



SIGNAL

A club since 1992



Since 1993



Since 1996

de N1NC

May 2020

Volume 29 Number 5

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Last Month's Meeting

While hastily put together, last month's meeting was a resounding success as a test of the WebEX virtual conferencing technology. We thank MedTronics, Jim, N8VIM's employer, who provided use of the WebEx medium.

The meeting featured the annual NVARC Elections, which were carried out by remote and eMail-in voting.

Congratulations to Jessica, WU3C, who was the runaway choice for President, and to Skip, K1NKR, who was elected to the vacant Board seat.

This Month's Meeting

The May NVARC meeting will again be a Virtual, on-line meeting via WebEx. Jessica, WU3C, our new President, will present on a subject TBD.

The President's Corner

de Jessica, WU3C

The Prez says: "Greetings All!"

I would like you all to think about the feeling you get when you acquire a new tool.

We have all thought about one particular project that would be possible with it, and it is so exciting to finally have the ability to make that project a reality

Then so many other things come to mind, what else could you do, how many amazing capabilities could come out of all the things you will make with that new tool?

Then thoughts about all the other tools you need that will complement the one you just got.

OK, so maybe you are not as project crazy as I am.

My point is this: I believe the club is that tool, not for me, but for you and all of our members.

The NVARC website says "The purpose of NVARC is to facilitate the exchange of information and general cooperation relating to Amateur Radio and to conduct club programs and activities to advance the interest and welfare of Amateur Radio in the general community."

What does that mean to us?

I hope it means this: The club provides the members with a platform and the required infrastructure to collaborate on interesting and exciting activities related to Amateur radio.

The platform can be seen as the status and recognition of the collective actions of our members, which will enable access to things we, as individuals, could not achieve.

The infrastructure is the coordination and administration of collective activities, usually called "fun things to do!" Which is really what we want.

The NVARC platform was hard earned by everyone over the last 28 years. Stan, Peter, Skip, Erik, and Earl, invested so much and all helped all the members make NVAC so great.

I probably cannot do any better than to keep the name as good as it is.

As to the infrastructure, I think I can build us something even better than what we have.

The club has a great history, and so many brilliant and dedicated people.

Hams are “do-ers.” I was noting the other day that even lazy hams are spectacularly motivated compared to most people.

I even have noticed a substantial bias in the electronics industry toward hams, since they are hardworking, dedicated, skilled, curious, and enjoy learning, meeting people, making friends, and trying new things, as well as keeping old things going strong.

That describes all of you, what could be better?

We love to do things, and really, I think that is what we all want out of the club. That is the infrastructure.

It takes some really hard work by passionate volunteers to make it work.



NVARC sure has had a lot of passionate volunteers, and I hope to be counted as one. I really hope many if not all of you will want to do the same.

The Covid situation is dire, but it will come to an end, and we will be able to work and play together again.

Even before that, we can invent new things just as you always have done.

Radio is the oldest electronic social network. It is perfect for being socially distanced.

How can we do more fun things just with that?

Peter, Bob, Stan, George and others are doing a CW net daily.

Another gang with some of the same members is doing a morning tech session via ZOOM net meeting.

Maybe some more nets?

How about another slow speed CW net: I could use that!

Maybe a new tech topic discussion group?

Maybe just bragging time on some cool thing?

So, I would really like to start the wheels turning in everyone’s heads.

What projects would you, the members, like to do?

We can make up the rules if there aren’t any. Bruce wants to have license classes, and the club is going to help him do it.

Jim and I want to see more kit building projects, and we are going to do it somehow.

I know Ralph and others like Fox Hunts, Lets plan one!

Let’s do show and tell, which we can even do remotely.

How about a circuit design contest?

Or a mobile radio sprint contest invented by us, NVARC!

A CW quiz?

How about a get on a new band initiative.

With these activities we can start to have fun, and the ones that are really a hit we can use to attract new members.

Maybe some members will think “we don’t have the money to do all that.” Or, “NVARC is a passive club”.

Maybe they are right, but maybe they aren’t.

Hams are highly resourceful after all. That is something we need to think about though.

We want and should do more things.

If ten people did something they like with 4 friends that would be almost the entire club!

Think of it! Sometime we will need a fundraiser! I am thinking a raffle of some sort. Maybe for a Rig.

I don’t know – I am just throwing it out there!

Send me some ideas people – you are good at it. I’m at jessica@kedzig.com.

I am going to plan for Field Day, and make sure “all the things” are in place. Just so in the event it makes sense and is permissible, the infrastructure is there for our members to enjoy and grow. I am going to take similar action for as many of your ideas as I can.

So, let’s do things and we will have fun! Everyone will be jealous of us and want to join in! What could be cooler? There isn’t anything in our way except ourselves.

Go NVARC!

de Jessica, WU3C

From the Shack
de George, KB1HFT

When it became clear that shelter-in-place was a good idea, I resolved to focus on all those projects that have piled up over the months/years/decades. Prioritizing them has been the issue.

Besides my current investigations on mitigating the tendency of my 300 watt, 3MHz, CW signals to reset my WiFi router, and ongoing experiments with the NanoVNAs, I have a basement full of 35 years of partial and unfinished electronics projects: all artifacts of past dreams of glory. <sigh>

Do I go back and finally finish that dual 4CX250B PA project from the 1960-something Handbook, or instead build the NXP NRF101A 100 watt, 6m, PA "RF Essentials Kit", with the 6m parts that Dan, KW2T, so kindly provided?

Or go back to Kip's Electricity and Magnetism¹ for a refresher?

So much time with no set agenda. It is Weird, but I have accomplished some things. I've organized my piles of as-yet-mostly-unread QSTs, QEXs, and Am-Sat publications from the past six months. I've even read and filed several issues.

I've rewired my operating position in the basement, and will have proper 110v AC power & ground, at the breaker box, tomorrow (via BC Electric, Pepperell, MA).

As to the WiFi router issue, thank you to the several members who recommended that I put ferrites on all router cables. Bob, W1XP, kindly loaned me some Type 31 toroid cores that have helped quite a bit on the CAT5 cable from the cable modem, but I can still cause the router to reset to factory defaults if I crank up the power beyond 350 watts. Stay Tuned.

I've spent some time on the morning NVARC "CW Tech Net"² with several NVARCers, learning to use paddles, and significantly improving my CW sending, which surprised me. My ability to read code is lagging behind, but getting better with listening practice.

I've even made perhaps a dozen CW QSOs, several in the NEQP. These are my first CW QSOs since the 1960's! Yiikes!

¹ Arthur F. Kip. Electricity and Magnetism. McGraw Hill, 1962. My Freshman EE Text.

² 3.562Mhz, 1330Z. An informal/formal CW net. 7-15wpm.

I've also taken time to just sit down and learn how these new-fangled FT4 & FT8 QSOs are done. It's not your Grandfather's Amateur Radio, but it IS Radio, and it IS kind of fun. At least for a geeky computer nerd like myself.



It is NOT, as some have said, just watching the computer do the QSO:

contacting a desirable DX station on low power can be challenging and rewarding.

I've been shown a few "tricks" on how to get the attention of a desirable DX station when using FT4 or FT8. One of these is to tune your response transmission up or down 50+KHz from the desired party who is calling CQ, so as to increase the odds that that party will see ME on their waterfall instead my being lost in the pileup ON their frequency. Works well, but not always. Some people only answer calls ON their frequency. Foey.



In the NanoVNA department, I have stumbled upon a neat way to identify those unmarked ferrite toroids in the junkie box. Several articles that I found³ were quite helpful in describing ferrite properties and identification techniques.

Ferrite mixes are ceramics that usually contain alloys of iron oxide, barium, nickel, zinc, or manganese. Luckily the different mix formulae have characteristic impedance properties that can be used to differentiate one mix from another.

By using a VNA, such as the NanoVNA, one can obtain a dual trace plot of a core's resistive and reactive characteristics, R and X, over frequency. Dual trace plots of a particular mix will show points in the frequency sweep where R=X. These "equal" points dif-

³ Common Mode Chokes. G3TXQ.

www.karinya.net/g3txq/chokes

Name That Core. Carl Luetzelschwab, K9LA.

https://k9la.us/Name_That_Core.pdf

How to Choose Ferrite Components for EMI Suppression. Fair-Rite Products Corp. <https://www.fair-rite.com/wp-content/uploads/2015/08/CUP-Paper.pdf>

fer between mixes, and can be used as “signatures” of the ferrite mixes to compare to the R=X plots in manufacturers’ specs. Size & shape of the core does not seem to change the spectral positions of the R=X points for a particular mix. Cool!

de George, KB1HFT

Some Favorite Ham Radio Web Sites

de Bruce, K1BG

In my researching “The History of Entry Level Licensing”, I’ve come across many web sites not directly related to amateur radio, but still pretty interesting.

Many times, these sites are researched and maintained by fellow amateur radio operators. Here is a collection of some of my favorites:

Any Navy veterans reading this? www.navy-radio.com has just about everything you would like to know about U.S Navy radio communications in the 1950s and 1960s. It’s complete with information on ship systems, radios, shore stations, etc. etc.

For Morse fans, a link to their page on keys: <http://www.navy-radio.com/xmtr-key.htm>. This site will provide you with hours of surfing entertainment.

Along these lines, www.jproc.ca is a similar, but not as complete, site for the Canadian Navy.

One of my favorite pages on this site, however, is dedicated to radio stories. Great stuff here.

Don’t believe me? Read “Don’t Shoot, We’re Republicans!!” the story of the USS Porter.

The Porter shot a torpedo at the Battleship Iowa with President Roosevelt himself on it!

It’s worth the time spent looking it up and reading it.

Both of these sites offer hours of reading and research pleasure.

One word of caution, however: limit the time you spend looking at this stuff, and get on the air!

de Bruce, K1BG

Make your Own SMA Calibration Kt

de Les, N1SV

Recently I jumped on the NanoVNA bandwagon and ordered one of my very own. It arrived with several cables and a small SMA calibration kit which included three SMA test terminators: a male short, an open, and a 50 ohm load (SOL, for short).

In order to properly use the NanoVNA you must first perform a simple calibration for the desired frequency band using the test terminators.

As I performed calibrations, I soon realized how easy it might be to lose one of those little SMA pieces and with it the ability to make accurate measurements.

I started looking at the possibility of making some kind of inexpensive calibration kit where the short, open, and load were combined into one piece and where the size and shape would make it harder for me to lose.

I found IN3OTDs web page⁴, which has a lot very useful information on how to build an effective SMA short, open, load (SOL) test fixture.

While Claudio did a great job, I wanted to take his idea one step farther and try to package the three components together. So, what you see in Figure-1 is my version of a homemade SOL test fixture.



Figure-1, homemade VNA calibration kit

I decided to lay out a pc board for this project using ExpressPCB (www.expresspcb.com) as I’ve done on some past projects. The edge mount male SMA connectors were chosen to interface with the NanoVNA, which has female SMA connectors. The total cost for the project was just under \$30. Table-1 is a list of the parts.

QTY	Part Number	Description
3	132366	Amphenol, RF Connector, End launch, Plug, for 0.062 PCB
2	754-RG3216P-1000-BT5	Susumu, Thin film resistor, ¼W, 100Ω, 0.1 % tol, SMD 1205, 25 ppm
1	N/A	PCB

Table-1, Parts list

⁴ https://www.qsl.net/in3otd/electronics/VNA_calokit/calokit.html



Figure-2, Installation of the two resistors

The pc board was easy to assemble except for the two 1206 SMD resistors (See Figure-2). The prototype was tested using a Keysight E5061B network analyzer and 85052D calibration kit. Figure-3 shows a comparison between my homemade load and the original load that came with the NanoVNA. I was shocked to see how bad the original load that came with the NanoVNA really was.

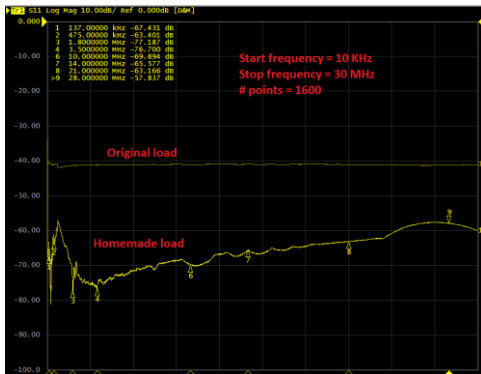


Figure-3, Homemade load Vs Original

I also compared the homemade load to the load found in the Keysight 85052D calibration kit and found very good correlation between the two up to about 300 MHz (refer to Figure 4A & 4B).

I also tested my short comparing it to the short in the 85052D kit and found good correlation (refer to figure 5A & 5B).

And while I did test my homemade open the results were identical to the open from the 85052D kit.



Figure-4A, Homemade load Vs 85052D load (10 KHz – 30 MHz)

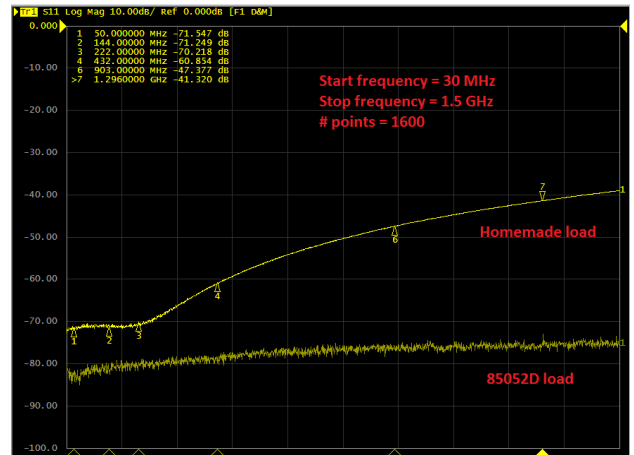


Figure-4B, Homemade load Vs 85052D load (30 MHz – 1.5 GHz)

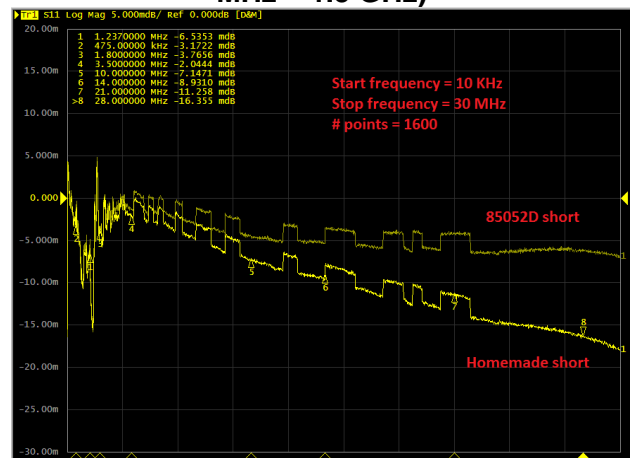


Figure-5A, Homemade short Vs 85052D short (10 KHz – 30 MHz)

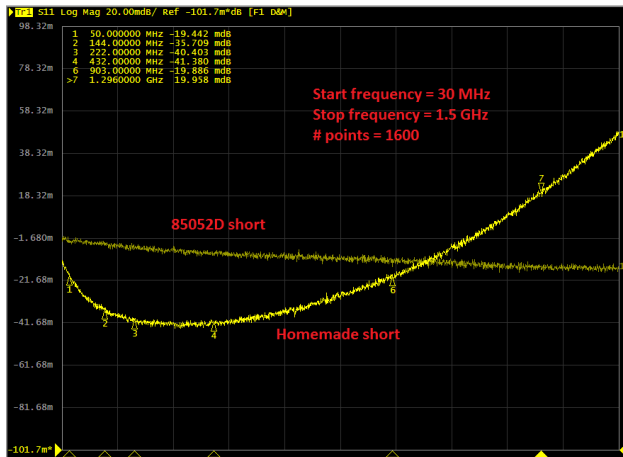


Figure-5B, Homemade short Vs 85052D short (30 MHz – 1.5 GHz)

In conclusion it is possible to make your own homemade calibration kit that's both inexpensive and more difficult to lose than those traditional ones.

And, like I found, your homemade calibration kit may be better than the one that came with your NanoVNA. If you are interested in further information or a PCB to build your own feel free to contact me at n1sv@n1sv.com

Upcoming Technician Classes
de Bruce, K1BG

For those of you who did not listen in on the May NVARC Board Meeting, I have volunteered to coordinate Technician classes as part of an ongoing program by NVARC to get more people into amateur radio, and to broaden our membership.

If this works, I'd like to broaden it to include General and even Extra class license classes. But first things first.

I'm investigating two different methods of doing this.

The first is what is called a "Tech in a Weekend" approach, whereby two days are dedicated to technician classes with the test at the end of the two days.

The second is a spread out approach, where material is taught two nights a week for four weeks. Both methods have their advantages and their drawbacks.

I'm currently interviewing hams who run successful programs for clubs in eastern Massachusetts and picking their brains. Once I've concluded my research, I'll formulate a plan and present it to the membership.

If you have any ideas or input, please let me know. No dates have been decided yet, and with the current lockdown, it may be autumn before a class is initiated.

I will also be looking for several volunteers to help with the classes. I won't be able (or willing) to do this alone. I can promise, however, that it will be both a satisfying and rewarding experience for everyone involved. To those of you who volunteer – thanks in advance.

de Bruce, K1BG

Board Meeting Notes

Attendees:

- | | |
|---------------|----------------|
| Jessica, WU3C | Jim, N8VIM, |
| John, KK1X | Bruce, K1BG, |
| Ralph, KD1SM | Skip, K1NKR, |
| Ed, N1YFK | George, KB1HFT |

Conducted Via WebEx Video

- Will set up a Field Day Plan, whether it goes forward or not.
- Jessica to present in May via WebEx.
- John to take over Constitutional Amendment language by next board meeting.
- Youth Activity? - Owen not at meeting.
- Growing our club via Social Media: Jessica taking action to find a volunteer to take over.
- Bruce looking to start up some classes. Bruce looking to recruit new hams.
- What are other potential meeting sites?
- Where can classes be held?
- Some discussion about generating a club calendar - Skip to investigate and inform George.
- Peter & Jessica will paint repeater building.
- Can we make the repeaters more active? Echolink is no longer supported.
- Time to renew liability insurance.

-de John, KK1X

Treasurer's Report

Income for April was \$30 in membership renewals. We had no expenses.

Current balances:

General fund \$2,602.67
Community fund \$5,948.25

As of 7 May we have 45 members who are current with their dues and 18 renewals outstanding. Thank you to those of you who mail or hand in your dues before Ralph comes to you. Please check your renewal status on the roster circulated at the monthly meeting or ask Ralph.

Membership dues can now be paid via PayPal:

Go to <https://www.paypal.me/nvarc>

- Please **remove** the checkmark in the box "Paying for goods or a service", as PayPal deducts a fee for their "purchase protection" if you leave this checked. If your "shipping address" is still displayed, then the box is still checked, adding an expense to the Club.
- (Optional) enter your callsign in the "Add a note" field.

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. ARRL membership checks should be made payable to NVARC; Ralph deducts the Club commission before forwarding your paperwork to Newington. As a Special Service Club, the ARRL expects a majority of Club members to also be ARRL members.

-de Ralph, KD1SM



The Global Recession has hit everyone hard:

- Corporate CEOs are playing Miniature Golf.
- My neighbor got a pre-declined credit card in the mail.
- McDonald's is selling the 1/4 ounce.



Here's a link to a newly re-formatted W W V time service. Check it out! (Turn up your audio.)

<https://www.repeater-builder.com/humor/www-the-tick.mp3>



QST.April, 1961

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 ⁴⁵ 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.

May

- 16 Hamvention QSO Party. 1200-2400Z. 160, 80, 40, 20, 15, 10m. <https://wwrf.org/hamvention-qso-party/>
- 16 His Majesty, the King of Spain CW Contest. 1200Z, May 16 to 1200Z, May 17. 160, 80, 40, 20, 15, 10m. <http://concursos.ure.es/en/s-m-el-rey-de-espana-cw/bases/>
- 17 Run for the Bacon CW Contest. 1900-2400Z. 160, 80, 40, 20, 15, 10m. 5w max. <http://qrcontest.com/pigrun/>
- 23 – 24 Baltic Contest. 2100Z, May 23 to 0200Z, May 24. 80m only. CW, SSB. <http://www.lrsf.lt/en/balticcontestrules/>
- 25 QRP ARCI Hootowl Sprint. 0000Z-0100Z. 160, 80, 40, 20, 15, 10m. CW only. <http://qrparci.org/contests/2020%20Hoot%20Owl%20Shootout.txt>
- 27 NW2K Phone Fray. 0230Z-0300Z. SSB only. 160, 80, 40, 20, 15. http://www.perfuma.com/Phone_Fray_Contest_Rules.pdf
- 30 CQ WW WPX CW Contest. 0000Z, May 30 to 2359Z, May 31. 160, 80, 40, 20, 15, 10m <http://www.cqwpw.com/rules.htm>

June

- 1 RSGB 80m Club Championship, Data. 1900Z-2030Z. RTTY, PSK. <https://www.rsqbcc.org/hf/rules/2020/r80mcc.shtml>

- 13-15 ARRL June VHF Contest. 1800Z, Jun 13 to 0259Z, Jun 15. 50MHz & up. All Modes. <http://www.arrl.org/june-vhf>
- 20 ARRL Kid's Day. 1800Z-2359Z. 80, 40, 20, 17, 15, 12, 10, 2m repeaters. <http://www.arrl.org/kids-day>

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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.

Meetings are held on the 3rd Thursday of the
month at 7:30 p.m. in the Pepperell Community
Center.

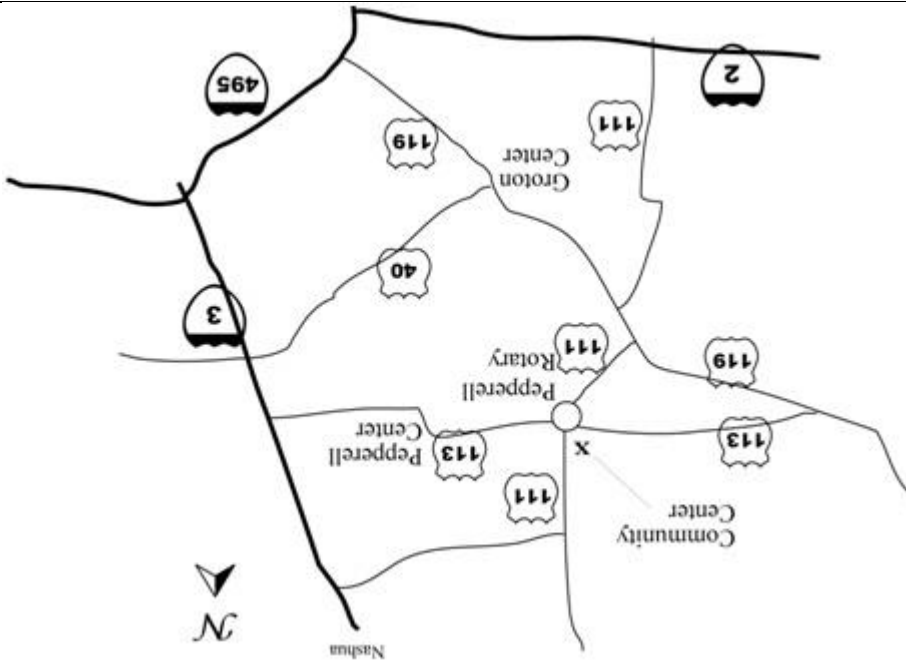
Contact us on the N1MNX repeater.
442.900 (+), 100Hz
147.345 (+), 100 Hz
53.890 (-), 100Hz

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the newsletter editor:

editor@n1nc.org.

Articles and graphics in most PC-compatible for-
mats are OK.

Editor: George Kavanagh, KB1HFT
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