



# NOARS Log

## K8KRG

March 2021

Volume 57, Issue 3



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## Prez Sez

Hi all. I am so proud of our Program Committee and the presentations they gave to us during our February membership meeting. Thanks to everyone who joined the Zoom meeting and especially our guests who hopefully had their questions answered or left with the knowledge of all the resources available. The video of the entire session is available to members on the website under Members Only. The technical presentations are open to anyone by clicking on the link provided on our Home Page at [www.noars.net](http://www.noars.net). Since there was some interest in SDR, I have also placed a link to *SDR 101* that David Kennet,

W8FKJ (SK), presented in 2015. It is a very comprehensive introduction to SDR.

As of February 16, 2021, I have received both of the Pfizer vaccinations. I hope all of you will get them when you become eligible. I received mine at the VA Medical Center, which was organized and efficiently executed. I had minimal side effects after the first and absolutely none after the second.

I am thrilled about the NASA Perseverance rover landing on Mars. The video and pictures sent back are unbelievable. Amazing! I don't get a

**Continues on page 2**

## Zoom Membership Meeting, March 15 at 7:00 PM

### Fox Hunts: Why and How

Fox hunting season approaches. Why bother hunting the fox? How do I do that? What do I need? Join us for a presentation by Bryan Torok, N8OOF, who will answer these questions and explain the fun of fox hunting.



## Nets

NOARS nets are Tuesday nights at 8 pm on 28.370 MHz, and Thursday nights at 8 pm on 146.700 MHz. All licensed amateurs are welcome. Participation is encouraged and appreciated.

## Continued from Prez Sez on page 1

video like that from my backup camera on my car, and I have trouble getting a reliable signal into the repeater in Elyria from my QTH. Isn't technology great?

I am looking forward to the March Zoom meeting and the program on Fox Hunting. For now, stay well, keep

wearing your masks in public, wash your hands often, love your family, and check into our nets.

73,

Carl, W8KRF

## Vice President's Message

I hope you enjoyed the presentations at the February membership meeting. The program committee worked hard on that and the upcoming more in-depth presentations will help all of us even more. Bob Plow, W8NNC is an integral part of the program committee because of his knowledge of NOARS membership and their capabilities and knowledge in presenting. This will show even more in future programs.

My hope is the easing of COVID-19 restrictions so meetings, Hamfest, and Field Day can occur, maybe with a few changes this year. And most important, The Ohio State University football spring practice goes off as usual, ending in a spring game that can occur with a large crowd.

## USTAW Net Control Stations Needed

The United States Awards Net is looking for volunteers to become Net Control Stations. NetLogger NCS experience is a plus; NetLogger user experience is easily trained to NCS. Our openings are for 40M weekdays at

3PM, and Thursday/Friday at 8PM on 80M. QRZ subscription required. Go to <http://www.USTAW.net>, or email [KD2HCE@ustaw.net](mailto:KD2HCE@ustaw.net) for more information.

## The Handie-Hotspot How-To

Submitted by Tim, NC8X

Looking for a fun project? Build a portable self-contained digital voice hotspot for radio amateurs.

<https://www.hackster.io/pnjorge/the-handie-hotspot-how-to-c65c86>



## Upcoming Social Events

### March

**Virtual NOARS Lunch Tuesday, March 2**

Join us on **Zoom at noon** for our Virtual NOARS lunch.

# March Birthdays

Tedd Mirgliotta, KB8NW

Alan Taylor, KF8PM

David Blood, W1AFC

Samson Fogo, K8DS

Elaine Wilkinson, KC8FOS

Pete Sklenar, KE8NQK

If your birthday doesn't appear here it's a good chance that it's not in our database. Please contact Carl, W8KRF so we can wish you a Happy Birthday!



## February 15, 2021 Meeting Attendance

David, W1AFC

Dan, W8AJF

Tom, KE8BTR

Al, N8CX

Bill, KE8DIF

Tom, N8FDY

Elaine, KC8FOS

Chris, KD2HCE

Roger, AB8IF

Robert, WA8JBT

Chet, K8KIZ

Carl, W8KRF

Tom, W8KYZ

Jeff, KE8MHL

Alex, KE8MQH

Pete, KE8NQK

Bob, W8NNC

Jim, KD8OCW

Bryan, N8OOF

Dennis, KE8OQA

Dale, KE8QGQ

Jim, KE8QLZ

Jeany, KC3QND

Tom, K1TRB

Dave, WB8UCD

Bill, K2WJS

Ann, KA8ZEP

Dave, KB6ZNS

Jeff, KB8ZUN

Cindy

## Heard on the Nets in February

Jeff, K8ACF

Fred, WD8ADG

Dan, K8AGW

Dan, W8AJF

Andy, K8ALG

Chuck, K8CVM

Lee, WA8ERA

Tom, N8FDY

Elaine, KC8FOS

Dan, KE8GME

Russ, KE8GNX

Chris, KD2HCE

Tim, NC8HF

Roger, AB8IF

Bryan, W8JMI

Dan, K8KGX

Tom, W8KYZ

Aaron, KE8LNJ

Pete, KE8NQK

Jim, KD8OCW

Ron, N8OD

Tony, KE8OOE

Bryan, N8OOF

Bob, W8OOT

Dave, KY8OSU

Alan, KF8PM

Gerald, KE8PQN

John, KE8PSC

Clark, N8PZD

Bob, KE8QFZ

Jeany, KC3QND

Corrie, KE8QWA

Matt, KD8VTX

Bill, K2WJS

Tom, W8WLI

Bill, N8WS

Leon, KB8WUA

George, WA8YVF

Ann, KA8ZEP

Jeff, KB8ZUN

# March, 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	<b>1</b>	<b>2</b> Zoom Lunch at Noon 10M Net 8 PM - NCS Dave, KY8OSU	<b>3</b> Food Group 7PM 2M NCS Elaine, KC8FOS	<b>4</b> 2M Net 8 PM NCS Dave, KY8OSU	<b>5</b>	<b>6</b>
<b>7</b>	<b>8</b>	<b>9</b> 10M Net 8 PM - NCS Tom, W8KYZ	<b>10</b> Food Group 7PM 2M NCS Dave, KY8OSU	<b>11</b> 2M Net 8 PM NCS Tom, W8KYZ	<b>12</b>	<b>13</b>
<b>14</b>	<b>15</b> NOARS Zoom On Line Meeting 7 PM	<b>16</b> 10M Net 8 PM - NCS George, WA8YVF	<b>17</b> Food Group 7PM 2M NCS Elaine, KC8FOS	<b>18</b> 2M Net 8 PM NCS Carl, W8KRF	<b>19</b>	<b>20</b>
<b>21</b>	<b>22</b>	<b>23</b> 10M Net 8 PM - NCS Dan, W8AJF	<b>24</b> Food Group 7PM 2M NCS Dave, KY8OSU	<b>25</b> 2M Net 8 PM NCS Elaine, KC8FOS	<b>26</b>	<b>27</b>
<b>28</b>	<b>29</b>	<b>30</b> 10M Net 8 PM - NCS Elaine, KC8FOS	<b>31</b> Food Group 7PM 2M NCS Elaine, KC8FOS			

## Newsletter Submissions

Email submissions for the Log to [noarslog@noars.net](mailto:noarslog@noars.net).  
The deadline is seven days before the first of the month.

That gives us time to create and get the Log uploaded to the Website.



## Contest Corner

<b>ARRL International DX Contest, SSB</b>	<b>Mar 6-7</b>	<a href="http://www.ARRL.org/ARRL-dx">http://www.ARRL.org/ARRL-dx</a>
<b>Novice Rig Roundup</b>	<b>Mar 6-14</b>	<a href="http://www.NoviceRigRoundup.org">www.NoviceRigRoundup.org</a>
<b>CQ WW WPX Contest, SSB</b>	<b>Mar 27-28</b>	<a href="http://www.CQWPX.com">www.CQWPX.com</a>
<b>Oklahoma QSO Party</b>	<b>Mar 13-14</b>	<a href="http://www.K5CM.com/OKQP.htm">www.K5CM.com/OKQP.htm</a>
<b>Idaho QSO Party</b>	<b>Mar 13-14</b>	<a href="http://www.pocatelloarc.org/idahoqsoparty/">www.pocatelloarc.org/idahoqsoparty/</a>
<b>Wisconsin QSO Party</b>	<b>Mar 14-15</b>	<a href="http://www.n4wis.org/N4WIS/QSO_Party.html">www.n4wis.org/N4WIS/QSO_Party.html</a>
<b>Virginia QSO Party</b>	<b>Mar 20-21</b>	<a href="http://www.VAQSOParty.com">www.VAQSOParty.com</a>

### By Tom, W1PDI

The 2021 contest schedule is pretty much in full swing now with one of the year's biggest DX contests, the ARRL International DX SSB and ending the month of March with the CQ World Wide WPX Contest, SSB. Between these two international SSB contests, there are many other contests and activities and at least four special events stations will be active.

If you are interested in the more than 100 March contests and on-air activities, I suggest visiting the WA8BNM.com Contest Calendar. If there's some kind of contest, or other ham related event on the ham bands, it's on this website.

There may not be many hams who still own their novice rigs but if you do, you might be interested in the Novice Rig Roundup starting March 6 and running through March 14, CW only, of course. This is the seventh year for this event and here's a brief description from their website: [www.NoviceRigRoundup.org](http://www.NoviceRigRoundup.org), "RELIVE THE GLORIOUS NOVICE ERA! You may use ANY radio equipment you like, but the scoring will be higher for using real novice-era radios! Of course, this will include

manual straight keys, bugs, side swipers and other manual keying devices. Simple equipment, but stupendous fun!

There's another event called the QRP Fox Hunt. I haven't had much time to learn about it but if you're into QRP operation, here's a description from their website that might interest you: [www.FoxHunt.org](http://www.FoxHunt.org)

A QRP Fox Hunt is a series of 90-minute Amateur Radio events during which low-power (QRP) stations, or "Hounds," attempt to make contact with specific QRP stations designated as "The Fox."

The Winter 2020-2021 40M Fox Hunt began on Tuesday evening, November 3, 2020 and will run through March 30, 2021. There are two hunts each Tuesday. A total of 20 Foxes will be needed. Each Fox will be scheduled for two hunts, usually separated by several weeks. See rules for details.

Good Luck in your next contest!

*Sources for contests: ARRL Contest Branch, CQ Magazine, WA7BNM & Ham Radio Contesting*

# Science: A Search for the Answer

by Chet, K8KIZ

Here's a CNET presentation on the new 5G Cell Network.

<https://www.cnet.com/how-to/5gs-many-names-explained-dont-fall-for-the-marketing-fluff/>

But, the above report must be weighed by the following:

Studies Aren't Clearcut

<https://www.howtogeek.com/423720/how-worried-should-you-be-about-the-health-risks-of-5g/>

Of course, just because there's no known mechanism for non-ionizing radiation to have a biological effect, that doesn't mean it's safe or that no effect exists. Indeed, researchers continue to conduct studies. One recent study was released by the National Toxicology Program (NTP), an agency run by the Department of Health and Human Services. In this widely quoted study about cell phone

radio frequency radiation, scientists found that high exposure to 3G RFR led to some cases of cancerous heart tumors, brain tumors, and tumors in the adrenal glands of male rats.

The study is a good object lesson in how hard it is to do science like this. As RealClearScience points out, the number of tumors detected were so small that they statistically could have occurred by chance (which may be more likely since they were only detected in male subjects). Moreover, the level and duration of the RFR exposure were well in excess of what any actual human would ever be exposed to, and in fact, the irradiated test rats lived longer than the unexposed control rats. Says Dr. Novella, "Experienced researchers look at a study like that and say that doesn't really tell us anything."

And that, my friends, is why science is not necessarily the answer, but the search for the answer.

73, Chet, K8KIZ

## Christmas Presents

by Tom Porter, W8KYZ

My son-in-law was searching for presents for me this past Christmas. He bought me a special writing pen which I have already lost, a two-foot-tall outdoor thermometer which I have mounted in the garage, and a book on Ham Radio.

*The World of Ham Radio, 1901-1950*, written by Richard A. Bartlett, is a social history of my lifelong hobby. This is a 281-page informative book which for me is most

interesting since I was licensed in 1952 as a Novice. It begins with hams who built primitive receivers and transmitters without licenses prior to WWI, how the U.S. Navy wanted to forbid hams from operating but wanted their morse code skills during the war, and the establishment of the ARRL in 1914.

The fifteen chapters will take a while to read, but it has been great for these long self-quarantined afternoons with hot tea and a comfortable chair. Look for it at your local libraries or bookstores.



# Operating Winter Field Day 2021

by Tom Miller, W1PDI

Sometime in December and after reading the rules for the 2021 Winter Field Day (WFD), I started giving thought to participating. Of course, the intent for Field Day is to practice emergency preparedness and field communications sometimes under adverse conditions. But the thought of camping out in the middle of a field, campground or in a wooded area by myself didn't really inspire me much.

So that left me with just a few other options, especially since I don't own a generator. I could operate in the warmth and comfort from my home ham shack and make contacts with those operating from Field Day locations, or participate in one of the three WFD entry categories:

**Home:** Operating in your home or a structure attached to your home and using a previously erected antenna.

**Outdoor:** Operating from a partly or fully exposed-to-the-elements location, i.e. a non-insulated area such as a pavilion, tent, campground etc., using non-commercial power.

**Indoor:** Operating from inside a remote insulated and weather protected structure not attached to a home.

After weighing my options and checking with the WFD staff, I was given the OK to operate in the "Indoor" category. My station location would be set up in my somewhat insulated detached garage with no heat. The garage is located more than 30 feet from the main house and I would operate under battery power so I could operate as 1I Ohio (1 station, Indoor, in Ohio).

As per the rules, on Friday the day before WFD, I installed my HyEndFed 80-10 meter antenna as a sloper. On Saturday I backed the cars out of the garage, swept the floor and after the dust settled brought in a table and chair and started setting up. I had already planned on QRP

operation using my Elecraft KX3, a Bioenno battery and a Palm Radio Pico Paddle for CW. Commercial power was permitted for computer logging only, purposes which I took advantage of for my laptop and N3FJP logging software.

By 1900 UTC (2pm) I was set up to begin operating. I was very pleased with the reports and comments received on both CW and SSB for my QRP signal. I operated until about 11pm and probably would not have lasted that long if it weren't for my wife Kelly plugging in a space heater for me, a heating pad to sit on and several cups of hot chocolate.

I was up pretty early on Sunday morning and have to admit that garage was cold at 7:30 AM. I operated almost to the end of WFD. By 2:30 all the equipment was moved inside and put away.

All in all, I was pleased with how good propagation and overall conditions were and how well my KX3 and antenna performed. This was my first WFD and judging by the activity I'll bet that a record was set for the number of participating hams. Last year there was a total of 1,032 logs submitted so, we'll see.

I was lucky enough to have submitted a claim of 153 CW and 37 SSB contacts for a total of 190 during 13 hours of operation. I reached 32 states with Colorado being my long-distance contact and worked 3 Canadian providences.

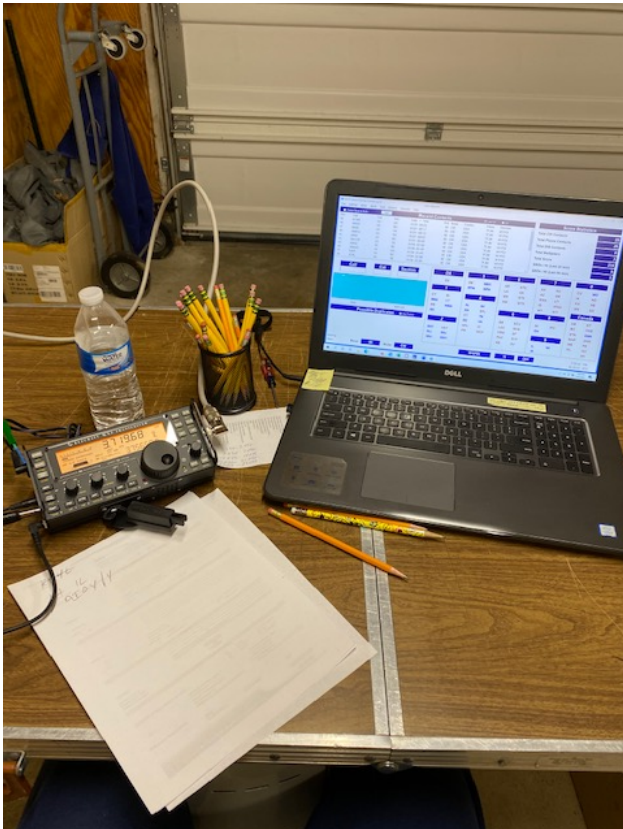
From 2pm Saturday until I shut down Saturday night, I averaged only 10 contacts an hour. But on Sunday I almost doubled that amount per hour with 19. As mentioned, conditions, at least for me, were very good during that 24-hour period.

And as is typical for me following a contest weekend, I stay away from the shack, having had my fill of radio for a while until the next contest.

**Photos on page 8**

# Operating Winter Field Day 2021

Story on page 7





# A Bi-directional Power Indicator for WSPR

By Roger Fell, AB8IF

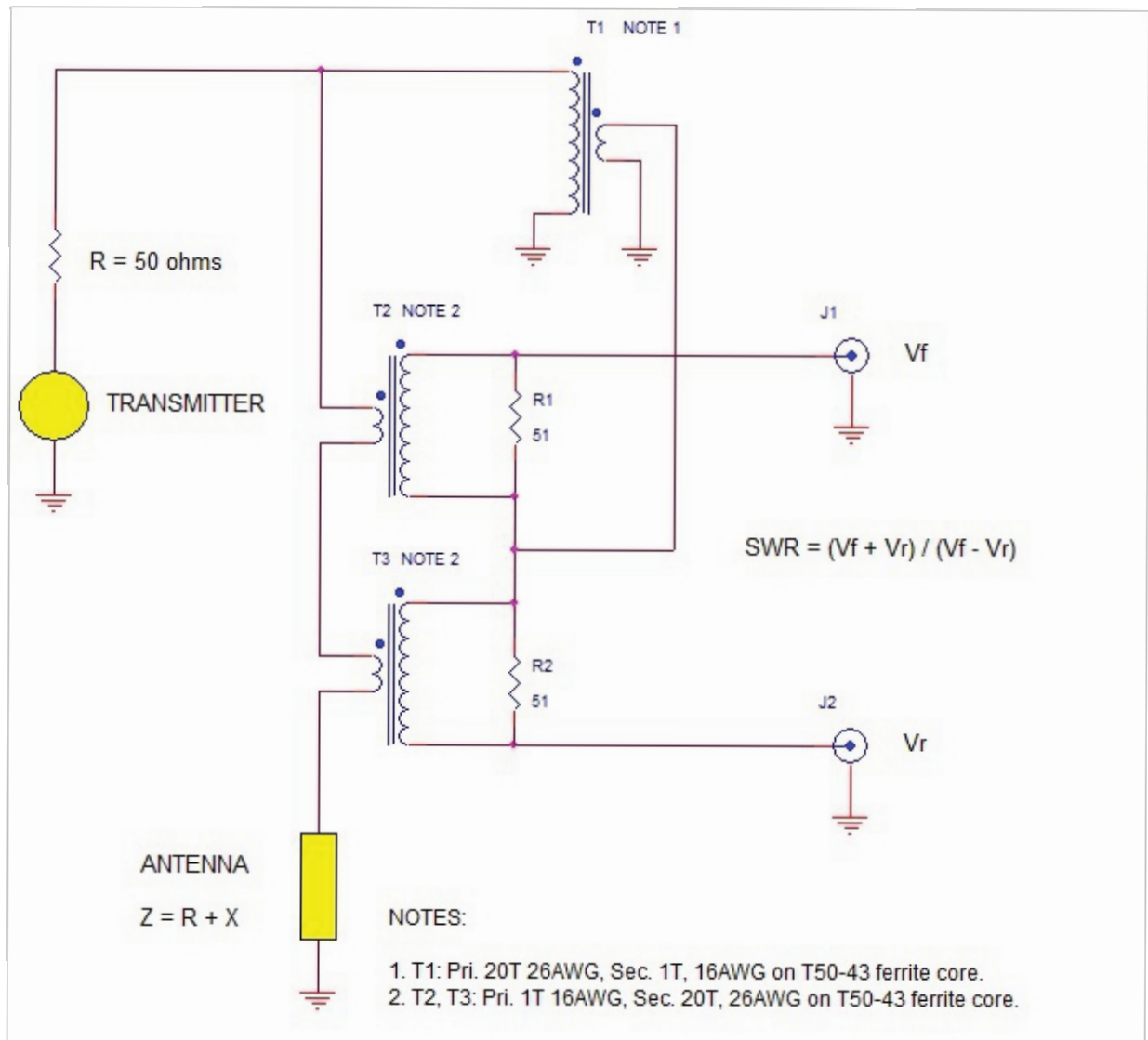
One of the challenges encountered with WSPR is adjusting an antenna tuner for minimum power reflection. This adjustment is typically monitored by a pair of diode detectors that measure forward and reflected power levels. Unfortunately these diodes cease to function at the sub-watt levels commonly used for WSPR signals. Not a problem for 50-ohm systems where a tuner is not required; but what about antennas systems that present very different driving-point impedances?

There are several analog and digital solutions to this situation. Just check out Google. I however, chose to take a path less travelled; use an oscilloscope to generate Lissajous figures from the forward and reflected signals.

A simple implementation uses a pair of X10 (i.e. low capacitance) probes. One probe connects to the input of the forward sensing diode, the other to the reflection sensing diode. However, having a pair of 'scope probes attached to a tuner is hardly a practicable long-term answer. Better to have a direct oscilloscope connection via a pair of slender coax cables. The problem here is that cable capacitance (e.g. 90pF for 3 ft of RG316) unbalances the outputs of many SWR circuits, giving inaccurate readings.

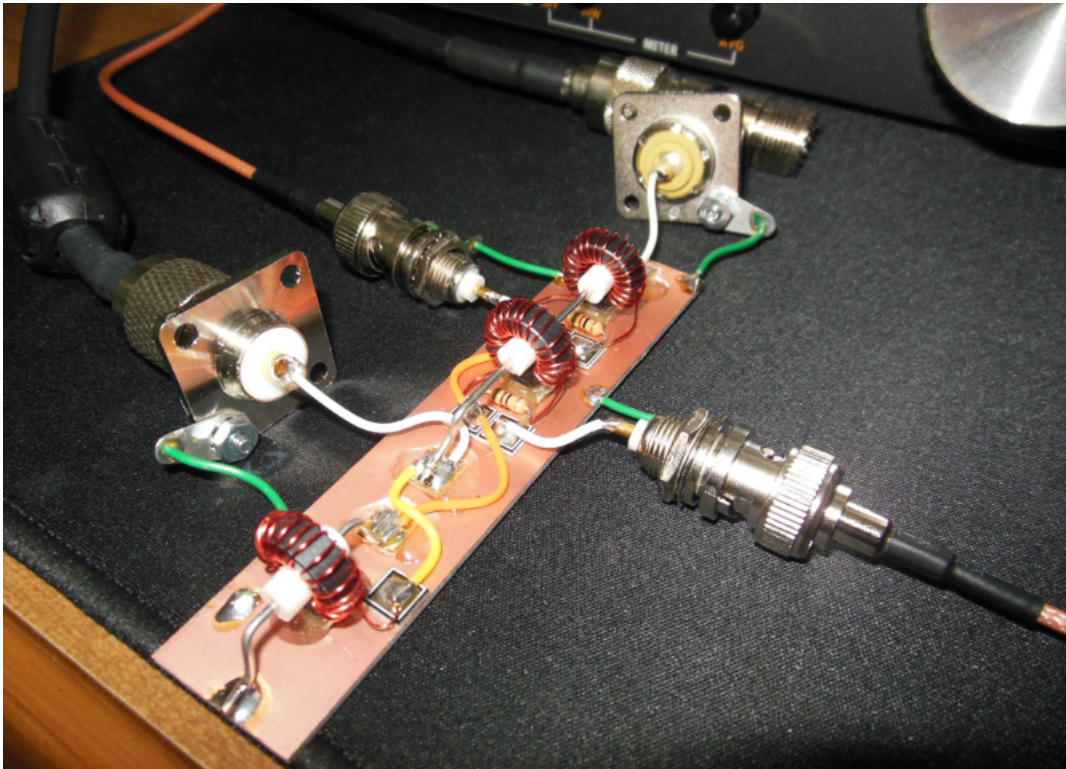
Experimentation led me to a bridge circuit where the forward and reflection outputs were symmetrical and of low impedance. This meant that capacitance loading scales the forward and reflected readings by equal factors, allowing valid SWR indications.

Here is the schematic diagram of this bridge:



Continued on page 10

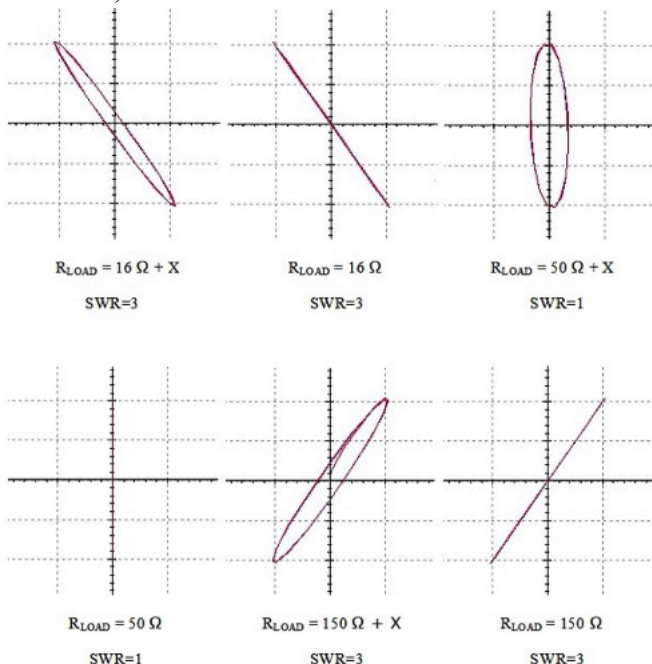
And a photo of the prototype unit:



The bridge splices into the transmitter output with a link that passes through two toroidal current transformers and terminates at UHF connectors. A voltage transformer (lower left) senses the voltage on this line. White silicone insulation stripped from a 30kV wire centers the single-turn windings inside each toroid. Forward and reflected voltages are delivered to BNC cables which go to the oscilloscope. Here are typical Lissajous patterns as seen on the oscilloscope (simulated here for an efficient presentation)...

The vertical axis is driven by  $V_f$ ; the horizontal by  $V_r$ . Unlike cross-needle SWR meters and digital SWR readouts, Lissajous figures respond instantly to tuner adjustments. As well as responding to resistance mismatches between the transmitter and the load, they also indicate load reactances. This allows more precise tweaking of the tuner.

My plan is to install this prototype inside a MFJ-969 tuner, and add BNC receptacles for the forward and reflection outputs. This will give me the best of both worlds... a cross-needle readout for moderate to high power levels, and Lissajous figures for QRP.



**Home Brew Corner**

# NOARS Membership Meeting Minutes

Submitted by Elaine Wilkinson, KC8FOS

February 15, 2021

The meeting was called to order at 7:00 PM by club President, Carl, W8KRF. Twenty-nine members and guests were in attendance. Tom, K1TRB made a motion to suspend reading minutes of the January 2021 meeting, as they are published in the newsletter. Dave, KY8OSU seconded the motion. The motion passed.

**Treasurer's Report** - Tom, W8KYZ. One expense in January – Windstream. The current checking account balance was reported. Ann, KA8ZEP made a motion to accept the Treasurer's Report, seconded by Jeany, KC3QND. The motion passed.

## Committee Reports

Parliamentarian - Tom, N8FDY. No report.

Club Property - Tom, W1PDI not present. No report

Repeaters - Carl, W8KRF. Carl received a complaint about the audio on EchoLink. It's not at its best. Carl will attend to it when the weather warms up.

Website – Carl, W8KRF. An updated member roster has been posted on the website in the members only section.

Field Day – Al, N8CX. We have tentative approval for the Field Day site in Indian Hollow and for the Carlisle Reservation, site of the Annual Picnic in August. Currently Lorain County Metroparks sites are closed. It depends on what they want to do in June, whether we get full approval, or not. Jim, KD8OCW will report this to the Lorain County Amateur Radio Association at their Zoom meeting. It also depends on the status of the vaccine.

Membership – Carl, W8KRF. Due to the passing of Ron, K8VJG, we currently have eighty-three members.

Social Committee - Elaine, KC8FOS. The March Zoom luncheon is coming up.

Summer Hamfest – Carl, W8KRF. We are standing by with Plan B, which is to have a tailgate hamfest in the parking lot at Lorain County Community College, if we

don't get approval for use of the room we usually use. We will wait until May to determine if and where we will have the Summer Hamfest. It depends on vaccinations.

Sunshine - Tom, W8KYZ. Everything is fine.

Nets – Elaine, KC8FOS. The nets are going well. Attendance varies, depending on the day and what else is happening, such as sports broadcasts.

VE Testing – Carl, W8KRF. There is currently no testing. The American Red Cross building in Elyria is closed. Tom, W8KYZ confirmed.

Newsletter - Tom, N8FDY. February 24 is the deadline for submissions.

Old Business - We need to vote on two amendments to the by-laws, as presented at last month's Zoom meeting and printed in the February newsletter. 1) Add a new class of membership - Family Members who are not licensed radio amateurs receive the Associate Member status at the Family Member rate. 2) Move the deadline for dues from the adjournment of the February meeting to the adjournment of the January meeting of the membership year. Pete, KE8NQQ made a motion to accept the amendments to the by-laws, seconded by Chris, KD2HCE. The motion passed.

## Added Comments

Guests and newer hams introduced themselves – Dale, KE8QGQ; Jim, KE8QLZ; Dave, WB8UCD; Dave, KB6ZNS.

A motion was made to adjourn the meeting by KA8ZEP, seconded by Roger, AB8IF. The motion passed. The meeting was adjourned at 7:23 PM.

**Post adjournment** – More introductions were made. Bill, KE8DIF; Dennis, KE8OQA; Alex, KE8MQH had no audio, so introduced himself via chat; Tom, KE8BTR and his wife, Cindy.

Following the meeting, a program entitled Ham Radio Review was presented by Tom, N8FDY; Bob, W8NNC; Dave, KY8OSU; Chet, K8KIZ; Elaine, KC8FOS.

# We're Here for Your Ham Radio Needs

The Showroom is Temporarily Closed to Walk-in Customers, But You Can Still Place Your Orders & Pick Them Up at the Curb.

- Available from 9 am – 8 pm, Monday-Saturday and 9 am – 7 pm, Sunday.
- Place your order at [DXEngineering.com](http://DXEngineering.com) or by calling 1-800-777-0703. All orders must be prepaid.
- Pull into a designated curbside pickup space in front of the Summit Racing Retail Store. You will need valid ID, your order number, and the physical credit card you used or Pay Pal receipt.
- Only the person who purchased the item may pick up the order.

Please note that the Summit Racing portion of the store is open. If you know your DX Engineering part number, you can place your order directly in the store and pick it up there.

We look forward to seeing you!

**[DXEngineering@DXEngineering.com](mailto:DXEngineering@DXEngineering.com)**

***The DX Engineering Retail Showroom***  
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**DX** ENGINEERING®

## For Sale by Tom, W8KYZ

Bose Companion 2 Multimedia Speaker System for your computer. Manual, AC power source. \$45.00.

Uniden Bearcat 9000XLT scanner. 500 channel continuous band scanner. 25MHz to 3 GHz. Manual, AC power source, telescopic antenna and manual. \$45.00.

MFJ-4432 digital car voltmeter. New. 8-30 volts. Fits in cigarette lighter plug. Red LED readout. \$5.00.

Heathkit HM2140A HF dual watt meter. 1.8-30 MHz. Manual. \$25.00

Alinco DJ-580T HT for 2M/440cm. Manual, soft case, mobile power cable/charger, remote speaker/mic. Ni-Cad battery charger. Needs battery. \$25.00.

Weller 8200 dual power soldering gun. 100/140 watts. Excellent condition. \$10.00.

**Contact Tom, W8KYZ. 440-320-5523 or [tporter161@oh.rr.com](mailto:tporter161@oh.rr.com).**

# Equipment for Sale from Dave, WV8P

Heathkit SWR meter: HM 2140. In good shape. \$45.00.

Daiwa CNW419 antenna tuner. 500 watts. In good shape. \$55.00.

Heathkit RF oscillator. IG- 5280. New. 10.00.

Olson SWR & field strength meter. In good shape. \$10.00.

Heathkit code Oscillator. HD1416A. In good shape. \$12.00.

**Contact Dave, WV8P, at (440) 799-3202. (Leave message)**

## This Spot Reserved for Your Free Ad to Sell Your Stuff



## Ad Submission Guidelines

Electronic ads may be emailed to [noarslog@noars.net](mailto:noarslog@noars.net).  
Printed ads may be sent to NOARS Log, 161 Herrmann Drive, Avon Lake, OH. 44012. The deadline for submissions is seven days before the first day of each month. All must include: asking price, sellers name, call sign and phone number. Only ads from current NOARS

members, or paid advertisers will be accepted. If your items sell, please notify the Log editors at [noarslog@noars.net](mailto:noarslog@noars.net) so the ad can be removed. All ads will be removed (unless updated) after four months. NOARS reserves the right to refuse any ads.

# CW OP Lapel Pins for Sale Created by Chet, K8KIZ

They have been sent to multiple states, Denmark, United Kingdom, Germany, Australia

CW OP Pins are \$5.75 each. US S/H is \$5.06 - International S/H\* is \$15.50

(\*The US Postal Service ships to most countries around the world.)

NOTE: This pricing includes shipping charges for up to 10 pins per envelope.

For Example:

- 1 pin + US 1st Class S/H ..... \$10.81
- 2 pins + US 1st Class S/H ..... \$16.56
- 3 pins + US 1st Class S/H ..... \$22.31
- 1 pin + International S/H ..... \$21.25

2 pins + International S/H ..... \$27.00

3 pins + International S/H ..... \$32.75

NOTE: This pricing includes shipping for up to 10 pins per envelope.



Envelopes are 5"x7" tan heavy paper with inside bubble padding. Please send your order and full correct address with ZIP code to: CWpins05@gmail.com

Send your appropriate payment to: www.paypal.me/ANCRSundials

Please advise me if you are using a

different name with your payment (Example: a company name) so I can credit your email order.

Thank you! 73, Chet K8KIZ



**Chet Roberts**

22h

How would you like a CW OP label for a coffee mug, car window, or whatever? Get 3 of these 3" durable, waterproof and dishwasher safe labels by sending \$5 WITH a self-addressed AND self-stamped envelope to: Chet Roberts K8KIZ, 173 Fredericksburg Drive, Avon Lake, OH 44012. 73!



# NOARS Information

## Members of the Board of Directors

President: Carl, W8KRF  
Vice President: Dave, KY8OSU  
Secretary: Elaine, KC8FOS  
Treasurer: Tom, W8KYZ  
Others: Bob, W8NNC, Tim, NC8X; Tom, N8FDY

## Others

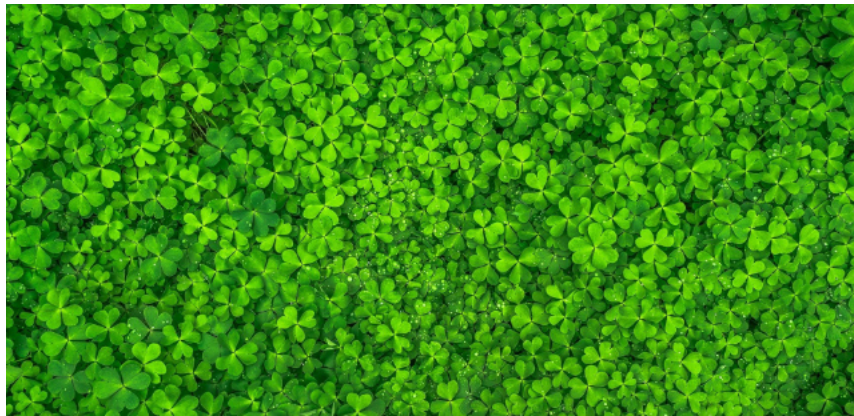
Net Manager: Elaine, KC8FOS  
Club Trustee for K8KRG: Al, N8CX  
NOARS Log Editors: Tom, N8FDY; Elaine, KC8FOS  
Volunteer Examiners: Tom, W8KYZ; Joe, W8GWD;  
John, KC8KI; Dave, K8WRS; Sallie, AB8GI

## Committees

Parliamentary Committee: Tom, N8FDY  
Repeaters: Carl, W8KRF; Tim, NC8X  
Field Day: Al, N8CX  
Hamfest:  
Sunshine: Tom, W8KYZ (temp)  
Membership: Carl, W8KRF  
Club Property Committee: Tom, W1PDI  
Program Committee: Elaine, KC8FOS; Joe, 8DYZ;  
Bob, W8NNC; Dave, KY8OSU  
Social Committee: Elaine, KC8FOS; Dave, KY8OSU;  
Ann, KA8ZEP  
Public Relations Committee: Dave, KY8OSU;  
Elaine, KC8FOS

## Membership

Membership is open to anyone interested in radio communication. Dues are: Full \$15, Associate (non-licensed) \$7, Family members of a full member are \$4 each. Membership forms are available at [www.noars.net](http://www.noars.net). Make checks payable to NOARS and mail them to: NOARS Membership Committee, 161 Herrmann Drive, Avon Lake, OH 44012.



## Meetings

During the Covid-19 pandemic, in-person meetings have been cancelled. They will resume as soon as it is safe to once again meet in large groups.

## Nets

NOARS nets are Tuesday nights at 8 pm on 28.370 MHz, Wednesday nights at 7 pm on 146.700 MHz, and Thursday nights at 8 pm. on 146.700 MHz. All licensed amateurs are welcome.

## VE Testing

Due to COVID-19, there will be no VE testing until further notice.

## Net Control Stations

Elaine, KC8FOS  
Carl, W8KRF  
Tom, W8KYZ  
Dave, KY8OSU  
Dan, W8AJF  
George, WA8YVF