



The RELAY))) August 2025

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
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Summer 2025



Join us on
Facebook!

Summer Road Trip? Fabulous Day Trip for Ham Fams

It's August, and for many families, including ham "fams", this month tends to be a bit less of a scheduling frenzy. By this point in summer, typically we've opened the family cabin, attended graduations, moved college students home from dorms, attended weddings, celebrated an Independence Day gathering and had some time to enjoy the rest of July. August might just be the time to sneak in a road trip, whether for a day, weekend, or an entire week. This edition of the Relay will suggest one destination in particular that is perfect for hams. So if you just can't fit in an out-of-state trek this season, no worries. Our featured destination is in Minnesota, and you can take it as a day trip if you'd like. Here it is:

The Pavek Museum of Electronic Communication

Open Wednesday—Saturday, and located at 3517 Raleigh Avenue, St. Louis Park, Minnesota, this museum is **packed** with fascinating communication artifacts and interactive exhibits.

Founder Joseph Pavek was a devoted amateur radio operator, holding the ham radio call sign WØOEP, which he said stood for "Old Empty Pockets," reflecting his humorous acknowledgement of the costs associated with his beloved hobby.

Pavek's interest in radio began early. He built his first crystal set and Model T Ford spark coil transmitter in 1919, and was active in radio experimentation well before receiving his official call sign W9OEP issued in 1933. Later, his call sign changed to WØOEP, reflecting a shift in the Federal Communications Commission (FCC) restructuring the regional numbering system.

By 1946, Pavek had become an electronics instructor at Dunwoody Institute in Minneapolis. During this time, he watched students disassembling vintage radios as part of their training, which sparked his concern about the potential loss of historically significant equipment. This led him to rescue an old radio from destruction, marking the beginning of his lifelong passion for collecting vintage radios and broadcast gear. After his employment at Dunwoody,



Image Credit: Pavek Museum

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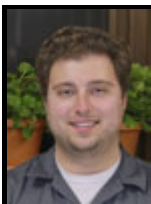
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david.pyrlik@gmail.com

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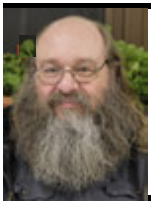
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Randy Wabik

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2ND YEAR BOARD



KD9VKI
Justin Cheever
jcheever13@gmail.com

1ST YEAR BOARD



KFØLFZ
Brian Beckman

Board Meeting Minutes - July 1, 2025

Present:

President: Gene Ellefsen – NØVRM
Treasurer/Membership: Randy Wabik - KRØB
Secretary: William Turk – KFØILA
First Year Board: Brian Beckman- KFØLFZ
Second Year Board: Justin Cheever – KD9VKI
Third Year Board: Dave Davis – AAØAC
Parliamentarian: Grant Forsyth – KCØWUP
HamFest/Education: Bob Schulz – KCØNFB
Special Events: Open/Gene Ellefsen – NØVRM (acting)
Testing: Doug Nelson – AAØAW
Vice President: Dave Pyrlik – KØDJP
Repeater: Dave Pyrlik – KØDJP
Property/Picnic: Scott Ahlgren –

NØVYU

williamturk11@gmail.com

Absent:

Newsletter/Historian: Kim Waller – KEØNQS
Newsletter/Historian: Steve Waller – KEØNQT
Web Site: Thomas Dorr – KEØRHA
Chaplin:

Meeting called to order at 18:32 (6:32 PM) by President Gene Ellefsen – NØVRM.

Minutes:

Minutes are posted on the website and in the newsletter. Motion to accept by Justin Cheever - KD9VKI, seconded by Brian Beckman - KFØLFZ motion Passed.

Treasurer's Report:

Checking: 1411.98
Savings: 6298.86
Repeater: 4676.33
Assets Subtotal: \$12,387.17

Firsted by Brian Beckman - KFØLFZ seconded by William Turk - KFØILA

Testing:

As always if you are looking to test or upgrade or know of anyone that is interested in testing, please contact Doug Nelson at AAØAW@arrl.net.

New Business:

Motion to bring to club to spend up to \$425 for a new laptop for treasurer was firsted by William Turk - KFØILA, and Seconded by Brian Beckman - KFØLFZ

Motion to spend up to \$350 for picnic food, Firsted by Justin Cheever - KD9VKI, and seconded by Brian Beckman - KFØLFZ

Silent Key: (Please keep their family in your thoughts)

Motion to adjourn by William Turk - KFØILA, seconded by Justin Cheever - KD9VKI, motion passed at 19:14 (7:14 PM).



ARAC Club Meeting Minutes

July 10, 2025

Present:

President: Gene Ellefsen – N0VRM
Treasurer/Membership: Randy Wabik - KR0B
Secretary: William Turk – KF0ILA
First Year Board: Brian Beckman- KF0LFZ
Second Year Board: Justin Cheever – KD9VKI
Third Year Board: Dave Davis – AA0AC
Parliamentarian: Grant Forsyth – KC0WUP
HamFest/Education: Bob Schulz – KC0NFB
Special Events: Open/Gene Ellefsen – N0VRM (acting)
Testing: Doug Nelson – AA0AW
Vice President: Dave Pyrlik – K0DJP
Repeater: Dave Pyrlik – K0DJP
Property/Picnic: Scott Ahlgren – N0VYU

Absent:

Newsletter/Historian: Kim Waller – KE0NQS
Newsletter/Historian: Steve Waller – KE0NQT
Web Site: Thomas Dorr – KE0RHA
Chaplin:

Meeting called to order at 18:58 (6:58 PM) by President Gene Ellefsen – N0VRM.

Minutes:

Minutes are posted on the website and in the newsletter. Motion to accept by Melinda Nelson – KF0GJW, seconded by William Turk - KF0ILA, motion Passed.

Treasurer's Report:

Checking: 1411.98
Savings: 6298.86
Repeater: 4676.33
Assets Subtotal: \$12,387.17

Firsted by Doug Nelson - AA0AW seconded by John Nelson - N0UOZ

Continued on Page 4



ARAC Club Meeting Minutes continued

Testing:

As always if you are looking to test or upgrade or know of anyone that is interested in testing, please contact Doug Nelson at AA0AW@arrl.net.

New Business:

Motion passed to spend up to \$425 for a new treasury laptop, John Nelson - N0UOZ, seconded by Paul - KF0GEX

Motion to spend up to \$350 for club picnic passed firsted by Doug Nelson - AA0AW, and seconded by John Nelson - N0UOZ

Silent Key: (Please keep their family in your thoughts)

Door Prize was won by Gary

Motion to adjourn by William Turk - KF0ILA, seconded by John Nelson - N0UOZ, motion passed at 19:29 (7:29 PM).



CLUB REPEATER

WØGKP

146.94 (-)

CTCSS TONE

103.5



Prez Sez

Hello Everyone,

Now that we are in the middle of summer you may be hearing different call signs on the repeater from Hams visiting our area. Reach out to them if you didn't catch the call sign. Ask them to repeat and engage them in QSO. Let's make them feel welcome to the Duluth area and make their visit even more memorable.

Have a great Summer!

73,
Gene Ellefsen NØVRM



LOOKING for an Amateur Radio License TESTING SESSION?

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

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

All Exam Candidates are REQUIRED to have an FCC Registration Number (FRN) before exam day, which will require your email address.

Not Currently Licensed? For New License Candidate FRN registration, go to: www.fcc.gov/new-users-guide-getting-started-universal-licensing-system-uls

Upgrading to General or Expert Class & not sure you have an FRN number?
go to

<https://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp>

UPGRADE CANDIDATES:

Please bring a copy of your current license to the exam session.

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 —●—●—●—



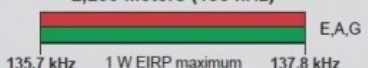
US Amateur Radio Bands

US AMATEUR POWER LIMITS

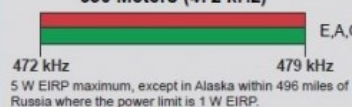
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

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.

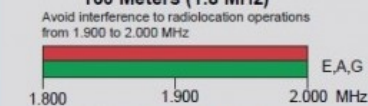
2,200 Meters (135 kHz)



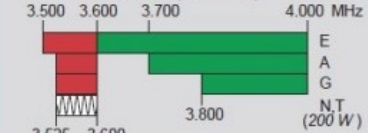
630 Meters (472 kHz)



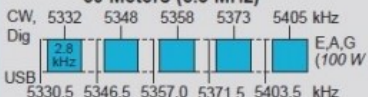
160 Meters (1.8 MHz)



80 Meters (3.5 MHz)

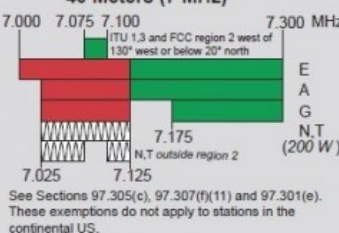


60 Meters (5.3 MHz)

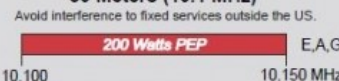


General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

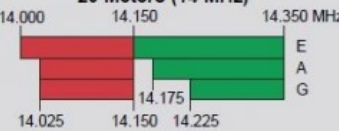
40 Meters (7 MHz)



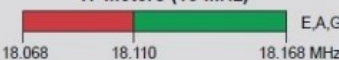
30 Meters (10.1 MHz)



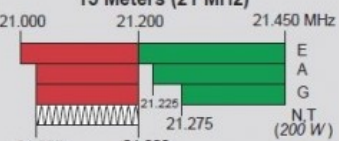
20 Meters (14 MHz)



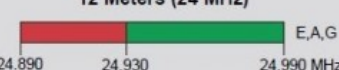
17 Meters (18 MHz)



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.

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

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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/glmmnet/>
- 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
- 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



DULUTH AREA REPEATERS

ARAC System WØGKP

Frequency	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	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)
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LSAC System – some may work/some may still be linked

147.330	plus	151.4	Proctor
147.270	plus	114.8	Two Harbors
147.270	plus	103.5	Wales
147.090	plus	114.8	Silver Bay
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
443.325	+5.00	146.2	Isanti

Rev. KCØWDQ as of 12/01/24 For ARAC Newsletter

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DULUTH AREA REPEATERS, continued

NARC System NAØRC

147.135	plus	103.5	Knife River
147.135	plus	114.8	Duluth (rcv)

Stand Alone Repeaters

145.210	minus	110.9	Clam Lake, WI
146.880	minus	123.0	Grand Rapids, MN
146.910	minus	146.2	Duxbury, MN
146.955	minus	146.2	Askov, MN
147.105	plus	110.9	Chaffey, WI
444.850	+5.00	141.3	Cloquet, MN

Fusion

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

147.150	plus	151.4	NTØB Gilbert, MN Fusion Repeater
145.170	minus	110.9	WA9KLM Superior, WI – Douglas County RACES/ARES Fusion Repeater (Digital only) Fusion Room 28373

145.250	minus	103.5	KBØYHX Cloquet, MN – Carlton County RACES/ARES Fusion Repeater
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444.300	+5.00	103.5	NØEO Duluth, MN – Spirit Valley Amateurs Fusion Repeater WIRES-X NØEO (Analog only) Fusion Room 40494
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444.400	+5.00	103.5	NAØRC Knife River, MN – Wires X Connected to NØEO Room 40494
444.500	+5.00	103.5	NØLCR Two Harbors, MN – Wires X Connected to NØEO Room 40494
444.600	+5.00	103.5	NØLCR Silver Bay, MN – Wires X Connected to NØEO Room 40494
444.800	+5.00	103.5	NØLCR Grand Marais, MN – Wires X Connected to NØEO Room 40494
440.400	+5.00	110.9	WØLSA Maple, WI – Wires X Connected to NØEO Room 40494

D-Star

147.375	plus	NØEO D Star
442.200	plus	NØEO D Star

Rev. KCØWDQ as of 12/01/24 For ARAC Newsletter

Elmers

El-mer / el-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 Sign	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...



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Co-Editors,
Kim & Steve Waller
KEØNQS & KEØNQT



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

AUGUST

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

	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3 ARAC Club Picnic Chambers Gove CW 1930 AA0AW USB 2000 K9KDK ES 2100 KE0YTM	4 WX 2000 KC0MKS	5 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	6 2100 - BWAR	7	8	9
10 CW 1930 N0PDG USB 2000 N0VRM ES 2100 AA0AW	11 Douglas County ARES/RACES Mtg 1900 DC EOC WX 2000 KC0MKS	12 DC Net 2000 CC Net 2030	13 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	14 ARAC Club Meeting Coppertop Church 7 PM	15	16
17 CW 1930 AA0AW USB 2000 N0PDG ES 2100 K0DSL	18 WX 2000 KC0MKS	19 DC Net 2000 CC Net 2030	20 St Louis County ARES/RACES Meeting 1800 2100 - BWAR	21	22	23
24 CW 1930 N0PDG USB 2000 AA0AW ES 2100 KD9VKI	25 WX 2000 KC0MKS	26 DC Net 2000 CC Net 2030	27 Lake County Net 1900 2100 - BWAR	28 Carlton County ARES/RACES Meeting 1900 CC EOC	29	30
31 CW 1930 AA0AW USB 2000 KB9WLB ES 2100 KC0WDQ						

Get this newsletter *faster*
via email!

Email Doug AAØAW at
aa0aw@arrl.net

Next Club Meeting:
August 14, 2025 - 7 pm
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

Chaplain:

Rollie Bockbader KBØCK

Visiting Chaplin:

Parliamentarian:

Grant Forsyth KCØWUP

Website:

Thomas Dorr KEØRHA

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Property Chair:

Scott Ahlgren NØVYU

Testing:

Doug Nelson AAØAW

Field Day:

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.

Day Trip continued from page 1

which was somewhere in the 15-20 year range, Pavek founded and operated the Twin City Bolt and Supply Company, located on Harmon Place, less than a mile away from Dunwoody Institute. The business focused on retail and delivery of hardware supply, and served customers across Minnesota, North Dakota, South Dakota, Wisconsin, and Iowa. As his business grew, Pavek traveled extensively through these states, leveraging his travels to expand his radio collection. He developed a unique strategy of visiting local barbershops for haircuts, where he would speak of his hobby and hear about residents who owned old radios. From these conversations, he contacted those residents and acquired some wonderfully rare and valuable pieces. This ingenious entrepreneurial approach not only sustained his hardware business, but also fueled his vintage radio & equipment passion.

Founding the Pavek Museum

Joe Pavek's collection grew significantly from 1946 over the decades, amassing thousands of antique radios, televisions, and broadcast equipment. The increasing size of the collection made it necessary to safely warehouse it at his business. Joe then began to search for someone to take custody of the artifacts to incorporate them into a museum setting for the public to appreciate. Finding no one, Joe made a very difficult decision in 1984. He planned to auction his entire collection, in hopes that—even though his dream of a Pavek Museum would never come true—other passionate hobbyists would preserve the rare and valuable pieces of history in their private collections.

Divine intervention seemed to prevail, and **Earl Bakken**, who was the co-founder of **Medtronic** and inventor of the wearable pacemaker, heard of Pavek's vast collection and came to the rescue. Bakken recognized the immense value of the collection because he shared Joe's fascination of old radios and vintage electronics. It turns out that Earl Bakken repaired radios and televisions to fund his college education. Looking at the impressive array of Pavek's immense chronicle of radio communication, Bakken enthusiastically envisioned a museum with a very active mission of engaging children—and educating the general public—about the amazing history, development, and use of radio technology to shape our world.

Continued on Page 14



Images Credit: Pavek Museum

Day Trip continued from page 13

Earl Bakken and Joe Pavék then contacted Paul Hedberg of the **Minnesota Broadcasters Association** and together created a non-profit in preparation for the museum. A site was found & the artifacts were readied for public view. The museum's grand opening date was selected as October 29, 1988, to correspond with the 50th anniversary of Orson Welles' *War of the Worlds* radio play broadcast.

Welles broadcasted *War of the Worlds* on Halloween night in 1938, as part of his ongoing series *Mercury Theater on the Air*. Welles inserted clear narration before the broadcast that the radio play was fiction, as the drama's storyline included a "news man" who was reporting a Martian invasion of Earth. Care was taken to explain the radio play's format so as to not cause the listening public panic. The public panicked.

It was truly fitting that the iconic radio event that propelled the 23 year old Welles into the world spotlight would share a date with the Pavék's historic grand opening. This was the introduction of a collection that honored the work of every radio equipment maker, writer, director, announcer, actor, singer, news personality, recording engineer, sound stage builder, Foley artist, stage electrician, camera operator, and grip. The museum is recognized as *Continued on Page 15*



Joe Pavék's hardware store in Minneapolis

This nice image of Joe Pavék's **Twin City Bolt & Supply Company** is from the Pavék Museum website. Date is unmarked, but we clearly have a 1963 Ford Galaxie coupe (above left), a 1961 Chevrolet Biscayne sedan (center), and the unmistakable front grill of a 1962 Lincoln Continental. Yours Truly has fond memories of visiting buildings just like this with my dad as a little girl and riding in these cars. Fun fact: I still have my mother's 1962 Lincoln Continental.



Images Credit: Pavék Museum

Day Trip continued from page 14

one of the world's largest and finest collections of vintage broadcast equipment in existence, with over 12,000 square feet of exhibits. Here's an overview of the Pavék Museum exhibits:

Amateur Radio Exhibits and Features

Amateur Radio Station WØOEP

The Pavék Museum operates an active amateur radio station, call sign WØOEP, located within its facility. This is a fully functional ham radio station that allows licensed visitors to experience amateur radio communication firsthand. This exhibit highlights the role of amateur radio in fostering global communication, emergency response, and technical experimentation.

Details: The station is equipped with vintage and modern ham radio equipment, showcasing the evolution of amateur radio technology. Visitors can observe or, in some cases, participate in live ham radio communications, connecting with other operators worldwide.

The station serves as a tribute to the museum's founder, Joe Pavék, who was an avid amateur radio enthusiast and held the call sign WØOEP, which the museum adopted in his honor.

Vintage Amateur Radio Equipment

The museum's collection includes a variety of vintage ham radio transceivers, receivers, and transmitters, illustrating the technological advancements in amateur radio from the early 20th century to the present. These artifacts demonstrate how amateur radio operators contributed to the development of radio technology, often experimenting with circuits and designs that influenced commercial broadcasting.

Highlights

Early Spark Gap Transmitters: These devices represent the earliest forms of wireless communication used by amateur radio operators before modern radio technology.

Vacuum Tube Radios: Examples of tube-based transceivers from the 1920s to 1950s, showcasing the craftsmanship and technical skill required by early ham operators.

Home-Built Radios: Many amateur radio operators historically built their own equipment, and the museum displays examples of these custom-built rigs, emphasizing the DIY ethos of ham radio culture.

Amateur Radio History Displays

The museum features exhibits that trace the history of amateur radio, emphasizing its role in innovation, emergency communication, and community building. These displays educate visitors on the cultural and technical importance of amateur radio, particularly its role in emergency preparedness and global connectivity.

Historical Artifacts: Includes Morse code keys, early QSL cards (used by ham operators to confirm contacts), and log-books that document amateur radio activity.

Stories of Ham Operators: Panels or displays highlighting notable Minnesota-based amateur radio operators and their contributions, such as providing communication during natural disasters or advancing radio technology.



Images Credit: Pavék Museum



Continued on Page 16

Vintage Radios

The museum features one of the world's most significant collections of vintage radios, showcasing the evolution of radio technology beginning in the early 20th century.

Crystal Radios: Early radio receivers that operate without an external power source, demonstrating the foundational technology of wireless communication.

Tabletop Sets and Cathedral-Style Radios: These beautifully designed radios from the 1920s and 1930s highlight the craftsmanship and artistry of the era, when radios were considered both functional devices and works of art.

Early Wireless Devices: Artifacts that illustrate the beginnings of wireless communication technology.

Philco Mystery Control Radio: A notable piece from the 1930s, one of the first wireless remote-control radios, showcasing early advancements in user interaction with electronics.

Television and Broadcasting Equipment

Exhibits trace the history of television from its experimental beginnings in the 1920s to the golden age of broadcasting in the mid-20th century.

Antique Microphones and Consoles: Used in early radio and TV broadcasting, these artifacts highlight the technical infrastructure of the broadcast industry.

Broadcast Cameras: Examples of historic cameras used in television studios, showing the evolution of video production technology.

One of the First Magnetic Tape Recording Machines: Used in the 1940s for recording radio programs, this piece demonstrates a pivotal moment in audio recording history.



Images Credit: Pavek Museum

Minnesota Broadcasters Hall of Fame

This exhibit category celebrates the individuals who shaped Minnesota's media landscape, including on-air personalities, engineers, and inventors.

The Hall of Fame honors over 200 Minnesotans including these Duluthians:

♦ **Dennis Anderson (WDIO TV, WDSE—PBS)** Inducted in 2019.

Our very own **Denny Anderson WØDIO** had a distinguished career spanning over 50 years, primarily at WDIO TV in Duluth, where he anchored news from 1969 to 2011. He certainly became a trusted figure in the Northland, known for his warm catchphrase, "Good night everybody—and be kind!" He also worked at WDSE TV hosting shows like Almanac North. Earlier in his career he was on-air at WHLB radio in Virginia, Minnesota. *See page 17 for Denny's Pavek Museum bio for more about his illustrious career.*

♦ **Barbara Reyelts KBJR TV)** Inducted in 2011.

Reyelts took journalism classes at the University of Minnesota Duluth. Part of her studies included an internship in the news department at KBJR. For almost 20 years Barbara anchored the "Live at Five" newscast, and became an accomplished News Director there as well.

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DENNIS ANDERSON

Minnesota Broadcasters Hall of Fame

Induction Date: 1/1/2019

Dennis Anderson's broadcast career started in 1961 as a senior in high school. He produced 15-minute weekly radio plays that grabbed the attention of Jim Praise, Station Manager of WHLB Radio [Virginia, Minnesota], which ultimately landed him a job on-air. Later, at the tender age of 19, listeners would hear him break the story of President John F. Kennedy's assassination.

In October of 1968, KTHI TV in Fargo hired Dennis as News Director and News Anchor. After a year of broadcasting in Fargo, his career moved him to WDIO TV in Duluth. 1971 brought unexpected national media attention when his 16mm film camera was confiscated by Duluth police while filming a burglary in progress. This action was later ruled a constitutional violation of the first, fourth and fourteenth amendments, a landmark decision made by U.S. District Court Judge Phillip Neville.

Dennis Anderson was named WDIO TV's Chief Anchor in 1972 and would retire from this position in 2011. After retirement from WDIO, he became co-anchor of *Almanac North* on WDSE TV, the Duluth PBS station.

Throughout his television anchor career, Dennis Anderson has broke and covered many significant news stories: F-4 tornado near Outing, the sinking of the Edmund Fitzgerald, Duluth's Glensheen Mansion murders, the Northwest Airlink passenger plane crash in Hibbing, and the plane crash of Minnesota Senator Paul Wellstone near Eveleth.

Awards and achievements include: Three regional Emmys, 2003 UMD Chancellor's Outstanding Media Persons' Award, 2008 City of Virginia Hall of Fame inductee, 2011 Gold Circle Award from The National Academy of Arts And Sciences, and being ordained as a permanent deacon in the Catholic Church.

Continued on Page 18

Now let's turn our attention to the Pavek Museum's special Collections. Here are a few highlights:

The Pavek Collection

Donated by the Pavek Museum's namesake, the Joe Pavek collection contains artifacts representing the history and evolution of early radio technology. Consisting primarily of radios from the early 1900s through 1940s, it also includes artifacts that are precursors to radio technology, like telegraphs and telephones.

Joseph R. Pavek (1908-1989) was an ardent radio collector and amateur radio operator. Coincidentally, he was born on the day that the first radio tube, the de Forest Audion, was patented. He built his first crystal set and Model T Ford spark coil transmitter in 1919, and received his amateur call letters, W9OEP (Old Empty Pockets), in 1933. His lifelong passion for collecting earned him a national reputation as a radio authority and historian: he received the coveted Houck Award from the Antique Wireless Association, the Batcher Award, and a Fellowship from the prestigious Radio Club of America. He eventually donated his entire collection to the museum that bears his name, which opened its doors in 1988.



Images Credit: Pavek Museum

The Mullin Collection

Acquired in 1990 from John "Jack" Mullin, the Mullin Collection consists of artifacts representing audio and sound-recording history. The collection includes early magnetic tape machines like the Magnetophon and Ampex 200, phonographs and record players, and a diverse array of microphones.

John "Jack" Mullin (1913-1999) was a premier collector of audio and sound-recording devices. It all began when he was a member of the Signal Corps during World War II, when he acquired a magnetic tape recorder called a Magnetophon from a German station that would forever change audio recording in America. At that time, magnetic tape was unknown to American audiences. After the war, Mullin partnered with Ampex to create the first American magnetic tape recorder, which was based on the Magnetophon.

The Charles Bradley Collection

Charles Bradley was an avid radio and phonograph collector, and one of the Pavek Museum's very first members. The Charles Bradley Collection contains Minnesota-manufactured radios and novelty radios. Charles Bradley (1933-2012) had multiple collections over his lifetime, including phonographs, RCA Nipper dogs, and radios. The Pavek Museum obtained his 1920s Minnesota-manufactured radio collection in 1990, and his novelty radio collection in 1998. Charles worked as a printer for most of his life, but after retirement became a master woodworker. As one of its first members, he was heavily involved with the Pavek Museum, repairing items for free and sharing his knowledge through seminars.



Continued on Page 19

Also at The Pavek Museum:

The Minnesota Collection

A dedicated section highlighting the contributions of Minnesota-based radio and television manufacturers. Artifacts from over 30 Minnesota-based companies beginning in the 1920s, showcasing regional innovation in electronic communication.

Examples include locally produced radios, televisions, and broadcast equipment that played a role in the national broadcasting industry. These exhibits trace the history of television from its experimental beginnings in the 1920s to the golden age of broadcasting in the mid-20th century.



Images Credit: Pavek Museum

Continued on Page 20

Day Trip continued from page 19



Images Credit: Pavek Museum

Pavek Interactive and Hands-On Exhibits

The museum emphasizes dynamic, tactile experiences to engage visitors of all ages. Highlights:

Nipper Circuit: A signature interactive tour included with admission, featuring 16 stations that provide an audio-visual exploration of electronic communication history, from telegraphy to modern technologies like computers and video games.

Broadcast Experience: An interactive area where visitors, especially children, can “work” in a simulated newsroom, producing a 1960s-style radio broadcast or participating in an old-time radio quiz program.

S.T.E.A.M. Saturdays: Hands-on programs exploring science, technology, engineering, art, and math, designed for all ages.

Sonic Storytelling: Intro to Foley: A workshop where visitors learn to create sound effects like professional Foley artists, enhancing the understanding of audio in media.

Events

First Saturday Guided Tour: Held monthly, this tour offers a deep dive into the museum’s most unique artifacts with special demonstrations, included with admission.

Pavek After Dark: A live radio play performance by members of the Minnesota Broadcasters Hall of Fame, featuring a silent auction to benefit the museum.

Havoc at the Pavek: A Halloween-themed event with spooky S.T.E.A.M. activities for families.

Crash Course: How to Solder: A pay-what-you-can workshop teaching electronics repair and soldering skills, fostering hands-on learning.

We hope you enjoyed this glimpse into Minnesota’s own spectacular Pavek Museum. If this inspires you to make a road trip down to see it, let us know about your visit there by emailing us at ke0nqs.mn@gmail.com and we’ll share your contribution in a future edition of the Relay. ★

The Pavek Museum

3517 Raleigh Ave.
St. Louis Park, MN 55416

PavekMuseum.org

952-926-8198

HOURS

Wednesday – Saturday
10am to 5pm
Last Entry Time 4:30pm

ADMISSION

Adults: \$11
Students and Youth (4-17): \$6
Military: \$6



Contest Calendar - August 2025

[+ QRP Fox Hunt](#)

[+ NCCC FT4 Sprint](#)

[+ Weekly RTTY Test](#)

[+ NCCC Sprint](#)

[+ K1USN Slow Speed Test](#)

[+ 10-10 Int. Summer Contest, SSB](#)

[+ European HF Championship](#)

[+ ARRL 222 MHz and Up Distance Contest](#)

[+ North American QSO Party, CW](#)

[+ Hemus VHF Contest - 144 MHz](#)

[+ SARL HF Phone Contest](#)

[+ K1USN Slow Speed Test](#)

[+ ICWC Medium Speed Test](#)

[+ OK1WC Memorial \(MWC\)](#)

[+ ICWC Medium Speed Test](#)

[+ ARS Spartan Sprint](#)

[+ Worldwide Sideband Activity Contest](#)

[+ ICWC Medium Speed Test](#)

[+ ZL Sprint](#)

[+ Phone Weekly Test](#)

[+ A1Club AWT](#)

[+ CWops Test \(CWT\)](#)

[+ VHF-UHF FT8 Activity Contest](#)

[+ Mini-Test 40](#)

[+ Mini-Test 80](#)

[+ CWops Test \(CWT\)](#)

0100Z-0230Z, Aug 1

0100Z-0130Z, Aug 1

0145Z-0215Z, Aug 1

0230Z-0300Z, Aug 1

2000Z-2100Z, Aug 1

0001Z, Aug 2 to 2359Z, Aug 3

1200Z-2359Z, Aug 2

1800Z, Aug 2 to 1800Z, Aug 3

1800Z, Aug 2 to 0559Z, Aug 3

0600Z-1359Z, Aug 3

1400Z-1700Z, Aug 3

0000Z-0100Z, Aug 4

1300Z-1400Z, Aug 4

1630Z-1729Z, Aug 4

1900Z-2000Z, Aug 4

0000Z-0200Z, Aug 5

0100Z-0159Z, Aug 5

0300Z-0400Z, Aug 5

0800Z-0829Z (CW), Aug 5 and

0830Z-0859Z (SSB), Aug 5 and

0900Z-0929Z (FT4), Aug 5

0230Z-0300Z, Aug 6

1145Z-1300Z, Aug 6

1300Z-1400Z, Aug 6

1700Z-2100Z, Aug 6

1700Z-1759Z, Aug 6

1800Z-1859Z, Aug 6

1900Z-2000Z, Aug 6

Continued on Page 22



Contest Calendar - August 2025

+ Walk for the Bacon QRP Contest

+ CWops Test (CWT)

+ CWops Test (CWT)

+ NRAU 10m Activity Contest

+ SKCC Sprint Europe

+ QRP Fox Hunt

+ NCCC FT4 Sprint

+ Weekly RTTY Test

+ NCCC Sprint Ladder

+ K1USN Slow Speed Test

+ FISTS Saturday Sprint

+ WAE DX Contest, CW

+ YB Bekasi Merdeka Contest

+ SKCC Weekend Sprintathon

+ Kentucky State Parks on the Air

+ Maryland-DC QSO Party

+ 50 MHz Fall Sprint

+ NCCC 55th Anniversary Fiesta

+ SARL HF Digital Contest

+ 4 States QRP Group Second Sunday Sprint

+ K1USN Slow Speed Test

+ ICWC Medium Speed Test

+ OK1WC Memorial (MWC)

+ ICWC Medium Speed Test

+ MMonVHF/DUBUS 144 MHz Meteorscatter Sprint Contest

+ Worldwide Sideband Activity Contest

0000Z-0100Z, Aug 7 and

0200Z-0300Z, Aug 8

0300Z-0400Z, Aug 7

0700Z-0800Z, Aug 7

1800Z-1900Z, Aug 7 (CW) and

1900Z-2000Z, Aug 7 (SSB) and

2000Z-2100Z, Aug 7 (FM) and

2100Z-2200Z, Aug 7 (Dig)

1900Z-2100Z, Aug 7

0100Z-0230Z, Aug 8

0100Z-0130Z, Aug 8

0145Z-0215Z, Aug 8

0230Z-0300Z, Aug 8

2000Z-2100Z, Aug 8

0000Z-2359Z, Aug 9

0000Z, Aug 9 to 2359Z, Aug 10

1200Z, Aug 9 to 1159Z, Aug 10

1200Z, Aug 9 to 2400Z, Aug 10

1400Z-2200Z, Aug 9

1400Z, Aug 9 to 0400Z, Aug 10

1800Z-2200Z, Aug 9

1900Z, Aug 9 to 0300Z, Aug 10

1300Z-1600Z, Aug 10

0000Z-0200Z, Aug 11

0000Z-0100Z, Aug 11

1300Z-1400Z, Aug 11

1630Z-1729Z, Aug 11

1900Z-2000Z, Aug 11

2200Z, Aug 11 to 2159Z, Aug 13

0100Z-0159Z, Aug 12

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Contest Calendar - August 2025

+ ICWC Medium Speed Test

+ ZL Sprint

+ DARC FT4 Contest

+ NAQCC CW Sprint

+ Phone Weekly Test

+ A1Club AWT

+ CWops Test (CWT)

+ Mini-Test 40

+ VHF-UHF FT8 Activity Contest

+ Mini-Test 80

+ CWops Test (CWT)

+ CWops Test (CWT)

+ CWops Test (CWT)

+ NCCC FT4 Sprint

+ QRP Fox Hunt

+ Weekly RTTY Test

+ NCCC Sprint Ladder

+ K1USN Slow Speed Test

+ SARTG WW RTTY Contest

+ ARRL EME Contest

+ Russian District Award Contest

+ ARRL 10 GHz and Up Contest

+ SARL Youth QSO Party

+ Keyman's Club of Japan Contest

+ Feld Hell Sprint

+ North American QSO Party, SSB

0300Z-0400Z, Aug 12

0800Z-0829Z (CW), Aug 12 and

0830Z-0859Z (SSB), Aug 12 and

0900Z-0929Z (FT4), Aug 12

1900Z-2029Z, Aug 12

0030Z-0230Z, Aug 13

0230Z-0300Z, Aug 13

1145Z-1300Z, Aug 13

1300Z-1400Z, Aug 13

1700Z-1759Z, Aug 13

1700Z-2100Z, Aug 13

1800Z-1859Z, Aug 13

1900Z-2000Z, Aug 13

0300Z-0400Z, Aug 14

0700Z-0800Z, Aug 14

0100Z-0130Z, Aug 15

0100Z-0230Z, Aug 15

0145Z-0215Z, Aug 15

0230Z-0300Z, Aug 15

2000Z-2100Z, Aug 15

0000Z-0800Z, Aug 16 and

1600Z-2400Z, Aug 16 and

0800Z-1600Z, Aug 17

0000Z, Aug 16 to 2359Z, Aug 17

0800Z, Aug 16 to 0800Z, Aug 17

0900Z, Aug 16 to 0759Z, Aug 18

1200Z-1300Z, Aug 16

1200Z, Aug 16 to 1200Z, Aug 17

1600Z-1759Z, Aug 16

1800Z, Aug 16 to 0559Z, Aug 17

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Contest Calendar - August 2025

[+ CVA DX Contest, CW](#)
[+ FISTS Sunday Sprint](#)
[+ NJQRP Skeeter Hunt](#)
[+ ARRL Rookie Roundup, RTTY](#)
[+ Run for the Bacon QRP Contest](#)
[+ K1USN Slow Speed Test](#)
[+ ICWC Medium Speed Test](#)
[+ OK1WC Memorial \(MWC\)](#)
[+ RSGB FT4 Contest](#)
[+ ICWC Medium Speed Test](#)
[+ Worldwide Sideband Activity Contest](#)
[+ ICWC Medium Speed Test](#)

[+ ZL Sprint](#)

[+ Phone Weekly Test](#)
[+ A1Club AWT](#)
[+ CWops Test \(CWT\)](#)
[+ Mini-Test 40](#)
[+ VHF-UHF FT8 Activity Contest](#)
[+ Mini-Test 80](#)
[+ CWops Test \(CWT\)](#)

[+ Walk for the Bacon QRP Contest](#)

[+ CWops Test \(CWT\)](#)
[+ CWops Test \(CWT\)](#)
[+ NTC QSO Party](#)
[+ NCCC FT4 Sprint](#)
[+ QRP Fox Hunt](#)
[+ Weekly RTTY Test](#)

1800Z, Aug 16 to 2100Z, Aug 17
0000Z-2359Z, Aug 17
1700Z-2100Z, Aug 17
1800Z-2359Z, Aug 17
2300Z, Aug 17 to 0100Z, Aug 18
0000Z-0100Z, Aug 18
1300Z-1400Z, Aug 18
1630Z-1729Z, Aug 18
1900Z-2100Z, Aug 18
1900Z-2000Z, Aug 18
0100Z-0159Z, Aug 19
0300Z-0400Z, Aug 19
0800Z-0829Z (CW), Aug 19 and
0830Z-0859Z (SSB), Aug 19 and
0900Z-0929Z (FT4), Aug 19
0230Z-0300Z, Aug 20
1145Z-1300Z, Aug 20
1300Z-1400Z, Aug 20
1700Z-1759Z, Aug 20
1700Z-2100Z, Aug 20
1800Z-1859Z, Aug 20
1900Z-2000Z, Aug 20
0000Z-0100Z, Aug 21 and
0200Z-0300Z, Aug 22
0300Z-0400Z, Aug 21
0700Z-0800Z, Aug 21
1900Z-2000Z, Aug 21
0100Z-0130Z, Aug 22
0100Z-0230Z, Aug 22
0145Z-0215Z, Aug 22

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Contest Calendar - August 2025

+ NCCC Sprint Ladder

+ K1USN Slow Speed Test

+ Turkey HF SSB Contest

+ Hawaii QSO Party

+ YO DX HF Contest

+ ARSI VU DX Contest

+ Ohio QSO Party

+ CVA DX Contest, SSB

+ SARL HF CW Contest

+ K1USN Slow Speed Test

+ ICWC Medium Speed Test

+ QCX Challenge

+ OK1WC Memorial (MWC)

+ QCX Challenge

+ ICWC Medium Speed Test

+ Worldwide Sideband Activity Contest

+ ICWC Medium Speed Test

+ QCX Challenge

+ ZL Sprint

+ SKCC Sprint

+ Phone Weekly Test

+ A1Club AWT

+ CWops Test (CWT)

+ Mini-Test 40

+ Mini-Test 80

+ CWops Test (CWT)

+ CWops Test (CWT)

+ CWops Test (CWT)

0230Z-0300Z, Aug 22

2000Z-2100Z, Aug 22

0000Z-2359Z, Aug 23

0400Z, Aug 23 to 0400Z, Aug 25

1200Z, Aug 23 to 1200Z, Aug 24

1200Z, Aug 23 to 1200Z, Aug 24

1600Z, Aug 23 to 0400Z, Aug 24

1800Z, Aug 23 to 2100Z, Aug 24

1400Z-1700Z, Aug 24

0000Z-0100Z, Aug 25

1300Z-1400Z, Aug 25

1300Z-1400Z, Aug 25

1630Z-1729Z, Aug 25

1900Z-2000Z, Aug 25

1900Z-2000Z, Aug 25

0100Z-0159Z, Aug 26

0300Z-0400Z, Aug 26

0300Z-0400Z, Aug 26

0800Z-0829Z (CW), Aug 26 and

0830Z-0859Z (SSB), Aug 26 and

0900Z-0929Z (FT4), Aug 26

0000Z-0200Z, Aug 27

0230Z-0300Z, Aug 27

1145Z-1300Z, Aug 27

1300Z-1400Z, Aug 27

1700Z-1759Z, Aug 27

1800Z-1859Z, Aug 27

1900Z-2000Z, Aug 27

0300Z-0400Z, Aug 28

0700Z-0800Z, Aug 28

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Contest Calendar - August 2025

[+ NCCC FT4 Sprint](#)

[+ QRP Fox Hunt](#)

[+ Weekly RTTY Test](#)

[+ NCCC Sprint Ladder](#)

[+ K1USN Slow Speed Test](#)

[+ SCRY/RTTYOps WW RTTY Contest](#)

[+ Feld Hell Sprint](#)

[+ ALARA Contest](#)

[+ U.S. Islands QSO Party](#)

[+ World Wide Digi DX Contest](#)

[+ Colorado QSO Party](#)

[+ Kansas QSO Party](#)

0100Z-0130Z, Aug 29

0100Z-0230Z, Aug 29

0145Z-0215Z, Aug 29

0230Z-0300Z, Aug 29

2000Z-2100Z, Aug 29

2200Z, Aug 29 to 1200Z, Aug 30 and

1200Z-2359Z, Aug 31

0000Z-2359Z, Aug 30

0600Z Aug 30 to 0559Z, Aug 31

1200Z, Aug 30 to 0300Z, Aug 31

1200Z, Aug 30 to 1200Z, Aug 31

1300Z, Aug 30 to 0400Z, Aug 31

1400Z, Aug 30 to 0200Z, Aug 31 and

1400Z-2000Z, Aug 31

Our thanks to

Bruce Horn, WA7BNM for use of this calendar!

Visit Bruce at www.contestcalendar.com/contestcal.html

The ARAC RELAY



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