



The RELAY)))

JANUARY
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 Steve - KEØNQT
KEØNQS.mn@gmail.com KEØNQT@gmail.com

20 Questions of Ham Radio Trivia: How Many Serious (or Silly) Facts Do You Know?

Amateur radio is full of interesting facts, whether scientific, historic or fairly meaningless fun. Back by popular demand, we've compiled another round of trivia questions to ponder while you sit by the fire these cold winter evenings. We threw a few repeats in there that we thought were worth hearing again. See how many you can answer without the assistance of the internet. Answers are on page 16. Our thanks to ARRL's Ward Silver N0AX and funtrivia.com for being great resources.

1. Operating your radio "barefoot" means to operate it how?

2. Where would you tune for a signal that has the same numeric value of frequency in MHz and wavelength in meters?

3. What is "Yagi" short for?

4. Which two metals were used to make the first battery?

5. In ham lingo, an unmarried female ham is known as a "YL" which stands for "young lady". Once she becomes married, what is she called?

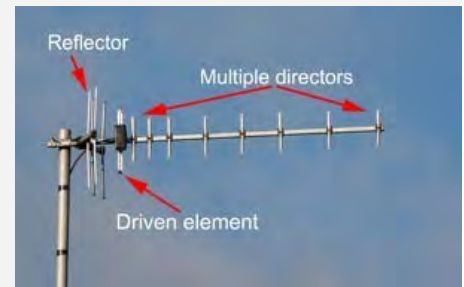
6. Amateur radio operators are credited with the first documented observations of which unusual phenomenon?

7. This late actor held the call sign KE6PZH and once used his Oscar as a doorstop. Who is it?

8. What do the Amateur Radio Stations NA1SS and RS0ISS have in common?

9. What type of pre-amplifier, invented by hams, does not include a transistor, tube or other active amplifying device?

10. Her call-sign is K5PSG, her name is Peggy Sue, and her then-boyfriend wrote a song about her. Who was this famous early rock and roller?



2022



Join us on
Facebook!

Continued on Page 16

ARAC Board Meeting - December 7, 2021

PRESIDENT



NØVRM
Gene Ellefsen
3710 Chambersburg Ave
Duluth, MN 55811
218-390-3272
lspitech@mail.com

VICE PRESIDENT

Photo Coming Soon!

KØDJP
David Pyrlík
david.pyrlík@gmail.com

SECRETARY

Photo Coming Soon!

KFØGJW
Melinda Nelson

TREASURER

Photo Coming Soon!

KNØNUL
Bruce Carlson
906 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 54880

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:

2021 Board Members

Gene Ellefsen-NØVRM, Mike Lovold-NØPDG, Robin Davis, Dave Davis-AAØAC, Randy Johnson-AAØME, Gary Minter-KD9ABS

<<<2022 Board Members voted in at Dec. Club Mtg Listed at Left

Board Advisors (Non-Board Members)

Doug Nelson-AAØAW, David Pyrlík-KØDJP, Randy Wabik-KRØB, Kim Waller-KEØNQS, Steve Waller-KEØNQT

Guests Del Minter-KEØCLI, Melinda Nelson-KFØGJW, Rochelle Nelson

Meeting called to order at 6:30 pm by President Gene-NØVRM

Minutes:

Posted on the web page and in the newsletter. Moved to approve by Mike-NØPDG, seconded by Dave-AAØAC, motion passed

Treasurer's Report:

Checking	2,590.59
Savings	2,174.17
Repeater	1,700.00
Subtotal Cash	\$6,464.76

Winter CD.....	1,724.37
Summer CD	0.00
Subtotal CD	\$1,724.37

Assets Subtotal:.....\$8,189.13

Outstanding Checks:

Mahtowa Repeater	-1,100.00
Bob Boyd-KDØLYN Memorial	-1,390.00
Repeater Fund.....	-1,700.00
Reserved Funds	-\$4,190.00

Grand Total\$3,999.13

New Account – Repeater Fund

Motion to accept by Gary-KD9ABS, seconded Randy-AAØME, motion passed

Another hurdle crossed to receive \$800.00 from Senovis (former Husky Refinery). Gene-NØVRM received an email on Thanksgiving Day from Senovis, suspicious but sent from Canada. Thanksgiving is not a holiday in Canada but is an American Holiday. Funds should be available via Direct Deposit before the end of the year

Continued on Page 3

ARAC Board Meeting - December 7, 2021 continued

Grants received for the Repeater Upgrade:

Grandma's Marathon \$1,500.00
Enbridge..... \$800.00
Lake County \$200.00
Halvor Lines \$275.00 – coming soon

Gene-N0VRM completed and then filed the application for the 501C3 - fee of \$275.00 paid with the application. Used the E-Z form and it was mailed in November. It is a slow process so we will have to exercise some patience. Can take up to ninety (90) days. We are on hold until they review the application

Christmas Party:

Today, Gene-N0VRM received a phone call from the church as they found out we were having a meal. That is a no-no, straight from the Bishop. We will be allowed to meet but without food including coffee and donuts. The \$350.00 allocated for food for the Christmas Party with discussion held to leave in the bank. Spend the \$100.00 on the gifts as previously moved and approved

Donation:

The Club's normal donation to the Coppertop Church is made in December each year. Should Bruce-KN0NUL pay it? Consensus is to pay the normal donation. Recorded in the minutes, everything above board

Repeater:

Randy-KR0B gave an update on Repeater Project. Completed the paperwork for Yaesu \$700.00 for the Repeater, done and in process. Up to fourteen (14) weeks for the Repeater to get here. They will not charge the credit card until the Repeater ships. We did not order the Wires X option because we don't have internet access up there. Did not order the controller or amplifier yet in case it doesn't match. Has a basic built-in controller. John Kruk-N9UPC from Yaesu went through it all with Randy-KR0B. We can put a power divider on the receive side. We could use it to hear Mahtowa. Warranty? No idea. Next step, David-K0DJP has equipment to check out our equipment and feed line, using David's equipment. Working on the assumption that we will want to upgrade it. 3Db increase, double the saturation, switching from 1/2" to 7/8". Wind loading? Probably want to know who is working on the stuff. Valid tower crew, bonded. Spend money to do it right the first time. Doing it right means it should last for thirty (30) years or so. Look at the antenna and the line because we can. We are at 550'1-5/8 is running about \$20.00 per foot. Output out of the cans is probably 70. Randy-KR0B is looking at TE Systems and TPL. Both quality and we only want to do this once. 100-125 out of the duplexes. Leaves some play room in the amp. Saturate with our handheld radios, locally. Well on our way to a real, kick ass system. Analog or digital input but only send out analog. Digital is the way to go and it has a smaller footprint. Digital is almost double analog. Mixed mode is on the receive side only. Any use on the fusion repeater? None. This is the Club's Repeater and we will be ready for digital. Digital is more efficient. We are saving a couple hundred dollars. Looking at amplifiers with built in power supplies and ones with external power supply. This would be a nice addition to Mahtowa. It will run full duty cycle at 50 watts. Only two sites - Mahtowa and the 94 site. The others are all just receive sites. Gene-N0VRM will try to touch base with Randy-N0BZZ and if he can't reach him, Randy-KR0B will try to reach him

Mahtowa Repeater Site – Gene-N0VRM turned the heaters on inside. Mr. Haglin (Randy Haglin-N0BZZ) has been there working on the system

Testing:

Tested out a new place for testing at the Moose Lodge in Proctor. Next one as close as possible when the Technician class is over. Two (2) individuals tested - one out of the class got General and a young lady named Molly, studied on her own and got her Technician. Doug-AA0AW will set up a test session if requested

Salvation Army:

Last Friday did Bell Ringing at the Miller Mall Super One. Kettle Report, \$944.57 in our kettle. One lady donated a \$100.00 because of the festive dress of the bell ringers. Thank you to everyone who rang the bells

Motion to adjourn by Dave-AA0AC, seconded by Mike-N0PDG, motion passed at 7:21 pm



ARAC Club Meeting Minutes

December 9, 2021

Present:

President Gene Ellefsen-N0VRM
Vice President Mike Lovold-N0PDG
Treasurer / Membership Bruce Carlson-KN0NUL
Secretary Robin Davis
Second Year Board Gary Minter-KD9ABS
Third Year Board Randy Johnson-AA0ME
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Property / Picnic Scott Ahlgren-N0VYU
Repeater Randy Wabik-KR0B
Repeater David Pyrlík-K0DJP
Testing Doug Nelson-AA0AW

Absent:

First Year Board Dave Davis-AA0AC
Parliamentarian Grant Forsyth-KC0WUP
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQT
Repeater Randy Wabik-KR0B
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ
Web Site Thomas Dorr-KE0RHA

Meeting called to order at 6:10 pm by President Gene-N0VRM. He is thankful for all the members that came out tonight

Election of Officers:

White ballot for offices.

Bob-KC0NFB made a motion for a white ballot, seconded by Mike-N0PDG

Question - what does that mean? No ballots as there was no opposition, only one (1) person nominated for each office

Call for the vote. Motion passed

Thomas J Reibold Award W9IBM Memorial Award:

This award is given to someone who has supported the Club and also promoted the hobby of Amateur Radio. This year's recipient has been very active in St Louis County, Douglas County, with the marathons and stepped up to help teach the Technician test. The award this year is presented to Paul Dallavia-KC0WDQ. Congratulations, Paul-KC0WDQ

Minutes:

Posted on the web page and in the newsletter. Moved to approve by Jon Nelson-, seconded by Dennis Anderson-W0DIO, motion passed

Treasurer's Report:

Checking	2,590.59
Savings.....	2,174.17
Repeater.....	1,700.00
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Repeater Fund	-1,700.00
Reserved Funds.....	-\$4,190.00

Grand Total\$3,999.13

Motion to accept as presented by Bob-KC0NFB, seconded by Mke-N0PDG, motion passed

Continued on Page 5



ARAC Club Meeting Minutes

Question - The Bob Boyd-KD0LYN Memorial is part of the Repeater Fund? Yes. When he passed, his brother said that Bob-KD0LYN considered the Club as part of his family. They decided to leave all his radio gear to the Club and Mike-N0PDG has handled selling the parts. The money received was put into the Repeater Fund as a Memorial to Bob-KD0LYN

Repeater Fund:

Grants (donations) received for the Repeater Upgrade:

Grandma's Marathon.....	\$1,500.00
Enbridge	\$800.00
Lake County	\$200.00
Halvor Lines	\$275.00 – coming soon

We will be replacing the 94 Repeater, following the lead of Randy-KR0B. He has been in contact with Yaezu (John Kruk-N9UPC sitting in a boat somewhere on a lake), fourteen (14) week delay for arrival of ordered products

Spoke with Randy Haglin-N0BZZ and he will get down to Mahtowa to finish the upgrade there. He is driving from Aitkin, MN

Education:

There is no scheduled classes until the fall. There has been some interest in Technician, General or Extra. Class will end in January

Testing:

Doug-AA0AW held a testing session last week, using a new location, Moose 1302 Lodge in Proctor. Two (2) candidates with 100% - Nothing to General, Nothing to Technician. Contact Doug AA0AW@ARRL.net. If you are ready to test, email Doug-AA0AW and they will test individually. Happy to set something up. There will be a test session in January. Former site House of Refuge has had successful prayer sessions seven (7) nights a week and is not available for the testing any longer

Christmas Party:

Gene-N0VRM received a call from the Coppertop Church on Tuesday, as they found out we were having food and that is a no-no. The rules are set by the Bishop of MN. We are thankful to have this room. We are following the rules so no food, no coffee and no doughnuts or cookies for now

Food will be brought to the Salvation Army Food Shelf

Salvation Army bell ringing. Gene called and the receptionist was compiling number. We did really good \$944.57. Thank you to the bell ringers who raised those funds. We'll do it again next year

Ham Fest will be applied for through the ARRL. First Saturday in May as normal and we can start looking forward to that. St Cloud is holding a Ham Fest as well, back at the armory this year. Brainerd is also holding a Ham Fest. These are things to look forward to for the New Year

Any new Hams?

KF0JGW General

Jon Palachek Technician to General. KD9DZB

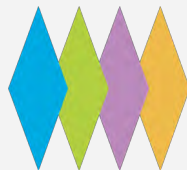
Paul KF0GEX Technician

Door Prize was won by Bob-KC0NFB

We are collecting dues for the year and they are \$20.00 for a single and \$25.00 for family

ARAC is a Non-Profit registered with the State of MN. Gene-N0VRM applied for 501C3 designation for the Club. The wait could be up to ninety (90) days before we get a response from the Federal Government

Gift giveaways based on attendance to the monthly meetings (tickets for the drawings). Congratulations to the winners!





Prez Sez...

HAPPY NEW YEAR !!

Out with the old and in with the new will be happening at A.R.A.C. this year!

First, there will be some new faces on the A.R.A.C. Board !!

Vice President	David Pyrlik	KØDJP
Secretary	Melinda Nelson	KFØGJW
1st Year Board	Doug Nelson	AAØAW

Second, there will be a new repeater for the WØGKP 146.94. This hopefully will take place in the first Quarter of 2022. We have secured funding from a number of donors, so the project is moving forward. Stay tuned for further announcements about this.

Also, it is that time of year for Club Dues. Please pay Club Treasurer Bruce Carlson KNØNUL at a meeting or by mail. \$20 single, \$25 Family

**Bruce Carlson
906 Anderson RD
Duluth, MN 55811**

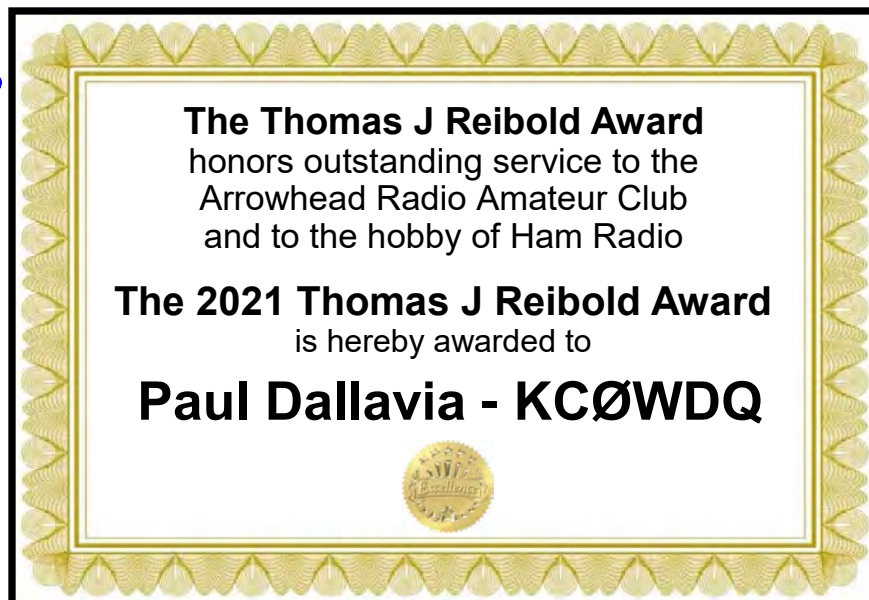
**A.R.A.C.
P.O. BOX 7164
Duluth, MN 55807-7164**

Thank You,

**Gene Ellefsen NØVRM
President**

The 2021 Thomas J Reibold Award

*Congratulations,
Paul Dallavia!*





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 Busy?	QRU Have anything for me	
QRV Are You Ready?	QRX Standby	QRS Transit Slower	

A	●■■■	M	■■■■	Y	■■■■●
B	■■■■●	N	■■■●	Z	■■■■●●
C	■■■■●●	O	■■■■■	1	●■■■■■
D	■■■■●●●	P	■■■■●●	2	●●■■■■■
E	●	Q	■■■■■●	3	●●●■■■■■
F	●●■■■■	R	■■■■●●●	4	●●●●■■■■■
G	■■■■●●●	S	●●●	5	●●●●●
H	●●●●	T	■■■	6	■■■■●●●●
I	●●	U	●●■■■	7	●●●●●●
J	■■■■■■■	V	●●●■■■	8	■■■■■■■●
K	■■■■●●■	W	■■■■●●●	9	■■■■■■■●●
L	■■■■●●●●	X	■■■■●●●●	0	■■■■■■■■■



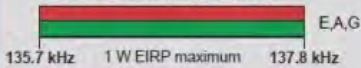
US Amateur Radio Bands

US AMATEUR POWER LIMITS

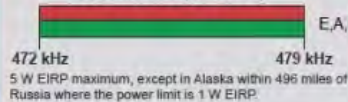
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

On March 28, 2017, the Federal Communications Commission adopted rules that will allow Amateur Radio access to 472-479 kHz (630 meters) and to 135.7-137.8 kHz (2,200 meters). However, amateurs cannot use these frequencies until 30 days after the Report and Order is published in the Federal Register and the final procedures for registering stations with the Utilities Telecom Council (UTC) have been approved and announced. At the time this chart was created, the Report and Order had not been published and the UTC online registration site is not yet available. Follow ARRL news for further information. New charts will be published at www.arrl.org/graphical-frequency-allocations when the bands are fully available for use.

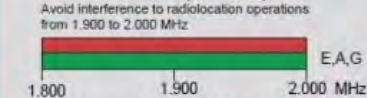
2,200 Meters (135 kHz)



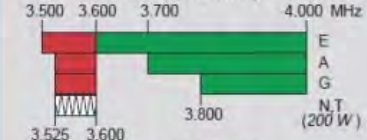
630 Meters (472 kHz)



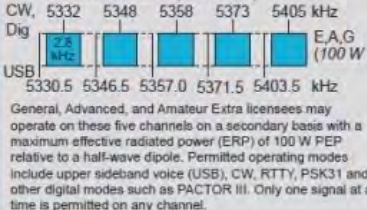
160 Meters (1.8 MHz)



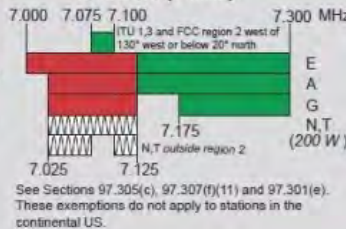
80 Meters (3.5 MHz)



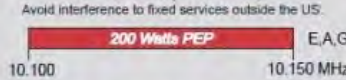
60 Meters (5.3 MHz)



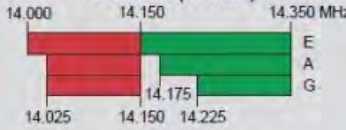
40 Meters (7 MHz)



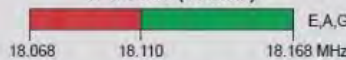
30 Meters (10.1 MHz)



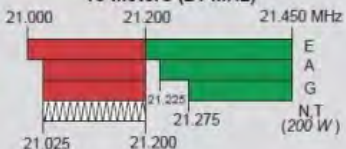
20 Meters (14 MHz)



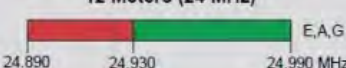
17 Meters (18 MHz)



15 Meters (21 MHz)



12 Meters (24 MHz)



Effective Date for
2,200 and 630 Meters
to be announced



ARRL The national association for
AMATEUR RADIO

KEY

Note: CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See **ARRLWeb** at www.arrl.org for detailed band plans.

ARRL We're At Your Service

ARRL Headquarters:
860-594-0200 (Fax 860-594-0259)
email: hq@arrl.org

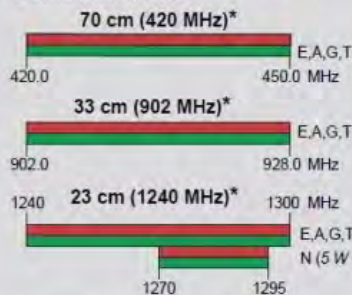
Publication Orders:
www.arrl.org/shop
Toll-Free 1-888-277-5289 (860-594-0355)
email: orders@arrl.org

Membership/Circulation Desk:
www.arrl.org/membership
Toll-Free 1-888-277-5289 (860-594-0336)
email: membership@arrl.org

Getting Started in Amateur Radio:
Toll-Free 1-800-326-3942 (860-594-0355)
email: ncwham@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz ‡	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

‡ No pulse emissions

NETS

Have a favorite HF/6m/2m/1.25m/70cm 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 2000 on the ARAC repeater (146.940 MHz with a tone of 103.5 and standard offset).
- **Minnesota D-Star Net:** Sundays at 19:30 on Reflector 53A
- **Minnesota Section Net** 1200 and 1730 on 3.860 [Net Manager: NØYR] http://www.mn-section.org/dept_stm.html
- The non-non-net: Evenings 2000 144.200 USB except for Sunday evenings.
- Badger WX Net: 0500-0715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **PICONET:** 3.925 from 0900-1100 CT Mon-Sat and 1600-1700 CT Mon-Fri. Info at: <http://www.piconet3925.com>
- Michigan Upper Peninsula Net: 1600 (CST) on 3.921 MHz Sun-Sat and 1200 Sun. Info: <http://www.michupnet.com>
- Great Lakes Marine/Maritime Mobile Net: Morning 07:30 - 3.932; 08:15 - 7.261 MHz and evening 18:30 - 3.1730927; 19:15 - 7.268 MHz. Weekend extra net: 10:00 - 7.261/7.268 MHz. All CST, LSB and +/- QRM. See: <http://www.sailblogs.com/member/glimmnet/>
- MIDCARS: 07:30-13:00 - 7.258 MHz. See: <http://www.midcars.net>
- Iowa snowbird net on 14.257MHz, M-W-F at 10:00 am Local Time. This is an open net.
- Spider Web Net (Marco Island FL) on 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Maritime Mobile Service Network: Daily at 1100—2100 Central on 14.300. <http://mmsn.org> and <http://www.14300.net>
- RV Radio Network: Every day at 1900 Central on 7.265 MHz. Web site: <http://www.rvradionetwork.com>
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 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 – 28.480 MHz USB
- Hobby Helpers Net - Tuesday @ 8 PM – 28.330 MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- Northstar Trader Net: 3.908 +/- at 0830 CST Sundays
- WARFA: 3.908 +/- Sun/Tue/Thu nights at 2200 CST, <http://warfa.org/>
- Youth Net: 14.320-14330 Sundays 1800-1900 UTC, Net Control: AC8PI
- YACHT: Saturdays 1900 CST on EchoLink #481872, <http://yachthams.webstarts.com>
- Northwestern Ontario ARES Net: Evenings at 20:15 (Central) on +/- 3.750Mhz
- The Iron Range Net: Saturdays at 0800 Central time on or near 3.919 Mhz. Look them up on Facebook!
- FORX Net: Mondays at 1900 Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- HF CW: Fridays 08:00 CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- Minnesota ARES Digital Net: Thursdays at 2000 CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/500.
- SARA Digital Net: Sundays at 1900 Local, 3.582.150 MHz USB +/- QRM, Mode: BPSK31/BPSK63
- Spider Web Net (Marco Island FL): 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Broadcaster Net: 7.231 or 3.855 M/W/F @ 1500 UTC. 14.255 M-F @ 2130 UTC. <http://www.cbsretirees.com/ham.htm>
- Old Military Radio Net: 7.268 +/- nightly at 0200z. Other times/Frequencies too. See: <http://www.mrca.ar88.net/>
- Rag Chew Crew/Tailgaters/Freewheelers Nets: 3.916 +/- nightly at 1900 CST, <http://www.tailgatersnet.com>
- North South Net: 7.214.6 +/- at 0700 CST, Monday-Saturday



Next ARAC Board Meeting

Tuesday, January 4, 2022

@ 6:30 p.m.

Sammy's Pizza

Next ARAC Club Meeting

Thursday, January 13th

7 p.m.

Coppertop Church!

January 13th Presentation:

Randy Wabik KR0B

Discussion of the
Repeater Project

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

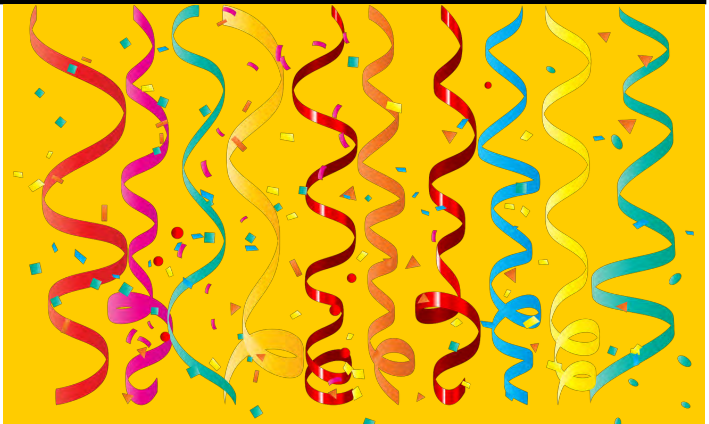
Contact us at
ke0nqs.mn@gmail.com



New Location for Amateur Radio License Testing Sessions!

Moose Lodge
415 3rd Ave. Proctor, MN

Questions on next available
Testing Session date? Please contact
Doug Nelson AA0AW at aa0aw@arrl.net



CONGRATULATIONS

to our

Newly Licensed or Upgraded Hams!

- ◆ KF0JGW, General
- ◆ Jon Palachek KD9DZB,
Technician to General
- ◆ Paul Gilsdorf KF0GEX,
Technician

*Know of a newly-licensed Ham
not listed here?*

*Let us know for next month's
newsletter at*

ke0nqs.mn@gmail.com

Duluth Area Repeaters



ARAC System WØGKP

Freq. Offset Tone Location

146.940	minus	103.5	Duluth
146.940	minus	107.2	Lakeside (rcv)
146.940	minus	151.4	Two Harbors (rcv)
146.940	minus	100.0	Gary-New Duluth (rcv)
146.940	minus	123.0	Solway (rcv)
146.940	minus	110.9	Cloquet (rcv)
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 (rcv 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 / el-mær/ [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.

<u>Name</u>	<u>Call</u>	<u>Expertise</u>
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...

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Contact Kim or Steve Waller to include your name in this listing!

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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
 1930 - CW - 28.125 MHz USB-CW
 2000 - USB 28.450 MHz
 2100 - Southern St. Louis County
 Emergency Services Net
MONDAY NIGHT NETS
 2000 - Northland WX Net - ARAC Repeater

JANUARY

CLUB EVENTS

TUESDAY NIGHT NETS
 2000 - Douglas Cty 145.490 MHz
 2030 - Central Carlton County
WEDNESDAY NIGHT NETS
 1900 - Lake County - LSAC1
 2nd & 4th Wednesdays
 2100 - BWAR

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						
2 CW 1930 AA0AW USB 2000 KC0WDQ ES 2100 - TBD	3 WX 2000 KC0MKS	4 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	5 2100 - BWAR	6	7	8
9 CW 1930 AA0AW USB 2000 N0VRM ES 2100 W0NWO	10 DC ARES/ RACES Mtg 1900 DC EOC WX 2000 KC0MKS	11 DC Net 2000 CC Net 2030	12 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	13  ARAC Club Meeting Coppertop Church 7:00 PM	14	15
16 CW 1930 N0PDG USB 2000 N0PDG ES 2100 N0VRM	17 WX 2000 KC0MKS	18 DC Net 2000 CC Net 2030	19 St. Louis County ARES/ RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	20	21	22
23 CW 1930 AA0AW USB 2000 AA0AW ES 2100 - TBD	24 WX 2000 KC0MKS	25 DC Net 2000 CC Net 2030	26 Lake County Net 1900 2100 - BWAR	27 Carlton County ARES/RACES Meeting 1900 CC EOC	28	29 ARAC Club Breakfast The Chalet 4833 Miller Trunk Hwy Hermantown, MN 8 am
30 CW 1930 N0PDG USB 2000 W0LWU ES 2100 AA0ME	31 WX 2000 KC0MKS					

Get this newsletter *faster*
via email!
Email Doug AAØAW at
aa0aw@arrl.net

Next Meeting: Thursday,
January 13th, 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 deliv-
ered 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](tel: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

20 QUESTIONS OF HAM TRIVIA, *continued from page 1*



- 11.** What amateur-invented AM mode is often heard around 14.230 MHz?
- 12.** What is a "lid" in ham radio lingo?
- 13.** In Hawaii, KH6, to which of the continents does the antenna always point, no matter what the rotator control box says?
- 14.** Ham radio operator Bob Heil, K9EID is a pioneer in what way?
- 15.** What is Dr. Owen K. Garriott W5LFL famous for?
- 16.** VHF enthusiasts discovered and documented what unusual propagation mode?
- 17.** His call-sign was K2ORS and he wrote and narrated a classic film that had everyone saying "you'll shoot your eye out". Who is it?

18. Gerson Strassberg WA2JXX invented this item, which for a long time, no self-respecting geek would have been without. What is it?

19. Bob Dennison, W0DX, led the "Gone Waki" team in the first example of what popular activity?

20. What is the ARISS program?

ANSWERS

1. Without an amplifier. Generally, barefoot operating means using 10 watts to 100 watts. An amplifier would typically boost that to approximately 1000W.
2. 17.320508 MHz = 17.320508 meters
3. "Yagi" is the shortened name for a "Yagi-Uda Antenna". In 1926, Shintaro Uda, (at Tohoku University located in Sendai, Japan), with the collaboration of Hidetsugu Yagi developed the antenna. Mr. Yagi published the first English-language article about it in 1928 so his name got associated with it, though he was always quick to credit Mr. Uda.
4. Alessandro Volta used zinc and copper
5. XYL - "Ex Young Lady"
6. Long-delayed echoes. LDEs are spooky phenomena that are not completely understood, even today.
7. Marlon Brando
8. They are both located on the International Space Station
9. Parametric. Parametric amplifiers use the nonlinearity of diode junctions to amplify.
10. Singer Buddy Holly wrote a classic 50's song "Peggy Sue" about his Texan girlfriend, which peaked at number 3 on the Billboard singles chart. Tragically, he was killed in an airplane crash in Iowa on February 3rd, 1959 enroute to Fargo, ND. With him were famous performers The Big Bopper and Richie Valens, who also lost their lives. Just days before, on January 31st, Holly performed at the Duluth Armory. A young Bob Dylan attended that performance, which he cited as an inspiration at the 1998 Grammy Awards when he received Album of the Year for Time Out of Mind.
11. Slow-scan TV. Invented by Cophorne Macdonald VE1BFL in the early 1960s, SSTV is even incorporated in some handheld VHF radios
12. A poor operator. No one can really say from where the term originated but to be called a lid is generally the ultimate insult. An unlicensed operator is called a variety of things - pirate, bootlegger, slim, but he may operate respectfully otherwise so not qualify as a true "lid".
13. Africa, in which lies the antipode to KH6.
14. Heil pioneered live-in-concert sound for various rock and roll groups. Bob Heil is responsible for taking the world of live rock and roll from a fairly puny sound from the band's amps, to the booming wall to wall of volume we enjoy today during concerts. He worked with The Who, The Grateful Dead, Jeff Beck, Joe Walsh and many other early performers. The "talking guitar" that artist Peter Frampton played in the 1970's was another one of Bob's creations. Today he manufactures high quality microphones that are used in music and communications.
15. He was the first amateur radio operator to operate from space. Dr. Owen Garriott, PhD has flown on Skylab-3, spending 60 days (a record at the time, doubling the previous record) in space in 1973. His next space mission was aboard Spacelab-1 for 10 days in 1983. During this mission (STS-9) Dr. Garriott, a ham for over 40 years, was the first astronaut to take a ham radio into space.
16. Trans-equatorial skip. TE was not considered possible at VHF until hams found it.
17. Jean Shepherd was a writer and radio-television personality who narrated the classic holiday film 'A Christmas Story'. The 1983 family comedy was based on his writing.
18. The Plastic Pocket Protector. It was designed to slip into your shirt pocket and hold your ink pens. Geek fashion dictated that you not only have a plastic pocket protector, but also have *multiple* pens tucked into it.
19. DXpeditions. Bob's 1948 "Gon-Waki" operation as VP7NG (Bahamas) was the first modern DXpedition.
20. Amateur Radio on the International Space Station. ARISS is a program that enables astronauts on the space station to communicate with groups such as school students. Volunteer ham operators set up their equipment in classrooms and the students can chat with the astronauts and ask questions. Even though they are in space, the astronauts still have to have a valid amateur radio license to communicate back to hams on earth; that's why most of the members of the astronaut corps are licensed hams.



Contest Calendar - January 2022

<u>+ AGB New Year Snowball Contest</u>	0000Z-0100Z, Jan 1
<u>+ SARTG New Year RTTY Contest</u>	0800Z-1100Z, Jan 1
<u>+ AGCW Happy New Year Contest</u>	0900Z-1200Z, Jan 1
<u>+ WW PMC Contest</u>	1200Z, Jan 1 to 1200Z, Jan 2
<u>+ AGCW VHF/UHF Contest</u>	1400Z-1700Z, Jan 1 (144) and 1700Z-1800Z, Jan 1 (432)
<u>+ Original QRP Contest</u>	1500Z, Jan 1 to 1500Z, Jan 2
<u>+ ARRL Kids Day</u>	1800Z-2359Z, Jan 1
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jan 3
<u>+ OK1WC Memorial</u>	1630Z-1729Z, Jan 3
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jan 4
<u>+ ARS Spartan Sprint</u>	0200Z-0400Z, Jan 4
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 4
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 5
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Jan 5
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jan 5
<u>+ Mini-Test 40</u>	1700Z-1759Z, Jan 5
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Jan 5
<u>+ Mini-Test 80</u>	1800Z-1859Z, Jan 5
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jan 5
<u>+ UKEICC 80m Contest</u>	2000Z-2100Z, Jan 5
<u>+ Walk for the Bacon QRP Contest</u>	0000Z-0100Z, Jan 6 and 0200Z-0300Z, Jan 7
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jan 6
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jan 6
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 6
	1800Z-1900Z, Jan 6 (CW) and 1900Z-2000Z, Jan 6 (SSB) and 2000Z-2100Z, Jan 6 (FM) and 2100Z-2200Z, Jan 6 (Dig)
<u>+ NRAU 10m Activity Contest</u>	

Continued on Page 18



Contest Calendar - January 2022, Continued

+ EACW Meeting	1900Z-2000Z, Jan 6
+ SKCC Sprint Europe	2000Z-2200Z, Jan 6
+ NCCC RTTY Sprint	0145Z-0215Z, Jan 7
+ QRP Fox Hunt	0200Z-0330Z, Jan 7
+ NCCC Sprint	0230Z-0300Z, Jan 7
+ K1USN Slow Speed Test	2000Z-2100Z, Jan 7
+ YB DX Contest	0000Z-2359Z, Jan 8
+ PODXS 070 Club PSKFest	0000Z-2400Z, Jan 8
+ Old New Year Contest	0500Z-0900Z, Jan 8
+ SKCC Weekend Sprintathon	1200Z, Jan 8 to 2400Z, Jan 9
+ RSGB AFS Contest, CW	1300Z-1700Z, Jan 8
+ ARRL RTTY Roundup	1800Z, Jan 8 to 2400Z, Jan 9
+ EUCW 160m Contest	2000Z-2300Z, Jan 8 and 0400Z-0700Z, Jan 9
+ NRAU-Baltic Contest, SSB	0630Z-0830Z, Jan 9
+ DARC 10-Meter Contest	0900Z-1059Z, Jan 9
+ NRAU-Baltic Contest, CW	0900Z-1100Z, Jan 9
+ Midwinter Contest	1000Z-1400Z, Jan 9
+ K1USN Slow Speed Test	0000Z-0100Z, Jan 10
+ 4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Jan 10
+ OK1WC Memorial	1630Z-1729Z, Jan 10
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jan 11
+ RTTYOPS Weeksprint	1700Z-1900Z, Jan 11
+ QRP Fox Hunt	0200Z-0330Z, Jan 12
+ Phone Weekly Test - Fray	0230Z-0300Z, Jan 12
+ CWops Mini-CWT Test	1300Z-1400Z, Jan 12
+ Mini-Test 40	1700Z-1759Z, Jan 12
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Jan 12
+ Mini-Test 80	1800Z-1859Z, Jan 12

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Contest Calendar - January 2022, Continued

+ CWops Mini-CWT Test	1900Z-2000Z, Jan 12
+ CWops Mini-CWT Test	0300Z-0400Z, Jan 13
+ CWops Mini-CWT Test	0700Z-0800Z, Jan 13
+ RTTYOPS Weekspint	1700Z-1900Z, Jan 13
+ EACW Meeting	1900Z-2000Z, Jan 13
+ NCCC RTTY Sprint	0145Z-0215Z, Jan 14
+ QRP Fox Hunt	0200Z-0330Z, Jan 14
+ NCCC Sprint	0230Z-0300Z, Jan 14
+ K1USN Slow Speed Test	2000Z-2100Z, Jan 14
+ Malaysia DX Contest	0000Z-2359Z, Jan 15
+ UBA PSK63 Prefix Contest	1200Z, Jan 15 to 1200Z, Jan 16
+ Hungarian DX Contest	1200Z, Jan 15 to 1159Z, Jan 16
+ PRO Digi Contest	1200Z, Jan 15 to 1159Z, Jan 16
+ North American QSO Party, CW	1800Z, Jan 15 to 0559Z, Jan 16
+ WAB 1.8 MHz Phone	1900Z-2300Z, Jan 15
+ ARRL January VHF Contest	1900Z, Jan 15 to 0359Z, Jan 17
+ Feld Hell Sprint	2000Z, Jan 15 to 0559Z, Jan 16
+ RSGB AFS Contest, Data	1300Z-1700Z, Jan 16
+ Run for the Bacon QRP Contest	2300Z, Jan 16 to 0100Z, Jan 17
+ K1USN Slow Speed Test	0000Z-0100Z, Jan 17
+ OK1WC Memorial	1630Z-1729Z, Jan 17
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jan 18
+ RTTYOPS Weekspint	1700Z-1900Z, Jan 18
+ QRP Fox Hunt	0200Z-0330Z, Jan 19
+ Phone Weekly Test - Fray	0230Z-0300Z, Jan 19
+ CWops Mini-CWT Test	1300Z-1400Z, Jan 19
+ Mini-Test 40	1700Z-1759Z, Jan 19
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Jan 19
+ Mini-Test 80	1800Z-1859Z, Jan 19
+ CWops Mini-CWT Test	1900Z-2000Z, Jan 19

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Contest Calendar - January 2022, Continued

+ Walk for the Bacon QRP Contest	0000Z-0100Z, Jan 20 and 0200Z-0300Z, Jan 21
+ NAQCC CW Sprint	0130Z-0330Z, Jan 20
+ CWops Mini-CWT Test	0300Z-0400Z, Jan 20
+ CWops Mini-CWT Test	0700Z-0800Z, Jan 20
+ RTTYOPS Weeksprint	1700Z-1900Z, Jan 20
+ EACW Meeting	1900Z-2000Z, Jan 20
+ NCCC RTTY Sprint	0145Z-0215Z, Jan 21
+ QRP Fox Hunt	0200Z-0330Z, Jan 21
+ NCCC Sprint	0230Z-0300Z, Jan 21
+ K1USN Slow Speed Test	2000Z-2100Z, Jan 21
+ Marconi Club ARI Loano QSO Party Day	0700Z-1800Z, Jan 22
+ BARTG RTTY Sprint	1200Z, Jan 22 to 1200Z, Jan 23
+ RSGB AFS Contest, SSB	1300Z-1700Z, Jan 22
+ NA Collegiate Championship, SSB	1800Z, Jan 22 to 0559Z, Jan 23
+ North American QSO Party, SSB	1800Z, Jan 22 to 0559Z, Jan 23
+ Classic Exchange, Phone	1400Z, Jan 23 to 0800Z, Jan 24 and 1400Z, Jan 25 to 0800Z, Jan 26
+ K1USN Slow Speed Test	0000Z-0100Z, Jan 24
+ OK1WC Memorial	1630Z-1729Z, Jan 24
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jan 25
+ RTTYOPS Weeksprint	1700Z-1900Z, Jan 25
+ SKCC Sprint	0000Z-0200Z, Jan 26
+ QRP Fox Hunt	0200Z-0330Z, Jan 26
+ Phone Weekly Test - Fray	0230Z-0300Z, Jan 26
+ CWops Mini-CWT Test	1300Z-1400Z, Jan 26
+ Mini-Test 40	1700Z-1759Z, Jan 26
+ Mini-Test 80	1800Z-1859Z, Jan 26
+ CWops Mini-CWT Test	1900Z-2000Z, Jan 26
+ UKEICC 80m Contest	2000Z-2100Z, Jan 26

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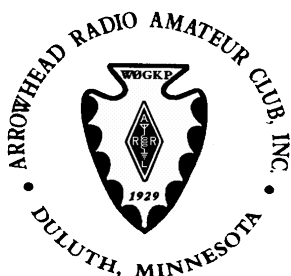


Contest Calendar - January 2022, Continued

<u>+ AWA Linc Cundall Memorial CW Contest</u>	2300Z, Jan 26 to 2300Z, Jan 27 and 2300Z, Jan 29 to 2300Z, Jan 30
<u>+ NAQCC CW Sprint</u>	0130Z-0330Z, Jan 27
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jan 27
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jan 27
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jan 27
<u>+ EACW Meeting</u>	1900Z-2000Z, Jan 27
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jan 28
<u>+ QRP Fox Hunt</u>	0200Z-0330Z, Jan 28
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jan 28
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Jan 28
<u>+ CQ 160-Meter Contest, CW</u>	2200Z, Jan 28 to 2200Z, Jan 30
<u>+ REF Contest, CW</u>	0600Z, Jan 29 to 1800Z, Jan 30
<u>+ UBA DX Contest, SSB</u>	1300Z, Jan 29 to 1300Z, Jan 30
<u>+ Winter Field Day</u>	1900Z, Jan 29 to 1900Z, Jan 30
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jan 31
<u>+ QCX Challenge</u>	1300Z-1400Z, Jan 31
<u>+ OK1WC Memorial</u>	1630Z-1729Z, Jan 31
<u>+ QCX Challenge</u>	1900Z-2000Z, Jan 31

Our thanks to **Bruce Horn, WA7BNM** for use of this calendar!
Please visit Bruce's site at
www.contestcalendar.com/contestcal.html

The ARAC RELAY



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