ARROWHEAD RADIO AMATEUR CLUB, INC. • DULUTH, MINNESOTA • WØGKP • 1929

# The RELAY

MARCH 2022

**The Official Publication of the Arrowhead Radio Amateur Club**

A.R.A.C. Inc. P.O. Box 7164 Duluth MN 55807-7164 http://www.thearac.org Dues: Member $20/Family $25

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**The Relay Co-Editors:**

**Kim & Steve Waller**

Kim - KEØNQS KEØNQS.mn@gmail.com

Steve - KEØNQT KEØNQT@gmail.com

2022

Join us on Facebook!

# WAS – Duluth

## Do You Know a Part Our Lost S/S Radio History?

As we've noted several times in past issues of The Relay, amateur radio operators have contributed great innovation and expertise in all areas of radio history. Ship-to-Shore (abbreviated S/S) radio is no different. Not only were early hams instrumental in building, operating and maintaining the early stations, they continue to this day to collect and preserve Ship-to-Shore radio history artifacts and knowledge.

One such man is **Tom McKee K4ZAD**. Growing up on the Great Lakes (Alpena, MI and South Bend, IN) his radio interest started with a short-wave receiver in 1947. Though he's now in his late eighties and lives near Raleigh, NC, he still researches and maintains a website dedicated to archiving radio history of marine communication on the Great Lakes and Mississippi River. His website, called ***Inland Marine Radio History Archive: Great Lakes - Mississippi River System*** can be found at **http://www.imradioha.org**

McKee says he operates as a non-profit organization and the content is comprised of Public Domain material. He welcomes anyone interested in contributing additional information they may have to add to, or clarify his content.

*Tom McKee K4ZAD says: "This photo of the former WAS operating console was photographed in 1996 or 1997 by Mark Karney, N9JWF at a museum near the Two Harbors, MN lighthouse. There is some similarity to the 1937 operating room at WMI. Perhaps it is the same equipment moved from to Lorain, Ohio to Duluth when the Lorain station expanded in the '40's or maybe they built identical setups for all three stations? The 50's Al Klopp photo [page 16] has the Hammarlund receivers just like the 1937 WMI photo. The Hammarlund receivers are gone in this photo, replaced in the left rack by six receiver channel strips from their maritime units. The same change was made at WMI. In a 1954 WMI photo there are many Hammarlund receivers in the equipment rack on the right. In the 1955 and 1958 photos, all but two of the Hammarlund receivers have been removed and eight receiver channel strips installed."*

As such, we are sharing his comments on WAS – Duluth, our former Ship-to-Shore station that operated from about 1938 through 1979.

Though he says he doesn't know much about the history of WAS - Duluth, his site seems to have the most information about it in one place that I can find. In the past 3 years, during my own local radio history research, I found mention that WAS – Duluth was a Ship-to-Shore station that once operated here, but little else. My thanks to Gene Ellefsen N0VRM for forwarding me Mr. McKee's website address.

I hope that in sharing K4ZAD's important "tid bit" of WAS – Duluth history, one of our readers can share additional history about the station and the people who operated and maintained it. Perhaps you or your family member participated in

*Continued on Page 15*

# ARAC Board Meeting - February 1, 2022

## PRESIDENT

**NØVRM**
Gene Ellefsen
371Ø Chambersburg Ave
Duluth, MN 55811
218-39Ø-3272
lspitech@mail.com

## VICE PRESIDENT

Photo Coming Soon!

**KØDJP**
David Pyrlik

david.pyrlik@gmail.com

## SECRETARY

Photo Coming Soon!

**KFØGJW**
Melinda Nelson

## TREASURER

Photo Coming Soon!

**KNØNUL**
Bruce Carlson
9Ø6 Anderson Rd
Duluth, MN 55811
763-315-2967
carlsbr@gmail.com

## 3RD YEAR BOARD

Photo Coming Soon!

**KD9ABS**
Gary Minter
1621 N 26th St
Superior WI 5488Ø

## 2ND YEAR BOARD

Photo Coming Soon!

**AAØAC**
Dave Davis

218-348-6649
aaøac@outlook.com

## 1ST YEAR BOARD

Photo Coming Soon!

**AAØAW**
Doug Nelson

aaøaw@arrl.net

**Present:**

**Board Members**

**Gene Ellefsen-N0VRM, David Pyrlik-K0DJP, Melinda Nelson-KF0GJW, Bruce Carlson-KN0NUL, Gary Minter-KD9ABS, Dave Davis-AA0AC, Doug Nelson-AA0AW**

**Board Advisors (Non-Board Members)**

**Randy Wabik-KR0B, Kim Waller-KE0NQS, Steve Waller-KE0NQT**

**Guests**

**Elmer Berg-KC0NGY, Del Minter-KE0CLI, Wendy Nelson, Rochelle Nelson**

Meeting called to order by President Gene-N0VRM at 18:30 (6:30 pm)

**Minutes:**

Minutes were not posted as of the meeting, so no one was able to review them.

**Treasurer's Report:**

| | |
|---|---|
| Checking: | $1,634.74 |
| Savings: | $1,074.33 |
| Repeater | $4,050.07 |
| Subtotal Cash | $6,759.14 |
| Winter CD | $1,730.42 |
| Summer CD | $0.00 |
| Subtotal CD's | $1,730.42 |

**Assets Subtotal: $8,489.56**

Minus Reserved Funds

| | |
|---|---|
| Check #1444 | $323.20 |
| Check #1445 | $150.00 |
| Reserved Subtotal: | $473.20 |
| **Grand Total** | **$8,016.36** |

Motioned to accept by Gary Minter-KD9ABS, seconded by Dave Davis-AA0AC, motion passed.

Education: Nothing till the fall

## February 10, 2022

**Present:**
President: Gene Ellefsen-N0VRM
Vice President: Dave Pyrlik-K0DJP
Treasurer/Membership: Bruce Carlson-KN0NUL
Secretary: Melinda Nelson-KF0GJW
First Year Board: Doug Nelson-AA0AW
Second Year Board: Dave Davis-AA0AC
Special Events: Open/Gene Ellefsen-N0VRM(acting)
Ham Fest/Education: Bob Schultz-KC0NFB
Property/Picnic: Scott Ahlgren-N0VYU
Repeater: Randy Wabik-KR0B
Repeater: Dave Prylik-K0DJP
Testing: Doug Nelson-AA0AW
Parliamentarian: Grant Forsyth-KC0WUP

**Absent:**
Third Year: Gary Minter-KD9ABS
Chaplin:
Newsletter/Historian: Kim Waller-KE0NQS
Newsletter/Historian: Scott Waller-KE0NQT
Web Site: Thomas Dorr-KE0RHA

Meeting called to order at 19:02 (7:02 PM) by President Gene Ellefsen-N0VRM.

**Minutes:** Posted on the web page and in the newsletter. Motion to approve by Bruce Carlson-KN0NUL, seconded by Jeff Nast-KC0MKS, motion passed.

**Treasurer's Report:**

| | |
|---|---|
| Checking: | $1,634.74 |
| Savings | $1,074.33 |
| Repeater | $4,050.07 |
| Subtotal Cash | $6,759.14 |
| Winter CD | $1,730.42 |
| Summer CD | $0.00 |
| Subtotal CD's | $1730.42 |
| **Assets Subtotal:** | **$8,489.56** |
| Minus Reserved Funds | |
| Check #1444 | -$323.20 |
| Check #1445 | -$150.00 |
| Reserved Subtotal: | -$473.20 |
| **Grand Total:** | **$8,016.36** |

Motion at accept as presented by Doug Nelson-AA0AW, seconded by Scott Ahlgren-N0VUY, motion passed.

**Education:** Bob Schultz-KC0NFB reported there is nothing going on till the fall.

*Continued on Page 4*

**Testing:** Doug Nelson-AA0AW reported testing a couple individuals that were in need of testing. We are registered for testing at HamFest on May 7th for anyone who is interested. There has not been a need for a big testing session lately. If you are in need of a testing session please reach out to Doug Nelson-AA0AW at AA0AW@ARRL.net. Side note there was a gentleman that came to a testing session. He stated that for his technician test he did it via zoom and it was the worst experience that he ever had.

**HamFest:** Bob Schults-KC0NFB reported that they got the approval, and have a number of responses back. We have 3 tables reserved already.

At the board meeting the board made a motion to make the Grand Prize $500.00 as we have done in the past. President Gene-N0VRM asked if there was any discussion? Grant Forsyth-KC0WUP seconded the motion. Motion passed.

Next month we will discuss the amount for food.

**Repeaters:**
Randy Wabik-KR0B reports that Mahtowa is back up and running with 17 watts. The controller that is out there (7330) is the one we wanted to purchase for the 94 repeater. Pulled that to move up to the 94. Doug is looking at an RCL2 for Mahtowa which is cheaper and very reliable for what we need there. Randy Wabik-KR0B made a phone call about an amplifier but has yet to get a phone call back. John Pouchak-KB9KDZ is donating a UPS 2200 for Mahtowa repeater only. Doug Nelson-AA0AW has an HF Radio that he is donating to Mahtowa as well.

Thank you John-KB9KDZ for the donation.

Comment from Doug Nelson-AA0AW. After getting the Mahtowa machine in, I had to take a trip to the cities. Started talking back into the repeater, at only 17 watts I was able to talk to it in Askov. Spoke with Denny-KB0SPA talked all the way to Nickerson except some of the dips, we were able to talk all the way to the southern Carlton County border. The reason for 100 watts is for handhelds.

Total amount left to spend for the Mahtowa Repeater right around $1,200.00.

No new discussions.

Door Prize was won by Mike Lovald-N0PDG who donated it back to the club.

Motion to adjourn by Jeff Nast-KC0MKS, seconded by Randy Wabik-KR0B, motion passed at 19:19 (7:19 PM). Program by David Prylik-K0DJP on Radio Frequency Interference.

# Prez Sez ...

**Hi ARAC Members,**

**This Month's Club meeting on March 10 will feature Mr. Bob Heil from Heil Sound. Heil Sound is renowned for quality microphones and headsets. This should be a good program.**

**Our April Club meeting on April 14 will be the annual Skywarn Training. We will be back to in-person training with staff from the NWS- Duluth office doing the training. Please note: the meeting will start one hour earlier at 6:00 p.m. with the Skywarn Training starting at 6:30 p.m.**

**As in the past, this training is open to the Public, so we will start the meeting promptly at 6:00.**

**73,**

**Gene Ellefsen NØVRM**

## CLUB REPEATER
## WØGKP

**146.94 (-)**
**CTCSS TONE**
**103.5**


## *The ARAC RELAY*

*Published monthly and distributed free to members, "The RELAY" is the official publication of the Arrowhead Radio Amateur Club, Inc. Members are encouraged to submit articles, opinions, and classifieds. Your submission will be placed as soon as possible providing it does not conflict with the bylaws of the Arrowhead Radio Amateur Club, Inc. The editors reserve the right to omit any submission that is not a required item. If a submission is questionable, it will be presented to the Board of Directors at the next scheduled board meeting for authorization.*

# U.S. AIR FORCE MILITARY AUXILIARY RADIO SYSTEM

**Minnesota State MARS Director**
**Reginald B. Cass / AFS5MN**

Gene Ellefsen
NØVRM

Thank you for your time and interest.

Air Force MARS membership could be for you. We do hope that it is.

If you have the following interests, and capabilities, we are interested in recruiting you to become an Air Force MARS member. Completion of the following on line training is mandatory:
Personally, Identifiable Information (PII) https://iatraining.disa.mil/eta/piiv2/launchPage.htm
Cyber Awareness https://iatraining.disa.mil/eta/disa_cac2018/launchPage.htm

If you have completed: Incident Command System (ICS) -100, 200, 700, and 800 training, and have obtained certification for Air Force MARS or are willing to obtain this training, again, Air Force MARS could be for you.

You must be interested in joining a group of individuals that are dedicated to amateur radio, emergency communications, and willingness to learn and used military communications procedures for voice and digital communications.

You must have equipment that will meet the minimum requirements for voice and digital operation. The equipment will be: transmitter, receiver, (transceiver) modified to operate out of amateur radio bands, computer, modem, and antenna's that are designed to operate on military assigned frequencies. (The best antennas will be a dipole cut to the operational frequency. NVIS antennas work best. You will not need a linear amplifier, however if you have one that will operate on out of amateur radio bands that will be a plus)

You must go through and complete training. You are allowed up to 180 days to do so.

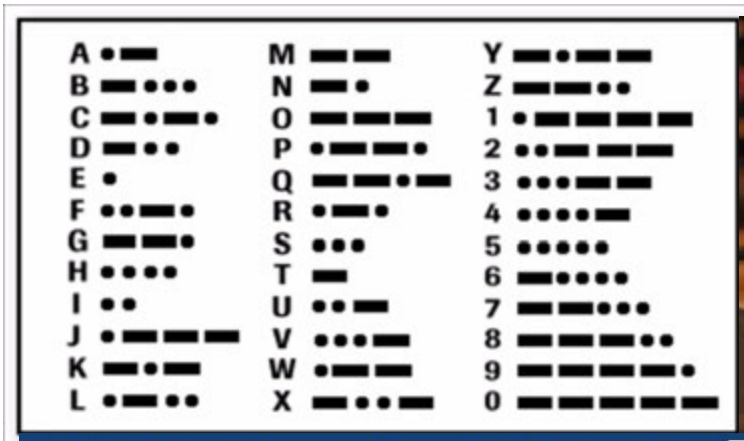
Air Force MARS operation's and procedures are based upon "MARS Operating Instruction", (MOI). The MOI manual uses as its basis for instruction a series of Allied Communications Publications (ACP's), Department of Defense Directives, Department of Defense Instructions, and Department of Defense Manual.

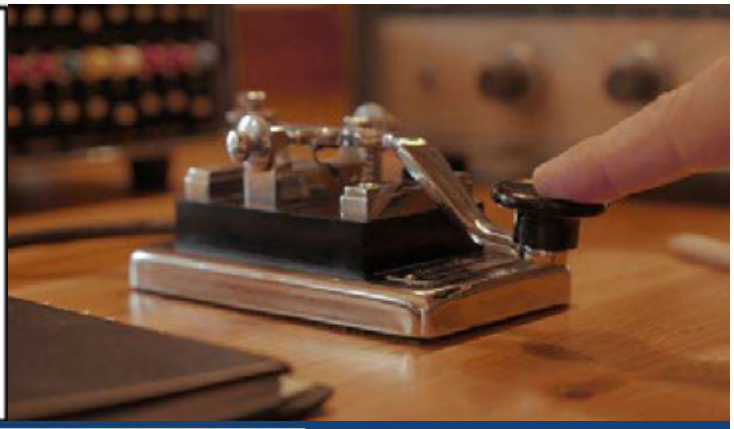
If you already belong to a MARS program and would like to consider Air Force MARS, please contact one of the recruiting team members.

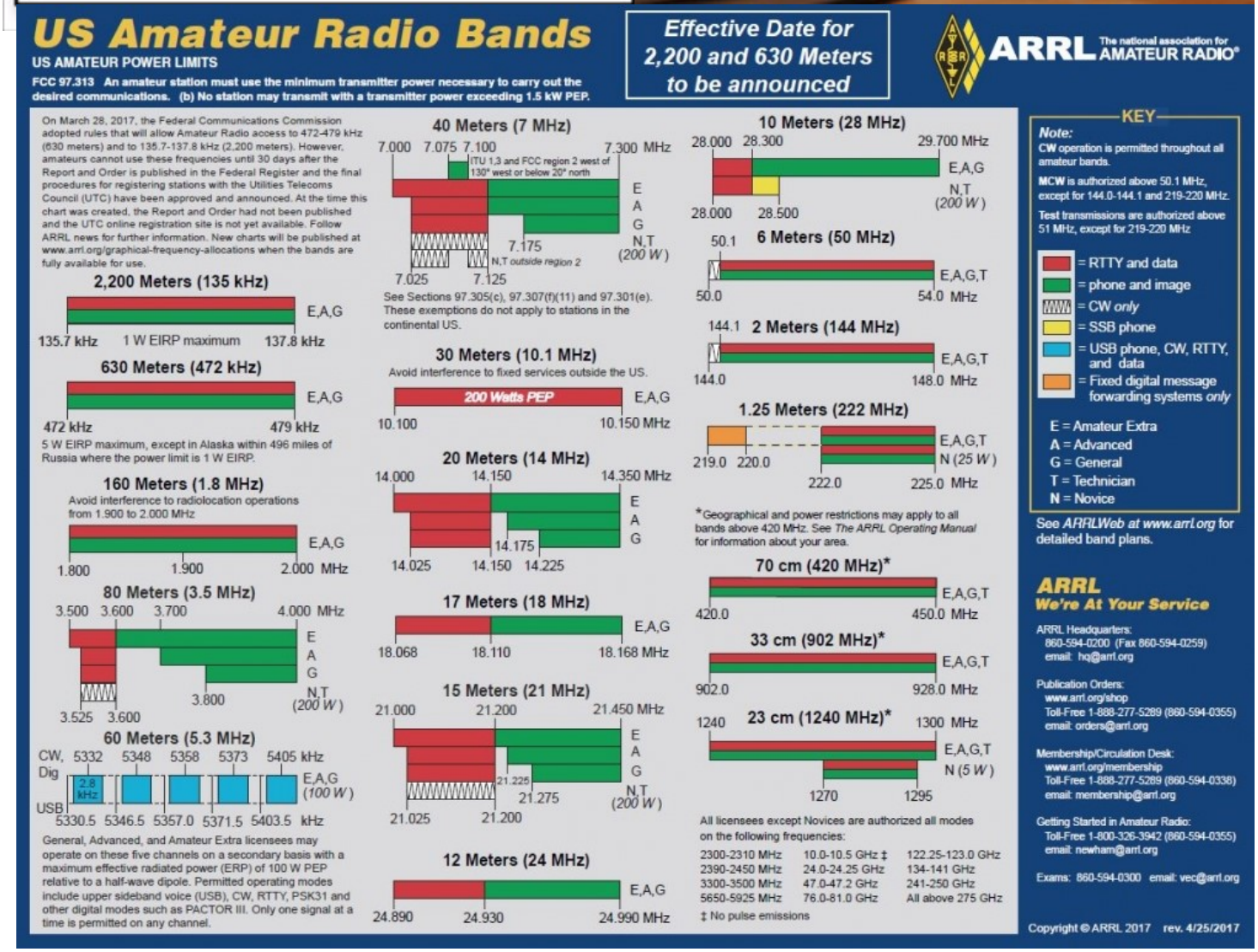
Our recruitment team is as follows:
AFA5XK Dave, WB7DRU wb7dru@gmail.com
AFA5ZV Randy, KRØB afa5zv@gmail.com
AFA5JY Reg, KAØRJY reg_cass@msn.com

# CW Abbreviations

| | | | |
|---|---|---|---|
| AR End of Message | AS Pse QRX | BK Back to You | SK End of Contact |
| TU Thank You | PSE Please | K Invite to Transmit | |
| QST Calling all Amateurs | QRL Are You Buzy? | QRU Have anything for me | |
| QRV Are You Ready? | QRX Standby | QRS Transit Slower | |





# NETS

Have a favorite HF/6m/2m/1.25m/7Øcm net that you check into or listen in on? Also, please send corrections and we will add it to the list below - Kim KEØNQS at my email KEØNQS.mn@gmail.com.

- **Northland Weather Group Net:** Mondays 2ØØØ on the ARAC repeater (146.940 MHz with a tone of 103.5 and standard offset).
- **Minnesota D-Star Net:** Sundays at 19:3Ø on Reflector 53A
- **Minnesota Section Net** 12ØØ and 173Ø on 3.86Ø [Net Manager: NØYR] http://www.mn-section.org/dept_stm.html
- The non-non-net: Evenings 2ØØØ 144.2ØØ USB except for Sunday evenings.
- Badger WX Net: Ø5ØØ-Ø715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **PICONET**: 3.925 from Ø9ØØ-11ØØ CT Mon-Sat and 16ØØ-17ØØ CT Mon-Fri. Info at: http://www.piconet3925.com
- Michigan Upper Peninsula Net: 16ØØ (CST) on 3.921 MHz Sun-Sat and 12ØØ Sun. Info: http://www.michupnet.com
- Great Lakes Marine/Maritime Mobile Net: Morning Ø7:3Ø - 3.932; Ø8:15 - 7.261 MHz and evening 18:3Ø - 3.173Ø927; 19:15 - 7.268 MHz. Weekend extra net: 1Ø:ØØ - 7.261/7.268 MHz. All CST, LSB and +/- QRM. See: http://www.sailblogs.com/member/glmmnet/
- MIDCARS: Ø7:3Ø-13:ØØ - 7.258 MHz. See: http://www.midcars.net
- Iowa snowbird net on 14.257MHz, M-W-F at 1Ø:ØØ am Local Time. This is an open net.
- Spider Web Net (Marco Island FL) on 14.347 every morning at Ø73Ø CST/CDT: http://www.spiderwebnet.net
- Maritime Mobile Service Network: Daily at 11ØØ—21ØØ Central on 14.3ØØ. http://mmsn.org and http://www.143ØØ.net
- RV Radio Network: Every day at 19ØØ Central on 7.265 MHz. Web site: http://www.rvradionetwork.com
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.48Ø MHz USB
- Wisconsin Sideband Net: Daily @ 5:15 PM – 3985 [or 3982.5] KHz LSB
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.48Ø MHz USB
- Hobby Helpers Net - Tuesday @ 8 PM – 28.33Ø MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- Northstar Trader Net: 3.9Ø8 +/- at Ø83Ø CST Sundays
- WARFA: 3.9Ø8 +/- Sun/Tue/Thu nights at 22ØØ CST, http://warfa.org/
- Youth Net: 14.32Ø-1433Ø Sundays 18ØØ-19ØØ UTC, Net Control: AC8PI
- YACHT: Saturdays 19ØØ CST on EchoLink #481872, http://yachthams.webstarts.com
- Northwestern Ontario ARES Net: Evenings at 2Ø:15 (Central) on +/- 3.75ØMhz
- The Iron Range Net: Saturdays at Ø8ØØ Central time on or near 3.919 Mhz. Look them up on Facebook!
- FORX Net: Mondays at 19ØØ Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- HF CW: Fridays Ø8:ØØ CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- Minnesota ARES Digital Net: Thursdays at 2ØØØ CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/5ØØ.
- SARA Digital Net: Sundays at 19ØØ Local, 3.582.15Ø MHz USB +/- QRM, Mode: BPSK31/BPSK63
- Spider Web Net (Marco Island FL): 14.347 every morning at Ø73Ø CST/CDT: http://www.spiderwebnet.net
- Broadcaster Net: 7.231 or 3.855 M/W/F @ 15ØØ UTC. 14.255 M-F @ 213Ø UTC. http://www.cbsretirees.com/ham.htm
- Old Military Radio Net: 7.268 +/- nightly at Ø2ØØz. Other times/Frequencies too. See: http://www.mrca.ar88.net/
- Rag Chew Crew/Tailgaters/Freewheelers Nets: 3.916 +/- nightly at 19ØØ CST, http://www.tailgatersnet.com
- North South Net: 7.214.6 +/- at Ø7ØØ CST, Monday-Saturday

# UPCOMING EVENTS

## Next ARAC Board Meeting

**Tuesday, March 1, 2Ø22**
**@ 6:30 p.m.**
**Sammy's Pizza - Spirit Valley**

## Next ARAC Club Meeting

**Thursday, March 10th**
**7 p.m.**
**Coppertop Church!**

## March 10th Presentation:

***Legendary Sound Pioneer***
***Bob Heil - K9EID***
***of Heil Sound***

**Bob Heil is responsible for taking the world of live rock and roll from a small tinny sound of band amps, to the booming, surround-sound of volume and clarity we enjoy today during concerts. He first worked in 1970 with The Grateful Dead, and went on to work with The Who, Jeff Beck, Joe Walsh and many other early performers. The "talking guitar" sound that artist Peter Frampton played in the 1970's was one of Bob's inventions, called the Heil Talk Box and is still in use today.**

**Heil Sound, based in Fairview Heights, IL is also known for manufacturing superior, high quality microphones that are used in professional music and communications. Bob also created an excellent line of products for amateur radio operation.**

***Interested in providing a program, or have an idea for one?***

***Contact us at ke0nqs.mn@gmail.com***

## SAVE THE DATE!

## HAMFEST 2022

**Used and like-new radios, electronic equipment, tools,vendor reps, parts, and computer items.**

**License Testing On-site!**

**Saturday May 7, 2022**
**9:00AM - 1:00PM**

**LOOKING**
**for an**
**Amateur Radio License**
**TESTING SESSION?**

**No need to wait for a class or Hamfest!**

***Schedule your own Testing Session TODAY!***

***Contact Doug Nelson-AA0AW at aa0aw@arrl.net or 218-391-5874***

# Duluth Area Repeaters

## ARAC System WØGKP

| Freq. | Offset | Tone | Location |
|---|---|---|---|
| 146.940 | minus | 103.5 | Duluth |
| 146.940 | minus | 107.2 | Lakeside (recv) |
| 146.940 | minus | 151.4 | Two Harbors (recv) |
| 146.940 | minus | 100.0 | Gary-New Duluth (recv) |
| 146.940 | minus | 123.0 | Solway (recv) |
| 146.940 | minus | 110.9 | Cloquet (recv) |
| 147.000 | minus | 103.5 | Mahtowa |
| 444.100 | plus | 103.5 | Duluth UHF Link |

## N9MMU/N9QWH System (WI)

| | | | |
|---|---|---|---|
| 145.310 | minus | 110.9 | Duluth |
| 145.490 | minus | 110.9 | Solon Springs |
| 147.255 | plus | 110.9 | Hayward |
| 145.110 | minus | 110.9 | Rice Lake |
| 147.345 | minus | 136.5 | Holcombe |
| 145.230 | minus | 110.9 | Eau Claire |

## WECOMM – WI Statewide Linked System WE9COM

| | | | |
|---|---|---|---|
| 147.075 | plus | 110.9 | Meteor Hill (closest repeater to Duluth) |

## LSAC System #1

| | | | |
|---|---|---|---|
| 147.330 | plus | 151.4 | Proctor |
| 147.330 | plus | 103.5 | Duluth (recv for Proctor) |
| 147.330 | plus | 156.7 | Duluth (North) (Fish Lake) |
| 147.270 | plus | 114.8 | Two Harbors |
| 147.270 | plus | 103.5 | Wales |
| 147.090 | plus | 114.8 | Silver Bay |
| 145.410 | minus | 114.8 | Finland |
| 147.300 | plus | 114.8 | Isabella |
| 145.150 | minus | 103.5 | Washburn, WI |
| 146.700 | minus | 103.5 | Bayfield, WI |
| 443.850 | +5.00 | none | Bayfield, WI |
| 147.165 | plus | 110.9 | Hurley, WI |
| 146.640 | minus | 151.4 | Ely |
| 443.500 | +5.00 | 141.3 | Gilbert |
| 147.060 | plus | 103.5 | Virginia |
| 147.360 | plus | 162.2 | Cook |
| 147.165 | plus | 114.8 | Coleraine |
| 443.925 | +5.00 | 110.9 | Brainerd |
| 443.200 | +5.00 | 114.8 | Tamarack |
| 147.360 | plus | 203.5 | Aitkin |
| 146.865 | minus | 146.2 | Giese |
| 147.570 | simplex | 146.2 | Hinckley |
| 444.575 | +5.00 | 146.2 | Hinckley |
| 443.325 | +5.00 | 146.2 | Isanti |

## NARC System NAØRC

| | | | |
|---|---|---|---|
| 145.45Ø | minus | 1Ø3.5 | Solway Twp |
| 145.45Ø | minus | 114.8 | Park Point (rcv) |
| 147.135 | plus | 114.8 | Park Point (rcv) |
| 147.135 | plus | 1Ø3.5 | Knife River |

## Stand Alone Repeaters

| | | | |
|---|---|---|---|
| 145.21Ø | minus | 11Ø.9 | Clam Lake, WI |
| 146.88Ø | minus | 123.Ø | Grand Rapids |
| 146.91Ø | minus | 146.2 | Duxbury, MN |

## Fusion and D Star

Fusion (Analog has tone and C4FM digital with no tone)

147.15Ø plus 151.4 NTØB Gilbert Fusion Rptr
145.17Ø minus 11Ø.9 WA9KLM Superior – Douglas County RACES/ARES Fusion Repeater
443.1ØØ +5.ØØ 1Ø3.5 KBØYHX Cloquet – Carlton County RACES/ARES Fusion Repeater
444.3ØØ +5.ØØ 1Ø3.5 NØEO Spirit Valley Amateurs Fusion Repeater WIRES-X NØEO (Analog only) Fusion Room 40494
147.375 plus NØEO D Star
442.2ØØ plus NØEO D Star

***Repeater list compiled by Dr. Frequency—KCØWDQ***

### ST. Louis County Department of Emergency Services Net Control Roster

| | | | |
|---|---|---|---|
| N9DMG | Scott Swanson | NØVRM | Gene Ellefsen |
| AAØAW | Doug Nelson | KCØWDQ | Paul Dallavia |
| WØNWO | Dave Miller | WØDIO | Dennis Anderson |
| KØDSL | Diane Saunders | AAØME | Randy Johnson |

***Sunday Nights at 21ØØ on the ARAC System***
**(See Calendar for net control schedule)**

### Ten Meter SSB Net Control Roster

AAØAW Doug Nelson WØLWU Joe Meese
NUØW Gary Hanson K9KDK Al Babcock
WØDIO Dennis Anderson NØVRM Gene Ellefsen
AAØME Randy Johnson KØDSL Diane Saunders
***Sunday Nights at 2ØØØ on 28.45Ø MHz USB***

### Ten Meter CW Net Control Roster

AAØAW Doug Nelson NØPDG Mike Lovold
***Sunday Nights at 193Ø on 28.125 MHz***

### Northland Weather Group Net Control Roster

KCØMKS Jeff Nast
***Monday Nights at 2ØØØ on the ARAC System***

### Douglas County Net

***Tuesday Nights at 2ØØØ on 145.49Ø (N9QWH System)***

### Central Carlton County Net

***Tuesday Nights at 2Ø3Ø on the ARAC System***

### Lake County RACES/ARES Net

***2nd & 4th Wednesday Nights at 19ØØ on the LSAC 1 System***

# Elmers

**El-mer / ɛl-mər/ [el-mer]**
1. a male given name: from Old English words meaning "noble" and "famous."
2. an adhesive used to bond like or unlike materials
3. An experienced ham radio operator who mentors new and prospective hams.

| Name | Call | Expertise |
|---|---|---|
| Jeff Nast | KCØMKS | APRS, EchoLink, WinLink, Fusion, Contesting |
| Bob Schulz | KCØNFB | Contesting |
| Jim Anderson | NØJWA | QsoNet |
| Doug Nelson | AAØAW | HF, VHF/UHF, Contesting, Packet, APRS, Morse Code, VE testing, Echolink, Allstar, EmCom… |

# Membership E-mail Directory

**Ahlgren, Scott** **NØVYU**
*sahlgren01@msn.com*
**Anderson, Jim** **NØJWA**
*kcØmko@centurylink.net*
**Anway, Allen** **KC9LJN**
*allen@a2d2.com*
**Bakke, Richard** **KDØQHE**
*rabakke46@aol.com*
**Barnes, Ray** **KEØZN**
*KEØZN@outdrs.net*
**Blodgett, Warren** **KDØXI**
*kdØxi@aol.com*
**Blotti, Nick** **KBØMHD**
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***Members, please check your name and email address for accuracy. If you are not on this list and want to be on the list, contact us with your info. If you need to make a change, please let us know at KEØNQS.mn@gmail.com Or KEØNQT@gmail.com***

***Co-Editors,***

**SUNDAY NIGHT NETS**
193Ø - **CW - 28.125 MHz USB-CW**
2ØØØ -**USB 28.45Ø MHz**
21ØØ - **Southern St. Louis County Emergency Services Net**

**MONDAY NIGHT NETS**
2ØØØ- **Northland WX Net - ARAC Repeater**

# MARCH
## CLUB EVENTS

**TUESDAY NIGHT NETS**
2ØØØ -**Douglas Cty 145.49Ø MHz**
2Ø3Ø -**Central Carlton County**

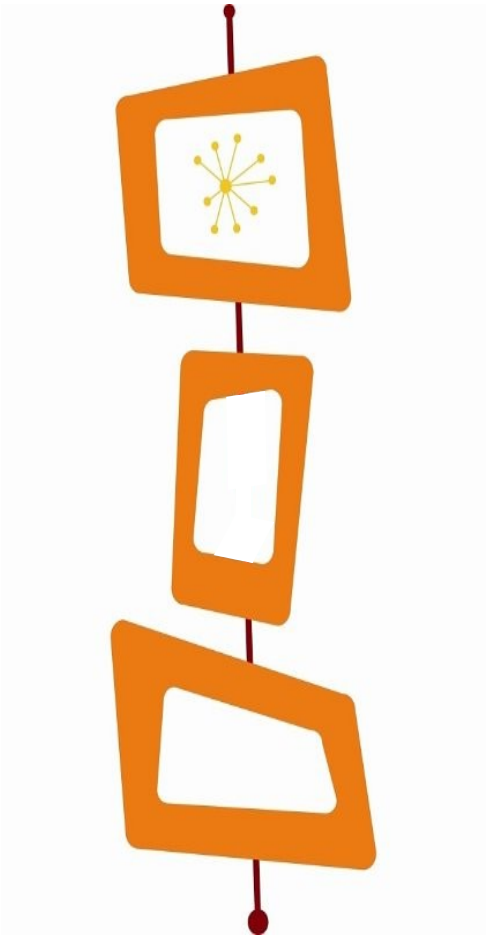
**WEDNESDAY NIGHT NETS**
19ØØ -**Lake County - LSAC1**
**2nd & 4th Wednesdays**
21ØØ -**BWAR**

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | 1<br>**ARAC BOARD MEETING**<br>**Sammy's Pizza**<br>**6:30 pm**<br>DC Net 2000<br>CC Net 2030 | 2 | 3 | 4 | 5 |
| 6<br>**CW 1930 AAØAW**<br>**USB 2000 AAØAW**<br>**ES 2100 NØVRM** | 7<br>**WX 2000 KCØMKS** | 8<br>DC Net 2000<br>CC Net 2030 | 9<br>**Lake County ARES/RACES Meeting 1800**<br>Lake County Net 1900<br>21ØØ -**BWAR** | 10<br>**ARAC**<br>**Club Meeting**<br>**Coppertop Church**<br>**7:00 PM** | 11 | 12 |
| 13<br>**CW 1930 NØPDG**<br>**USB 2000 WØLWU**<br>**ES 2100 - TBD** | 14<br>**DC ARES/ RACES Mtg 1900 DC EOC**<br>**WX 2000 KCØMKS** | 15<br>DC Net 2000<br>CC Net 2030 | 16<br>**St. Louis County ARES/ RACES Mtg 1630 Pike Lake EOC**<br>21ØØ -**BWAR** | 17 | 18 | 19 |
| 20<br>**CW 1930 AAØAW**<br>**USB 2000 K9KDK**<br>**ES 2100 AAØME** | 21<br>**WX 2000 KCØMKS** | 22<br>DC Net 2000<br>CC Net 2030 | 23<br>Lake County Net 1900<br>21ØØ -**BWAR** | 24<br>**Carlton County ARES/RACES Meeting**<br>**1900 CC EOC** | 25 | 26<br>**ARAC Club Breakfast**<br>**The Chalet**<br>**4833 Miller Trunk Hwy**<br>**Hermantown, MN**<br>**8 am** |
| 27<br>**CW 1930 NØPDG**<br>**USB 2000 - TBD**<br>**ES 2100 N9DMG** | 28<br>**WX 2000 KCØMKS** | 29<br>DC Net 2000<br>CC Net 2030 | 30 | 31 | | |
| | | | | | | |

**Get this newsletter *faster* via email!**
**Email Doug AAØAW at**
***aaØaw@arrl.net***

**Next Meeting: Thursday,**
***March 10th, 2022 - 7 pm***
***at the Coppertop Church!***

# ARAC Committee Chairs



**Club License Trustee:**
Ray Barnes KEØZN

**Control Operators:**
AAØAW - NØKXT - KCØNFB

**Newsletter/Historian:**
Kim KEØNQS & Steve KEØNQT Waller

**Education Chair:**
Bob Schulz KCØNFB

**Hamfest Chair:**
Bob Schulz KCØNFB

**Chaplains:**

**Visiting Chaplain:**
Denny Anderson WØDIO

**Parliamentarian:**
Grant Forsyth KCØWUP

**Website:**
Thomas Dorr KEØRHA

**Membership:**
Bruce Carlson KEØNIT

**Property Chair:**
Wulf Gar WU1FGR

**Testing:**
Doug Nelson AAØAW

**Field Day:**
Dennis Anderson WØDIO

**Picnic Chair:**
Scott Ahlgren, NØVYU

**Repeater Chairs:**
Randy Haglin NØBZZ
Randy Wabik KAØJZV

**Contest Calendar at www.contestcalendar.com**

**National Contest Journal at www.ncjweb.com**

**QSO Party Note: State/Province/National QSO Parties are abbreviated with the 2 or 3 letter abbreviation for the state/province/national designation followed by QP for QSO Party:**

**Examples: Minnesota QSO Party is MNQP**
**British Columbia QSO Party = BCQP**

**QRZ web site at www.qrz.com**
**VHF Propagation site at www.aprs.mountainlake.k12.mn.us**

**Reminder: The Contest Corral monthly listing of contests can be found in each issue of QST. ARRL sponsored contests can be found in Contest Corral, highlighted, or on the ARRL's web site at arrl.org.**

# FOR SALE

**For Sale:**
**Four sections Rohn 25G tower, plus one top section.**

**Included are mast and home-brew gin pole. $500.**

**Located in Warba, can be delivered to Duluth area for $50.**

**Contact Jeff Bodin, WA0VOM at jdbodin@gmail.com**

**Denny Burt KB0SPA has a close friend—Lynn Johnson KB9PFF of Siren, WI—who became a Silent Key. KB9PFF's radio equipment is now located in Barnum at the house of KB0SPA. Denny has difficulty hearing phone calls, so those interested in the following items, please send texts to KB0SPA at 218-341-4033**

1. Lafayette swr signal strength meter. 30.00
2. Radio shack htx 242, 2 meter mobile 50.00
3. Icom 2000 2 meter mobile.65.00
4. Icom 2100 2 meter mobile 65.00
5. Kenwood ts-480 hf 200 watt radio 550.00
6. Palomar dx-100 hf mobile amp 3-30 MHz 50.00
7. mirage 35 watt 2 meter mobile amp FM only 30.00
8. Mfj 259 antenna analyzer 150.00
9. Uniden bc60lt handheld scanner 20.00
10. Kenwood HT-22at 60.00
11. Mfj RF line insulator 25.00
12. 2 tv antenna rotors 40.00 each
13. 2 vintage regency crystal scanners 10.00 each
14. Homemade 80 meter antenna 30.00
15. 1/4 inch guy wire 80 feet. 20.00
16. Stud finder 3.00
17. Straight line Lazer tape 5.00
18. 2 realistic speakers 5.00
19. Homemade 2 meter beam 5.00
20. Yaesu hf 757 gx Radio 200.00

List Your FOR SALE items in the next ARAC Relay ! Submit photos and descriptions to ke0nqs.mn@gmail.com

# WAS - Duluth, continued from page 1

**WAS and have valuable information to share with us all.**

**Station WAS– Duluth primarily served bulk-carriers (container ships that carry bulk dry goods such as coal, grain, ore and other similar products in loose form) and tanker ships carrying liquids and gases on Lake Superior. The June 30, 1939 FCC Annual Report showed that a new license for WAS had been granted during the past 12 months. Frequency allocations above 3 MHz were approved during the FCC fiscal year that ended June 30, 1941.**

**As far as we know, the station was always owned and operated by Lorain Electronics headquartered in Lorain, Ohio. However, my 1938 Polk's Duluth City Directory lists a company called Radiomarine Corporation of America under the category of Radio Broadcasting Stations. Radiomarine's office address was 927 N 9th Avenue West. It is possible that they set up WAS - Duluth and sold it to Lorain Electronics. Loraine Electronics owned and operated several Ship-to-Shore stations on the Great Lakes and installed Melvin Werking as the manager of WAS– Duluth sometime near 1941. Werking was in that role until about 1944. It's not clear whether Werking was from the Duluth area or was transferred from Lorain, Ohio. Let us know, if you know of Mr. Werking or his family.**

Former home of WAS, which was painted white in those days. This photo was taken by John Harrison Late in 2005

**Tom McKee K4ZAD describes Werking's successor, who was a ham radio operator from Wisconsin. "Albert E. Klopp W0QXI started with Lorain Electronics in Port Washington, WI in 1940. He was an operator at marine radio/telephone station there called WAD. He transferred to Duluth, MN in 1944 and became manager of Marine Radio Station WAS. WAS - Duluth was located on Chase Avenue and Hollister, in the eastern part of Duluth and not far from the city limits (see map inset above).**

**"There were three operators that worked at the station and one serviceman Jim Scott, who took care of equipment on the boats. After the last boat arrived or left Duluth in the winter, the station closed until spring. The station closed permanently in 1979. After that, all Lorain Electronics manually-operated stations became automatically-operated remote stations. Whenever there was a problem, Al had to go to one of the remote stations around Lake Superior and Lake Michigan. Al retired in 1980."**

**Albert Ernst Klopp was born in Wisconsin on June 2nd, 1915 to Albert Daniel Klopp and Adeline Wilhemina (maiden name Klotz) Klopp. Albert Ernst Klopp was married to Doris Lorraine Klopp and lived at 4414 Tioga Avenue in Duluth. The house was built in 1950 and they lived there for at least 30 years, if not more. From public records they seem to have several children or grandchildren, possibly named Daniel, Debra and Michael. Lara Jeanne Ahrens may be also be a granddaughter, possibly Debra's daughter. Al's wife Doris, at least through the 1950's was the secretary at Denfeld High School. By 1973, Mrs. Klopp is listed as an employee of the City Board of Education. Why are we highlighting such name detail here? Al Klopp was the key person in the history of WAS – Duluth and an essential figure in Ship-to-Shore radio history on the Great Lakes. Though Mr. Klopp passed away in 2011, perhaps our readers remember Mr. or Mrs. Klopp and/or their children and grandchildren and can tell us more. Time can be critical in archiving history, as it's very important to hear rom someone who has first-hand knowledge and memories of these key figures in our history. Oftentimes they have photographs and documents of which they don't even realize the greater historical implications. We would be honored to talk to any of Al Klopp's family or friends.**

*Continued on Page 16*

# WAS - Duluth, continued from page 15

## WAS - DULUTH STAFF

**Tom McKee K4ZAD compiled a list of WAS employees that he knows of and there may be more. See if you recognize any of the names and let us know more info on them and anyone else.**

| CREWMEMBER NAME | JOB | YEARS |
|---|---|---|
| Melvin (Mel) Werking | Manager | 1941? - 1944 |
| Edward Ansell (former call sign W9PSA) | Operator | 1943 - 1945 |
| Albert E. Klopp, W0QXI (Silent Key) | Manager | 1944 -1979 |
| Walter Clayton Toms W0PIH (Silent Key) | Operator | 1944 - 1979 |
| Dorothy Wolf (Silent Key) | Operator | 1946? - 1979? |
| Lloyd Horton | Operator | 1943? - 1945+ |
| Dale Grimwood (Silent Key) | Operator | ? |
| Jim Scott | Technician | 1943? - 1945+ |

***K4ZAD has noted Silent Keys that he has confirmed, but unfortunately it is unlikely that any of these staff members are still with us today.***

**McKee says, "Dorothy Wolf usually worked the night shift and had a wonderful on-air voice. She had kind of a fan club going and when she would sign the station off in the evening usually an anonymous caller would chime in 'Goodnight Dorothy'."**

**Wow! We'd love to have more info and photographs of Dorothy and the rest of the crew! Whether they're hams or not, they're an important part of S/S history and WAS - Duluth.**

**Feel free to pass along any WAS – Duluth history you may know to Tom McKee K4ZAD via email and copy us on it as well for our archive.**

**His email address is: atarchivist-1@imradioha.org**
**Our email: ke0nqs.mn@gmail.com**

**In addition, if you need to send Tom physical copies (not originals!) of any photos or documents rather than scanning them and attaching them to email, his contact info is:**

**Tom McKee, K4ZAD**
**104 Water Leaf Lane**
**Cary, NC 27518-9728**
**(919) 851-2542**

***We'd love to share your knowledge about WAS - Duluth in an upcoming edition of The Relay, so let us know!*** ★

**Al Klopp at the WAS operating position - circa 1950. This photo is posted on Tom McKee's website and was given to him years ago by Al and Doris Klopp**

# Contest Calendar - March 2022

| | |
|---|---|
| + Worldwide Sideband Activity Contest | 0100Z-0159Z, Mar 1 |
| + QCX Challenge | 0300Z-0400Z, Mar 1 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 1 |
| + AGCW YL-CW Party | 1900Z-2100Z, Mar 1 |
| + QRP Fox Hunt | 0200Z-0330Z, Mar 2 |
| + Phone Weekly Test | 0230Z-0300Z, Mar 2 |
| + A1Club AWT | 1200Z-1300Z, Mar 2 |
| + CWops Test | 1300Z-1400Z, Mar 2 |
| + Mini-Test 40 | 1700Z-1759Z, Mar 2 |
| + VHF-UHF FT8 Activity Contest | 1700Z-2000Z, Mar 2 |
| + Mini-Test 80 | 1800Z-1859Z, Mar 2 |
| + CWops Test | 1900Z-2000Z, Mar 2 |
| + UKEICC 80m Contest | 2000Z-2100Z, Mar 2 |
| + AWA John Rollins Memorial DX Contest | 2300Z, Mar 2 to 2300Z, Mar 3 and 2300Z, Mar 5 to 2300Z, Mar 6 |
| + Walk for the Bacon QRP Contest | 0000Z-0100Z, Mar 3 and 0200Z-0300Z, Mar 4 |
| + CWops Test | 0300Z-0400Z, Mar 3 |
| + CWops Test | 0700Z-0800Z, Mar 3 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 3 |
| + NRAU 10m Activity Contest | 1800Z-1900Z, Mar 3 (CW) and 1900Z-2000Z, Mar 3 (SSB) and 2000Z-2100Z, Mar 3 (FM) and 2100Z-2200Z, Mar 3 (Dig) |
| + EACW Meeting | 1900Z-2000Z, Mar 3 |
| + SKCC Sprint Europe | 2000Z-2200Z, Mar 3 |
| + NCCC RTTY Sprint | 0145Z-0215Z, Mar 4 |
| + QRP Fox Hunt | 0200Z-0330Z, Mar 4 |

*Continued on Page 18*

# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + NCCC Sprint | 0230Z-0300Z, Mar 4 |
| + K1USN Slow Speed Test | 2000Z-2100Z, Mar 4 |
| + Novice Rig Roundup | 0000Z, Mar 5 to 2359Z, Mar 13 |
| + ARRL Inter. DX Contest, SSB | 0000Z, Mar 5 to 2400Z, Mar 6 |
| + Wake-Up! QRP Sprint | 0600Z-0629Z, Mar 5 and<br>0630Z-0659Z, Mar 5 and<br>0700Z-0729Z, Mar 5 and<br>0730Z-0800Z, Mar 5 |
| + Open Ukraine RTTY Championship | Cancelled for 2022 due to war |
| + UBA Spring Contest, CW | 0700Z-1100Z, Mar 6 |
| + SARL Hamnet 40m Simulated Emerg Contest | 1200Z-1400Z, Mar 6 |
| + NSARA Contest | 1200Z-1600Z, Mar 6 and<br>1800Z-2200Z, Mar 6 |
| + WAB 3.5 MHz Phone | 1800Z-2200Z, Mar 6 |
| + K1USN Slow Speed Test | 0000Z-0100Z, Mar 7 |
| + OK1WC Memorial | 1630Z-1729Z, Mar 7 |
| + RSGB 80m Club Championship, Data | 2000Z-2130Z, Mar 7 |
| + Worldwide Sideband Activity Contest | 0100Z-0159Z, Mar 8 |
| + ARS Spartan Sprint | 0200Z-0400Z, Mar 8 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 8 |
| + QRP Fox Hunt | 0200Z-0330Z, Mar 9 |
| + Phone Weekly Test | 0230Z-0300Z, Mar 9 |
| + A1Club AWT | 1200Z-1300Z, Mar 9 |
| + CWops Test | 1300Z-1400Z, Mar 9 |
| + Mini-Test 40 | 1700Z-1759Z, Mar 9 |
| + VHF-UHF FT8 Activity Contest | 1700Z-2000Z, Mar 9 |
| + Mini-Test 80 | 1800Z-1859Z, Mar 9 |
| + CWops Test | 1900Z-2000Z, Mar 9 |

*Continued on Page 19*

# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + CWops Test | 0300Z-0400Z, Mar 10 |
| + CWops Test | 0700Z-0800Z, Mar 10 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 10 |
| + EACW Meeting | 1900Z-2000Z, Mar 10 |
| + NCCC RTTY Sprint | 0145Z-0215Z, Mar 11 |
| + QRP Fox Hunt | 0200Z-0330Z, Mar 11 |
| + NCCC Sprint | 0230Z-0300Z, Mar 11 |
| + K1USN Slow Speed Test | 2000Z-2100Z, Mar 11 |
| + YB DX RTTY Contest | 0000Z-2359Z, Mar 12 |
| + SARL Field Day Contest | 0800Z, Mar 12 to 1000Z, Mar 13 |
| + RSGB Commonwealth | 1000Z, Mar 12 to 1000Z, Mar 13 |
| + DIG QSO Party, SSB | 1200Z-1700Z, Mar 12 (20m-10m) and 0700Z-0900Z, Mar 13 (80m) and 0900Z-1100Z, Mar 13 (40m) |
| + SKCC Weekend Sprintathon | 1200Z, Mar 12 to 2400Z, Mar 13 |
| + South America 10 Meter Contest | 1200Z, Mar 12 to 1200Z, Mar 13 |
| + AGCW QRP Contest | 1400Z-2000Z, Mar 12 |
| + Stew Perry Topband Challenge | 1500Z, Mar 12 to 1500Z, Mar 13 |
| + Oklahoma QSO Party | 1500Z, Mar 12 to 0200Z, Mar 13 and 1500Z-2100Z, Mar 13 |
| + EA PSK63 Contest | 1600Z, Mar 12 to 1600Z, Mar 13 |
| + TESLA Memorial HF CW Contest | 1800Z, Mar 12 to 0559Z, Mar 13 |
| + Idaho QSO Party | 1900Z, Mar 12 to 1900Z, Mar 13 |
| + North American Sprint, RTTY | 2300Z, Mar 12 to 0300Z, Mar 13 |
| + FIRAC HF Contest | 0700Z to 1700Z, Mar 13 |
| + UBA Spring Contest, 2m | 0700Z-1100Z, Mar 13 |
| + Wisconsin QSO Party | 1800Z, Mar 13 to 0100Z, Mar 14 |
| + K1USN Slow Speed Test | 0000Z-0100Z, Mar 14 |

*Continued on Page 20*

# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + 4 States QRP Group Second Sunday Sprint | 0000Z-0200Z, Mar 14 |
| + OK1WC Memorial | 1630Z-1729Z, Mar 14 |
| + Worldwide Sideband Activity Contest | 0100Z-0159Z, Mar 15 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 15 |
| + CLARA Chatter Party | 1700Z, Mar 15 to 1700Z, Mar 16 and 1700Z, Mar 19 to 1700Z, Mar 20 |
| + QRP Fox Hunt | 0100Z-0230Z, Mar 16 |
| + Phone Weekly Test | 0230Z-0300Z, Mar 16 |
| + A1Club AWT | 1200Z-1300Z, Mar 16 |
| + CWops Test | 1300Z-1400Z, Mar 16 |
| + VHF-UHF FT8 Activity Contest | 1700Z-2000Z, Mar 16 |
| + Mini-Test 40 | 1700Z-1759Z, Mar 16 |
| + Mini-Test 80 | 1800Z-1859Z, Mar 16 |
| + CWops Test | 1900Z-2000Z, Mar 16 |
| + RSGB 80m Club Championship, CW | 2000Z-2130Z, Mar 16 |
| + Walk for the Bacon QRP Contest | 0000Z-0100Z, Mar 17 and 0200Z-0300Z, Mar 18 |
| + NAQCC CW Sprint | 0030Z-0230Z, Mar 17 |
| + CWops Test | 0300Z-0400Z, Mar 17 |
| + CWops Test | 0700Z-0800Z, Mar 17 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 17 |
| + NTC QSO Party | 1900Z-2000Z, Mar 17 |
| + EACW Meeting | 1900Z-2000Z, Mar 17 |
| + BCC QSO Party | 1900Z-2059Z, Mar 17 |
| + QRP Fox Hunt | 0100Z-0230Z, Mar 18 |
| + NCCC RTTY Sprint | 0145Z-0215Z, Mar 18 |
| + NCCC Sprint | 0230Z-0300Z, Mar 18 |
| + K1USN Slow Speed Test | 2000Z-2100Z, Mar 18 |

*Continued on Page 21*

# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + BARTG HF RTTY Contest | 0200Z, Mar 19 to 0159Z, Mar 21 |
| + SARL VHF/UHF Analogue Contest | 0300Z-0500Z, Mar 19 (6m) and<br>0501Z-0700Z, Mar 19 (2m) and<br>0701Z-0900Z, Mar 19 (70cm) and<br>0300Z-0500Z, Mar 20 (6m) and<br>0501Z-0700Z, Mar 20 (2m) and<br>0701Z-0900Z, Mar 20 (70cm) |
| + Russian DX Contest | 1200Z, Mar 19 to 1200Z, Mar 20 |
| + F9AA Cup, SSB | 1200Z, Mar 19 to 1200Z, Mar 20 |
| + Virginia QSO Party | 1400Z, Mar 19 to 0400Z, Mar 20 and<br>1200Z-2400Z, Mar 20 |
| + AGCW VHF/UHF Contest | 1400Z-1700Z, Mar 19 (144) and<br>1700Z-1800Z, Mar 19 (432) |
| + Feld Hell Sprint | 2000Z-2159Z, Mar 19 |
| + UBA Spring Contest, SSB | 0700Z-1100Z, Mar 20 |
| + Run for the Bacon QRP Contest | 2300Z, Mar 20 to 0100Z, Mar 21 |
| + K1USN Slow Speed Test | 0000Z-0100Z, Mar 21 |
| + OK1WC Memorial | 1630Z-1729Z, Mar 21 |
| + Bucharest Digital Contest | 1800Z-2059Z, Mar 21 |
| + Worldwide Sideband Activity Contest | 0100Z-0159Z, Mar 22 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 22 |
| + SKCC Sprint | 0000Z-0200Z, Mar 23 |
| + QRP Fox Hunt | 0100Z-0230Z, Mar 23 |
| + Phone Weekly Test | 0230Z-0300Z, Mar 23 |
| + A1Club AWT | 1200Z-1300Z, Mar 23 |
| + CWops Test | 1300Z-1400Z, Mar 23 |
| + Mini-Test 40 | 1700Z-1759Z, Mar 23 |
| + Mini-Test 80 | 1800Z-1859Z, Mar 23 |

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# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + CWops Test | 1900Z-2000Z, Mar 23 |
| + CWops Test | 0300Z-0400Z, Mar 24 |
| + CWops Test | 0700Z-0800Z, Mar 24 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 24 |
| + EACW Meeting | 1900Z-2000Z, Mar 24 |
| + RSGB 80m Club Championship, SSB | 2000Z-2130Z, Mar 24 |
| + QRP Fox Hunt | 0100Z-0230Z, Mar 25 |
| + NCCC RTTY Sprint | 0145Z-0215Z, Mar 25 |
| + NCCC Sprint | 0230Z-0300Z, Mar 25 |
| + K1USN Slow Speed Test | 2000Z-2100Z, Mar 25 |
| + CQ WW WPX Contest, SSB | 0000Z, Mar 26 to 2359Z, Mar 27 |
| + FOC QSO Party | 0000Z-2359Z, Mar 26 |
| + UBA Spring Contest, 6m | 0600Z-1000Z, Mar 27 |
| + K1USN Slow Speed Test | 0000Z-0100Z, Mar 28 |
| + QCX Challenge | 1300Z-1400Z, Mar 28 |
| + OK1WC Memorial | 1630Z-1729Z, Mar 28 |
| + QCX Challenge | 1900Z-2000Z, Mar 28 |
| + RSGB FT4 Contest | 2000Z-2130Z, Mar 28 |
| + Worldwide Sideband Activity Contest | 0100Z-0159Z, Mar 29 |
| + QCX Challenge | 0300Z-0400Z, Mar 29 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 29 |
| + QRP Fox Hunt | 0100Z-0230Z, Mar 30 |
| + Phone Weekly Test | 0230Z-0300Z, Mar 30 |
| + A1Club AWT | 1200Z-1300Z, Mar 30 |
| + CWops Test | 1300Z-1400Z, Mar 30 |
| + Mini-Test 40 | 1700Z-1759Z, Mar 30 |

*Continued on Page 21*

# Contest Calendar - March 2022, Continued

| | |
|---|---|
| + Mini-Test 80 | 1800Z-1859Z, Mar 30 |
| + CWops Test | 1900Z-2000Z, Mar 30 |
| + UKEICC 80m Contest | 2000Z-2100Z, Mar 30 |
| + CWops Test | 0300Z-0400Z, Mar 31 |
| + CWops Test | 0700Z-0800Z, Mar 31 |
| + RTTYOPS Weeksprint | 1700Z-1900Z, Mar 31 |
| + EACW Meeting | 1900Z-2000Z, Mar 31 |

**Our thanks to Bruce Horn, WA7BNM for use of this calendar!**

**Please visit Bruce's site at www.contestcalendar.com/contestcal.html for many other helpful contest calendar formats.**


## *The ARAC RELAY*

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