



The RELAY)))

NOVEMBER
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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Autumn 2020



Join us on
facebook!

Co-Editors:

Kim & Steve Waller

Kim - KEØNQS • Steve - KEØNQT

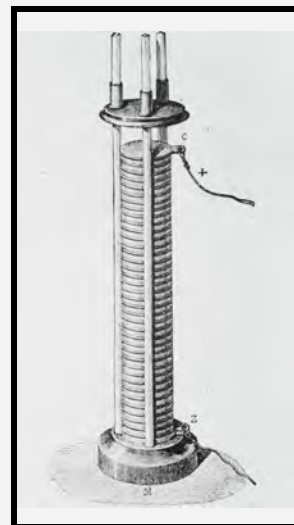
KEØNQS.mn@gmail.com
KEØNQT@gmail.com

Twenty Questions of Ham Trivia

How Many Serious (or silly) Facts Do You Know?

Amateur radio is full of interesting facts, whether scientific, historic or fairly meaningless fun. This month we've compiled a mix of trivia questions for you to see how many you can answer without the assistance of the internet. Answers are on page 23, with 5 more "bonus" questions to appear in the December Relay. Our thanks to ARRL's Ward Silver NOAX and funtrivia.com for being great resources.

1. Where would you tune for a signal that has the same numeric value of frequency in MHz and wavelength in meters?
2. What do the Amateur Radio Stations NA1SS and RS0ISS have in common?
3. Gerson Strassberg WA2JXX invented this item, which for a long time, no self-respecting geek would have been without. What is it?
4. Which two metals were used to make the first battery?
5. In ham lingo, an unmarried female ham is known as a "YL" which stands for "young lady". Once she becomes married, what is she called?
6. Amateur radio operators are credited with the first documented observations of which unusual phenomenon?
7. This late actor held the call sign KE6PZH and once used his Oscar as a doorstop. Who is it?
8. Which circuit and structure have the same name?
9. Grote Reber (ex-W9GFZ) pioneered what scientific discipline?



10. This ham's name is probably known to jazz fans, but we all know his cute red haired daughter from her many movies such as 'Sixteen Candles' and 'The Breakfast Club'. His name is Bob and his call sign is K6YBV. Who do you think his daughter is?
11. What amateur-invented AM mode is often heard around 14.230 MHz?
12. Which DXCC entity gives its name to a popular item of men's summer clothing?
13. In Hawaii, KH6, to which of the continents does the antenna always point, no matter what the rotator control box says?

Continued on page 23

ARAC Board Meeting Minutes – October 6 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



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

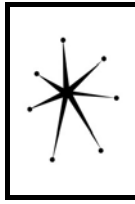
3RD YEAR BOARD



AAØAC
Dave Davis

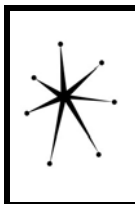
218-348-6649
aaØac@outlook.com

2ND YEAR BOARD



AAØME
Randy Johnson
randy@nsw4x4.com

1ST YEAR BOARD



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

Present: Gene Ellefsen-NØVRM, Mike Lovold-NØPDG, Bruce Carlson-KEØNIT, Robin Davis, Dave Davis-AAØAC, Gary Minter-KD9ABS, Randy Johnson-AAØME, Randy Wabik-KRØB, Grant Forsyth-KCØWUP, Doug Nelson-AAØAW
Guests: Del Minter-KEØCLI

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

Minutes:

Minutes posted in newsletter and on the web site. Motion to accept by Dave-AAØAC, seconded by Gary-KD9ABS, motion passed

Treasurer's Report:

Checking	2,022.41
Savings	2,173.57
Cash Subtotal.....	\$4,195.98

Outstanding Checks:

Mahtowa Repeater	-1,100.00
Bob Boyd-KDØLYN Memorial	-1,020.00
Subtotal Checks	-\$2,120.00

Winter CD	1,714.03
CD Subtotal.....	\$1,714.03

Grand Total\$3,790.01

Dues are coming in, some donations also coming in also. Question as to who was donating and should we be sending a thank you note. Bruce-KEØNIT stated there are a couple people donating and they wish to remain anonymous. They give extra money because our dues are reasonable. Motion to accept by Dave-AAØAC, seconded by Gary-KDØABS, motion passed

Elections:

Any nominations yet? Make sure to bring it up at the ARAC General meeting on Thursday, October 8, 2020. Dave Davis-AAØAC nominated for First Year Board by Doug-AAØAW. Gene-NØVRM, Mike-NØPDG, Bruce-KEØNIT and Robin are also nominated by Doug-AAØAW for their respective offices.

How will we handle an election if there is a contested office? Nominations due by end of November, reminding Club members. Nomination requests should be published in the December newsletter. Could mail back ballots by December meeting for voting? Publish who won what in January 2021 newsletter. 15% of the membership present at the December meeting, on the air or in person, Election Judge and/or Chairperson could declare a white ballot for the slate if there is not a contested election. Talk to Kim Waller-KEØNQS and Tom Dohr-KEØRHA about being included in the newsletter and on the web page. Print off web page could be mailed in. We would need two (2) election judges and a chairperson. Must be a dues paying member including non-Ham members (Family Membership). More discussion to follow.

First Sunday night net after our normal monthly meeting, announce who has been nominated for positions for the Club. Keep informed, no denying, covering Executive Board, transparency, etc

Continued on page 3

ARAC Board Meeting Minutes – October 6, 2020

Committee Reports:

Christmas Party:

Probably no Christmas party this year due to the COVID restrictions

Non Profit Status:

Gene-N0VRM renewed Non-Profit Status with the State of MN. Also edited the Club information on the ARRL site. No activities for two (2) years on the ARRL site, they remove the Clubs completely. We are a sanctioned Club with the ARRL again

94 Repeater:

94 Repeater upgrade discussion. Replacing the 94 may not be just a plug and play. Linking them to the remote sites could be very difficult. It is complicated deal. Upgrade the 94? What are our options? Randy W-KR0B will take a look at it. Gene-N0VRM asked Randy-KR0B to look into it. Mike-N0PDG and Randy-KR0B will do some investigation. Randy-KR0B will look at the manual, at the print. Upgrade Duluth; buy one (1) repeater, more information to follow

Spirit Valley Amateurs replaced the 440 PA Power Amplifier at the main repeater site. Doug-AA0AW and Gene-N0VRM went to the site. It is working because Diane Saunders-K0DSL has come in via Echo Link. Working on putting in a patch at the Repeater at Mahtowa so the two (2) radios will talk to each other. Carrier Operated Relay, Doug-AA0Aw believes it is reversed at Mahtowa. We need the password to complete the project, which we do not have. Randy Haglin-N0BZZ is checking his paperwork that he inherited from Jimmy Watten-KD0DZX. The Repeater at Mahtowa was staying open. We have a temporary patch to take the pressure off Randy Haglin-N0BZZ for now

Mahtowa Repeater:

Mahtowa looks like a POS. We haven't cut the grass this year and the site is loaded with small poplars. Something should have been done this year. Trees inside the fence are even bigger. Discussion on going to the site in the next few weeks to do some clean-up of the grounds, weed whack, cut grass, remove small trees

New Business:

ARRL Elections:

ARRL has an upcoming election for the Dakota Division Director. Matt Holden-K0BBC, incumbent, is running against Bill Lippert-AC0W. Ballots are being sent out via mail. Gene-N0VRM spoke in favor of Matt-K0BBC. He has been to several of ARAC's meetings and has provided the programs for many of our monthly meetings. If you don't get your ballot by October 16, 2020, call ARRL to get one sent to you

FCC:

FYI – FCC just sold a portion of the band to a private company for 4.2 billion. 3.8 to 4.2 lower half for 5G use. They want our 440 band. UHF is valuable. All communications is valuable to someone

Bell Ringing:

In past years, we've done bell ringing for the Salvation Army. Gene-N0VRM got a letter from them to see if we are interested in ringing again. We'll ask at the Thursday evening Club meeting. Bob Hoyt-KC0EIM started it with our Club, several years ago

Motion to adjourn by Randy-AA0ME, seconded by Mike-N0PDG, motion passed at 7:25 pm





ARAC Club Meeting Minutes

October 8, 2020

Present:

President Gene Ellefsen-N0VRM
Vice President Mike Lovold-N0PDG
Treasurer / Membership Bruce Carlson-KE0NIT
Secretary Robin Davis
Third Year Board Dave Davis-AA0AC
First Year Board Gary Minter-KD9ABS
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Testing Doug Nelson-AA0AW

Absent:

Second Year Board Randy Johnson-AA0ME
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 by President Gene-N0VRM at 7:00 pm via 94 Repeater

Minutes:

Minutes posted in newsletter and on the web site. Consider it passed

Treasurer's Report:

Checking	2,022.41
Savings	2,173.57
Cash Subtotal	\$4,195.98

Outstanding Checks:

Mahtowa Repeater.....	-1,100.00
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Subtotal Checks.....	-\$2,120.00

Winter CD	1,714.03
CD Subtotal	\$1,714.03

Grand Total..... \$3,790.01

Questions on report? Any objections to the report? Consider it passed

Reminder that dues. It would help us (ARAC Club) greatly to have folks pay their dues even though we are not meeting due to COVID

Committee Reports:

Repeater:

Repeater repair on 94 in memory of Bob Boyd-KD0LYN. It isn't just plug and play. People looking for most cost efficient, best service





ARAC Club Meeting Minutes

Continued from page 4

Elections:

Sending to Board members to take control at this time. Dave-AA0AC responded he can't take control because he is up for reelection. KD9ABS is here, in the car wash, can we hear him? Gene-N0VRM will step in. Take nominations for the officers and board members. One (1) nomination for all current officers (President, Vice President, Treasurer, Secretary) and one nomination to fill the open board seat (First Year Board Member). Dave Davis-AA0AC was nominated to return as the First Year Board member. Any nominations? You can self-nominate. Second call, any nominations? Third call for nominations for any of the position? Please call Gene-N0VRM. If you are not comfortable doing it over the air, you can send an email or call one of the Board Members. It is open until the end of the November Membership meeting

Thomas J Reibold Award W9IBM Memorial Award:

We are looking for a nomination for the Reibold Award for 2020. Looking for someone who has worked to promote the hobby of amateur radio. The Board is looking for nominations so contact Gary-KD9ABS or Randy-AA0ME. That also closes at the end of the November meeting

Program:

Mike-N0PDG will hold the program via Zoom. If you need assistance, please call him or send him an email and he will send out the invitation. Programs covers a recent project that Mike-N0PDG did at home to upgrade his system

Education:

Anything else someone would like to discuss? Bob-KC0NFB or Paul, do you have anything about the Tech Class. Bob - Class is running great with three (3) sessions in. Eleven (11) students. We're doing great. Going on through the middle of December with a test session at the end of the class

Testing:

Doug-AA0AW - testing? Anything to talk about? We will run one on December 15, 2020, the last day of the Technician Class. Know someone who wants to test? Contact Doug-AA0AC via email to set up a testing session

New Business:

ARRL has an election in the Dakota Division. The Matt Holden-K0BBC is the incumbent and is running again. Many of you should remember him. Gene-N0VRM is putting in a political plug for Matt-K0BBC. He is being challenged by Bill Lippert-AC0W. Bill-AC0W is sending out flyers encouraging people to vote, along with pointing out issues within the ARRL (most of which have been resolved prior to the election). Bill-AC0W is also the President of MWR. Matt-K0BBC is a good friend to ARAC. Ballots should be coming out to ARRL members. If you haven't received a ballot by October 16, please contact ARRL

Consider joining ARRL. They are the voice that protects our frequencies in Washington DC and elsewhere. It can be an expensive investment but the information is invaluable

Bob-KC0NFB stated it would be a good time to donate to the Club since we did not hold the Annual Ham Fest, which is an income generator for the Club

Motion to adjourn by Dave-AA0AC, Jim Anderson-N0JWA seconded, motion passed at 7:18 pm. Returning the 94 Repeater back to its normal usage





Prez Sez ...

Hi everyone,

Due to the Corona 19, Bah Humbug, we will not be able to have our annual Christmas Party. Talking with the Church staff I was told the Methodist Churches have been put on a strict guideline, "no gatherings of more than 10 people", so that seals our plans.

Remember we are still taking nominations for Club officers and also for the Tom Reibold W9IBM award. Nominations close on the November 12 Club meeting.

Also, because we are not meeting in person, please mail in your dues to:

Bruce Carlson	or	ARAC
906 Anderson Rd		PO Box 7164
Duluth, MN 55811		Duluth, MN 55807-7164

The November Club meeting on Thursday, November 12 will once again be held on the 94 WØGKP repeater at 7:00 PM

Have a Happy Thanksgiving !!!!

Gene Ellefsen NØVRM

Newly Licensed

CONGRATULATIONS

To new hams who have joined our amateur radio community in the last few months, as well as those who have newly upgraded to General or Extra!

- ♦ Tom Maida — KFOALP
is a new Technician as of 6/9/2020!

Tom is Traffic Sergeant for the Duluth Police Department. Welcome!



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

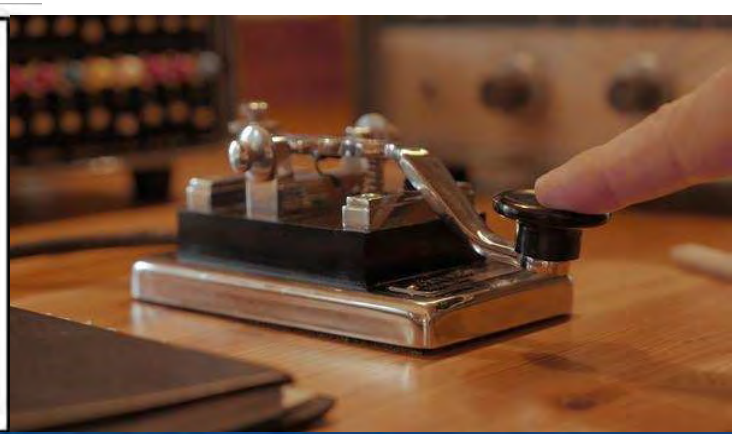
AFA5ZV Randy, KRØB afa5zv@gmail.com

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.

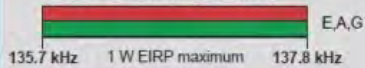
Effective Date for
2,200 and 630 Meters
to be announced



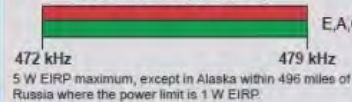
The national association for
ARRL AMATEUR RADIO

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.

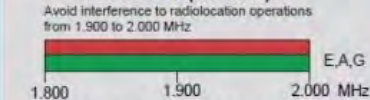
2,200 Meters (135 kHz)



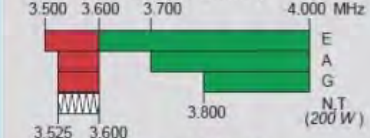
630 Meters (472 kHz)



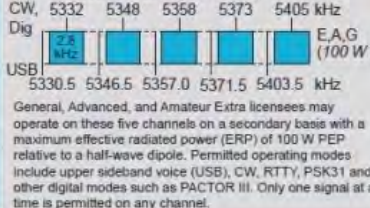
160 Meters (1.8 MHz)



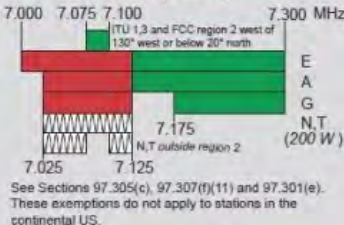
80 Meters (3.5 MHz)



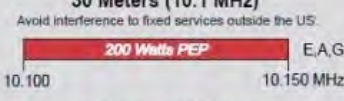
60 Meters (5.3 MHz)



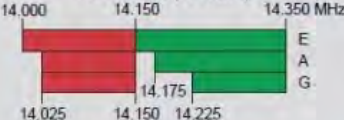
40 Meters (7 MHz)



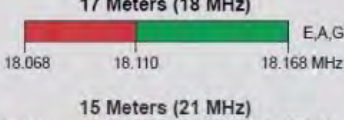
30 Meters (10.1 MHz)



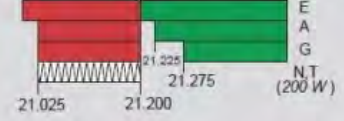
20 Meters (14 MHz)



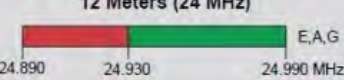
17 Meters (18 MHz)



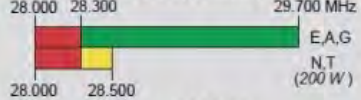
15 Meters (21 MHz)



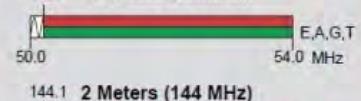
12 Meters (24 MHz)



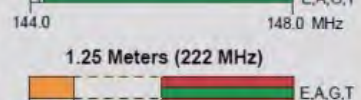
10 Meters (28 MHz)



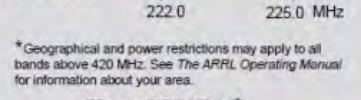
6 Meters (50 MHz)



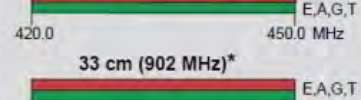
2 Meters (144 MHz)



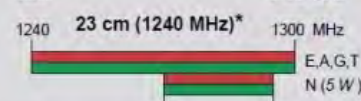
1.25 Meters (222 MHz)



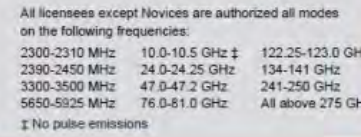
70 cm (420 MHz)*



33 cm (902 MHz)*



23 cm (1240 MHz)*



KEY

Note:
CW operation is permitted throughout all amateur bands.
MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.
Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

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

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

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

ARRL
We're At Your Service

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

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

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

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

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

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, November 3, 2020
@ 6:30 p.m.

Sammy's Pizza - West Duluth

Next ARAC Club Meeting

Thursday,
November 12th
7 p.m.
on the 94 Repeater

CLUB REPEATER

WØGKP

146.94 (-)
CTCSS TONE
103.5

Following the meeting, join us for
our November Zoom Program!

Astro Bob speaks on:

- ◆ Eclipses
- ◆ Meteor Showers
- ◆ The Great Conjunction of Jupiter & Saturn
- ◆ Starlink Satellites Update

You do not need a Zoom account to participate!

Join us on the web at:

<https://us02web.zoom.us/j/84422192780>

Meeting ID: 844 2219 2780

Passcode: araczoom

OR Join us by phone at 312-626-6799

Meeting ID: 844 2219 2780

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

Contact Mike NØPDG at
lovoldm@gmail.com

2020
Spectrum Defense Fund

Protect Your Frequencies.

Donate Today by visiting
<https://www.arrrl.org/arrrl-donation-form>



THANK YOU, ARRL Members!

Because of you, ARRL has maintained constant vigilance and taken decisive action throughout the years, including:

- Defeating the threat that Little Leo satellites posed to the 2-meter and 70-cm bands;
- Removing high-powered international broadcasting stations from the heart of the 40-meter band - doubling the size of the worldwide band and making it more useful than it had been in 70 years;
- Working with our colleagues in the International Amateur Radio Union to gain global allocations at 135 kHz and 472 kHz (domestic implementation is the next step);
- Battling the Broadband Over PowerLine (BPL) interference for six years including successfully challenging the FCC in court on its prejudice that tainted the rulemaking process; and
- Defending microwave allocations against the onslaught of commercial wireless broadband;
- Seeking an international allocation at 60 meters (5 mHz).

Your contribution to the Spectrum Defense Fund ensures that ARRL will have the resources to meet future challenges when they appear and to protect your operating privileges!

Duluth Area Repeaters



ARAC System WØGKP

Freq. Offset Tone Location

146.940	minus	103.5	Duluth
146.940	minus	107.2	Lakeside (rcv)
146.940	minus	151.4	Two Harbors (rcv)
146.940	minus	100.0	Gary-New Duluth (rcv)
146.940	minus	123.0	Solway (rcv)
146.940	minus	110.9	Cloquet (rcv)
147.000	minus	103.5	Mahtowa
444.100	plus	103.5	Duluth UHF Link

N9MMU/N9QWH System (WI)

145.310	minus	110.9	Duluth
145.490	minus	110.9	Solon Springs
147.255	plus	110.9	Hayward
145.110	minus	110.9	Rice Lake
147.345	minus	136.5	Holcombe
145.230	minus	110.9	Eau Claire

WECOMM – WI Statewide Linked System WE9COM

147.075 plus 110.9 Meteor Hill (closest repeater to Duluth)

LSAC System #1

147.330	plus	151.4	Proctor
147.330	plus	103.5	Duluth (rcv for Proctor)
147.330	plus	156.7	Duluth (North) (Fish Lake)
147.270	plus	114.8	Two Harbors
147.270	plus	103.5	Wales
147.090	plus	114.8	Silver Bay
145.410	minus	114.8	Finland
147.300	plus	114.8	Isabella
145.150	minus	103.5	Washburn, WI
146.700	minus	103.5	Bayfield, WI
443.850	+5.00	none	Bayfield, WI
147.165	plus	110.9	Hurley, WI
146.640	minus	151.4	Ely
443.500	+5.00	141.3	Gilbert
147.060	plus	103.5	Virginia
147.360	plus	162.2	Cook
147.165	plus	114.8	Coleraine
443.925	+5.00	110.9	Brainerd
443.200	+5.00	114.8	Tamarack
147.360	plus	203.5	Aitkin
146.865	minus	146.2	Giese
147.570	simplex	146.2	Hinckley
444.575	+5.00	146.2	Hinckley
443.325	+5.00	146.2	Isanti

NARC System NAØRC

145.45Ø	minus	1Ø3.5	Solway Twp
145.45Ø	minus	114.8	Park Point (rcv)
147.135	plus	114.8	Park Point (rcv)
147.135	plus	1Ø3.5	Knife River

Stand Alone Repeaters

145.21Ø	minus	11Ø.9	Clam Lake, WI
146.88Ø	minus	123.Ø	Grand Rapids
146.91Ø	minus	146.2	Duxbury, MN

Fusion and D Star

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

147.15Ø	plus	151.4	NTØB Gilbert Fusion Rptr
145.17Ø	minus	11Ø.9	WA9KLM Superior –
Douglas County RACES/ARES Fusion Repeater			
443.1ØØ	+5.ØØ	1Ø3.5	KBØYHX Cloquet –
Carlton County RACES/ARES Fusion Repeater			
444.3ØØ	+5.ØØ	1Ø3.5	NØEO Spirit Valley Amateurs Fusion
Repeater WIRES-X NØEO (Analog only) Fusion Room 40494			
147.375	plus		NØEO D Star
442.2ØØ	plus		NØEO D Star

Repeater list compiled by Dr. Frequency—KCØWDQ

ST. Louis County Department of Emergency Services Net Control Roster

N9DMG	Scott Swanson	NØVRM	Gene Ellefsen
AAØAW	Doug Nelson	KCØWDQ	Paul Dallavia
WØNWO	Dave Miller	WØDIO	Dennis Anderson
KØDSL	Diane Saunders	AAØME	Randy Johnson

Sunday Nights at 21ØØ on the ARAC System
(See Calendar for net control schedule)

Ten Meter SSB Net Control Roster

AAØAW	Doug Nelson	WØLWU	Joe Meese
NUØW	Gary Hanson	K9KDK	Al Babcock
WØDIO	Dennis Anderson	NØVRM	Gene Ellefsen
AAØME	Randy Johnson	KØDSL	Diane Saunders

Sunday Nights at 2ØØØ on 28.45Ø MHz USB

Ten Meter CW Net Control Roster

AAØAW	Doug Nelson	NØPDG	Mike Lovold
-------	-------------	-------	-------------

Sunday Nights at 193Ø on 28.125 MHz

Northland Weather Group Net Control Roster

KCØMKS Jeff Nast

Monday Nights at 2ØØØ on the ARAC System

Douglas County Net

Tuesday Nights at 2ØØØ on 145.49Ø (N9QWH System)

Central Carlton County Net

Tuesday Nights at 2Ø3Ø on the ARAC System

Lake County RACES/ARES Net

2nd & 4th Wednesday Nights at 19ØØ on the LSAC 1 System

Elmers

El-mer / el-mær/ [el-mer]

1. a male given name: from Old English words meaning "noble" and "famous."
2. an adhesive used to bond like or unlike materials
3. An experienced ham radio operator who mentors new and prospective hams.

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

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

NOVEMBER

CLUB EVENTS

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

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

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

Next Meeting: Thursday,
November 12, 2020 - 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.



ATTENTION MEMBERS: URGENT CALL TO ACTION!

As you may have heard, the FCC has made a proposal to add service fees on Amateur Radio transactions. Please read the detail below and go to <https://www.fcc.gov/ecfs/filings> to express your opposition to this Proposal during the official comment period.

FCC Proposes to Reinstate Amateur Radio Service Fees

08/28/2020

[UPDATED 2020-09-01 @1845 UTC]

Amateur radio licensees would pay a \$50 fee for each amateur radio license application if the FCC adopts rules it proposed this week. Included in the FCC's fee proposal are applications for new licenses, renewal and upgrades to existing licenses, and vanity call sign requests. Excluded are applications for administrative updates, such as changes of address, and annual regulatory fees.

The FCC proposal is contained in a *Notice of Proposed Rulemaking (NPRM)* in MD Docket **20-270**, which was adopted to implement portions of the "Repack Airwaves Yielding Better Access for Users of Modern Services Act" of 2018 — the so-called "**Ray Baum's Act**."

The Act requires that the FCC switch from a Congressionally-mandated fee structure to a cost-based system of assessment. In its *NPRM*, the FCC proposed application fees for a broad range of services that use the FCC's Universal Licensing System (ULS), including the Amateur Radio Service that had been excluded by an earlier statute. The 2018 statute excludes the Amateur Service from annual regulatory fees, but not from application fees.

"[A]pplications for personal licenses are mostly automated and do not have individualized staff costs for data input or review," the FCC said in its *NPRM*. "For these automated processes — new/major modifications, renewal, and minor modifications — we propose a nominal application fee of \$50 due to automating the processes, routine ULS maintenance, and limited instances where staff input is required."

The same \$50 fee would apply to all Amateur Service applications, including those for vanity call signs. "Although there is currently no fee for vanity call signs in the Amateur Radio Service, we find that such applications impose similar costs in aggregate on Commission resources as new applications and therefore propose a \$50 fee," the FCC said.

The FCC is not proposing to charge for administrative updates, such as mailing address changes for amateur applications, and amateur radio will remain exempt from annual regulatory fees. "For administrative updates [and] modifications, which also are highly automated, we find that it is in the public interest to encourage licensees to update their [own] information without a charge," the FCC said.

The FCC also proposes to assess a \$50 fee for individuals who want a printed copy of their license. "The Commission has proposed to eliminate these services — but to the extent the Commission does not do so, we propose a fee of \$50 to cover the costs of these services," the FCC said.

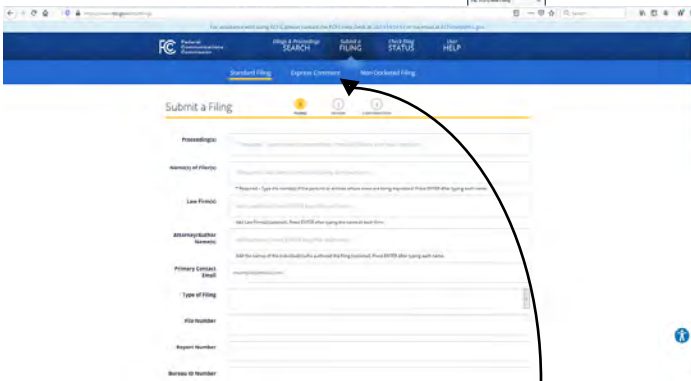
The Ray Baum's Act does not exempt filing fees in the Amateur Radio Service. The FCC dropped assessment of fees for vanity call signs several years ago.

Continued on Page 16

URGENT CALL TO ACTION, continued from p 16

Deadlines for comments and reply comments will be determined once the *NPRM* appears in the *Federal Register*. Interested parties may file comments by using the FCC's Electronic Comment Filing System (**ECFS**), posting to MD Docket No. **20-270**. This docket is already open to accept comments, even though deadlines have not yet been set.

To comment, go to the FCC ECFS at <https://www.fcc.gov/ecfs/filings> and do the following:



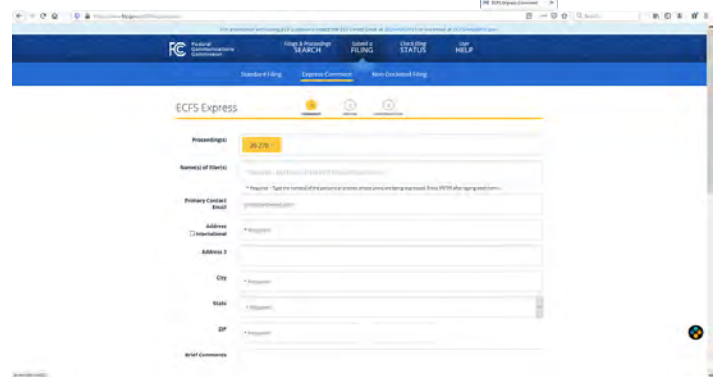
1. Go to the web address <https://www.fcc.gov/ecfs/filings> and you will see the FCC "Submit a Filing" page first, per the ARRL. Do not enter anything on this page. Click on the "Express Comment" text.



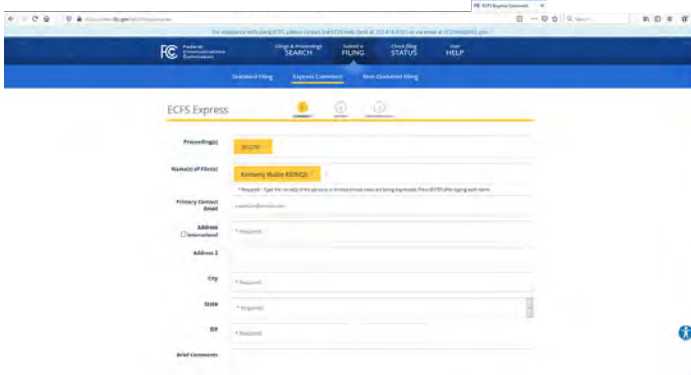
2. You will now be at the FCC's official page to express your comment. Be sure "Express Comment" is underlined in amber.



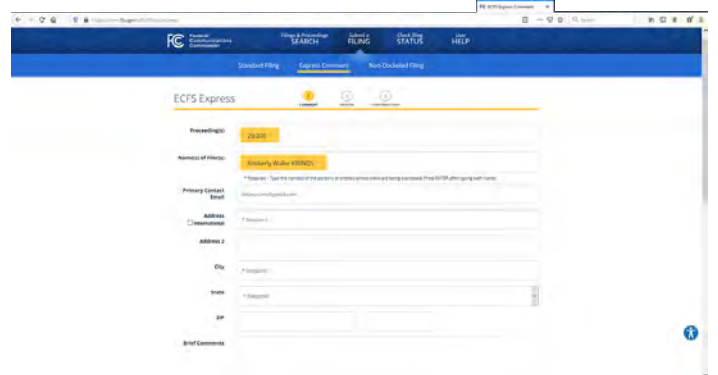
3. In the "Proceeding" box enter the official docket number only, which is 20-270. A drop down menu will appear, then click 20-270.



4. The docket number should now turn to amber. Click the enter button on your keyboard to lock it in & go to the next line.



5. Enter your name & call sign, then click your enter button when it turns amber.



6. Enter your email address. This will stay a white background as shown, then move your cursor each time to fill out the remaining address fields, which will remain as a white background.

7. Express your opinion in "Brief Comments" section and then click the tiny "Email Confirmation" box to be sure the FCC sends you a confirmation they've received your comments. Now click the Aqua box at the bottom to continue to the review screen. Double check that everything is right and submit your official comment.

We hope all of you take a few minutes to make your voice known to the FCC in this matter! Family members who are not hams can comment too. It is important that they understand that Amateur Radio operators perform a tremendously important role in public safety, including during emergencies, and should be free of additional financial encumbrances in executing this valuable voluntary public service. ★

FOR SALE



Our thanks to the family of Bob Boyd KDØYLN, who have graciously donated Bob's ham shack equipment to the ARAC.

Bob became a silent key on May 31, 2020 & was serving the club as a 1st Year Board Member. N0PDG found sales for 3 items totaling \$970 thus far.

The Board has voted to earmark all proceeds from Bob's equipment toward replacement of our aging repeater.

THE FOLLOWING ITEMS ARE AVAILABLE FOR SALE:

We are taking offers on non-priced items & will present offers for discussion on all items for consideration as appropriate. Contact N0PDG at lovoldm@gmail.com to make offer.

YAESU 767GX, built in power supply. Comes with matching speaker (no cables to hook up the speaker). This radio has an issue with all the lights coming on all the time. Sometimes they come on, sometimes not.

MAKE OFFER

KENWOOD TS-940S Receives Great! No mic, built in power supply, power button missing. Unit powers up by pushing the display button, likely had work done to it. Unknown on power output.

MAKE OFFER

ICOM 718 RADIO with mic and power cord. No manual. New are selling for \$625.

ASKING \$400

Morse code book with a cd for learning. Also oscillator, no keyer.

ASKING \$20

ICOM IC-Z1A Handheld dual band. Comes with manual. Unknown if works as there is no power cord or charger. Worked fine when gifted to Bob by Randy Johnson AA0ME.

MAKE OFFER

ADDITIONAL ITEMS FOR SALE ON PAGE 16 & 17!

FOR SALE



Larry Mattfield KEØPJW, of Bovey, Minnesota became a silent key July 25, 2020. NØVRM was contacted by Minton Miller NØNWO who is handling the sale of the radio equipment benefiting Larry's wife of 48 years, Betsy.

Please contact Minton Miller NØNWO at mdfamily@mchsi.com or 218-256-6708 with questions or offers on the following items:

Icom 7300 \$935.00

Icom sm30 desk mic \$119

Samlex sec1235m \$110.50

LDG AT 600 Prow II auto tuner for Icom \$ 314.50

Yaesu 857d hf/vhf/uhf \$680

Yaesu ft70d 2m ht \$148.75

Yaesu SBH-28 rapid charger \$25.50

Yaesu SBR-24Li batteries (2X) \$34 each or \$68 for both.

MFJ 941E manual antenna tuner \$119

Ameritron ALS 500m mobile 500 watt amp \$850

Ameritron ALS 500 rc mobile amp remote \$55.25

Ameritron SPS 75MV switching power supply \$246.50

vantage pro 2 weather station. \$990.25

diamond 2m/440 X50A bass antenna \$80.75

Solarcon A 99 cb antenna with GPK-1 Ground Plane \$123.25

Alpha Delta DELTA 4b coax switch. \$89.25

**MORE ITEMS
FOR SALE on p.17!**

FOR SALE

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

For those interested in the following items, please send texts to KB0SPA
at **218-341-4033**

1. a pair of uniden frs or gmrs radios, with cradle charger 20.00
- 2.lafayette swr field strength meter. with box. 30.00
- 3.radio shack 2 meter mobile radio model htx-242 60.00
4. ic-2000 2 meter mobile lcom, 65.00
- 5.ic-2100 2 meter mobile icom 65.00
- 6.Yaesu 2800 2 meter mobile 65.00
7. yaesu 2900 2 meter mobile 75.00
8. Kenwood ts-480 200 watt radio hf-6 meters. 500.00
- 9.palamar tx-100 3-30 mhz mobile hf amp 50.00
10. hygain 2.5 amp power supply 15.00
11. yaesu 757gx hf radio 200.00
12. astron ss-25m with meters built in, 45.00
- 13.kenwood at-200 tuner. 60.00
14. astron rs-20a power supply. 65.00
15. mirage 35 watt 2 meter fm amp 30.00
- 16.uniden 40 channel cb radio 10.00
17. sears roadtalker base mic 30.00
18. realistic pro 2023 scanner 10.00
19. mfj 259 analyzer 150.00
20. mfj 862 144/220/440 swr watt meter.25.00
- 21.realistic 2024 scanner 10.00
22. bc60xlt handheld scanner x2 of these 20.00 a peace.
- 23.tv antenna rotor with 3 wire wire. 35.00
24. realistic pro 2003 scanner. 15.00
25. 2 vintage regency scanners crystal operated. 10.00 each.
26. auto rotator tra rotor with control box 45.00
27. lil tarheel screwdriver 225.00
28. 50 feet raw coax on a spool 10.00
29. 1/4 inch guy wire cable 80-100 feet. 20.00

Contest Calendar – November 2020

+ North American SSB Sprint Contest	0000Z-0400Z, Nov 1
+ Silent Key Memorial Contest	0600Z-0859Z, Nov 1
+ Classic Exchange, CW	1400Z, Nov 1 to 0800Z, Nov 2 and 1400Z, Nov 3 to 0800Z, Nov 4
+ High Speed Club CW Contest	1500Z-1800Z, Nov 1
+ K1USN Slow Speed Test	0000Z-0100Z, Nov 2
+ RSGB 80m Autumn Series, Data	2000Z-2130Z, Nov 2
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 3
+ ARS Spartan Sprint	0200Z-0400Z, Nov 3
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 3
+ QRP Fox Hunt	0200Z-0330Z, Nov 4
+ Phone Fray	0230Z-0300Z, Nov 4
+ CWops Mini-CWT Test	1300Z-1400Z, Nov 4
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Nov 4
+ CWops Mini-CWT Test	1900Z-2000Z, Nov 4
+ UKEICC 80m Contest	2000Z-2100Z, Nov 4
+ CWops Mini-CWT Test	0300Z-0400Z, Nov 5
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 5
	1800Z-1900Z, Nov 5 (CW) and 1900Z-2000Z, Nov 5 (SSB) and 2000Z-2100Z, Nov 5 (FM) and 2100Z-2200Z, Nov 5 (Dig)
+ NRAU 10m Activity Contest	
+ SKCC Sprint Europe	2000Z-2200Z, Nov 5
+ NCCC RTTY Sprint	0145Z-0215Z, Nov 6
+ QRP Fox Hunt	0200Z-0330Z, Nov 6
+ NCCC Sprint	0230Z-0300Z, Nov 6
+ Day of the YLs Contest	0000Z, Nov 7 to 2359Z, Nov 8
+ IPARC Contest, CW	0500Z-1200Z, Nov 7
+ Ukrainian DX Contest	1200Z, Nov 7 to 1200Z, Nov 8
+ SKCC Weekend Sprintathon	1200Z, Nov 7 to 2400Z, Nov 8
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Nov 7
+ ARRL Sweepstakes Contest, CW	2100Z, Nov 7 to 0300Z, Nov 9
+ AWA Bruce Kelley 1929 QSO Party	2300Z, Nov 7 to 2300Z, Nov 8 and 2300Z, Nov 14 to 2300Z, Nov 15
+ IPARC Contest, SSB	0500Z-1200Z, Nov 8
+ EANET Sprint	0800Z-1200Z, Nov 8

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Contest Calendar - November 2020, Continued from p.20

+ 4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Nov 9
+ K1USN Slow Speed Test	0000Z-0100Z, Nov 10
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 10
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 10
+ QRP Fox Hunt	0200Z-0330Z, Nov 11
+ Phone Fray	0230Z-0300Z, Nov 11
+ CWops Mini-CWT Test	1300Z-1400Z, Nov 11
+ VHF-UHF FT8 Activity Contest	1700Z-2000Z, Nov 11
+ CWops Mini-CWT Test	1900Z-2000Z, Nov 11
+ RSGB 80m Autumn Series, SSB	2000Z-2130Z, Nov 11
+ CWops Mini-CWT Test	0300Z-0400Z, Nov 12
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 12
+ NCCC RTTY Sprint	0145Z-0215Z, Nov 13
+ QRP Fox Hunt	0200Z-0330Z, Nov 13
+ NCCC Sprint	0230Z-0300Z, Nov 13
+ PODXS 070 Club Triple Play Low Band Sprint	0000Z, Nov 14 to 2359Z, Nov 16
+ WAE DX Contest, RTTY	0000Z, Nov 14 to 2359Z, Nov 15
+ 10-10 Int. Fall Contest, Digital	0001Z, Nov 14 to 2359Z, Nov 15
+ JIDX Phone Contest	0700Z, Nov 14 to 1300Z, Nov 15
+ OK/OM DX Contest, CW	1200Z, Nov 14 to 1200Z, Nov 15
+ SARL VHF/UHF Analogue Contest	1200Z, Nov 14 to 1000Z, Nov 15 1900Z-2300Z, Nov 14 (CW/Digital) and 0100Z-0500Z, Nov 15 (Phone) and 1900Z-2300Z, Nov 15 (Phone) and 0100Z-0500Z, Nov 16 (CW/Digital)
+ CQ-WE Contest	1300-1500Z, Nov 15 (40m) and 1500-1700Z, Nov 15 (80m)
+ Homebrew and Oldtime Equipment Party	2300Z, Nov 15 to 0100Z, Nov 16
+ Run for the Bacon QRP Contest	0000Z-0100Z, Nov 16
+ K1USN Slow Speed Test	2000Z-2130Z, Nov 16
+ RSGB FT4 Contest Series	0100Z-0159Z, Nov 17
+ Worldwide Sideband Activity Contest	1700Z-1900Z, Nov 17
+ RTTYOPS Weeksprint	0200Z-0330Z, Nov 18
+ QRP Fox Hunt	0230Z-0300Z, Nov 18
+ Phone Fray	1300Z-1400Z, Nov 18
+ CWops Mini-CWT Test	1900Z-2000Z, Nov 18
+ CWops Mini-CWT Test	0130Z-0330Z, Nov 19

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Contest Calendar - November 2020, Continued from p.21

+ CWops Mini-CWT Test	0300Z-0400Z, Nov 19
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 19
+ NCCC RTTY Sprint	0145Z-0215Z, Nov 20
+ QRP Fox Hunt	0200Z-0330Z, Nov 20
+ NCCC Sprint	0230Z-0300Z, Nov 20
+ YO International PSK31 Contest	1600Z-2200Z, Nov 20
+ SARL Field Day Contest	1000Z, Nov 21 to 1000Z, Nov 22
+ LZ DX Contest	1200Z, Nov 21 to 1200Z, Nov 22
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Nov 21
+ All Austrian 160-Meter Contest	1600Z-2359Z, Nov 21
+ REF 160-Meter Contest	1700Z, Nov 21 to 0100Z, Nov 22
+ RSGB 1.8 MHz Contest	1900Z-2300Z, Nov 21
+ Feld Hell Sprint	1900Z-2059Z, Nov 16
+ ARRL Sweepstakes Contest, SSB	2100Z, Nov 21 to 0300Z, Nov 23
+ K1USN Slow Speed Test	0000Z-0100Z, Nov 23
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Nov 24
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 24
+ SKCC Sprint	0000Z-0200Z, Nov 25
+ Phone Fray	0230Z-0300Z, Nov 25
+ CWops Mini-CWT Test	1300Z-1400Z, Nov 25
+ CWops Mini-CWT Test	1900Z-2000Z, Nov 25
+ UKEICC 80m Contest	2000Z-2100Z, Nov 25
+ CWops Mini-CWT Test	0300Z-0400Z, Nov 26
+ RTTYOPS Weeksprint	1700Z-1900Z, Nov 26
+ RSGB 80m Autumn Series, CW	2000Z-2130Z, Nov 26
+ NCCC RTTY Sprint	0145Z-0215Z, Nov 27
+ NCCC Sprint	0230Z-0300Z, Nov 27
+ CQ Worldwide DX Contest, CW	0000Z, Nov 28 to 2400Z, Nov 29
+ ARRL EME Contest	0000Z, Nov 28 to 2359Z, Nov 29
+ RTTYOPS Weekend Sprint	1600Z-1959Z, Nov 28
+ K1USN Slow Speed Test	0000Z-0100Z, Nov 30
+ QCX Challenge	1300Z-1400Z, Nov 30
+ QCX Challenge	1900Z-2000Z, Nov 30

Our thanks to **Bruce Horn, WA7BNM** for use of this calendar!

Please visit Bruce's site at
www.contestcalendar.com/contestcal.html



14. This famous ham invented a legendary music device that was featured on the album "Switched On Bach". Who is it?
15. What is Dr. Owen K. Garriott W5LFL famous for?
16. VHF enthusiasts discovered and documented what unusual propagation mode?
17. What type of pre-amplifier, invented by hams, does not include a transistor, tube or other active amplifying device?
18. Before he died in 1999, this amateur radio operator used his first name when talking to other hams on the radio, but his loyal subjects probably addressed him as "Your Highness". Who is it?
19. Bob Dennison, W0DX, led the "Gone Waki" team in the first example of what popular activity?
20. Here's a ham musician: He's been with several groups, but is probably best known as a member of The Eagles. Who is it?

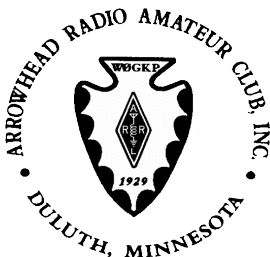


ANSWERS

1. 17.320508 MHz = 17.320508 meters
2. They are both located on the International Space Station
3. The Plastic Pocket Protector. It was designed to slip into your shirt pocket and hold your ink pens. Geek fashion dictated that you not only have a plastic pocket protector, but also have *multiple* pens tucked into it.
4. Alessandro Volta used zinc and copper
5. XYL - "Ex Young Lady"
6. Long-delayed echoes. LDEs are spooky phenomena that are not completely understood, even today.
7. Marlon Brando
8. They are both located on the International Space Station
9. Plastic Pocket Protector It was designed to slip into your shirt pocket and hold your ink pens. Geek fashion dictated that you not only have a plastic pocket protector, but also have multiple pens tucked into it.
10. Alessandro Volta used zinc and copper
11. Slow-scan TV. Invented by Cophorne Macdonald VE1BFL in the early 1960s, SSTV is even incorporated in some handheld VHF radios
12. VP9 Bermuda and the famous "Bermuda shorts."
13. Africa, in which lies the antipode to KH6.
14. Robert Moog K2AMH. Bob invented the famous Moog Synthesizer (see photo above, left) along with some other innovative electronic music equipment. He became a silent key in 2005.
15. He was the first amateur radio operator to operate from space. Dr. Owen Garriott, PhD has flown on Skylab-3, spending 60 days (a record at the time, doubling the previous record) in space in 1973. His next space mission was aboard Spacelab-1 for 10 days in 1983. During this mission (STS-9) Dr. Garriott, a ham for over 40 years, was the first astronaut to take a ham radio into space.
16. Trans-equatorial skip. TE was not considered possible at VHF until hams found it.
17. Parametric. Parametric amplifiers use the nonlinearity of diode junctions to amplify
18. King Hussein of Jordan King Hussein was a ham and enjoyed the hobby as a way to relax and get away from the demands of running Jordan. His call sign was JY1.
19. DXpeditions. Bob's 1948 "Gon-Waki" operation as VP7NG (Bahamas) was the first modern DXpedition.
20. Joe Walsh. His call sign is WB6ACU. He is very active on the air and has quite a ham radio collection too.



The ARAC RELAY



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