



SIGNAL

A club since 1992



Since 1993



Since 1996

de N1NC

February 2021

Volume 30 Number 2

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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

The January meeting's Main Event was the annual "Short Subjects night".

Several members spoke on quite interesting topics. You had to have been there though, since I can't read my own notes on the proceedings. <sigh>

This Month's Meeting

The February meeting will feature Brint, W3NOZ, speaking on radar and stealth technologies.

Next Month's Meeting

Greg, WA1JXR, is scheduled to speak on the Nano VNA at the March meeting.

CW Contests for Beginners

de Bruce, K1BG

After every Field Day I hear the same comments and questions on working CW: "I could never do that!" "Everyone is going so fast". "How can I do something like that?"

First, let's understand some basic facts. Most contest operators never (and I mean NEVER) win a major contest. And while it's nice to see your callsign at the top of some list, most people like contesting for the same reasons they like playing video games, Scrabble, or crossword puzzles: they find the activity stimulating and exciting.

Second, here is a little secret that few people talk about. The top testers MUST have participation from recreational testers if they are going to generate a big score. Otherwise, they just sit there looking for contacts with nothing to do.

Third, I can think of no other competitive activity in the world where YOU get to play with the very best. We can only watch Tiger Woods or Michael Jordan or Tom Brady on the TV! We give the world's best contest operators points that they need to compete on the world stage! (OK, I'm being dramatic, but you know what I mean).

Many of my CW Academy¹ students are learning Morse code because they went on a field day and want to participate in CW contesting.

So, step 1 is to learn Morse code. Assuming that you have already taken this step, step 2 is to build a little proficiency so that you can start making contacts comfortably.

Operators find that with every contact they make, their code proficiency goes up just a tiny bit, and before long they are in the 20+ word per minute (WPM) range.

One of the problems beginning contesters face is that they see lots of activity in the 25–40 WPM range, and it frightens them. Not to worry!

There are several tools and activities to help one get started in increasing one's code proficiency. Here are two excellent software programs (that are 100% free):

The first, **RufzXP**, as installed, sends random callsigns to the user. An interesting feature is that if you copy a callsign correctly, the next callsign to you is sent 3% faster! It will eventually break even the best CW operators around! If you get the callsign wrong, it will drop the speed by 3%. So, it pushes the student to copy faster and faster.

RufzXP has many programmable features (for instance you can lock the speed). You don't have to send just callsigns. I use it as a supplement to my CW Academy classes for learning individual letters and numbers. And it has some great analysis features built in, which can help you with specific Morse characters.

The second practice tool is **Morse Runner**. Morse Runner simulates a CQWPX CW contest. You get to call CQ, and stations call you just like in a real contest! You can selectively program speed, QRN, QRM, QSB, Flutter, and "activity" (how many stations are calling you). You can even select if you want to deal with "lids" during the training.

On many business trips, with free time at 30,000 ft, I would take out the ear-buds and practice my CW contesting skills with these tools. Morse Runner taught me how to handle pile ups like those found on Field Day, and it certainly helped me with my speed challenges.

Most of the younger serious contesters learned their skills with daily practice using one or both of these

¹ <https://cwops.org/cw-academy/> [Ed: CW Academy is a program run by the folks at cwops.org. Bruce has been teaching CW as part of CW Academy for many years.]

programs (15 minutes per day). Both programs are Windows compatible, and both can be found (and downloaded) with a simple Google search.

The last trick in my bag (and this is a new one) is a weekly activity called the "**SST**".

The SST (or "Slow Speed Test") is a twice weekly operating event sponsored by the K1USN² club.

They are basically one-hour mini contests, one on Friday afternoons, timed for European participants; another on Sunday nights, for US participants. A maximum speed of 20 WPM is observed. I personally set my keyer to 15 WPM, and slow down for those that call me at a slower speed.

This week, I worked two of my CW academy students who had just learned their last Morse letters in their previous session, and they were thrilled to be participating. Both of them worked over 10 stations during the one-hour period, and both of them had a fantastic time doing it.

Also, there are many, many, experienced operators participating who just like the "leisurely pace" of the activity and who also like "paying it forward".

Where does this leave us? As you know, my biggest thrill in amateur radio is "paying it forward". So, if you are interested in learning more, please let me know.

I'd love to schedule a Zoom (or Skype?) session to demo these software tools and help get them set up on your computers.

I'm available for a session during an actual SST in order to get you started. How can I help you get started? Just let me know! Bruce.blain@charter.net, or 508-341-5124

-de Bruce, K1BG

Monday 2m NVARC Information Net

The NVARC Information Net, NCS-ed by Charlie, AB1ZN, is held Monday nights at 7:30pm, local time on the 2m Pepperell repeater, N1MNX: 147.345MHz, PL: +100. Recent activity has picked up, with a dozen or so checkins, and discussions on bands, modes, antennas, and such.

USB & Serial Interfaces, Explained

Connecting your PC to your Radio is sometimes fraught with communications problems, especially if your interface box wants serial (as in RS-232) comms, but your PC has only USB ports. The following link is to a (rather large) .pdf that contains an

² <http://www.k1usn.com/> [Ed: Quite an outfit. Check them out.]

extensive discussion of the issues and solutions. Courtesy of Skip, K1NKR. Thanks Skip!

<https://www.contestuniversity.com/wp-content/uploads/2020/05/N6TV-Everything-You-Need-to-Know-About-USB-and-Serial-Interfaces.pdf>

How did YOU get into Ham Radio?

[Ed: I asked the NVARC members to relate their story of getting into Ham Radio. Here's a few responses.]

Joe, K1YOW, writes that he started in radio in 1961 by building a Heathkit single channel super regen CB walkie talkie.

The next year, while in the 8th grade, he got his Novice license.

His Novice station was a Halicrafters HT-40 transmitter, a surplus BC-342N receiver, and a random wire and a Heathkit 2er and later a 6er.

He got his General in 1970 and his Advanced in 1971 at the FCC Boston Custom House. Only when they reduced the code speed, did he get the Extra at a VEC in Marlboro.



Lamar, KC1MNN, relates "When I was a very young boy, my Uncle was an electrical engineer and a ham.

He helped me make a crystal radio as a cub scout project. It is then when I got the bug.

He gave me some old ARRL publications but as time progressed I became more interested in the opposite gender.

I still had an interest and continued to purchase up to date ARRL publications but was never interested enough to learn Morse code or devote a lot of time to actually sitting down and studying for licensing until I turned 66 and started getting ready for retirement.

At 66 I made the decision, if I am going to do this, I need to do it **now**; so I buckled down, started studying and finally passed and received my Technicians license Feb 2020.

I still am hopeful I can qualify for my General but I am still working a full time job and I have been a lucky one who can work from home typically more than a 40 hour week.

Once again, I will need to buckle down and make the decision to just do it!

I hope at some time to be able to devote more time to the hobby and get into assisting public service events and ARES but my guess that will not happen until I actually retire."

73!

Restoration of a Central Electronics 20A

The Central Electronics 20A was designed by Wes Schum, the "father" of SSB, and introduced in the late 1940's. It was one of the first designs to use phasing for SSB demodulation. eHam rave reviews of it may be found here:

<https://www.eham.net/reviews/view-product?id=6070>

Bill, AB1XP, purchased a used 20A 1965, used it for a while, driving a 200w linear, and then went off to College. Bill's unit has sat on the shelf for 54 years until recently, when Bill was looking for a restoration project to pass the time during COVID lockdown.

SSB PERFORMANCE
A Band Switched, "Phasing type", Single Sideband exciter.
Unwanted Sideband Suppression - average 40 to 45 db, a power ratio of 10,000 to 1 or 6 to 8 "S" units on the average receiver.
Carrier - adjustable from full output down to - 60 db.
Linear Power Amplifier - two 6AG7s operating with fixed negative bias deliver approximately 20 peak watts output from 160 through 20 meters, with reduced output on 15 and 10 meters.
This is sufficient to drive a pair of beam tubes such as 813s, 4-125As, 4-250As, etc., to more than a kilowatt, or a pair of 811A triodes to 400 watts. A pair of 304TLs operating in Class AB1 can be driven to a kilowatt on 75 meters.
In practically all cases your present final can be operated in Class A, AB1, AB2, or B as a linear amplifier by applying the proper fixed bias. As a result of linear amplification harmonic output is tremendously reduced. Single ended, push-pull or parallel operation is permissible.

MULTIPHASE EXCITER
MODEL 20A
BAND SWITCHED - 10 to 160 meters
20 PEAK WATTS OUTPUT
REDUCED HARMONIC TVI
VOICE OPERATED BREAK-IN
SWITCHABLE SINGLE SIDEBAND with or without carrier
DOUBLE SIDEBAND AM
NARROW BAND PHASE MODULATION
CW BREAK-IN

NEW OPERATING CONVENIENCE
CARRIER LEVEL CONTROL - separate knob inserts any amount of carrier without disturbing carrier suppression adjustments.
NEW CALIBRATE CIRCUIT - simply talk yourself exactly on frequency as you set MFO. Separate control adjusts calibrate signal level from zero to full output, to suit band conditions and different installations.
MAGIC EYE RF INDICATOR - shows carrier balance and maximum peak output. Can be adjusted to show maximum undistorted output.

[Ed: The data sheet shown here can be displayed at higher resolution at:

<http://www.ce-multiphase.com/img/20a-brochure.pdf>

Bill has focused on the audio quadrature circuitry, and



as can be seen in this photo, he is deep into it, and on the right track.

The circular trace on the X-Y scope

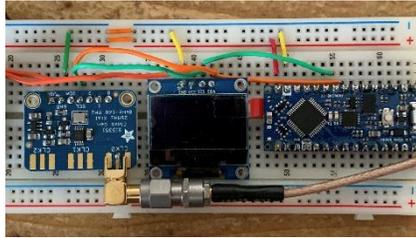
confirms a 90° phase shift.

Bill promises to report on the project in significant detail in next month's Signal, so stay tuned!

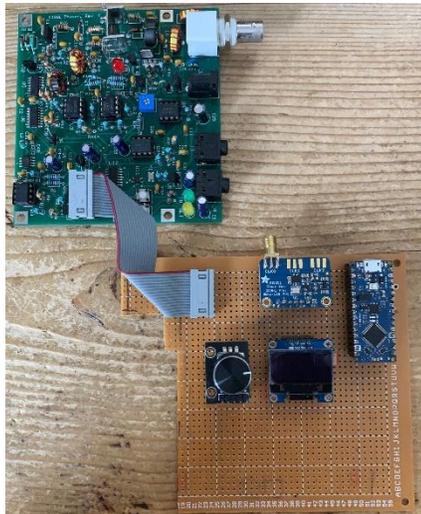
From the Shack
de George, KB1HFT

Ok, so I've decided that I really should either finish or abandon my 20m Phaser³ VFO-hack project.

I've realized that one of my big issues with inconsistent test results is caused by the not-quite-secure connections in the plug-in protoboard that I had been using. A hardware testbed built on such protoboards can be a suboptimal setup when trying to modify the driving software, as in: "Hey, it stopped working! NOW what did I wiggle?"



Also, I suspect that stray capacitance and crosstalk on the parallel I²C wires were responsible for the wacky results I had been seeing.



So, I have resolved to reconstruct the VFO hardware testbed in a more sturdy format. Here is the initial layout, yet to be wired (soldered!), in the lower right, "connected" to the assembled 20m Phaser transceiver kit, in the upper left:

After I get this working. I'll turn to the QCX+ QRP CW XCVR kit that I mentioned last month. I'm really eager to put that one together.

On the subject of "How did you get into Ham Radio", my story starts further back than I had realized, until I was recently scanning some old family photos. I found a few strands in the thread that led me to ham radio.

My Grandfather, George A. Kavanagh, was in the Signal Corps in France during WW1. After the war, he married, and had a son, my Dad, George M. Kavanagh.



Here's Dad, age about 3, in 1923, listening to what appear to be grandpa's headset. I still have the headset.



Neither Dad nor Grandpa were hams, but both were interested in electronics and radio.

As I was growing up, Abraham Marcus' Radio Servicing: Theory and Practice, 1948, was in the living room bookshelf along with other titles of interest to a budding young geek (me). I was thereby Parentally Primed for an interest in electronics.

When I was a Sophomore in high school (1963), I ran into a crew of like-minded students during Electronics Shop, and we formed a school radio club.

Somewhere in there, I took my Novice test at a neighbor ham's QTH, and was on the air as KN3FUV with a KnightKit T-60 transmitter and a Hallicrafters S-53A receiver, both of which I still have, and both of which still work!

I upgraded to Technician after a year, but let it lapse as I went off to College, got married, etc., etc.

I got back in in 2001 as a General, and then Extra in 2003 or so.

-de George, KB1HFT

³ Midnight Design Solutions:
<https://www.midnightdesignsolutions.com/phaser/>

Board Meeting 2/4/2021

Attendees:

John KK1X,	Bruce K1BG,
George KB1HFT,	Skip K1NKR,
Jim N8VIM,	Jim AB1WQ,
Jessica, WU3C	

- Jessica's time pressures - can Jim run last two meetings?
- 18650 Battery Challenge going on
- No treasurer's report
- New member N1DAN active on 2m net
- CW paddle kits redesigned. John to run a test print. Fundraiser needs a champion.
- George distributed newsletters at Electronics Plus. HRO not so much.
- Bruce will do a Tech class as soon as his CW Academy class is done (+7wks)
- 2m net seems to have picked up some traction - 11 checkins last week.
- February - W3NOZ Brint Ferguson - radar and stealth
- March - Skip - WA1JXR to speak on Nano VNA
- April - W3LPL available - topic TBD

-de John, KK1X

Treasurer's Report

Income for January was \$165 in membership renewals. Expenses were \$149

for the annual Post Office box renewal, leaving a net income of \$16.00

Current balances:

General fund	\$2,591.17
Community fund	\$5,948.25

As of 4February we have 45 members who are current with their dues and 22 renewals outstanding. Thank you to those of you who mail your renewals or use PayPal. Renewal months are in the member list on www.n1nc.org in the Member's area.

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 com-

mission 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

Calendar

W1AW Schedule

PAC	MTN	CENT	EAST	UTC	MON	TUE	WED	THU	FRI
6 AM	7 AM	8 AM	9 AM	1400		FAST CODE	SLOW CODE	FAST CODE	SLOW CODE
7 AM-1 PM	8 AM-2 PM	9 AM-3 PM	10 AM-4 PM	1500-1700 1800-2045	VISITING OPERATOR TIME (12 PM-1 PM CLOSED FOR LUNCH)				
1 PM	2 PM	3 PM	4 PM	2100	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE
2 PM	3 PM	4 PM	5 PM	2200	CODE BULLETIN				
3 PM	4 PM	5 PM	6 PM	2300	DIGITAL BULLETIN				
4 PM	5 PM	6 PM	7 PM	0000	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE
5 PM	6 PM	7 PM	8 PM	0100	CODE BULLETIN				
6 PM	7 PM	8 PM	9 PM	0200	DIGITAL BULLETIN				
6 ⁴⁵ PM	7 ¹⁵ PM	8 ⁴⁵ PM	9 ⁴⁵ PM	0245	VOICE BULLETIN				
7 PM	8 PM	9 PM	10 PM	0300	FAST CODE	SLOW CODE	FAST CODE	SLOW CODE	FAST CODE
8 PM	9 PM	10 PM	11 PM	0400	CODE BULLETIN				

W1AW's schedule is at the same local time throughout the year. From the second Sunday in March to the first Sunday in November, UTC = Eastern US time + 4 hours. For the rest of the year, UTC = Eastern US time + 5 hours.

♦ Morse code transmissions: Frequencies are 1.8025, 3.5815, 7.0475, 14.0475, 18.0975, 21.0675, 28.0675, 50.350, and 147.555 MHz.

Slow Code = practice sent at 5, 7½, 10, 13, and 15 WPM.

Fast Code = practice sent at 35, 30, 25, 20, 15, 13, and 10 WPM.

Code bulletins are sent at 18 WPM.

NVARC Calendar

February

18 Brint, W3NOZ, on radar and stealth tech

March

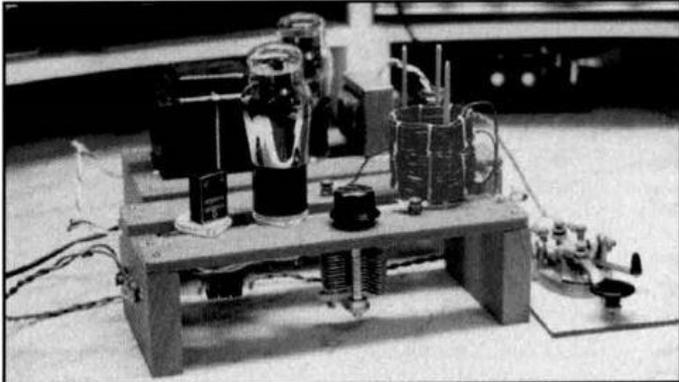
18 Lou, WA1JXR, on the Nano VNA





A flash from the past: from September 1997's QST:

BOB REIF, W1XP



Bob, W1XP, succumbed to nostalgia recently, when he was given some back issues of QST by a friend who was moving. Bob was riffling through the stack and found an old issue of the League's *How to Become a Radio Amateur* whose cover featured a rig that had been Bob's first (and homebrew) transmitter in 1953. With a lot of scrounging around, Bob found the required old-time paper capacitors and a 6V6G tube. As his first rig did, this one runs a mighty 5 W out, and Bob has used it to work all around the Eastern and Midwestern states, and into western Canada. Bob says, "It was this simple transmitter design that, even as a seventh grader, I knew I could build and get on the air, and which lured me into radio and electronics as a career. I certainly don't regret progress, as I've been a part of it, but the old days have their beauty also. This little project has been what Amateur Radio means to me—fun and excitement!"

Sponsors

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President: Jessica Kedziora, WU3C
Vice President: Jim Hein, N8VIM
Secretary: John Griswold, KK1X
Treasurer: Ralph Swick, KD1SM
Board Members:
Bruce Blain, K1BG, 2018-2021
Jim Wilber, AB1WQ, 2019-2022
Skip Youngberg, K1NKR, 2020-2023

Property Master: John Griswold, KK1X
Librarian: Peter Nordberg, N1ZRG
Emergency Coordinator: [open]
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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QST, QST, QST: Calling all Radio Amateurs:

We've got plenty of room in Signal for YOUR stories!

Signal is published on the 2nd Thursday of each month.

Send your quips, snips, questions or comments to editor@n1nc.org

Thank You in advance, and 73.



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