



The RELAY)))

JULY
2021

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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Antenna Restrictions?

Working Through Antenna Installation Encumbrances

Editor's Note: The topic of antenna restrictions has arisen again, so we are revisiting our prior content on the subject, with interesting photos of clever "work arounds" from Hams.

As an amateur radio operator, erecting an antenna at your residence should be an exciting part of the hobby. Selecting the type of antenna appropriate for your ham shack, acquiring the necessary hardware and planning the build with your fellow Hams can be a lot of fun. As any seasoned Ham will tell you, however, the process can be more complicated depending upon where you live. Everyone seems to know someone who has experienced some measure of difficulty from a city, town, township, county, HOA Board, landlord, neighbor—or spouse! Antenna restrictions from local government zoning ordinances are common and Covenant, Conditions and Restrictions (CC&Rs) or lease agreements might govern your residence if it is a condo, townhome, planned community or apartment.



Flagpole Antenna made by David Koch KX9DK

When dealing with local zoning authorities, understanding the **FCC's PRB-1 document** is essential.

PRB-1 is an 11 page Amateur Radio Memorandum Opinion and Order that was released in 1985 and it is still valid today.

PRB-1, in essence, states that federal law pre-empts state and city law and that since amateur radio operators are under federal license, they are subject only to building codes with respect to safe antenna installation and height restrictions.

Continued on Page 16



SUMMER 2021



Join us on
facebook!

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ARAC Board Meeting Minutes - June 1, 2021

PRESIDENT



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VICE PRESIDENT



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TREASURER



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3RD YEAR BOARD

AAØME
Randy Johnson

randy@nsw4x4.com

2ND YEAR BOARD



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

1ST YEAR BOARD

AAØAC
Dave Davis

218-348-6649
aaØac@outlook.com

Present: Gene Ellingsen-NØVRM, Mike Lovold-NØPDG, Bruce Carlson-KNØNUL, Robin Davis (via phone), Gary Minter-KD9ABS, Dave Davis-AAØAC (via phone), Grant Forsyth-KCØWUP, Kim Waller-KEØNQS, Steve Waller-KEØNQØT, Doug-AAØAW

Called to order by President Gene-NØVRM

Minutes:

Posted on web site and in the newsletter. Any questions? Move to approve by Bruce-KNØNUL, seconded by Gary-KD9ABS, motion passed

Treasurer's Report:

Checking 3,904.82
Savings 2,173.73
Subtotal Cash \$6,078.72

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

Assets Subtotal: \$7,803.08

Outstanding Checks:

Mahtowa Repeater -1,100.00
Bob Boyd-KDØLYN Memorial -1,190.00
Reserved Funds -2,290.00

Grand Total \$5,513.08

Any questions on Treasurer's Report? Motion by Gary-KD9ABS, seconded by Dave-AAØAC, motion passed

Ham Fest numbers?

Cash In \$3,396.00
Expenses -\$226.00
Profit \$2,290.00

This is after all bills paid, deposit (cash for startup money in the cash boxes) returned to Savings, etc. A little less than 2019 numbers but attendance was down by 25%. Income is bigger than expenses. Plenty of money to run for the year.

Continued on Page 3

ARAC Board Meeting Minutes - June 1, 2021

Reoccurring Annual Expenses:

- PO Box Rental
- Donation to First United Methodist Church (monthly meeting place)
- Repeater & Antenna donation (WDSE)
- Picnic
- Rental space for our storage unit
- Insurance

We normally pay WDSE \$1,200.00 every year after Ham Fest. We have cash to pay that. Bruce-KN0NUL received a letter asking us to convert to a monthly payment of \$100.00 a month. FYI – Commercial space rent is \$3.00 a foot and we are at 550 feet on WDSE's Tower.

Looking for input from the Board with a motion and then hold a conversation with the membership. The Credit Union should allow a monthly with drawl, automatically sent to WDSE. We need to have the membership discuss this. We offer for any member to sponsor the month in honor of a loved one, etc. Make a motion to approve the \$1,200.00 by Gary-KD9ABS, Mike-W0PDG seconded it, motion passed to be brought to the Membership Meeting for consideration

Anybody have anything else to discuss concerning Club business?

Membership:

178 members when Bruce-KN0NUL last counted. A good portion of the members renewed their annual membership and that is good. 15 or 20 members are always late, not timely, in payment to renew for the year

Picnic:

Anything special like door prizes or a raffle? Would we have enough time to do something? What about a Two (2) Meter Yaesu mobile for around \$150.00-180.00? Asking a Board Member to do the research and discuss it at the Club meeting in June

Grandma's Marathon:

Program on Grandma's June 10, 2021. We still have a need for more volunteers to do communications at the Aid Stations

Motion to adjourn by Dave-AA0AC, seconded by Gary-KD9ABS, motion passed at 6:46 pm





ARAC Club Meeting Minutes

June 10, 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
Parliamentarian Grant Forsyth-KC0WUP
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Property / Picnic Scott Ahlgren-N0VYU
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQT
Testing Doug Nelson-AA0AW
Web Site Thomas Dorr-KE0RHA

Absent:

First Year Board Dave Davis-AA0AC
Third Year Board Randy Johnson-AA0ME
Repeater Randy Wabik-KR0B
Repeater David Pyrlík-K0DJP
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ

Meeting called to order by President Gene-N0VRM at 7:00 pm

Reminder to put your name on a ticket for the attendance drawing at the end of the meeting

New or Upgraded Hams Operators:

General Aaron Johnson-KE0OPK
Technician Mara Ohrt-KF0FLG
Technician Jordan Chopskie-KF0EDQ
Technician Tom Maida-KF0ALP
Congratulations on passing your test and welcome to the ARAC Club

Minutes:

Minutes posted in newsletter and on the web site. Motion to accept by Theresa Dall-KA0CDO, seconded by Garry Hawkinson-W0ELH, motion passed

Treasurer's Report:

Checking	3,904.82
Savings	2,173.73
Subtotal Cash	\$6,078.72
Winter CD	1,724.37
Summer CD	0.00
Subtotal CD	\$1,724.37
Assets Subtotal:	\$7,803.08
Outstanding Checks:	
Mahtowa Repeater	-1,100.00
Bob Boyd-KD0LYN Memorial	-1,190.00
Reserved Funds	-\$2,290.00
Grand Total	\$5,513.08

Questions? Details are available on the eight (8)-page spread sheet if Members are interested. Any other discussion or comments? Move to approve by Bob-KC0NFB, seconded by Grant-KC0WUP, motion passed

Continued on Page 5



ARAC Club Meeting Minutes

Deposited about \$4,400.00 after Ham Fest, attendance about 25% below where we were in 2019, down about a quarter in income. Actual profit from the Ham Fest \$2,290.00. Substantially higher than 2019. Successful Ham Fest and thankful for everybody who came out and for all of those who helped

WDSE Donation:

We need a motion to make \$1,200.00 annual donation to WDSE. Our 94 Repeater is located in the WDSE building and our antenna is at 550 feet on their tower. Commercial rate is \$3-4.00 per month, per foot. We've been donating \$1,200.00 each year after the Ham Fest. Our repeater is also on Emergency Power in the building. Larry, WDSE Engineer, approached the Club about moving the Repeater due to some work they needed to do. We are located in the north section of the building, as if is divided in thirds. We had to run a circuit to the South breaker panel to get Emergency Power. The Club covered the costs from their preferred contractor, Hunt Electric, who completed the work. Quite a valuable resource as the 94 Repeater is used for the National Weather Service, Emergency Services, etc. The Club owns and maintain the 94 Repeater. Doug-AA0AW moves, Paul-KC0WDQ seconded. Any questions? Rental payment or a donation to WDSE? It is a donation to WDSE. WDSE recognizes what we do as a Club for the Community. Motion passed

Annual Races:

Voyager and Kurnow races update by Paul-KC0WDQ. We have a couple of trails runs coming up - July 10 Kurnow, Zoo to Carlton, one way, July 24, Voyager is from the Zoo to Carlton and back again. This year there will only be four (4) aid stations for each race. Jay Cook, Peterson, Becks and the Turn Around. More details will come out, as the Race Board is meeting tonight. We are looking for volunteers; inexperienced volunteers will be put with an experienced volunteer. Wild Duluth, Inline Marathon are a few of the other races we provide communication

Picnic:

Raffle tickets are \$2.00 each or five (5) for \$10.00 for the radio, which is the door prize. Interested in building an antenna for the Fox Hunt, contact Bob-KC0NFB. Picnic is August 1, 2021, Sunday, at Chambers Grove Park. Park Pavilion is rented 10:00 am to 3:00 pm. Volunteers are needed to shuck corn, man the grills, set up and clean up, etc. Plan on attending and bringing a dish to share

Education:

September 21, 2021, first day of Technician Class, offered nationwide via Zoom. Registration will be through ISD 709 Duluth Public School Community Education Classes

Monthly Programs:

Mike-N0PDG has been trying to get I Com to come or attend our meeting via Zoom. Next month, July, they will present a program. Bill, new ND AC0W will be here, via Zoom, to introduce himself and talk about the ND Division. The Zoom programs will be done from the church.

Newsletter:

Kim-KE0NQS and Steve-KE0NQT do a great job on the monthly Newsletter so don't forget to check it out each month

Web Page:

Thomas-KE0RHA handles our web page, also doing a great job

Facebook:

We also have two (2) Facebook faces for information. They are updated routinely so if you have a Facebook account, check out our pages. Gene-N0VRM routinely posts information on these pages

\$5.00 attendance drawing was won by Jonah Bockbrader-K0IRA

Motion to adjourn by John Cavanaugh-KC0AFE, seconded by Grant-KC0WUP, motion passed at 7:21 pm





Prez Sez ...

Hi everyone!

I hope you are enjoying the start of Summer. With the easing of the COVID restrictions we can start getting back to normal club routines:

- ♦ July 6 the A.R.A.C. Board meeting at Sammy's West Duluth 6:30 PM.
- ♦ The July A.R.A.C. club meeting Thursday July 8 at the Copper Top Church 7:00PM

We will be having a Picnic this year, Sunday August 1 out at Chambers Grove Park. That is out in the Fond du Lac neighborhood in the far west part of Duluth. The Club will be providing brats, hot dogs, corn-on-the-cob, potato salad and bottled water. As in previous years, we hope that you will bring your delicious potluck items.

Start time is 11:00 AM. Please be patient if you get there early and the food is not quite ready then. We can use some help shucking corn!!! This year we will have a raffle for a Yaesu FT1500 mobile radio, \$2.00 a chance or the A.R.A.C. special 5 for \$10.00. Tickets on sale at the Club meeting and at the picnic. If you are just using a Baofeng hand-held this is nice upgrade for you!

Hope to see you there!!!!

Gene Ellefsen NØVRM

Newly Licensed

CONGRATULATIONS to our New or Upgraded Ham Operators!

General Class Upgrade: Aaron Johnson KEØOPK of Cloquet

Technician Class: Mara Ohrt KFØFLG of Duluth

Technician Class: Jordan Chopskie KFØEDQ of Duluth

Welcome to the ARAC!



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	■■■■●●●●
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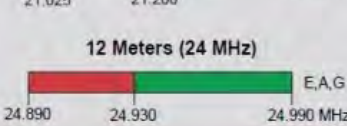
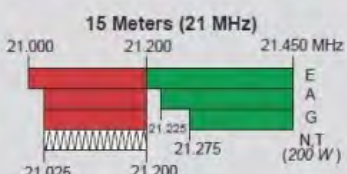
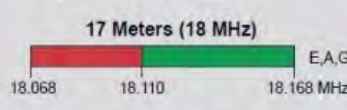
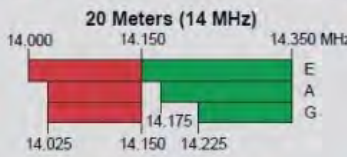
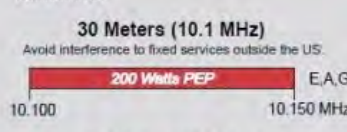
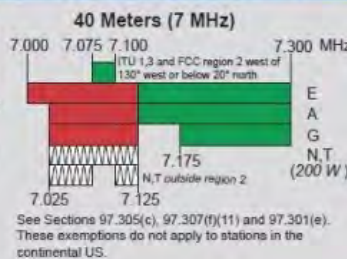
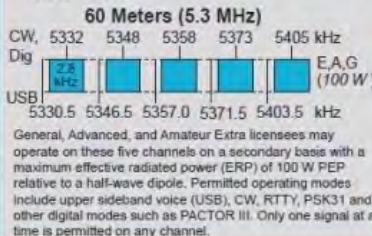
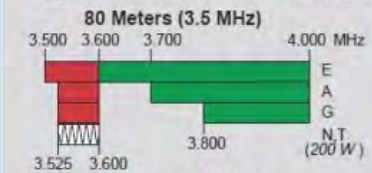
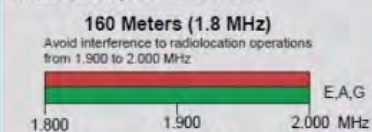
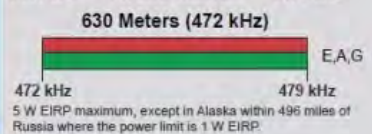
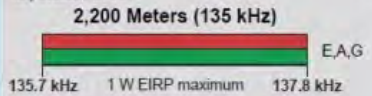


US Amateur Radio Bands

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.



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:
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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.rvradionet.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, July 6, 2021

@ 6:30 p.m.

Sammy's Pizza

Next ARAC Club Meeting

Thursday,
July 8, 2021
7 p.m.

Back at the Coppertop!

PLEASE WEAR A MASK,
as requested by our hosts at the
Coppertop Church!

July 8th Club Meeting

**ICOM
AMERICA**

VIA ZOOM

*You do not need a Zoom
account to participate!*

*Zoom meeting details will be
posted on Facebook*

*Interested in providing a pro-
gram, or have an idea for one?*

Contact Mike NØPDG at
lovoldm@gmail.com



**4th
JULY**
INDEPENDENCE DAY



Thanks to our Veterans!

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

JULY

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
				1	2	3
 CW 1930 NØPDG USB 2000 WØLWU ES 2100 NØVRM	5 WX 2000 KCØMKS	6 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	7 2100 - BWAR	 ARAC Club Meeting Coppertop! Masks Required 7 pm	9	10
11 CW 1930 AAØAW USB 2000 K9KDK ES 2100	12 WX 2000 KCØMKS	13 DC Net 2000 CC Net 2030	14 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	15	16	17
18 CW 1930 NØPDG USB 2000 ES 2100 AAØME	19 DC ARES/RACES Mtg 1900 DC EOC WX 2000 KCØMKS	20 DC Net 2000 CC Net 2030	21 St. Louis County ARES/RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	22	23	24
25 CW 1930 AAØAW USB 2000 NØVRM ES 2100 N9DMG	26 WX 2000 KCØMKS	27 DC Net 2000 CC Net 2030	28 Lake County Net 1900 2100 - BWAR	29 Carlton County ARES/RACES Meeting 1900 CC EOC	30	31 Club Breakfast @ The Chalet 0800-0900

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

Next Meeting: Thursday,
June 8th, 2021 - 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

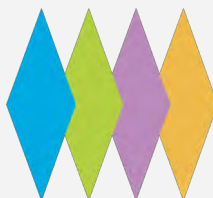
Reminder: The Contest Corral monthly listing of contests can be found in each issue of QST. ARRL sponsored contests can be found in Contest Corral, highlighted, or on the ARRL's web site at arrl.org.

FOR SALE

Denny Burt KB0SPA has a close friend—Lynn Johnson KB9PFF of Siren, WI—who became a Silent Key. KB9PFF's radio equipment is now located in Barnum at the house of KB0SPA.

Denny has difficulty hearing phone calls, so those interested in the following items, please send texts to KB0SPA at **218-341-4033**

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



Antenna Restrictions, Continued from Page 1

Building permit fees must be reasonable. Reasonable cost means they should be in line with those fees of surrounding communities. Having federal law on your side is step one, but then it may be necessary to “prove your case” to your local planning board or other jurisdictional entity. There may be misconceptions on the part of your governing board regarding your rights as a federal licensee that you can proactively and respectfully address in your permit application and presentation.

Sometimes local zoning entities overstep their legal authority due to a misunderstanding of their jurisdictional powers with regard to ham radio antennas. As such, a ham operator must be prepared to provide documentation necessary to **respectfully** inform officials about PRB-1 compliance.

PRB-1 provides that an amateur station antenna structure **may be erected at heights and dimensions sufficient to accommodate effective amateur service communications**. So, local authorities may adopt regulations pertaining to placement, screening, or height of antennas, **if** such regulations are based on health, safety, or aesthetic considerations **and** reasonably accommodate amateur communications.



Creative yard antennas built by Hams with the idea of being “hidden in plain sight”! Left & Center images posted by Antentop.org; Right image by Radiosurvivalist.com

Additionally, local governments may not base their regulation of amateur service antenna structures on the causation of radio frequency interference to home electronic equipment. RFI is regulated **exclusively** by the FCC.

Some local governments incorrectly believe that if an amateur radio antenna is **lowered**, the potential for interference **decreases**. The FCC has gone on record as stating that there is no reasonable connection between requiring an amateur radio operator to reduce the height of his or her tower and reducing the amount of interference to a neighbor's home electronic equipment. On the contrary, antenna height is inversely related to the strength of the radio signal that serves as a catalyst for interference in susceptible home electronic equipment. **The higher that antenna is, the farther away is it from consumer equipment, and the less the interference potential is.** So as a matter of technical fact, the higher an amateur antenna, the less likely it is that RFI will appear in home electronic equipment. This statement was made in an October 25, 1994 letter from former FCC Private Radio Bureau Chief Ralph Haller, which can be found on the ARRL website.

In preparation for discussion with your local authority, ARRL's Regulatory Information Branch has a couple of helpful PRB-1 information packets. A smaller, PRB-1 packet can be found on ARRL's web site. The larger PRB-1 package consists of more than 200 pages of cases,

Continued on Page 17

Antenna Restrictions, Continued from Page 16

sample ordinances, a communications height effectiveness study as well as the text of PRB-1 and other helpful info and is available for a modest fee. Visit <http://www.arrl.org/prb-1> for more information or use the search tool at [arrl.org](http://www.arrl.org).

ARRL also has **Volunteer Counsels**--Hams that are lawyers—to give you additional legal guidance if needed. Go to <http://www.arrl.org/volunteer-counsel-program> to see a list of volunteers for you to contact. Need some additional technical advice regarding to your antenna permit? Visit <http://www.arrl.org/volunteer-consulting-engineer-program> for a list of **ARRL Volunteer Consulting Engineers**. They're amateur radio operators who are also professional engineers and are there to help.

Facing obstacles with Covenants or HOAs at your condo, townhome, planned community or apartment?

PRB-1 does not govern your situation, but the past five years Congress has slow-walked the **Amateur Radio Parity Act (ARPA)** through their committee process. Several versions have been introduced that have not yet passed, but the ARRL feels that diligent advocates in the legislature and constituent lobbyists increase the chances of it actually becoming law.

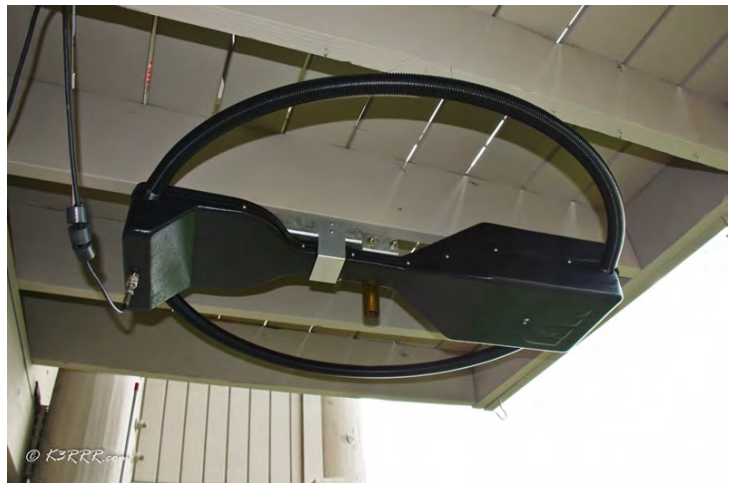
What would the Amateur Radio Parity Act do? Historically Federal Courts have been largely reluctant to intervene in the matters of Covenants, seeing them as contracts between private individuals in which the Federal Government has no stake. While the FCC does have the jurisdiction to limit covenants where they obviously conflict with Federal telecommunications policy, that jurisdiction is exercised very seldom.

The Parity Act would **guarantee** every single radio amateur who lives in a deed-restricted community the right to erect and maintain an “effective outdoor antenna on property under the exclusive use or control of the licensee,” regardless of what the covenants say. This undoubtedly would be a positive development for thousands of Hams living in deed-restricted housing. In addition, the Parity Act might be effectively applied to lease agreements for rental housing. With over 730,000 amateur radio operators in the U.S. and the majority of new home construction having some form of covenant restrictions attached, this is an issue that will not go away and that Federal law will have to clarify at some point in the future on

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“Stealth 2 Meter Copper J-Pole for your HOA”- David Savidge AF5DN



“Stealth” MFJ-1786 Loop Antenna - Robert Goodman K3RRR



Antenna Restrictions, Continued from Page 17

the basis that, according to ARPA language:

- ♦ Amateur radio, at no cost to taxpayers, provides a fertile ground for technical self-training in modern telecommunications, electronics technology, and emergency communications techniques and protocols.
- ♦ There is a strong Federal interest in the effective performance of amateur stations established at the residences of licensees. Such stations have been shown to be frequently and increasingly precluded by unreasonable private land use restrictions, including restrictive covenants.
- ♦ Federal Communications Commission regulations have for three decades prohibited the application to stations in the amateur service of State and local regulations that preclude or fail to reasonably accommodate amateur service communications, or that do not constitute the minimum practicable regulation to accomplish a legitimate State or local purpose.
- ♦ Commission policy has been and is to require States and localities to permit erection of a station antenna structure at heights and dimensions sufficient to accommodate amateur service communications.

Wherever you reside, there is a wealth of helpful information on antenna solutions from the amateur radio community locally and on various internet forums. Though not everyone agrees on the need for legislation beyond PRB-1, most Hams believe that we need to participate at the local, state and federal level when necessary to preserve the rights of amateur radio enthusiasts for the sake of the hobby and its future.★



"Ventenna" ▼

Stealth Antenna Ideas

Flowerpot antenna & satellite dish antenna

stealthhamradio.com



Stealth Ham Radio Antenna



40 meter stealth vertical, Antentop.org



"My Super Stealth Bar Stool Tower and Fire Pit Cover for the MFJ-1786. From a distance [the loop antenna] looked like a patio chair with an umbrella..." Robert Goodman K3RRR



c-pole antenna, chadamberg.com



Canoe Antenna
Timothy Sammons, N6CC,
San Ramon, CA

17 foot aluminum canoe mounted on black plastic rack-mounts = a quarter wave horizontal mobile antenna for the 20 meter Ham band



Trike Antenna, Antentop.org

Contest Calendar - July 2021

<u>+ RAC Canada Day Contest</u>	0000Z-2359Z, Jul 1
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jul 1
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jul 1
	1700Z-1800Z, Jul 1 (CW) and 1800Z-1900Z, Jul 1 (SSB) and 1900Z-2000Z, Jul 1 (FM) and 2000Z-2100Z, Jul 1 (Dig)
<u>+ NRAU 10m Activity Contest</u>	
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 1
<u>+ EACW Meeting</u>	1900Z-2000Z, Jul 1
<u>+ SKCC Sprint Europe</u>	1900Z-2100Z, Jul 1
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Jul 2
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jul 2
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jul 2
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Jul 2
<u>+ Venezuelan Ind. Day Contest</u>	0000Z-2359Z, Jul 3
<u>+ DL-DX RTTY Contest</u>	1100Z, Jul 3 to 1059Z, Jul 4
<u>+ Two-Meter Classic Sprint</u>	1300Z-1330Z, Jul 3
<u>+ Marconi Memorial HF Contest</u>	1400Z, Jul 3 to 1400Z, Jul 4
<u>+ TA VHF/UHF Contest</u>	1500Z, Jul 3 to 1500Z, Jul 4
<u>+ Original QRP Contest</u>	1500Z, Jul 3 to 1500Z, Jul 4
<u>+ PODXS 070 Club 40m Firecracker Sprint</u>	2000Z, Jul 3 to 2000Z, Jul 4
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jul 5
<u>+ RSGB 80m Club Championship, CW</u>	1900Z-2030Z, Jul 5
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jul 6
<u>+ ARS Spartan Sprint</u>	0100Z-0300Z, Jul 6
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 6
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Jul 7
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jul 7
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Jul 7
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jul 7

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Contest Calendar - July 2021, Continued

<u>+ Walk for the Bacon QRP Contest</u>	0000Z-0100Z, Jul 8 and 0200Z-0300Z, Jul 9
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jul 8
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jul 8
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 8
<u>+ EACW Meeting</u>	1900Z-2000Z, Jul 8
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Jul 9
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jul 9
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jul 9
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Jul 9
<u>+ IARU HF World Championship</u>	1200Z, Jul 10 to 1200Z, Jul 11
<u>+ SKCC Weekend Sprintathon</u>	1200Z, Jul 10 to 2400Z, Jul 11
<u>+ QRP ARCI Summer Homebrew Sprint</u>	2000Z-2300Z, Jul 11
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jul 12
<u>+ 4 States QRP Group Second Sunday Sprint</u>	0000Z-0200Z, Jul 12
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jul 13
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 13
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Jul 14
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jul 14
<u>+ VHF-UHF FT8 Activity Contest</u>	1700Z-2000Z, Jul 14
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jul 14
<u>+ RSGB 80m Club Championship, SSB</u>	1900Z-2030Z, Jul 14
<u>+ NAQCC CW Sprint</u>	0030Z-0230Z, Jul 15
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jul 15
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jul 15
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 15
<u>+ EACW Meeting</u>	1900Z-2000Z, Jul 15
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Jul 16
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jul 16
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jul 16

Continued on Page 21

Contest Calendar - July 2021, Continued

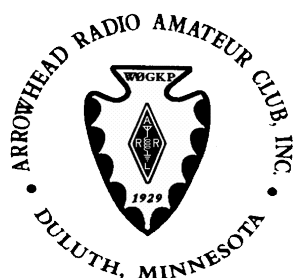
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Jul 16
<u>+ Russian Radio Team Championship</u>	0700Z-1459Z, Jul 17
<u>+ Trans-Tasman Low-Bands Challenge</u>	0800Z-1400Z, Jul 17
<u>+ Feld Hell Sprint</u>	1200Z-1359Z, Jul 17
<u>+ IARU Region 1 70 MHz Contest</u>	1400Z, Jul 17 to 1400Z, Jul 18
<u>+ North American QSO Party, RTTY</u>	1800Z, Jul 17 to 0559Z, Jul 18
<u>+ CQ Worldwide VHF Contest</u>	1800Z, Jul 17 to 2100Z, Jul 18
<u>+ RSGB International Low Power Contest</u>	0900Z-1200Z and 1300Z-1600Z, Jul 18
<u>+ YOTA Contest</u>	1000Z-2159Z, Jul 18
<u>+ CQC Great Colorado Gold Rush</u>	2000Z-2159Z, Jul 18
<u>+ Run for the Bacon QRP Contest</u>	2300Z, Jul 18 to 0100Z, Jul 19
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jul 19
<u>+ Worldwide Sideband Activity Contest</u>	0100Z-0159Z, Jul 20
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 20
<u>+ Phone Weekly Test - Fray</u>	0230Z-0300Z, Jul 21
<u>+ CWops Mini-CWT Test</u>	1300Z-1400Z, Jul 21
<u>+ CWops Mini-CWT Test</u>	1900Z-2000Z, Jul 21
<u>+ CWops Mini-CWT Test</u>	0300Z-0400Z, Jul 22
<u>+ CWops Mini-CWT Test</u>	0700Z-0800Z, Jul 22
<u>+ RTTYOPS Weeksprint</u>	1700Z-1900Z, Jul 22
<u>+ EACW Meeting</u>	1900Z-2000Z, Jul 22
<u>+ RSGB 80m Club Championship, Data</u>	1900Z-2030Z, Jul 22
<u>+ QRP Fox Hunt</u>	0100Z-0230Z, Jul 23
<u>+ NCCC RTTY Sprint</u>	0145Z-0215Z, Jul 23
<u>+ NCCC Sprint</u>	0230Z-0300Z, Jul 23
<u>+ K1USN Slow Speed Test</u>	2000Z-2100Z, Jul 23
<u>+ RSGB IOTA Contest</u>	1200Z, Jul 24 to 1200Z, Jul 25
<u>+ ARS Flight of the Bumblebees</u>	1700Z-2100Z, Jul 25
<u>+ K1USN Slow Speed Test</u>	0000Z-0100Z, Jul 26

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Contest Calendar - July 2021, Continued

+ QCX Challenge	1300Z-1400Z, Jul 26
+ RSGB FT4 Contest Series	1900Z-2030Z, Jul 26
+ QCX Challenge	1900Z-2000Z, Jul 26
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jul 27
+ QCX Challenge	0300Z-0400Z, Jul 27
+ RTTYOPS Weeksprint	1700Z-1900Z, Jul 27
+ SKCC Sprint	0000Z-0200Z, Jul 28
+ Phone Weekly Test - Fray	0230Z-0300Z, Jul 28
+ CWops Mini-CWT Test	1300Z-1400Z, Jul 28
+ CWops Mini-CWT Test	1900Z-2000Z, Jul 28
+ CWops Mini-CWT Test	0300Z-0400Z, Jul 29
+ CWops Mini-CWT Test	0700Z-0800Z, Jul 29
+ RTTYOPS Weeksprint	1700Z-1900Z, Jul 29
+ EACW Meeting	1900Z-2000Z, Jul 29
+ QRP Fox Hunt	0100Z-0230Z, Jul 30
+ NCCC RTTY Sprint	0145Z-0215Z, Jul 30
+ NCCC Sprint	0230Z-0300Z, Jul 30
+ K1USN Slow Speed Test	2000Z-2100Z, Jul 30
+ Feld Hell Sprint	0000Z-2359Z, Jul 31
+ Russian WW MultiMode Contest	1200Z, Jul 31 to 1159Z, Aug 1
+ Missouri QSO Party	1400Z, Jul 31 to 0400Z, Aug 1 and 1400Z-2000Z, Aug 1
+ WAB 144 MHz Low Power Phone	1400Z-1800Z, Jul 31

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



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