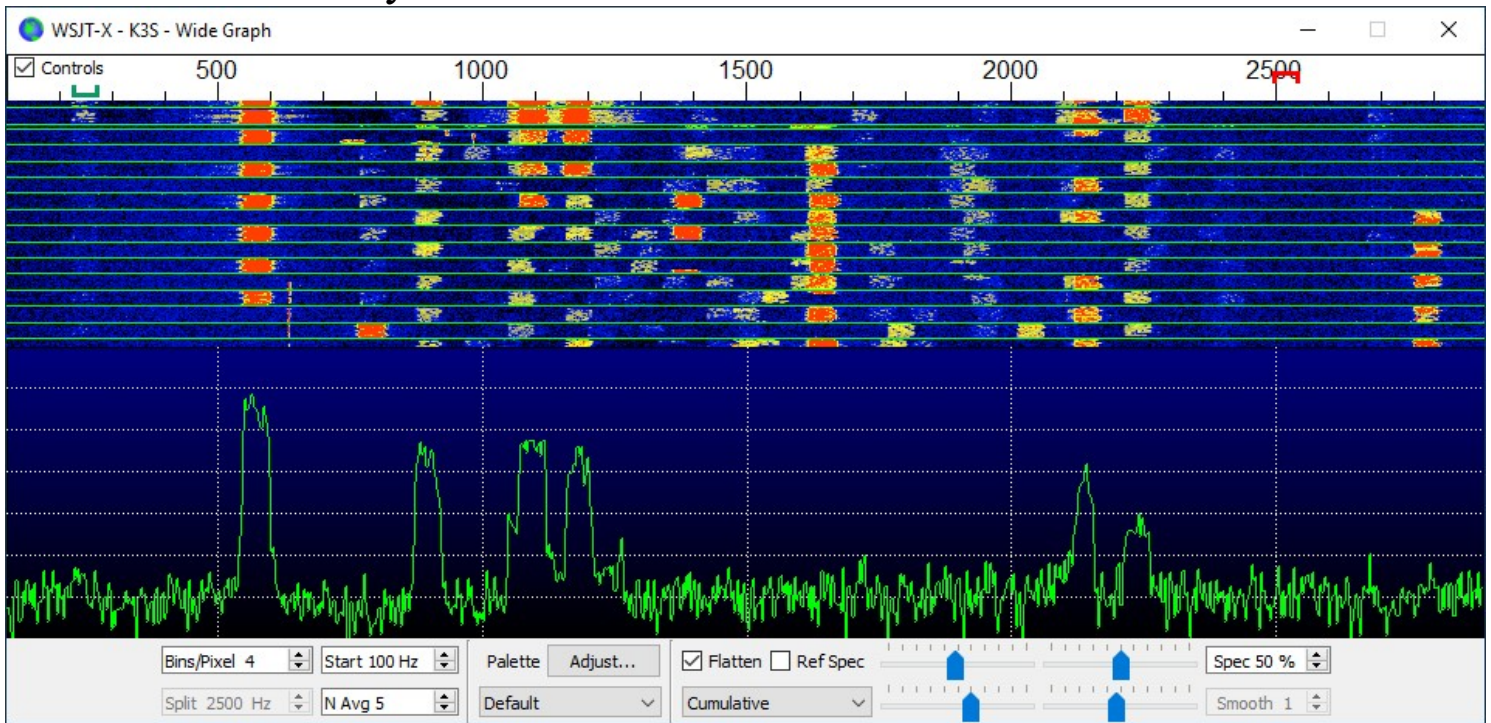
I'm short a few connectors at this point, so I'll either find them at a flea market or in fabulous ham tradition, cover them with duct tape. Late breaking news, I actually ordered some. \$15 a pop for these beauties! They've been added, and the panel is in service with three connectors in service (so far).

Thanks to our sponsors!



DXer's Notebook Les N1SV

In this installment of the DXers Notebook, I want to talk about FT8 & FT4. FT8 seems to be the latest rage with some loving it and others hating it. However you stand on this, it seems to have funneled a lot of activity away from the SSB & CW modes. But it has also allowed those smaller stations to be able to work DX that weren't able to effectively do this previously. Anyway, if you want to work DX you need to go where the DX is and these days it seems to be FT8.



Both FT8 & FT4 are digital modes found in the WSJT-X software package. FT8 uses a 15 second T/R sequence. While FT4 uses a 7.5 second one. Below are the default FT8 & FT4 operating frequencies, however stations are free to define new frequencies within the WSJT-X settings Frequencies tab as needed. For further information on WSJT-X refer to the user's manual here <https://wsjt.sourceforge.io/wsjt-x-doc/wsjt-x-main-2.7.0.html>. Two alternative programs to WSJT-X are JTDX (<https://sourceforge.net/projects/jtdx/>) & MSHV (<http://lz2hv.org/mshv>). I'm still exploring both of these so I don't have a lot to say on them at this time other than to say JTDX has a similar look at feel of WSJT-X while MSHV is not.

The screenshot displays the WSJT-X v2.7.0-rc8 interface. The top section shows two tables: 'Band Activity' and 'Rx Frequency'. The 'Band Activity' table lists various stations with their UTC, dB, DT, Freq, and Message. The 'Rx Frequency' table shows received signals with similar columns. Below the tables are control buttons for 'CQ only', 'Log QSO', 'Stop', 'Monitor', 'Erase', 'Decode', 'Enable Tx', 'Halt Tx', and 'Tune'. A central display shows the frequency '28.074 500' and a call sign 'FK8HM'. A 'Generate Std Msgs' panel on the right lists messages like 'FK8HM N1SV FN42' and 'FK8HM N1SV -14'. The bottom status bar shows 'Tx: FK8HM N1SV 73' and 'Last Tx: FK8HM N1SV R-14'.

Band Activity					Rx Frequency				
UTC	dB	DT	Freq	Message	UTC	dB	DT	Freq	Message
234915	-11	0.2	2236	~ JA9PPC V31DL R-07	234315	Tx		2497	~ CQ AS N1SV FN42
234915	-22	0.1	829	~ JH0EHQ N3FMC -14	234330	-22	0.1	1427	~ UA0FO K6NCC 73
234915	-10	0.5	1128	~ KZ4MQ KR7M RR73	234345	Tx		2497	~ CQ AS N1SV FN42
234915	-14	0.1	1202	~ KC8BQP K6DSP -09	234400	-16	0.1	1427	~ KM4HRR K6NCC CN80
234945	-16	0.1	226	~ N1SV FK8HM RR73	234415	Tx		2497	~ CQ AS N1SV FN42
234945	13	0.9	1074	~ N4NJJ NL7D DM42	234430	-10	0.1	1427	~ KM4HRR K6NCC CN80
234945	17	0.0	552	~ <...> KE7NLI DN55	234500	-13	0.1	1427	~ KM4HRR K6NCC CN80
234945	7	-0.1	2124	~ TI2FAF N1EVK FN42	234530	-15	0.1	1427	~ KM4HRR K6NCC CN80
234945	11	0.1	877	~ JA3JFT N0GOS DN70	234600	-13	0.1	1427	~ KM4HRR K6NCC CN80
234945	8	0.8	1164	~ PY2MLC N090 DM79	234630	-10	0.1	1427	~ KM4HRR K6NCC CN80
234945	-2	1.6	2217	~ NC4MH N9MW RRR	234800	-8	0.1	1427	~ KQ4YMD K6NCC CN80
234945	-19	0.0	1359	~ CA4JMR AJ6VY CM87	234830	-11	0.1	1427	~ KQ4YMD K6NCC CN80
234945	-13	0.2	2235	~ JA9PPC V31DL R-07	234845	-21	0.1	227	~ KC8BQP FK8HM RR73
234945	-3	0.1	1052	~ CQ K7PPD DM33	234903	Tx		2497	~ FK8HM N1SV FN42
234945	-10	0.4	1129	~ CQ KR7M DM42	234915	-14	0.1	227	~ N1SV FK8HM -01
234945	-13	0.1	1202	~ KC8BQP K6DSP RR73	234930	Tx		2497	~ FK8HM N1SV R-14
234945	-24	0.0	2677	~ W9LNU K7TCH R+01	234945	-16	0.1	226	~ N1SV FK8HM RR73
234945	-17	-0.3	1056	~ LU7DZ N7DV 73	235000	Tx		2497	~ FK8HM N1SV 73

A DXpedition is one or more people that travel to a rare location to make contacts with other stations worldwide. More and more DXpeditions seem to be putting heavier emphasis on FT8 / FT4 in their plans. It's no secret that it takes longer to make contacts on FT8 than it does on SSB or CW. During a SSB contest, I can make 3-4 contacts a minute. In contrast it can take 60 seconds or longer to make an FT8 contact even if there are no repeats. While FT4 is faster it could still take 30 seconds or longer to complete a contact. Unfortunately, many people have not caught on to FT4 mode and are content to continue to use FT8.

WSJT-X incorporated two different features designed to make multiple simultaneous contacts, Fox & Hound (F / H), and SuperFox. Fox & Hound mode is a FT8 DXpedition mode where the DX station can work up to five stations simultaneously and thereby in theory, make contacts at a much faster rate. In Fox & Hound mode, the DX station referred to as the Fox, transmits multiple signals on the 1st sequence (15-30 & 45-59

seconds of each minute). The Hounds (chasing the Fox) transmit on the 2nd sequence (0-14 & 31-44 seconds of each minute). The Fox always transmits below an audio frequency of 1 KHz on the Waterfall display and all the hounds transmit above 1 KHz. When the Fox responds to a Hound, the WSJT-X software automatically moves the Hounds audio frequency below 1 KHz to complete the contact. Fox & Hound mode is not allowed on any standard FT8 / FT4 frequency so a new frequency 3 KHz or more away from an existing one must be used. See the WSJT-X user manual (<https://wsjt.sourceforge.io/wsjt-x-doc/wsjt-x-main-2.7.0.html>) for further information on how to configure and use Fox & Hound mode. Fox & Hound mode is found in every standard WSJT-X release.

WSJT-X also incorporated into the new 2.7.0 release; a mode called SuperFox. SuperFox transmits up to nine streams in a full power constant envelope waveform as opposed to Fox & Hound mode that only transmits up to five streams of concurrent waveform. The SuperFox mode also has a key that is entered by the DX station to generate a one-time password (OTP) that all the hounds can see. The OTP lets the hounds know that the DX station is valid and not a pirate (a station pretending to be one that it is not licensed as). Keys for legitimate DXpeditions are requested by contacting the Northern California DX Foundation. Like Fox & Hound, SuperFox transmits on the 1st sequence but can transmit on any audio frequency with the Hounds doing the same on the 2nd sequence. For further details on both Fox & Hound & SuperFox refer to the FT8 DXpedition manual.

(https://www.ft8.it/images/FT8_DXpedition_Mode.pdf)

So how can one tell if a DX station is using Fox & Hound or Superfox mode. Watch the stations that are responding to the DX. If their frequency moves below 1 KHz when they respond to the Fox then the DX is using F / H mode. You also may be able to tell by looking at the waveform and seeing if it's a constant envelope waveform (SuperFox) or not.

Here are a couple of tips for working FT8 / FT4 contacts. In general, most people will transmit at between 1 KHz and 2 KHz on the waterfall display. If that frequency is crowded you may consider running above or below this area where there may be fewer signals competing with you.

Remember if you go too high, you may be out of the DX stations receiver passband. If you can't seem to get the DX to respond, pause a couple of sequences to see if someone is on the same transmit frequency as you. Moving to a clearer audio frequency on the waterfall display could make all the difference. Also, when calling a station that is already in a QSO, consider waiting until they send RRR / RR73 or 73. This may sound obvious but you will be amazed and how many stations will just keep calling the DX regardless. The best tip I may be able to give you is be persistent.

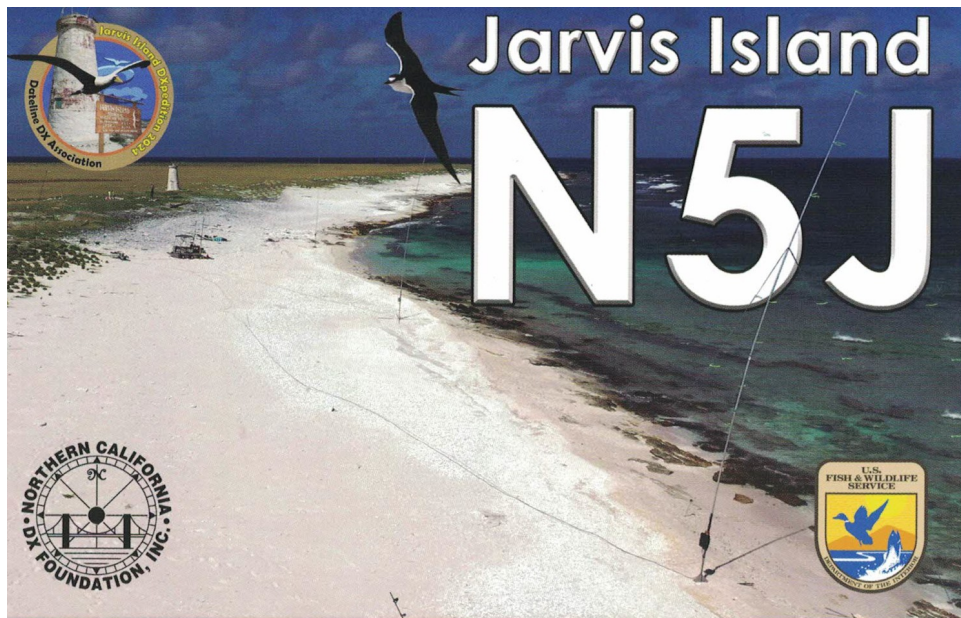
A program that I use as an adjunct to WSJT-X, is JTAlert (<https://hamapps.com/JTAlert/>). It identifies new countries you haven't worked by reading what WSJT-X is decoding and using a band-by-band list of needed countries. Of course, you have to enter all the countries you haven't worked before you start which takes a little while. But when properly configured, it will alert you to new countries you haven't worked in WSJT-X so it is useful. Here is an example of the JTAlert main window showing a new country I recently needed on 10m.



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Jarvis Island is a National Wildlife Refuge (NWR) and part of the Pacific Remote Islands Marine National Monument (PRIMNM). The coral island is an uninhabited, approximately 4.5 km² (1.7 mi²) in size, and located in the South Pacific Ocean, about halfway between Hawaii and the Cook Islands. It was last activated in 1990 and was in the top 20 dxcc entities. In Europe it ranked nr 9 and on SSB was number 2.

Jarvis is one of the Central Line Islands (Palmyra is one of the Northern Line Islands) and for statistical purposes is also grouped as one of the United States Minor Outlying Islands. Jarvis Island is the largest of three U.S. equatorial possessions, which include Baker and Howland Islands. Fifteen species of tropical seabirds thrive on Jarvis including one of the world's largest sooty tern colonies. Jarvis, in addition to being part of a different Island group from Palmyra, is also separated from Palmyra by the division of territory by a Maritime Boundary treaty between the U.S. and Kiribati, signed in 2013. It deserves its own country status.

The 2024 Jarvis Island DXpedition wishes to thank the staff of the U.S. Fish and Wildlife Service (USFWS) in Hawaii for issuing a Special Use Permit to approve this minimally invasive operation on Jarvis Island NWR and within the PRIMNM. The PRIMNM encompasses approximately 490,000 square miles of open ocean, coral reef, and island habitats, making the total area of the PRIMNM nearly five times the size of all the U.S. National Parks combined and nearly twice the size of the state of Texas. Within the boundaries of the Monument rest seven national wildlife refuges: Howland, Baker, and Jarvis Islands, Johnston, Wake and Palmyra Atolls, and Kingman Reef.

The mission of the USFWS is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Grid: AI99 ITU:61 CQ:31 IOTA:OC-081 Website: <https://jarvisisland2024.com>

N5J confirms the following 2-way QSOs with N1SV

16/08/2024 12:16 17m FT8 SNR +25dB
 11/08/2024 00:50 15m FT8 SNR +08dB
 09/08/2024 12:40 20m FT8 SNR -10dB

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 WQ6Q

The team wishes to thank these Foundations, Clubs, Corporate and Individual major donors

Central Oregon DX Club

This month's QSL is from a 2024 DXpedition to Jarvis Island in the South Pacific Ocean. This was a unique DXpedition where a small group of hams assembled stations on Jarvis Island and then a larger group of operators from around the world remotely operated and made most of the contacts. DXpeditions like this have become more prevalent in ecologically fragile areas. This has allowed permission to be granted for operations where in the past it might have been denied for a large group. For more information on the 2024 Jarvis Island DXpedition see jarvisisland2024.com

Treasurer's Report
Ralph KD1SM

The Treasurer's Report was
unavailable at press time.

Board Meeting Report
John K1JEB

The Board Meeting minutes were
unavailable at press time.

Nashoba Valley Amateur Radio Club
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Pepperell MA 01463-0900
<https://n1nc.org>

President: Bruce Blain K1BG
Vice President: Les Peters N1SV
Secretary: John Bielefeld K1JEB
Treasurer: Ralph Swick KD1SM

Board Members:
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John Griswold KK1X (2024-2026)
Jim Hein N8VIM (2024-2027)

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,
corrections, and inquiries should be sent to

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to reach the newsletter editor.

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