



The RELAY)))

MAY 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

INDEX

CW: Then & Now	1
Board Mtg Minutes	2-3
Club Mtg Minutes	4-5
Prez Sez	6
MARS	7
CW Abbreviations	8
Band Plan	8
Nets	9
Upcoming Events	10
Repeaters	11
Members' Email	12
Calendar	13
Committee Chairs	14
Contest Calendar	15-18

CW: Then & Now

In the 177 years Morse Code has been around, there have been many vital uses for this important language of dits and dahs (what the public often calls dots and dashes) which was adapted from the version invented by Samuel Morse.

In 1825 Morse, then an artist who was completing a portrait for a client in Washington, D.C., received a heart-wrenching letter. The letter related the news that his beautiful young wife, who was at their home in Connecticut, had tragically died. Sadly, the letter had taken so long to reach him via horse & rider that by the time he rushed home, he had also missed her funeral and could only visit her grave. After some years of continuing his work as an artist, the grief-stricken Morse became convinced that he could do something to make communication faster. He reasoned that using pulses of electricity on dedicated wires between two points was the answer.

Though not a scientist, Morse went on to work on his electric telegraph design in the 1830s and then a few years later developed a language of standardized code for efficient communication via telegraph wires. He successfully convinced the United States Congress to fund a "long-distance" trial telegraph wire project between Washington, DC and Baltimore, Maryland at the price of \$30,000. As promised, on May 24, 1844, Samuel Morse sat down in the U.S. Capitol's Supreme Court chamber to transmit the first message to his business partner Alfred Vail, who was seated in Baltimore. He transmitted a short quote of exclamation from the book of Numbers in the King James Bible, found in chapter 23, verse 23. It said, "Look what God Wrought!", which in present-day English means, "Look what God has done!"

Morse's humble attitude and earnest endeavors paved the way to an expanded telegraph wire network in the following decades and was used by President Abraham Lincoln to transmit and receive crucial battle communication to his generals during the Civil War. He used the official Telegraph Office as his command center during the war and often slept on a cot there.

Continued on page 19



Spring 2021



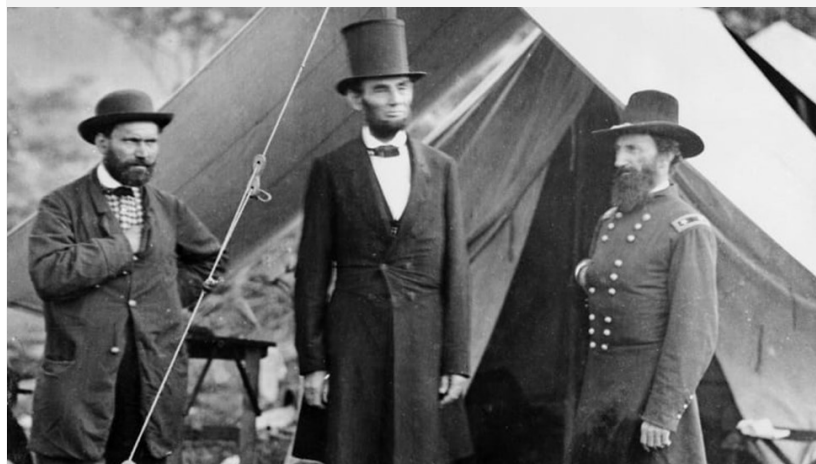
Join us on facebook!

Co-Editors:

Kim & Steve Waller

Kim - KEØNQS • Steve - KEØNQT

KEØNQS.mn@gmail.com
KEØNQT@gmail.com



Above: One version of a post-civil war flag, with 36 states represented.

< President Abraham Lincoln, photographed "in the field" with his Union Army during the American Civil War.

ARAC Board Meeting Minutes - April 6, 2021

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



NØCALL
Robin Davis

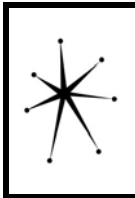
218-391-3Ø77
davisfam2858@yahoo.com

TREASURER



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

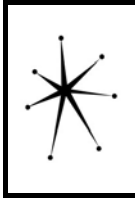
3RD YEAR BOARD



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, Gary Minter-KD9ABS, Randy Johnson-AAØME, Dave Davis-AAØAC, Scott Ahlgren-NØVYU, Randy Wabik-KRØB, David Pyrlik-KØDJP, Doug-AAØAW

Guest: Emery Davis

Meeting called to order by President Gene at 6:36 pm

Minutes:

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

Treasurer's Report:

Checking 1,698.39
Savings 2,173.73
Subtotal Cash \$3,872.28

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

Assets Subtotal: \$5,596.65

Outstanding Checks:

Mahtowa Repeater -1,100.00
Bob Boyd-KDØLYN Memorial .. -1,020.00
Reserved Funds -\$2,120.00

Grand Total \$3,476.65

Details are included in the printed copy. We are getting dues payments and the COD Reservation Check for the Picnic cleared. We received \$140.00 donation to the Club. We truly appreciate the donations of cash and of time volunteered. Savings account quarterly interest was \$0.16. March CU statements were included. The dues have just about duplicated a typical year of dues collection. We are sitting pretty good. Motion by GaryKD9ABS to approve, seconded by Dave-AAØAC, motion passed

Programs:

Picnic:

Check to City of Duluth for the park reservation cleared with a

Continued on Page 3

ARAC Board Meeting Minutes , continued

Continued from page 2

\$175.00 reservation fee, \$100.00 which is refundable after the picnic

Ham Fest:

Pat Hayden-KC0JRJ has volunteered to work in the Kitchen. Looking for Kitchen help. Robin will make the pulled pork. Rollie (Rolland Bockbrader-KB0CK) will be getting a gift card from Thrivent for \$250.00 gift card. We use that card in previous years to buy the supplies for the kitchen. Mike-N0PDG will meet Scott-N0VYU at the storage to get the supplies. We need the tumbler drums, cash boxes, speakers with the sound system, paper supplies, coffee, coffee cups, etc. Hand Sanitizer donated by Pay-KC0JRJ's employer, Auto Zone. Floor plan is with one-way traffic and marked sanitary stations. Scott-N0VYU has a big roll of double tickets he will donate. We need seed money, money for the kitchen and cash for the prizes. How much to spend for the hourly prizes? Gene-N0VRM suggested up to \$500.00 for food, \$300.00 for door prizes. Motion to spend up to \$500.00 for food and up to \$300.00 by Bruce-KN0NUL, seconded by Gary-KD9ABS, motion passed. Forty-two (42) tables available inside. Discussion to allow additional tables outside for the same fee. Set up time is 6:00 am, vendors in at 7:00 am and general public at 9:00 am. \$7.00 entrance fee. Laura at Douglas County Health Department was very helpful when Gene-N0VRM talked to her. Pamphlets needed for testing and Ham Fest. Scott-N0VYU will make some arrows and signs to show direction for the Ham Fest. Dave-AA0AC will bring several boxes of the KN55 masks as masks must be worn at the Ham Fest

Testing:

A couple of opportunities, Tuesday, April 20, 2021, House of Refuge, two sessions – one at 3:00 pm and one at 5:30 pm. Next opportunity is May 1, 2021, at the Ham Fest, 9:30 am for registration with 10:00 am testing at the 4-H Building at the Superior Fairgrounds

Motion to adjourn by Gary-KD9ABS, seconded by Scott-N0VYU, motion passed at 7:22 pm





ARAC Club Meeting Minutes

April 8, 2021

Present:

President Gene Ellefsen-N0VRM
Vice President Mike Lovold-N0PDG
Treasurer / Membership Bruce Carlson-KN0NUL
Secretary Robin Davis
First Year Board Dave Davis-AA0AC
Parliamentarian Grant Forsyth-KC0WUP
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Testing Doug Nelson-AA0AW

Absent:

Second Year Board Gary Minter-KD9ABS
Third Year Board Randy Johnson-AA0ME
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Property / Picnic Scott Ahlgren-N0VYU
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQY
Repeater Randy Wabik-KR0B
Repeater David Pyrlik-K0DJP
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ
Web Site Thomas Dorr-KE0RHA

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

Minutes:

Minutes posted in newsletter and on the web site. Any questions? Any objections? Hearing none, the minutes are passed. Thank you

Treasurer's Report:

Checking	1,698.39
Savings	2,173.73
Subtotal Cash	\$3,872.28
Winter CD	1,724.37
Summer CD	0.00
Subtotal CD	\$1,724.37
Assets Subtotal:	\$5,596.65
Outstanding Checks:	
Mahtowa Repeater	-1,100.00
Bob Boyd-KD0LYN Memorial	-1,020.00
Reserved Funds	-\$2,120.00
Grand Total	\$3,476.65

Thank you to Bruce-KN0NUL. Gene-N0VRM is pleased that folks are sending in their dues. Several folks have also made additional donations and those donations are greatly appreciated. We are looking at replacing the 94 Repeater in the future. Randy Wabik-KR0B presented a three (3) phased plan to update and replace the Repeater, the power supply and controller, with the coax and the antenna in the third stage

Any objections to the Treasurer's Report? Hearing none, the Report is accepted as presented.

Continued on Page 5



ARAC Club Meeting Minutes, continued

Ham Fest:

- ◆ The Board made two (2) motions as part of the business. The first one was for up to \$300.00 for door prizes for the Ham Fest and up to \$500.00 for food at the Ham Fest. Questions? Grant-KC0WUP provides a second for the Board motions. Question from Mitch Wiss-WA9TRY. We are going to be able to use our food and drinks at the Fest.
- ◆ Gene-N0VRM and Bob-KC0NFB are meeting with the Director tomorrow at 5:00 pm to go over the details. Seconded by Paul-KC0WDQ. Considered the two (2) motions passed
- ◆ Currently we have 34 ½ tables reserved, with 42 tables possible. There will be rows, not islands this year. It is filling up fast. We will need help setting it up and running it. We do have hourly drawings. We will be requiring masks and 6 foot social distancing. We have confirmation from ARRL and Yaesu will be there as well
- ◆ Ham Fest is a Club event and we need help. Gene-N0VRM will be posting on the Facebook page as well. Let him know what you are interested in helping at the Fest. We really do need Kitchen help as well as other help. Please be willing to donate your time. It just makes the Club better
- ◆ Per Mike-N0PDG, we have an Icom 718 for the Grand Prize, working on a radio from Yaesu to see what they will donate, \$50.00 gift certificate from DX Engineering, plus other smaller gift certificates. FYI – normally we would meet at 5:00 am at McDonald's in Superior but this year as they are not open for interior dining. Some will be going through the drive thru and meeting at the Fairgrounds to eat and socialize in their parking lot. We need a few more volunteers to sell tickets, we try to pre-sell tickets to avoid a log jam at the ticket table
- ◆ Gene-N0VRM was in contact with Laura at the Douglas County Health Department. She said yes, there is no problem with the amount of people allowed with suggestions for the Fest itself to be in compliance. It has to be a one-way flow with hand sanitizer, 2 gallons donated from Auto Zone – Pat Hayden-KC0JRJ facilitated the donation. We will need help setting up at 6:00 am, vendors in at 7:00 am. We will need people to sell tickets. We have three volunteers (Pat-KC0JRJ, Scott-N0VYU and his wife). Robin is in a consulting position only due to recent carpal tunnel surgery. We could use more volunteers. The entrance fee is \$7.00, the same as last year. The doors will open at 9:00 am. We also could use donations for door prizes, the hourly door prizes. We need someone to be on the mike announcing the hourly prize winners as well as other volunteers working at the prize table. Any questions or other information to be presented? Grant-KC0WUP will there be test sessions in the 4-H Building this year? Good question, passing this to Doug-AA0AW to answer

Testing:

A couple of opportunities, Tuesday, April 20, 2021, House of Refuge, two sessions – one at 3:00 pm and one at 5:30 pm. I already have received a couple of requests, probably 11 or 12, so far to test. May 1, 2021, at the Ham Fest, 9:30 am for registration with 10:00 am testing at the 4-H Building.

Remember, you need an FRN from the Federal government along with an email address to test. Fee is still \$15.00. Email Doug-AA0AW if interested in testing at either of the sessions. If you have a license and want to upgrade, bring a copy of your license, which has the FRN number on the bottom of it. This is mandatory from the FCC

Education:

We have nothing planned until the September Duluth Schools Community Education

Program:

Normally April is Skywarn month and the training is available online. There are two courses available

Tonight, the program will be very interesting – send an email to Bob-KC0NFB to join the Webex meeting. The program is on FT8 and how your antenna really works presented by Mike-N0PDG

Mike-N0PDG makes a motion to adjourn, Bob-KC0NFB seconded and the motion passed at 7:28 pm. Thank you.



Prez Sez ...

Hi everyone,

By the time you are reading this the A.R.A.C. Hamfest will be over. I just wanted to send out a thank you. Thank you A.R.A.C. club members who volunteered to help put this event on.

I would also like to thank Ashley Laurion, Environmental Health Specialist with the Douglas County Health Department for all her help to let us have this event. Thanks to Dan Litchke of DHL the management company for the Head of the Lakes Fairground for his help making Hamfest successful this year.

Because of Covid 19 we had a different look than previous years but we were able to meet the challenges and put on a great event!!!

Thank You All !!!!!

73 Gene Ellefsen NØVRM





U.S. AIR FORCE MILITARY AUXILIARY RADIO SYSTEM

Minnesota State MARS Director
Reginald B. Cass / AFS5MN

Gene Ellefsen
NØVRM

Thank you for your time and interest.

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

If you have the following interests, and capabilities, we are interested in recruiting you to become an Air Force MARS member. Completion of the following on line training is mandatory:

Personally, Identifiable Information (PII) <https://iatraining.disa.mil/eta/piiv2/launchPage.htm>
Cyber Awareness https://iatraining.disa.mil/eta/disa_cac2018/launchPage.htm

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

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

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

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

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

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

Our recruitment team is as follows:

AFA5XK Dave, WB7DRU wb7dru@gmail.com

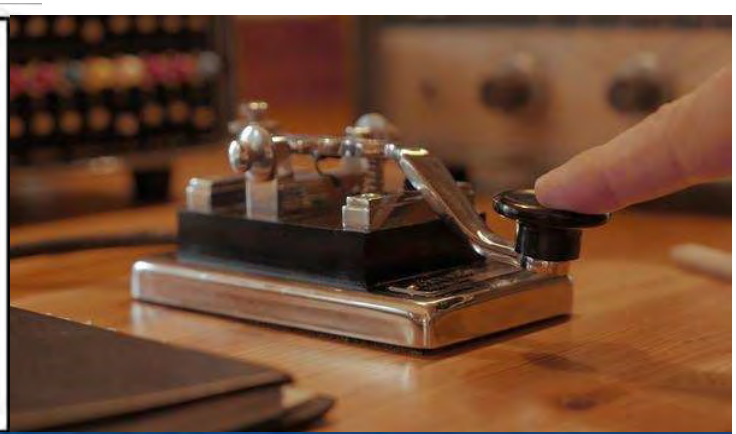
AFA5ZV Randy, KRØB afa5zv@gmail.com

AFA5JY Reg, KAØRJY reg_cass@msn.com

CW Abbreviations

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

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



US Amateur Radio Bands

US AMATEUR POWER LIMITS

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

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



ARRL The national association for AMATEUR RADIO®

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

KEY

- Note:** CW operation is permitted throughout all amateur bands.
 MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.
 Test transmissions are authorized above 51 MHz, except for 219-220 MHz
- = RTTY and data
 - = phone and image
 - = CW only
 - = SSB phone
 - = USB phone, CW, RTTY, and data
 - = Fixed digital message forwarding systems only
- E = Amateur Extra
 A = Advanced
 G = General
 T = Technician
 N = Novice

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

ARRL We're At Your Service

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

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

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

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

- **MN ARES Winlink Net: Sunday thru Saturday; Various Modes/Forms; NCO N0DZQ (n0dzq@arrl.net)**
- **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**
- **Minnesota ARES Digital Net:** Thursdays at 2000 CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/500.
- **PICONET:** 3.925 from 0900-1100 CT Mon-Sat and 1600-1700 CT Mon-Fri. Info at: <http://www.piconet3925.com>
- **Upper Midwest Ten Meter Net:** Every Thursday Evening @ 8 PM – 28.480 MHz USB
- **HF CW:** Fridays 08:00 CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- **Youth Net:** 14.320-14330 Sundays 1800-1900 UTC, Net Control: AC8PI
- **The Iron Range Net:** Saturdays at 0800 Central time on or near 3.919 Mhz. Look them up on Facebook!
- **Wisconsin Sideband Net:** Daily @ 5:15 PM – 3985 [or 3982.5] KHz LSB
- **Badger WX Net:** 0500-0715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **Michigan Upper Peninsula Net:** 1600 (CST) on 3.921 MHz Sun-Sat and 1200 Sun. Info: <http://www.michupnet.com>
- **FORX Net:** Mondays at 1900 Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- **Northwestern Ontario ARES Net:** Evenings at 20:15 (Central) on +/- 3.750Mhz
- **Iowa snowbird net** on 14.257MHz, M-W-F at 10:00 am Local Time. This is an open net.
- **North South Net:** 7.214.6 +/- at 0700 CST, Monday-Saturday
- **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/glmnet/>
- **Maritime Mobile Service Network:** Daily at 1100—2100 Central on 14.300. <http://mmsn.org> and <http://www.14300.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>
- **Northstar Trader Net:** 3.908 +/- at 0830 CST Sundays
- **MIDCARS:** 07:30-13:00 - 7.258 MHz. See: <http://www.midcars.net>
- **The non-non-net:** Evenings 2000 144.200 USB except for Sunday evenings.
- **RV Radio Network:** Every day at 1900 Central on 7.265 MHz. Web site: <http://www.rvradionetwork.com>
- **Old Military Radio Net:** 7.268 +/- nightly at 0200z. Other times/Frequencies too. See: <http://www.mrca.ar88.net/>
- **Hobby Helpers Net:** Tuesday @ 8 PM – 28.330 MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- **WARFA:** 3.908 +/- Sun/Tue/Thu nights at 2200 CST, <http://warfa.org/>
- **YACHT:** Saturdays 1900 CST on EchoLink #481872, <http://yachthams.webstarts.com>.
- **SARA Digital Net:** Sundays at 1900 Local, 3.582.150 MHz USB +/- QRM, Mode: BPSK31/BPSK63
- **Rag Chew Crew/Tailgaters/Freewheelers Nets:** 3.916 +/- nightly at 1900 CST, <http://www.tailgatersnet.com>
- **Spider Web Net (Marco Island FL)** on 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>



Next ARAC Board Meeting

Tuesday, May 4, 2021

@ 6:30 p.m.

Sammy's Pizza

Next ARAC Club Meeting

Thursday,
May 13, 2021
7 p.m.

on the 94 Repeater

Join us on Zoom immediately
following the club meeting!

May 13th Zoom PROGRAM

Yaesu

We'll talk about new Yaesu
products & have an open
Q&A session

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

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

Contact Mike NØPDG at
lovoldm@gmail.com



MEMORIAL DAY

REMEMBERING & HONORING ALL WHO SERVED



IN HONOR OF THOSE WHO GAVE THE
ULTIMATE SACRIFICE IN SERVICE TO
THE UNITED STATES OF AMERICA AND
THE FAMILIES THEY LEFT BEHIND.
THE SACRIFICE WILL NOT BE FORGOTTEN.



Help End Veteran Homelessness!
Go to: veteransaffordablehousing.org

Duluth Area Repeaters



ARAC System WØGKP

Freq. OffsetTone 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.

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

Membership E-mail Directory

Ahlgren, Scott NØVYU
sahlgren01@msn.com

Anderson, Jim NØJWA
kcØmko@centurylink.net

Anway, Allen KC9LJN
allen@a2d2.com

Bakke, Richard KDØQHE
rabakke46@aol.com

Barnes, Ray KEØZN
KEØZN@outdrs.net

Blodgett, Warren KDØXI
kdØxi@aol.com

Blotti, Nick KBØMHD
NickBlotti@hotmail.com

Bockbrader, Jonah KEØCXD
j@pelirrojo.ninja

Bockbrader, Rollie KBØCK
Rollie.bockbrader@q.com

Clemens, Butch KBØSMG
kbØsmg@2z.net

Currier, Barb
bjcurrier@peoplepc.com

Dall, Jim WDØGVW
Dall, Teresa KAØCDO
wdØgvw@gmail.com

Dallavia, Paul KCØWDQ
kcØwdq@yahoo.com

Daly, Ed KØYMF
eddalymn@aol.com

Ellefsen, Gene NØVRM
lspitech@mail.com

Ferch, Tim AKØTF
akØtf@aol.com

Ferguson, Tom WBØDHB
tferg5@msn.com

Fleischman, Bill KCØZZL
wfleisch@d.umn.edu

Forsyth, Grant KCØWUP
forsythgrantc@gmail.com

Frederick, Jerry NØBNG
nØbng@mchsi.com

Frederick, Julie NØPIE
jfreds@mchsi.com

Gibbs, Rex NØKXT
nØkxt@yahoo.com

Godbout, Med WØEEZ
wØeezmedgodbout@centurytel.net

Hanson, Gary NUØW
captaingary@chartermi.net

Harstad, Ben KEØJDB
coast_guard_aux_duluth@yahoo.com

Hawkinson, Garry WØELH
garryhawkinson@yahoo.com

Hegrenes, Bruce KØOE
Hegrenes@charter.com

Jakubek, Patrick KDØSGK
kdØsgk@gmail.com

Johnson, Randy AAØME
randy@nsw4x4.com

Leslie, Shirl KBØSBM
dsleslie@centurytel.net

Maida, Tom KFØALP
tmaida@outlook.com

Makowski, Cletus KBØLBS
kbØlbs52@msn.com

Makowski, Karen NØWEZ
k-wez1@hotmail.com

Marchetti, Jim KEØLHX
jimmarchetti@live.com

Mattson, Bing KCØKRA
, Kathy KCØTIV
HamToHam@msn.com

McCorison, Derek WØDNF
derek1Ø68@hotmail.com

Meese, Joe WØLWU
rxcpd@yahoo.com

Miller, Dave WØNWO
dmiller@nwoutlet.com

Mullozzi, Anthony (Nick)
KDØYQA
AJ KDØYPZ
Ben KDØYQB
Joe KDØYQC
amulloz@hotmail.com

Murray, Edwin W1ELM
w1elm@arrl.net

Nast, Jeffrey KCØMKS
kcØmks@gmail.com

Nelson, Doug AAØAW
aaØaw@chartermi.net

Nelson, Glen KAØGGG
mgnelsonØ1@gmail.com

Nelson, John KBØSUW
jon275@q.com

Nordin, Al WBØDBQ
anordin@aol.com

Olson, Lloyd Jr. KC9JTC
kc9jtc@yahoo.com

Pearson, Wayne WØKRH
meppsy@netzero.net

Pettit, Kathy KCØYVM
kcØyvm@gmail.com

Pomroy, Deb KCØUKC
dpomroy@d.umn.edu

Pyrlik, David KØDJP
David.pyrlik@gmail.com

Reger, Bernard KB9KQZ
Mike KB9KRA
Brian KB9KUX
Chris KB9WJQ
bjr5488@yahoo.com

Rosell, Dawson KEØHEL
rosel032@d.umn.edu

Saunders, Diane KØDSL
kØdslae@gmail.com

Scholz, Greg KDØUYN
kdØuyn@gmail.com

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

Schreyer, Dave WAØAWZ
wa0awz@gmail.com

Schulz, Robert KCØNFB
kcØnfb@charter.net

Snyder, Mark ACØLE
snyds1118@msn.com

Stark, John KCØYVH
johnvinyl@yahoo.com

Swanson, Scott N9DMG
sswanson6749@charter.net

Waller, Kim KEØNQS
keØnqs.mn@gmail.com

Waller, Steve KEØNQT
keØnqt@gmail.com

Whelan, Jacqui KBØJIM
cndymx@gmail.com

Whelan, John KØJRW
jr-whelan@hotmail.com

Winterscheidt, Heinz
KD6FSA
alter.skipper@gmail.com

Wulf Gar WU1FGR
wu1fgr.ham@gmail.com

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



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

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

MAY

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
4 CW 1930 AA0AW USB 2000 N0VRM ES 2100 KC0WDQ	3 WX 2000 KC0MKS	4 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	5 2100 - BWAR	6	7	8
9 CW 1930 N0PDG USB 2000 N0PDG ES 2100 W0NWO	10 DC ARES/ RACES Mtg 1900 DC EOC WX 2000 KC0MKS	11 DC Net 2000 CC Net 2030	12 Lake County ARES/RACES Meeting 1800 Lake County Net 1900 2100 - BWAR	13  ARAC Club Meeting 94 Repeater 7 pm	14	15
16 CW 1930 AA0AW USB 2000 AA0AW ES 2100 N0VRM	17 WX 2000 KC0MKS	18 DC Net 2000 CC Net 2030	19 St. Louis County ARES/ RACES Mtg 1630 Pike Lake EOC 2100 - BWAR	20	21	22
23 CW 1930 N0PDG USB 2000 W0LWU ES 2100	24 WX 2000 KC0MKS	25 DC Net 2000 CC Net 2030	26 Lake County Net 1900 2100 - BWAR	27 Carlton County ARES/RACES Meeting 1900 CC EOC	28	22 Club Breakfast @ The Chalet 0800-0900
30 CW 1930 AA0AW USB 2000 K9KDK ES 2100 AA0ME	31  MEMORIAL DAY WX 2000 KC0MKS					

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

Next Meeting: Thursday,
May 13, 2021 - 7 pm
On the 94 Repeater

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.

Contest Calendar - May 2021

+ Araucaria World Wide VHF Contest	0000Z, May 1 to 1600Z, May 2
+ 10-10 Int. Spring Contest, CW	0001Z, May 1 to 2359Z, May 2
+ RCC Cup	0300Z-0859Z, May 1
+ SBMS 2.3 GHz and Up Contest and Club Challenge	0600 local, May 1 to 2359 local, May 2
+ Microwave Spring Sprint	0800-1400 local, May 1
+ F9AA Cup, Digi	1200Z, May 1 to 1200Z, May 2
+ ARI International DX Contest	1200Z, May 1 to 1159Z, May 2
+ 7th Call Area QSO Party	1300Z, May 1 to 0700Z, May 2
+ AGCW QRP/QRP Party	1300Z-1900Z, May 1
+ Indiana QSO Party	1500Z, May 1 to 0300Z, May 2
+ FISTS Saturday Sprint	1600Z-1800Z, May 1
+ Delaware QSO Party	1700Z, May 1 to 2359Z, May 2
+ New England QSO Party	2000Z, May 1 to 0500Z, May 2 and 1300Z-2400Z, May 2
+ K1USN Slow Speed Test	0000Z-0100Z, May 3
+ OK1WC Memorial	1630Z-1729Z, May 3
+ Worldwide Sideband Activity Contest	0100Z-0159Z, May 4
+ ARS Spartan Sprint	0100Z-0300Z, May 4
+ RTTYOPS Weeksprint	1700Z-1900Z, May 4
+ MIE 33 Contest	2300Z, May 4 to 0300Z, May 5
+ Phone Weekly Test - Fray	0230Z-0300Z, May 5
+ CWops Mini-CWT Test	1300Z-1400Z, May 5
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, May 5
+ RSGB FT4 Contest Series	1900Z-2030Z, May 5
+ CWops Mini-CWT Test	1900Z-2000Z, May 5
+ CWops Mini-CWT Test	0300Z-0400Z, May 6
+ RTTYOPS Weeksprint	1700Z-1900Z, May 6
+ NRAU 10m Activity Contest	1700Z-1800Z, May 6 (CW) and 1800Z-1900Z, May 6 (SSB) and 1900Z-2000Z, May 6 (FM) and 2000Z-2100Z, May 6 (Dig)

Continued on Page 16

Contest Calendar - May 2021, Continued

+ EACW Meeting	1900Z-2000Z, May 6
+ SKCC Sprint Europe	1900Z-2100Z, May 6
+ NCCC RTTY Sprint	0145Z-0215Z, May 7
+ NCCC Sprint	0230Z-0300Z, May 7
+ K1USN Slow Speed Test	2000Z-2100Z, May 7
	0500Z-0700Z, May 8 (6m) and 0700Z-0900Z, May 8 (2m) and 0900Z-1100Z, May 8 (70cm) and 0500Z-0700Z, May 9 (6m) and 0700Z-0900Z, May 9 (2m) and 0900Z-1100Z, May 9 (70cm)
+ SARL VHF/UHF Digital Contest	
	1200Z, May 8 to 1200Z, May 9
+ VOLTA WW RTTY Contest	1200Z, May 8 to 2400Z, May 9
+ SKCC Weekend Sprintathon	1200Z, May 8 to 1159Z, May 9
+ CQ-M International DX Contest	1400Z, May 8 to 0200Z, May 9
+ Arkansas QSO Party	2300Z, May 8 to 0300Z, May 9
+ 50 MHz Spring Sprint	1000Z-1400Z, May 9
+ WAB 7 MHz Phone	0000Z-0100Z, May 10
+ K1USN Slow Speed Test	0000Z-0200Z, May 10
+ 4 States QRP Group Second Sunday Sprint	1630Z-1729Z, May 10
+ OK1WC Memorial	1900Z-2030Z, May 10
+ RSGB 80m Club Championship, SSB	0100Z-0159Z, May 11
+ Worldwide Sideband Activity Contest	1700Z-1900Z, May 11
+ RTTYOPS Weeksprint	0230Z-0300Z, May 12
+ Phone Weekly Test - Fray	1300Z-1400Z, May 12
+ CWops Mini-CWT Test	1700Z-2000Z, May 12
+ VHF-UHF FT8 Activity Contest	1900Z-2000Z, May 12
+ CWops Mini-CWT Test	0300Z-0400Z, May 13
+ CWops Mini-CWT Test	1600Z-2200Z, May 13
+ QRP Minimal Art Session	1700Z-1900Z, May 13
+ RTTYOPS Weeksprint	1900Z-2000Z, May 13
+ EACW Meeting	

Continued on Page 17

Contest Calendar - May 2021, Continued

+ NCCC RTTY Sprint	0145Z-0215Z, May 14
+ NCCC Sprint	0230Z-0300Z, May 14
+ K1USN Slow Speed Test	2000Z-2100Z, May 14
+ NZART Sangster Shield Contest	0800Z-1100Z, May 15 and 0800Z-1100Z, May 16
+ His Maj. King of Spain Contest, CW	1200Z, May 15 to 1200Z, May 16
+ Feld Hell Sprint	1600Z-1759Z, May 15 and 2000Z-2159Z, May 15
+ FISTS Sunday Sprint	2100Z-2300Z, May 16
+ Run for the Bacon QRP Contest	2300Z, May 16 to 0100Z, May 17
+ K1USN Slow Speed Test	0000Z-0100Z, May 17
+ OK1WC Memorial	1630Z-1729Z, May 17
+ Worldwide Sideband Activity Contest	0100Z-0159Z, May 18
+ RTTYOPS Weeksprint	1700Z-1900Z, May 18
+ Phone Weekly Test - Fray	0230Z-0300Z, May 19
+ CWops Mini-CWT Test	1300Z-1400Z, May 19
+ CWops Mini-CWT Test	1900Z-2000Z, May 19
+ RSGB 80m Club Championship, Data	1900Z-2030Z, May 19
+ NAQCC CW Sprint	0030Z-0230Z, May 20
+ CWops Mini-CWT Test	0300Z-0400Z, May 20
+ RTTYOPS Weeksprint	1700Z-1900Z, May 20
+ EACW Meeting	1900Z-2000Z, May 20
+ NCCC RTTY Sprint	0145Z-0215Z, May 21
+ NCCC Sprint	0230Z-0300Z, May 21
+ K1USN Slow Speed Test	2000Z-2100Z, May 21
+ YOTA Contest	0800Z-1959Z, May 22
+ Hamvention QSO Party	1200Z-2400Z, May 22
+ EU PSK DX Contest	1200Z, May 22 to 1200Z, May 23
+ Baltic Contest	2100Z, May 22 to 0200Z, May 23
+ K1USN Slow Speed Test	0000Z-0100Z, May 24
+ QRP ARCI Hootowl Sprint	0000Z-0100Z, May 24

Continued on Page 18

Contest Calendar - May 2021, Continued

+ OK1WC Memorial	1630Z-1729Z, May 24
+ Worldwide Sideband Activity Contest	0100Z-0159Z, May 25
+ RTTYOPS Weeksprint	1700Z-1900Z, May 25
+ SKCC Sprint	0000Z-0200Z, May 26
+ Phone Weekly Test - Fray	0230Z-0300Z, May 26
+ CWops Mini-CWT Test	1300Z-1400Z, May 26
+ CWops Mini-CWT Test	1900Z-2000Z, May 26
+ CWops Mini-CWT Test	0300Z-0400Z, May 27
+ RTTYOPS Weeksprint	1700Z-1900Z, May 27
+ EACW Meeting	1900Z-2000Z, May 27
+ RSGB 80m Club Championship, CW	1900Z-2030Z, May 27
+ NCCC RTTY Sprint	0145Z-0215Z, May 28
+ NCCC Sprint	0230Z-0300Z, May 28
+ K1USN Slow Speed Test	2000Z-2100Z, May 28
+ Feld Hell Sprint	0000Z-2359Z, May 29
+ CQ WW WPX Contest, CW	0000Z, May 29 to 2359Z, May 30
+ Day of the YLs Contest	0001Z, May 29 to 2359Z, May30
+ K1USN Slow Speed Test	0000Z-0100Z, May 31
+ QCX Challenge	1300Z-1400Z, May 31
+ OK1WC Memorial	1630Z-1729Z, May 31
+ QCX Challenge	1900Z-2000Z, May 31

HAPPY MEMORIAL DAY!

HONORING THE MEMORY OF SERVICE MEMBERS
AND THEIR FAMILIES WHO HAVE SACRIFICED
TO PROTECT THE FREEDOM WE ENJOY.

CW Then & Now, Continued from Page 1

Morse Code proved to be instrumental in the Commander-in-Chief's ability to communicate with his officers in the field, almost in real time. A team of telegraph operators manned his Washington Telegraph Office and quickly transcribed the code into long-hand messages on paper. It is not an overstatement to say that Lincoln's use of Morse Code in the Civil War is a major factor in the United States continuing to survive as a country.

Learning Morse Code, Lincoln himself transmitted an *incoming* message to his personnel at the Telegraph Office in Washington where he often sat, getting to know each of the operators quite well. Sent from City Point, Virginia, Lincoln's victorious message announced that Union Army General Ulysses S. Grant had captured the Confederate capital city of Richmond, Virginia. Sadly, a week later, heart-broken operators at the official Telegraph Office in Washington transmitted the tragic news that, after being shot by an assassin at Ford's Theatre the evening prior, "Abraham Lincoln died this morning at 22 minutes after seven."

Going wireless

By 1866 a telegraph cable was laid across the Atlantic ocean for communication by the United States and Europe. And during World War I (1914-1918) Morse Code was used extensively on both sides of the Atlantic to communicate between nations. Sometimes government leaders used it to officially communicate, but most times it was national and military leaders sending messages relating critical information about battle strategy and troop movement to their own.

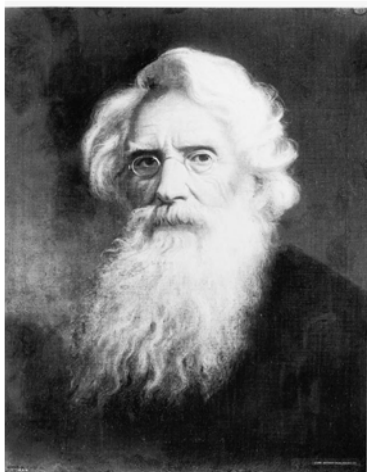
Though electric telegraph machines continued to be essential in communication well into the twentieth century, in the late 19th century, Guglielmo Marconi invented radio-telegraph equipment, which could send Morse code over radio waves, rather than wires. The shipping industry loved this new way to communicate with ships at sea, either from ship to ship or to shore-based stations. By 1910, U.S. law required many passenger ships in U.S waters to carry wireless sets for sending and receiving messages.

After the Titanic sank in 1912, an international agreement required some ships to assign a person to listen for radio distress signals at all times. That same agreement designated "SOS" – "dit-dit-dit dah-dah-dah dit-dit-dit" – as the international distress signal, not as an abbreviation for anything, but because it was a simple pattern that was easy to remember and transmit. The Coast Guard discontinued monitoring in 1995. The requirement that ships monitor for distress signals was removed in 1999, though the U.S. Navy still teaches some sailors to read, send and receive Morse code.

During World War II military "radio men", as they were called, used Morse Code to communicate between each other during battle. In Pacific engagement the United States also used Navajo Code Talkers, radio men who exchanged crucial, real-time information based on a special code of 411 terms of spoken-language Navajo. The Japanese could never decipher Navajo code and it remains the only code never cracked in a war.

This brings us to the interesting, yet sensitive topic: The use of Morse Code today in matters of intelligence and military operations. To the sadness of military veterans and ham radio operators for quite a few years, the United States Military maintained they no longer used Morse Code in any official operations.

Continued on Page 20



Samuel Morse

Easy Sending

Morse's key insight in constructing the code was considering how frequently each letter is used in English. The most commonly used letters have shorter symbols: "E," which appears most often, is signified by a single "dit." By contrast, "Z," the least used letter in English, was signified by the much longer and more complex "dit-dit-dit (pause) dah." The reference to letter frequency makes for extremely efficient communications: Simple words with common letters can be transmitted very quickly. Longer words can still be sent, but they take more time.



Samuel Morse Telegraph Receiver

Image: Smithsonian National Museum of American History

CW Then & Now, Continued from Page 19

However, recently both U.S. intelligence officials and the United States Navy have begun to openly discuss Morse Code's current use, admitting that in fact, it never went away, just underground. Sound far-fetched? Well, without going into details, Morse Code has been used for years in writing computer code based on the dits and dahs then translated into other computer commands or intermediary codes. These cloaked processes are used by the U.S. Government and Military intelligence as well as bad actors throughout the world. Nefarious computer codes imbedded with Morse Code are responsible for hacking several major American organization to steal sensitive data, for example.

The U.S. Government, and the Navy in particular, are openly recruiting cryptology experts to work in our very real, 21st Century Cyber Warfare. All of these personnel are required to be highly proficient in Morse Code. These individuals work highly-classified projects, including all the way up to Top Secret.

Here's part of the U.S. Navy's official **Cryptologic Technician** description: "The CT community performs a wide range of tasks in support of the national intelligence-gathering effort, with an emphasis on cryptology and signal intelligence related products." (Editor's Note: this includes Morse Code)

As noted on Wikipedia: "Navy CT personnel are required to obtain and maintain security clearances. Due to the highly classified and secure work environment requiring very restricted access, it is not always possible to share resources with other commands, leading to their shipboard nickname, "spooks". Almost every detail surrounding the CT world from administration to operations to repair requires dedicated technicians with appropriate security clearances. This accounts for the many branches of the CT rating and members of the CT community enjoy a wide range of career and training options. Once trained, a CT might serve ashore, afloat, or in an airborne capacity. Some CT sailors can expect overseas assignments of lengthy duration and some may never travel overseas."



WW II Images

LEFT:
Radio Men
transmitting
Morse Code

RIGHT: Navajo
Code Talkers



U.S. Navy Blinking Morse

Because its signals are so simple – on or off, long or short – Morse code can also be used by flashing lights. Many navies around the world use blinker lights to communicate from ship to ship when they don't want to use radios or when radio equipment breaks down. The U.S. Navy is actually testing a system that would let a user type words and convert it to blinker light. A receiver would read the flashes and convert it back to text.

Prisoner of War & Morse Code

Perhaps the most publicly notable modern [military wartime] use of Morse code was by Navy pilot Jeremiah Denton, while he was a prisoner of war in Vietnam. In 1966, about one year into a nearly eight-year imprisonment, Denton was forced by his North Vietnamese captors to participate in a video interview about his treatment. While the camera focused on his face, he blinked the Morse code symbols for "torture," confirming for the first time U.S. fears about the treatment of service members held captive in North Vietnam.

OK. This is just a scratch-the-surface view of Morse Code's use in history, and anyone under the impression that "CW"—as hams call it—other than military use is fading fast? Well actually, CW is making a "comeback" in more than the military.

By the way, "CW" is an abbreviation for Continuous Wave, describing the mode in which Morse code is most often transmitted. A transmitter is simply keyed on and off, and the presence or absence of carrier is decoded in the receiver as the presence or absence of a tone.

Continued on Page 21

CW Then & Now, Continued from Page 20

As we discussed in the February 2020 Relay article *CW's Bright Future*, in the past few years many amateur radio clubs and CW forums are indicating an **upswing** in participation, especially among recently licensed hams. Why **now**, several years after the FCC dropped CW proficiency as part of amateur radio license requirements? There seem to be a few reasons for this and it will be interesting to observe as the trend continues.

Perhaps the largest factor is that ham radio clubs are “re-introducing” CW to their members through a variety of engaging activities. Amateur radio clubs are increasingly understanding that in this fast-paced world, it helps to view club activities as family-friendly so that even unlicensed family members can learn and participate in the hobby. Why is this?

Well club members are more and more likely to choose family time over club participation when there's competition for valuable free time, even in the era COVID 19. And ham clubs that make a concerted effort to blend in family-friendly components have the opportunity to teach kids and spouses about amateur radio and invite them to join the hobby, too.

How are clubs doing this? One way is creating special “kids club” or family nights, with interactive presentations with titles such as “The Invisible Power of Radio”, “The Secret Code of CW”, “Treasure Hunt”, and “Skywarn for Kids”. Kids can make a brief video report (like “Show & Tell”) on what they learned from the presentation and submit it to their science teacher for extra credit or for consideration as a class project or field trip. In 2020 everyone learned to use Zoom, which made this even easier.

Pre-COVID, clubs were also making Field Day family-friendly to include scavenger hunts for kids using CW as “secret code” clues, fun demonstrations, food judging contests & camping. Sacrilege to the traditional Field Day? Not really. Contesting “in the field” was the original intent of Field Day, with just you and your radio equipment and some camping gear. No trailers with computers or generators or a massive antenna, like today. But shortly after its inception, Field Day began to grow and change as an event to include new developments in the hobby and become what it is today. While Field Day continues the importance of contesting at its core, ham clubs are also coming up with new ways for families to participate. New interest in CW is one of the results, so we should embrace that idea as we resume Field Day.

Another reason there is an upturn in Morse code interest is that, surprisingly, some young people are beginning to be exposed to it from STEM education. One such electrical engineering student from the University of South Carolina, Eddie King, wrote an article in 2019 in the online publication *The Conversation*, enthusiastically informing his peers about Morse code, its history and his fascination with it. King's attraction to CW also led to his becoming a ham radio operator and pilot. Read more about King's passion for CW in the February 2020 Relay, available at thearac.org



CW T-Shirts marketed to College Students



CW is also being discovered by college students learning to be educators. They are finding that children with learning disabilities, from mild dyslexia to autism can benefit enormously from learning the “language” of Morse code. When taught as a language which uses auditory rhythms to denote letters and words, Morse code becomes a sub-cognitive process in which the user does not consciously think of how to tap out each character and becomes an simple extension of a person's thoughts. This is true of anyone who learns CW and sticks with it long enough.

Also, students of the medical sciences are learning that Morse code is an effective tool for those with physical or emotional conditions that make it difficult or impossible for individuals to speak.

Jim Lubin is a resource consultant advocating for the disabled, and an alternative information technology expert. As a quadriplegic for nearly 30 years, he's been described as building virtual communities “one breath at a time with Morse code. Fleshing out those dots and dashes to create a full life for himself and a smorgasbord of resources for others.”

Lubin devised a method of transmitting Morse code to a computer via an air tube attached to his ventilator using “sips and puffs” almost 3 decades ago. A sip is a dit (dot) and a puff is a dah (dash). On one of his web sites, Lubin explains: “Morse code is a perfect method for a quadriplegic, someone with little or no ability to move. A person just needs to be able to activate a switch by some method.

Morse code has a number of advantages over other alternate computer access strategies. It is usually faster, requires less fine motor control and is less likely to produce

Continued on Page 22

CW Then & Now, Continued from Page 21

fatigue than other methods. Perhaps its most important advantage is its ability to become a sub-cognitive process. After using the code for a period of time, the Morse code user no longer thinks about the code they're entering. This is the same process as is used by touch typists and it has a significant impact on speed, accuracy and the quality of the work being produced. Morse code is the only alternate access method that can become a sub-cognitive process."

Wondering what all of this means for amateur radio and CW? It means the amateur radio community is an excellent training ground for kids to maintain interest and proficiency in CW, which they can actually use in life as they grow up. Of course they can keep it as a hobby, including learning how to be a weather spotter. In fact, CW may turn out to be a key aspect of attracting and growing amateur radio as a hobby for the next generation. But young people can also utilize valuable CW skills in science, technology & engineering fields, as well as education and military careers.

We just need to learn from other amateur radio clubs how to incorporate kids and family more fully into our club activities. This may mean looking at Hamfests, Field Days and Club Picnics differently to have more engaging and entertaining outreach to kids and help them see the connection between CW and future careers that are rewarding and fun.

Start by reaching out to the kids you know: your kids, grandkids, nieces, nephews. Find some fun CW resources for kids online. There are quite a few, so pick some favorites and get them engaging in CW activities and games. Summer's just around the corner, so now's also the time to plan some great outdoor activities that help kids learn CW.

Have a great kid's activity idea that we can do at Field Day or the Club Picnic? Get your kid's input and share it with us at ke0nqs.mn@gmail.com ★

The screenshot shows a web browser window with the URL <https://picklebums.com/secret-codes-for-kids/>. The website has a colorful header with the 'picklebums' logo and navigation links for 'home', 'activities for kids', 'family food', 'parenting', 'printables', 'farm tales', and 'shop'. The main content area features a post titled 'Cool Secret Codes For Kids - Free Printables' by 'HI, I'M KATE', posted on February 16, 2018. The post text says: 'Kids of all ages will love these fun secret codes and coding activities. "What's mouse code?" my seven year old asked. It took me a little while to figure out that he meant 'morse code' rather than 'mouse code', but from that moment on he was in love with everything about secret codes!' Below the text are several images: a child writing on a piece of paper, a grid of letters with small objects placed on them, and three printable cards: 'Learn Morse', 'Learn The Pig', and 'Write Your Own Secret Code!'. The 'Write Your Own Secret Code!' card includes instructions: 'Create a key for each letter, and write and receive messages in the secret code. (If you can draw write a message in your very own secret code!)' and shows a key for letters A through J.

CW FOR KIDS

Picklebums is just one of many fun sites with great CW activities for kids.

Former preschool teacher Katie Pickle has great printable resources for kids to learn fun "secret codes", including CW.

Visit <https://picklebums.com/secret-codes-for-kids/>

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.

