



The RELAY)))

JUNE
2020

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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Field Day : Then & Now

As **Field Day 2020** approaches, once again we find ourselves adjusting the way we interact as an amateur radio club. This year, club meetings and events don't look the same as years past, but in a sense they can still **feel** familiar, because we are connected, as always, by voice. The moment we hear them speak, we instantly recognize WØDIO, AAØAW, NØVRM and many others among us. Sadly, we just found out as we "go to press" that ARAC Board member and friend Bob Boyd KDØYLN is now a silent key.

So we go on, knowing we'll get through this tumultuous year and look back on it from the Field Days ahead, as well as other times when we gather again in person. As noted in the May 5th ARAC Board Meeting Minutes on page 3, ARRL is encouraging everyone to set up a portable station at home, in their yard, and have a personal Field Day. This is a throw-back to the earliest Field Day, of course, when F.E. Handy W1BDI said: "The real object of this contest is to test 'portables' wherever they may be available. If successful, we want to make it an annual affair."

Speaking of throw-backs, a few years ago Newsletter Editors Jeff Nast-KCØMKS and Diane Nast-KCØTIU wrote an excellent article describing Field Day and its origins and purpose. A concise explanation of the subject, we are reprising the piece in its entirety:

"**Field Day** is an annual amateur radio exercise, widely sponsored by IARU regions and member organizations, encouraging emergency communications preparedness among amateur radio operators. In the United States, it is typically the largest single emergency preparedness exercise in the country, with over 30,000 operators participating each year. Field Day is always the fourth full weekend of June, beginning at 1800 UTC Saturday and running through 2059 UTC Sunday.

"Since the first **ARRL Field Day** in 1933, radio amateurs throughout North America

ranging from operations under tents in remote areas to operations inside Emergency Operations Centers (EOCs). Operations using emergency and alternative power sources are highly encouraged, since electricity and other public infrastructures are often among the first to fail during a natural disaster or severe weather.

"To determine the effectiveness of the exercise and of each

Continued on page 15



Spring 2020



Join us on
facebook!

Co-Editors:

Kim & Steve Waller

Kim - KEØNQS • Steve - KEØNQT

KEØNQS.mn@gmail.com
KEØNQT@gmail.com



Prez Sez...

Hello everyone,

We are still not able to have face-to-face Board and Club meetings yet due to the Covid 19 precautions, so I thank you for working with us as we get past this situation.

There will not be a Club sponsored Field Day event this year, with Spirit Mountain closed and the rules for gatherings of not more than 10 people. However you can set up your own station for Field Day and work portable from your yard or find a spot to operate from using battery or generator power from either location.

The ARRL is encouraging this type of Field Day operations this year because of Covid 19. The June issue of QST magazine has a good article on operating Field Day this year so get out, throw up wire and get on the air!!

Stay safe,

73 Gene Ellefsen NØVRM

Silent Key

Bob Boyd KDØYLN, ARAC Board Member

Our deepest sympathy to Bob's family and friends.

Rest in Peace, dear friend.

ARAC Board Meeting Minutes – May 5, 2020

PRESIDENT



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

VICE PRESIDENT



NØPDG
Mike Lovold
386Ø Birchwood Rd
Downtown Arnold, MN
558Ø3
lovoldm@gmail.com

SECRETARY



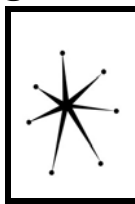
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Robin Davis
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davisfam2858@yahoo.com

TREASURER



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

3RD YEAR BOARD



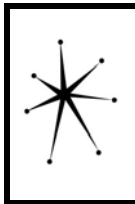
KD9ABS
Gary Minter
1621 N 26th St
Superior WI 5488Ø

2ND YEAR BOARD



AAØAC
Dave Davis
218-348-6649
aaØac@outlook.com

1ST YEAR BOARD



SILENT KEY
KDØYLN
Robert Boyd
5054 Boulder Dr
Hermantown, MN 55811

Present: Gene Ellefsen-NØVRM, Mike Lovold-NØPDG, Bruce Carlson-KEØNIT, Gary Minter-KD9ABS, Bob Boyd-KDØYLN, Doug Nelson-AAØAW, Kim Waller-KEØNQS, Steve Waller-KEØNQT, Randy Wabik-KRØB, Bob Schultz-KCØNFB

Meeting called to order at 6:34 pm

Minutes:

Posted in newsletter and on the web page. Considered it approved because of the Zoom format

Treasurer's Report:

Checking	1,178.67
Savings	1,373.40
Cash Subtotal.....	\$2,522.07

Outstanding Check (Repeater # 1414) -1,100.00

Winter CD	1,714.03
Summer CD	1,700.00
CD Subtotal.....	\$3,414.03

Grand Total\$4,866.10

Bruce-KEØNIT has the details but little has changed since March first. Any questions? Approved as presented

New Business:

No physical Club meeting this month because of the Shelter in Place order. Bruce-KEØNIT, if we use Zoom, some may not be able to participate because they don't have internet. Gene-NØVRM, let's do it on the radio, utilizing the Repeater. Lots of feedback that people liked it on the 94 Repeater

Committees:

Field Day:

No Field Day at Spirit Mountain. Gene-NØVRM contacted them to explain our situation and request that they consider our use of it next year. ARRL is encouraging everyone to set up a portable station at home, in their yard, and have a personal Field Day. For Field Day, if you don't have a generator, that makes you a Class D, you cannot contact other stations unless they are a Class D

Picnic:

Scheduled for August 2, 2020, first Sunday

Ham Fest:

- ◆ Have approval for the entire building, Four Seasons, in Carlton. Think it will be a very good fest because there are not a lot of fests lately due to the Shelter in Place. Bob-KCØNFB obviously, everything is a set up at the building
- ◆ Looking at sending out another vending email notice in July and again in August, about a month and a half before the Fest. Notices did go out cancelling the one originally scheduled for May 2, 2020. We have fourteen (14) tables reserved for the Fall

Continued on page 4

ARAC Board Meeting Minutes – Continued from page 3

- ◆ An additional thing to look into, is the need for seventy (70) plus tables. The building is set up for round tables, which is what the Four Seasons have. The VFW next door has a few but we will need a lot more. Asking people to check for the long rectangular tables
- ◆ The rental fee is a per hour fee and they collect the money after the event. That is always how they always have done it. The faster we get out of there, the cheaper the rent will be
- ◆ Randy-KR0B observation, as we will not be in Wisconsin, do we have to fill out the State Sales Tax forms because the Ham Fest will be in MN in September? Kim-KE0NQS questioned does the Club have an ES number? We can get one quickly if we need it. Just covering all the angles, don't want the State to hit us with something later
- ◆ As for the food, no Robin running the kitchen this time. Maybe we'll just do brats and hot dogs, no pork because of Robin's absence as she prepared the pulled pork. Suggestion from Kim-KE0NQS for Robin to share her recipe and Kim-LE0MQS will make it for the picnic to sample so it could be included at the Ham Fest
- ◆ Brainerd Ham Fest has not rescheduled at this time – *Update now rescheduled for August 22, 2020*

Testing:

May 12, 2020, test session has been cancelled. Hoping to schedule one in June sometime pending the government request for Shelter in Place

Education:

For reference, classes have been cancelled due to the schools being cancelled. Duluth School District offered to allow people to get a refund or take the class in the Fall. Bob-KC0NFB has been in contact with all seven (7) people. They are self studying and Bob-KC0NFB is sending them information via email. They are all taking the online tests to prepare for the next test session

Anything else?

Mahtowa Repeater Building:

- ◆ Doug-AA0AW had to do some work on Packet at the Mahtowa Repeater site since the power supply died. He replaced the power supply. The Mahtowa Repeater is running because the generator is running but it is not on the air. Doug-AA0AW also turned off the heat inside the building. Is Randy Haglin-N0BZZ still sick? He was sick for a couple of week. Randy-KR0B hasn't talked to him in a few weeks. Gene-N0VRM will send him an email to see how things are
- ◆ Bob-KC0NFB inquired if the Mahtowa building needs a new set of locks? Doug-AA0AW's keys didn't work but Gene-N0VRM's key worked with a lot of finessing. The locks are old and probably should be replaced. It would be three (3) new locks with an additional number of keys
- ◆ There is a 6 meter repeater in the Mahtowa repeater building. Doug-AA0AW got an email from a gentleman with questions about the repeater. It is there and it is working. Also wondering if Pat Wilmers-KB0QYC is still interested in that repeater as it belongs to him. Mike-N0PDG is a friend of Pat-KB0QYC through Facebook so will ask him about the repeater. Doug-AA0AW questioned if he had abandoned it? Ask what his intentions are for it? It is working and has his call sign on it. The Two Harbors repeater had Penny Wilmer's call on it and her call expired four (4) years ago. It appears he has abandoned the repeater and distanced himself from the hobby

Hearing nothing more, motion to adjourn by Mike-N0PDG, seconded by several, motion passed at 6:57 pm





ARAC Club Meeting Minutes

May 14, 2020

Present:

President Gene Ellefsen-N0VRM
Treasurer / Membership Bruce Carlson-KE0NIT
Secretary Robin Davis
Third Year Board Dave Davis-AA0AC
Second Year Board Bob Boyd-KD0YLN
First Year Board Gary Minter-KD9ABS
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Testing Doug Nelson-AA0AW

Absent:

Vice President Mike Lovold-N0PDG
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Parliamentarian Grant Forsyth-KC0WUP
Property / Picnic Scott Ahlgren-N0VYU
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQT
Repeater Randy Wabik-KR0B
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ
Web Site Thomas Dorr-KE0RHA

Meeting called to order at 7:01 pm on 94 Repeater by President Gene-N0VRM

Roll Call - Welcome using the Repeater due to COVID-19 meeting

Minutes:

Posted on the web page and in the newsletter, Joe Meese-W0LWU motioned to accept, Bruce Hegrenes-K0OE seconded, passed by consent

Treasurer's Report:

Checking.....	1,178.67
Savings.....	1,373.40
Cash Subtotal	\$2,522.07
Outstanding Check (Repeater # 1414).....	-1,100.00
Winter CD	1,714.03
Summer CD	1,700.00
CD Subtotal	\$3,414.03
Grand Total.....	\$4,866.10

Any questions about the Treasurer's Report? Motion to accept by Diane Saunders-K0DSL, seconded by Gary-KB9ABS, motion passed by consent

Not a lot of business because we couldn't do anything due to the Shelter in Place for the COVID-19 Pandemic

Continued on Page 6



ARAC Club Meeting Minutes

Continued from Page 5

Committee Reports:

Field Day:

Not up at Spirit Mountain this year. ARRL is recommending doing it from home. Hook up a generator, make some contacts via your radio and stay safe at home

Picnic:

Planning to have the annual, scheduled for August 2, 2020. At the whim of Governor Waltz and Mayor Larsen, depending on the City of Duluth Park being available. Scott-N0VYU on the air? Picnic Chair is not available

Testing:

Doug-AA0AW we are in the process, trying to come up with an idea for testing. Monday, May 18, 2020, the Shelter in Place is changing. Brainstorming to have a test session keeping within the restrictions. May schedule a daytime and a nighttime test session to accommodate the request for Social Distancing

Education:

Class for spring are being pushed along via email and text message. For fall semester, we may do a class with Zoom if we cannot gather together for safety reasons

Ham Fest:

Past the original date of May 2, 2020. Rescheduled for September 28, 2020, in Carlton, at the Four Seasons building. It is a bigger location. The flyer is on the Club web site. Keep an eye out for updates. Looking to see when Brainerd Ham Fest will be rescheduled to attend to promote our Fall Ham Fest

Old/New Business:

Hearing none. Looking forward to June, hoping we may be able to meet in person again. We will keep everyone posted via the nets, the web page and the newsletter. The bands have been somewhat open so keep in contact via your radio. It is fun!

Randy Scott-KE0RTX has been talking with board member for Voyageur and Curnow races. They are asking if volunteers are still willing to provide communication for the races using the current limitations. They are looking for our input. Planning to make a decision within the next month whether or not to hold the races, etc. They are working on it. Drop Randy-KE0RTX an email (KE0DX@gmail.com) with your thoughts. They appreciate our help

Is Ryan Johnson-N0RNJ on the air? No response

Anything else to be brought up?

Tim Ferch-AK0TF move to adjourn, seconded by Jim Anderson-N0JWA, consider this meeting adjourned.

Those three (3) famous words, subject to change, we are doing very well. Turn it over to Bob-KC0NFB for instructions for a Zoom meeting following our monthly membership meeting. He will share instructions how to access via our Facebook page and on Zoom

Arrowhead Radio Amateur Club **HAM FEST!**

Sat. Sept. 26, 2020 9:00am – 1:00pm

Four Seasons Sports Complex and Events Center

90 Chestnut Avenue Carlton, Mn. 55718

Under the water tower in downtown Carlton

Admission: \$7.00 (12 & under FREE!)

Used and like new radios, supplies, equipment, and computer related items including software and hardware! Personalized Ham items also available!

Yaesu Representative John N9UPC will be on site with new radio equipment displayed and for sale.

<<< QSL card checking for ARRL awards program by Mike Cizek W0VTT >>>

Mike's email: mgcizek@gmail.com



This is an A.R.R.L. sanctioned event.

Talk-in on W0GKP Repeater:
146.940(-) [103.5] Duluth
147.000(-) [103.5] Mahtowa
146.940(-) [114.8] 2-Harbors

Testing on site!

10:00 AM 4-H Building
Contact: Doug Nelson
AA0AW / 218-391-5874
aa0aw@arrl.net

www.thearac.org

Dealer / Vendor Tables:
4 foot table: \$5.00
8 foot table: \$10.00
Vendor setup starts at: 7:00am

Table Reservations:

Robert Schulz, KC0NFB
115 Eden Lane
Duluth, MN 55805-1533
218-481-7458
arac_hamfest@charter.net

Hourly Drawings!

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	●●●●●
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US Amateur Radio Bands

US AMATEUR POWER LIMITS

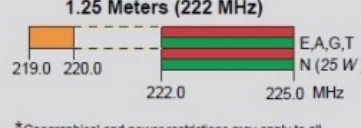
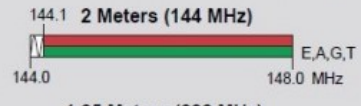
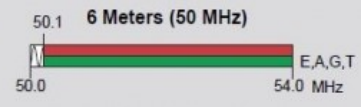
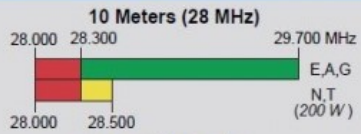
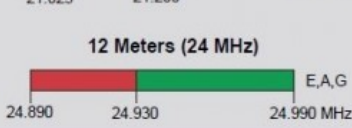
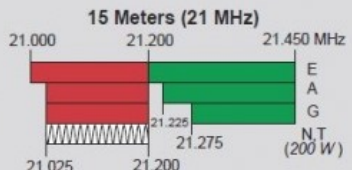
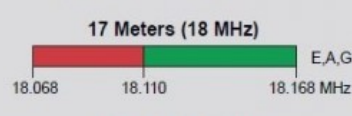
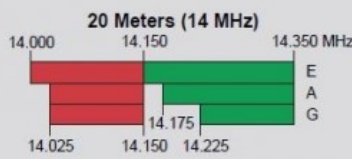
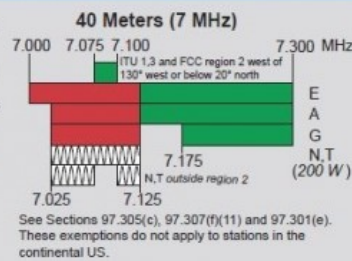
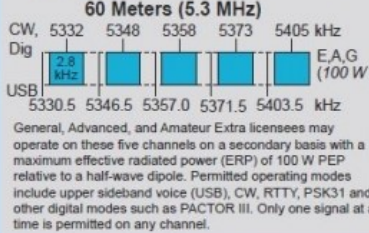
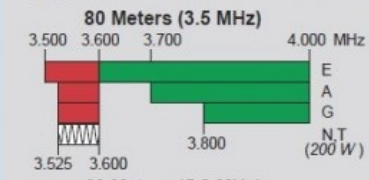
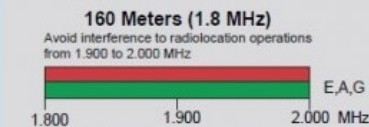
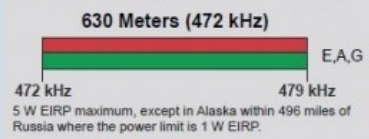
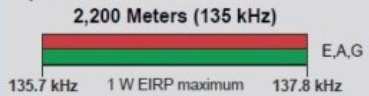
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

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

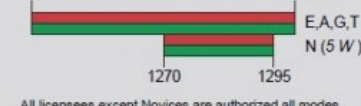
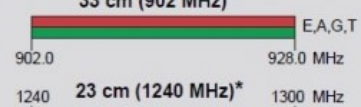
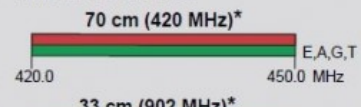


The national association for
ARRL AMATEUR RADIO

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.



*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

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:
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email: hq@arrl.org

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email: membership@arrl.org

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

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

NETS

Have a favorite HF/6m/2m/1.25m/70cm net that you check into or listen in on? Also, please send corrections and we will add it to the list below - Kim KEØNQS at my email KEØNQS.mn@gmail.com.

- **Northland Weather Group Net:** Mondays 2000 on the ARAC repeater (146.940 MHz with a tone of 103.5 and standard offset).
- **Minnesota D-Star Net:** Sundays at 19:30 on Reflector 53A
- **Minnesota Section Net** 1200 and 1730 on 3.860 [Net Manager: NØYR] http://www.mn-section.org/dept_stm.html
- The non-non-net: Evenings 2000 144.200 USB except for Sunday evenings.
- Badger WX Net: 0500-0715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **PICONET:** 3.925 from 0900-1100 CT Mon-Sat and 1600-1700 CT Mon-Fri. Info at: <http://www.piconet3925.com>
- Michigan Upper Peninsula Net: 1600 (CST) on 3.921 MHz Sun-Sat and 1200 Sun. Info: <http://www.michupnet.com>
- Great Lakes Marine/Maritime Mobile Net: Morning 07:30 - 3.932; 08:15 - 7.261 MHz and evening 18:30 - 3.1730927; 19:15 - 7.268 MHz. Weekend extra net: 10:00 - 7.261/7.268 MHz. All CST, LSB and +/- QRM. See: <http://www.sailblogs.com/member/glimmnet/>
- MIDCARS: 07:30-13:00 - 7.258 MHz. See: <http://www.midcars.net>
- Iowa snowbird net on 14.257MHz, M-W-F at 10:00 am Local Time. This is an open net.
- Spider Web Net (Marco Island FL) on 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Maritime Mobile Service Network: Daily at 1100—2100 Central on 14.300. <http://mmsn.org> and <http://www.14300.net>
- RV Radio Network: Every day at 1900 Central on 7.265 MHz. Web site: <http://www.rvradionetwork.com>
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 MHz USB
- Wisconsin Sideband Net: Daily @ 5:15 PM – 3985 [or 3982.5] KHz LSB
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 MHz USB
- Hobby Helpers Net - Tuesday @ 8 PM – 28.330 MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- Northstar Trader Net: 3.908 +/- at 0830 CST Sundays
- WARFA: 3.908 +/- Sun/Tue/Thu nights at 2200 CST, <http://warfa.org/>
- Youth Net: 14.320-14330 Sundays 1800-1900 UTC, Net Control: AC8PI
- YACHT: Saturdays 1900 CST on EchoLink #481872, <http://yachthams.webstarts.com>
- Northwestern Ontario ARES Net: Evenings at 20:15 (Central) on +/- 3.750Mhz
- The Iron Range Net: Saturdays at 0800 Central time on or near 3.919 Mhz. Look them up on Facebook!
- FORX Net: Mondays at 1900 Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- HF CW: Fridays 08:00 CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- Minnesota ARES Digital Net: Thursdays at 2000 CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/500.
- SARA Digital Net: Sundays at 1900 Local, 3.582.150 MHz USB +/- QRM, Mode: BPSK31/BPSK63
- Spider Web Net (Marco Island FL): 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Broadcaster Net: 7.231 or 3.855 M/W/F @ 1500 UTC. 14.255 M-F @ 2130 UTC. <http://www.cbsretirees.com/ham.htm>
- Old Military Radio Net: 7.268 +/- nightly at 0200z. Other times/Frequencies too. See: <http://www.mrca.ar88.net/>
- Rag Chew Crew/Tailgaters/Freewheelers Nets: 3.916 +/- nightly at 1900 CST, <http://www.tailgatersnet.com>
- North South Net: 7.214.6 +/- at 0700 CST, Monday-Saturday



Next ARAC Board Meeting*

Tuesday, June 2, 2020
@ 6:30 p.m.

**via conference call; Board Members will be informed of the call-in number*

Next ARAC Club Meeting

Thursday, June 11, 2020
7 p.m.
on the 94 Repeater

Tune into the
Sunday night ES Net
on May 10th at 9:00 p.m. for
more instructions on whether
we can meet in person after
all, as well as accessing
the program portion of the
club meeting

*Interested in providing a program,
or have an idea for one?
Contact Mike NØPDG at
lovoldm@gmail.com*

CLUB REPEATER
WØGKP

146.94 (-)
CTCSS TONE
103.5

KCØNFB Bob, would like to remind all hams to **make sure your license is current** and up-to-date on your address. You can visit the FCC ULS to check it and make changes at www.fcc.gov/uls.

“Stay tuned” for future information on the resumption of Amateur Radio License Class and General & Expert License Study Group

by visiting our club website at www.thearac.org and tuning into the Sunday night net at 9:00 p.m.

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

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

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.

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

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Mike KB9KRA
Brian KB9KUX
Chris KB9WJQ
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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,
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

JUNE

CLUB EVENTS

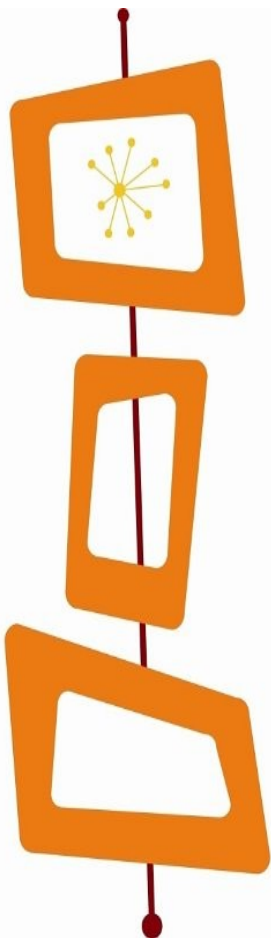
TUESDAY NIGHT NETS
 2000 - Douglas Cty 145.490 MHz
 2030 - Central Carlton County
WEDNESDAY NIGHT NETS
 1900 - Lake County - LSAC1
 2nd & 4th Wednesdays
 2100 - BWAR

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 WX 2000 KCØMKS	2 ARAC BOARD MEETING Via conference call DC Net 2000 CC Net 2030	3 2100 - BWAR	4	5	6
7 CW 1930 NØPDG USB 2000 NØPDG ES 2100 NØVRM	8 DC ARES/ RACES Mtg 1900 DC EOC WX 2000 KCØMKS	9 DC Net 2000 CC Net 2030	10 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	11  ARAC Club Meeting 94 Repeater 7 pm	12	13
14 CW 1930 AAØAW USB 2000 AAØAW ES 2100 KØDSL	15 WX 2000 KCØMKS	16 DC Net 2000 CC Net 2030	17 St. Louis County ARES/ RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	18	19	20
21 CW 1930 NØPDG USB 2000 WØLWU ES 2100 AAØME	22 WX 2000 KCØMKS	23 DC Net 2000 CC Net 2030	24 Lake County Net 1900 2100 - BWAR	25 Carlton County ARES/RACES Meeting 1900 CC EOC	26	27 Club Breakfast @ The Chalet 0800-0900
28 CW 1930 AAØAW USB 2000 K9KDK ES 2100 N9DMG	29 WX 2000 KCØMKS	30 DC Net 2000 CC Net 2030				

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

Next Meeting: Thursday,
June 11, 2020 - 7 pm
On the 94 Repeater

ARAC Committee Chairs



Club License Trustee:

Ray Barnes KEØZN

Control Operators:

AAØAW - NØKXT - KCØNFB

Newsletter:

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.



Field Day: Then & Now, Continued from Page 1

participant's operations, there is an integrated contesting component, and many clubs also engage in concurrent leisure activities (camping out, cookouts, etc.). Operations typically last a continuous twenty-four hours, requiring scheduled relief operators to keep stations on the air. Additional contest points are awarded for experimenting with unusual modes, making contacts via satellite, and involving youth in the activity.

“Field Day stresses emergency preparedness. Frequently, entire radio clubs get involved and assemble a portable radio station in a field or park. Some might use quickly deployable portable antennas while other might erect more elaborate radio masts and towers supporting several antennas. Generators or solar power provide electricity to amateur radio transceivers, which may be located in tents, cars, recreational vehicles, or other portable shelters.

Photo Courtesy Dan (KDØCRZ) and Donna Holm Collection



Field Day - Park Point - Late 1940's (1947 or 1948)

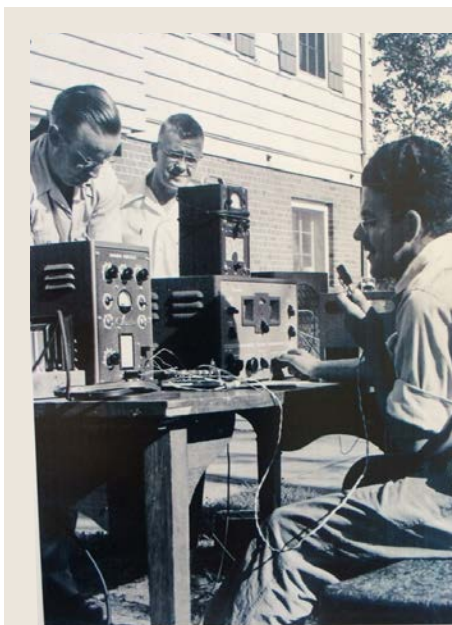
Photos Courtesy Dan KDØCRZ and Donna Holm Collection

“The contest aspect of a Field Day operating event is to contact as many stations as possible in the given time period (twenty-four hours, during a weekend, if setup commences before the contest starts, or 27 hours if setup commences at contest start time) using the portable station. Each station will exchange information with other participating stations. For the North American Field Day, the exchange consists of the station call sign, the name of the ARRL-recognized section from which the station is operating, and a class designator which indicates the

number of transmitters concurrently used at the station and information about the type of electrical power source being used.

“The contest portion of Field Day has two purposes. The primary purpose is to demonstrate the group's ability to plan operations that can be effective for an entire twenty-four-hour period, including operator endurance and adequate numbers of operators for a shift operation. The secondary portion is to demonstrate the technical proficiency of the station that has been hastily constructed for the purpose; in theory a better station will be capable of emergency operations in more dire conditions. Such a station will also be capable of making more contacts during the contest portion of Field Day.”

Thanks, Diane and Jeff for a great article on the subject; we appreciate your hard work in the years you served as our Newsletter Editors. As always, we'd really love to hear from



Field Day - Park Point - Late 1940's (1947 or 1948)

Continued on page 16



Field Day: Then & Now, Continued from Page 15

Club Members about your stories and photos of Field Days in the past, especially when you can also tell us accounts that include our Silent Keys.

Email us at ke0nqs.mn@gmail.com so that we can share your photos and stories in next month's Relay. When you do, you also make a valuable contribution to our Club's historical records for future ARAC Club Members to learn about. Happy Field Day 2020 to all! ★



Field Day - Park Point - late 1940's (1947 or 1948)



Field Day - Park Point - Late 1940's (1947 or 1948)

Photos Courtesy Dan KDØCRZ and Donna Holm Collection



There's still time to get field day gear delivered right to your doorstep!

<http://www.arrl.org/shop/FieldDay/>

Contest Calendar - June 2020

+ RSGB Hope QSO Party	0830Z-1000Z, Jun 1 (CW)
+ RSGB 80m Club Championship, Data	1900Z-2030Z, Jun 1
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Jun 2
+ ARS Spartan Sprint	0100Z-0300Z, Jun 2
+ RSGB Hope QSO Party	1000Z-1130Z, Jun 2 (RTTY)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 2
+ Phone Fray	0230Z-0300Z, Jun 3
+ RSGB Hope QSO Party	1130Z-1300Z, Jun 3 (SSB)
+ CWops Mini-CWT Test	1300Z-1400Z, Jun 3
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Jun 3
+ CWops Mini-CWT Test	1900Z-2000Z, Jun 3
+ CWops Mini-CWT Test	0300Z-0400Z, Jun 4
+ RSGB Hope QSO Party	1300Z-1430Z, Jun 4 (CW)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 4
+ NRAU 10m Activity Contest	1800Z-1900Z, Jun 4 (CW) and 1900Z-2000Z, Jun 4 (SSB) and 2000Z-2100Z, Jun 4 (FM) and 2100Z-2200Z, Jun 4 (Dig)
+ UKEICC 80m Summer Series	1800Z-1900Z, Jun 4
+ SKCC Sprint Europe	1900Z-2100Z, Jun 4
+ NCCC RTTY Sprint	0145Z-0215Z, Jun 5
+ NCCC Sprint	0230Z-0300Z, Jun 5
+ RSGB Hope QSO Party	1430Z-1600Z, Jun 5 (FT4)
+ HA3NS Sprint Memorial Contest	1900Z-1929Z, Jun 5 (40m) and 1930Z-1959Z, Jun 5 (80m)
+ 10-10 Int. Open Season PSK Contest	0000Z, Jun 6 to 2400Z, Jun 7
+ VK Shires Contest	0000Z-2359Z, Jun 6
+ PVRC Reunion	0000Z-0200Z, Jun 6 and 0000Z-0200Z, Jun 7
+ DigiFest	0400Z-1200Z, Jun 6 and 2000Z, Jun 6 to 0400Z, Jun 7 and 1200Z-2000Z, Jun 7
+ Wake-Up! QRP Sprint	0600Z-0629Z, Jun 6 and 0630Z-0659Z, Jun 6 and 0700Z-0729Z, Jun 6 and 0730Z-0800Z, Jun 6
+ COVID-19 Radio Communication Event	1000Z, Jun 6 to 0959Z, Jun 7
+ SEANET Contest	1200Z, Jun 6 to 1200Z, Jun 7
+ UKSMG Summer Contest	1300Z, Jun 6 to 1300Z, Jun 7

Continued on Page 18

Contest Calendar - June 2020

+ Kentucky QSO Party	1400Z, June 6 to 0200Z, Jun 7
+ RSGB National Field Day	Cancelled
+ Dutch Kingdom Contest	1500Z, Jun 6 to 1500Z, Jun 7
+ IARU Region 1 Field Day, CW	1500Z, Jun 6 to 1459Z, Jun 7
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Jun 6
+ KANHAM Contest	2100Z, Jun 6 to 0900Z, Jun 7
+ Cookie Crumble QRP Contest	1700Z-2200Z, Jun 7
+ RSGB Hope QSO Party	0830Z-1000Z, Jun 8 (SSB)
+ RSGB Hope QSO Party	1000Z-1130Z, Jun 9 (CW)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 9
+ NAQCC CW Sprint	0030Z-0230Z, Jun 10
+ Phone Fray	0230Z-0300Z, Jun 10
+ RSGB Hope QSO Party	1130Z-1300Z, Jun 10 (RTTY)
+ CWops Mini-CWT Test	1300Z-1400Z, Jun 10
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Jun 10
+ UKEICC 80m Summer Series	1800Z-1900Z, Jun 10
+ CWops Mini-CWT Test	1900Z-2000Z, Jun 10
+ RSGB 80m Club Championship, CW	1900Z-2030Z, Jun 10
+ CWops Mini-CWT Test	0300Z-0400Z, Jun 11
+ RSGB Hope QSO Party	1300Z-1430Z, Jun 11 (SSB)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 11
+ NCCC RTTY Sprint	0145Z-0215Z, Jun 12
+ NCCC Sprint	0230Z-0300Z, Jun 12
+ RSGB Hope QSO Party	1430Z-1600Z, Jun 12 (CW)
+ SMIRK Contest	0000Z, Jun 13 to 2400Z, Jun 14
+ DRCG WW RTTY Contest	0000Z-0759Z, Jun 13 and 1600Z-2359Z, Jun 13 and 0800Z-1559Z, Jun 14
+ Asia-Pacific Sprint, SSB	1100Z-1300Z, Jun 13
+ Portugal Day Contest	1200Z, Jun 13 to 1200Z, Jun 14
+ SKCC Weekend Sprintathon	1200Z, Jun 13 to 2400Z, Jun 14
+ AGCW VHF/UHF Contest	1400Z-1700Z, Jun 13 (144) and 1700Z-1800Z, Jun 13 (432)
+ GACW WWSA CW DX Contest	1500Z, Jun 13 to 1500Z, Jun 14
+ REF DDFM 6m Contest	1600Z, Jun 13 to 1600Z, Jun 14
+ ARRL June VHF Contest	1800Z, Jun 13 to 0259Z, Jun 15

Continued on Page 19

Contest Calendar - June 2020

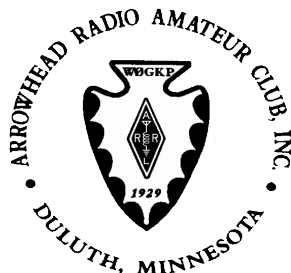
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Jun 14
+ 4 States QRP Group Second Sunday Sprint	0000Z-0200Z, Jun 15
+ RSGB Hope QSO Party	0830Z-1000Z, Jun 15 (FT4)
+ RSGB FT4 Contest Series	1900Z-2030Z, Jun 15
+ RSGB Hope QSO Party	1000Z-1130Z, Jun 16 (SSB)
+ SARL Youth Sprint	1200Z-1400Z, Jun 16
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 16
+ NAQCC CW Sprint	0030Z-0230Z, Jun 17
+ Phone Fray	0230Z-0300Z, Jun 17
+ RSGB Hope QSO Party	1130Z-1300Z, Jun 17 (CW)
+ CWops Mini-CWT Test	1300Z-1400Z, Jun 17
+ CWops Mini-CWT Test	1900Z-2000Z, Jun 17
+ CWops Mini-CWT Test	0300Z-0400Z, Jun 18
+ RSGB Hope QSO Party	1300Z-1430Z, Jun 18 (RTTY)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 18
+ NCCC RTTY Sprint	0145Z-0215Z, Jun 19
+ NCCC Sprint	0230Z-0300Z, Jun 19
+ RSGB Hope QSO Party	1430Z-1600Z, Jun 19 (SSB)
+ All Asian DX Contest, CW	0000Z, Jun 20 to 2400Z, Jun 21
+ Battle of Carabobo International Contest	0000Z-2400Z, Jun 20
+ Ukrainian DX Classic RTTY Contest	1200Z, Jun 20 to 1159Z, Jun 21
+ IARU Region 1 50/70 MHz Contest	1400Z, Jun 20 to 1400Z, Jun 21
+ Stew Perry Topband Challenge	1500Z, Jun 20 to 1500Z, Jun 21
+ West Virginia QSO Party	1600Z, Jun 20 to 0400Z, Jun 21
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Jun 20
+ Feld Hell Sprint	1800Z-1959Z, Jun 20
+ ARRL Kids Day	1800Z-2359Z, Jun 20
+ WAB 50 MHz Phone	0800Z-1400Z, Jun 21
+ Run for the Bacon QRP Contest	1900Z-2400Z, Jun 21
+ RSGB Hope QSO Party	0830Z-1000Z, Jun 22 (CW)
+ RSGB Hope QSO Party	1000Z-1130Z, Jun 23 (FT4)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 23
+ SKCC Sprint	0000Z-0200Z, Jun 24
+ Phone Fray	0230Z-0300Z, Jun 24

Continued on Page 20

Contest Calendar - June 2020

+ RSGB Hope QSO Party	1130Z-1300Z, Jun 24 (SSB)
+ CWops Mini-CWT Test	1300Z-1400Z, Jun 24
+ CWops Mini-CWT Test	1900Z-2000Z, Jun 24
+ QRP Fox Hunt	0100Z-0230Z, Jun 25
+ CWops Mini-CWT Test	0300Z-0400Z, Jun 25
+ RSGB Hope QSO Party	1300Z-1430Z, Jun 25 (CW)
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 25
+ RSGB 80m Club Championship, SSB	1900Z-2030Z, Jun 25
+ NCCC RTTY Sprint	0145Z-0215Z, Jun 26
+ NCCC Sprint	0230Z-0300Z, Jun 26
+ RSGB Hope QSO Party	1430Z-1600Z, Jun 26 (RTTY)
+ UFT QRP Contest	0600Z-0900Z, Jun 27 and 1400Z-1700Z, Jun 27
+ Ukrainian DX DIGI Contest	1200Z, Jun 27 to 1200Z, Jun 28
+ His Maj. King of Spain Contest, SSB	1200Z, Jun 27 to 1200Z, Jun 28
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Jun 27
+ ARRL Field Day	1800Z, Jun 27 to 2100Z, Jun 28
+ 10-10 Int. Spirit of 76 QSO Party	0001Z, Jun 29 to 2400Z, Jul 5
+ QCX Challenge	1300Z-1400Z, Jun 29
+ QCX Challenge	1900Z-2000Z, Jun 29
+ QCX Challenge	0300Z-0400Z, Jun 30
+ RTTYOPS Weeksprint	1700Z-1900Z, Jun 30

The **ARAC** RELAY



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

