



The RELAY)))

SEPTEMBER
2019

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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What's Your Story?

You're Part of ARAC History as our 90th Anniversary Nears

By Steve Waller KEØNQT
& Kim Waller KEØNQS

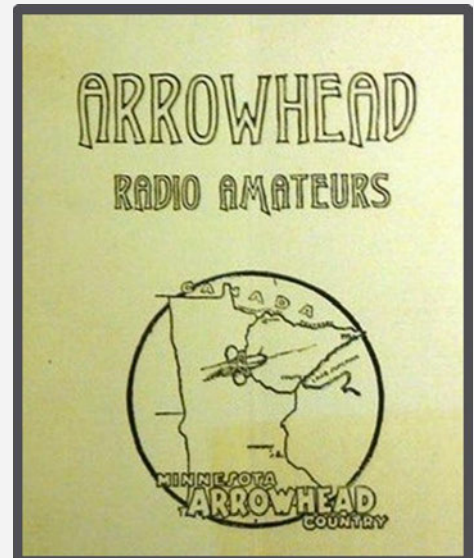
Remember when you decided to become a ham radio operator? Something piqued your interest in the hobby. Maybe someone you knew had a great ham shack or you read an article about amateur radio and knew it was for you. The more you explored it, the more it fascinated you and before you knew it you were taking a license test and eagerly awaiting your call sign.

When you joined the ranks of amateur radio operators, you probably learned the ropes from elmers, the mentors who took the time to answer your questions and invest in you by imparting their many years of expertise in the hobby. You probably also gleaned a lot from your fellow new hams, excitedly discussing new equipment or contests or events.

You might have enjoyed this hobby so far for a few months, a couple of years, or 30, 40, even 50 years.

However long it's been, you have a story. You remember and appreciate all the people that you got to know along the way. You remember your elmers with reverence and gratitude, and you probably know a lot about their story, too. They may even be Silent Keys now, but you'll never forget their contribution to the hobby and to you.

Your story is important, whether you realize it or not. Your story intertwines with others' stories and gives important context to document our club history as we approach our 90th anniversary. We need you to tell us your story, especially all you know about Silent Keys *continued on page 19*



ARA (as our club was called at the time) Second Annual Banquet program cover, showing our original logo. Photo Courtesy Art Wright Collection WØGKM



Join us on
facebook!

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Kim & Steve Waller

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PRESIDENT



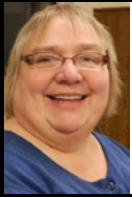
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2ND YEAR BOARD



AAØAC
Dave Davis

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aaØac@outlook.com

1ST YEAR BOARD

KDØYLN
Robert Boyd
5054 Boulder Dr
Hermantown, MN 55811

ARAC Board Meeting Minutes for August 6, 2019

Present: Gene Ellefsen-NØVRM, Bruce Carlson-KEØNIT, Robin Davis, Gary Minter-KD9ABS, Bob Boyd-KDØYLN, Doug Nelson-AAØAW, Bob Schultz-KCØNFB, Kim Waller-KEØNQS, Steve Waller-KEØNQT

Guest: Dennis Anderson-WØDIO, Diane Saunders-KØDSL, Paul Vander Horck-ADØYI

Meeting called to order by President Gene-NØVRM at 6:34 pm

Minutes:

Available on the web page and in the newsletter, as presented, motion passed

Treasurer's Report:

Checking2,815.96
Savings1,371.01
Cash Subtotal.....\$4,186.97

Outstanding Check (Repeater # 1414) -1,100.00
Subtotal..... -\$1,100.00

Winter CD1,707.19
Summer CD1,700.00
CD Subtotal.....\$3,407.19

Grand Total\$6,494.16

As presented, motion carried

Bruce-KEØNIT will be absent on Thursday, August 8, 2019, for the monthly Club meeting as he will be driving to Maryland for his brother-in-law's memorial service. Gene-NØVRM will present his report

90th Aerial Lift Bridge Anniversary:

Bruce-KEØNIT contacted our ARRL insurance provider concerning the need for the \$2,000,000.00 policy in the City of Duluth's name. They sat on it for two (2) weeks and then asked Bruce-KEØNIT a lot of questions. Part of their concerns are that we are not in a venue, in a building or event center and we are not selling anything, we are not the sponsor. This is frustrating and they relayed the policy will be between \$200.00 and \$400.00

Diane Saunders-KØDSL ran into Dave Miller-WØNWO. He called his insurance agent. Dave-WØNWO and Diane-KØDSL talked to him. Two (2) hours later Diane-KØDSL received this message, working on an event policy, 2 million dollars ARAC, listing the City of Duluth on the certificate. Cost is \$188.00. Bruce-KEØNIT has a quote from our own insurance (ARRL), between \$200.00 to \$400.00 based on the number of people. We can ask for donations at the Club meeting on Thursday or ARAC can pay for it. Any discussion? Not up just to this group. Gary-KD9ABS makes a motion to have ARAC pay for the insurance, Bruce-KEØNIT seconded. Discussion - pros and cons. This is a one-time expense that the Club could pay. Suggestion to approve and get the Club's opinion. Dave-WØNWO's agent is ready to provide the insurance; all he needs is the payment of \$188.00. This is not a money-making event. Call for the vote. Bring this forward to the Club for discussion and vote. There is eleven (11) days to the Event

Continued on Page 3

ARAC BOARD Meeting Minutes, Continued from Page 2

Repeater:

Gene-N0VRM met with Randy Haglin-N0BZZ and gave him a key for Mahtowa. He will stop on his way home this week to start the process of upgrading the Repeater. As for the tower inspection, he has not submitted the bill because he wants to attend a meeting and explain exactly what was inspected, etc. The site needs to be mowed plus several trees need to be removed, mostly poplars. It was a clump of trees that came down and it was one of them that hit the guy wire for the tower. There is still a bad relay on the power. Bob-KC0NFB is willing to work on it. The generator does work when operated manually

ARAC 90th Birthday

December 3, 2019, is ARAC's 90th Birthday. Suggestion to hold a Special Events Station on that day or for that week. Kim-KE0NQS has the original document for the Club. For the 80th birthday, Club members operated from their homes over the course of a week. Suggestion to use the Club Call/90 to signify the event. Gene will bring this forward to the Club meeting for suggestions and further discussion

Payment Assistance Requested:

Randy-N0BZZ relayed that we have Packet and APRS at Tamarack Repeater and at the Aiken Repeater. He is asking for assistance to defray the costs of the electrical bill. He is seeking \$20.00 a month. It is critical to protect the infrastructure, that is part of our Club and that it keeps operating. Suggestion to pay \$120.00 a year, splitting the cost with the Spirit Valley Amateurs. Motion by Bob-KD0LYN, seconded by Bruce-KE0NIT, to split the costs with Spirit Valley Amateurs. Bring this forward to the Club meeting. This type of thing could qualify for grants from other organizations to invest in ARAC and the Ham Community such as Essentia. Our long-range plan includes replacing the twin to the Mahtowa Repeater, our own 94 Repeater. We have emergency power hooked up to the 94 Repeater because of Larry Anderson, WDSE, working together with our Club. Gene-N0VRM found out who their preferred contractor is, which turned out to be Hunt Electric, and we contacted them. Our bill was way less money than budgeted for because of doing our homework. We need to eventually look at Two Harbors. Dick Wolfe is allowing us to rent it by paying the power, which is \$100.00. Spirit Valley Amateurs paid the bill in 2018, 2019 was paid by Dave Miller-W0NWO. The site belongs to Lake County now. They paid for all the infrastructure from the ground up to the top of the tower. They have their own Repeater on it. Suggestion to lay out a five (5) year plan for the Club's infrastructure. We need to look at how we serve our Community and how that impacts our community. We can make a good case and it is vital. We also need to consider our value to the Weather Service. The Skywarn Response Team is not an ARAC function. St. Louis County has become a dry well. The point is valid but we need someone to be diligent in donating their time to do the work to locate possible funding sources

Education:

We will be having a Technician class, starting September 24th through December 10th. We will also offer a General or Extra study group at the same time. These will be offered through Community Education. Diane-K0DSL will mentor the General and/or Extra study group

Carlton Fall Fest is September 28, 2019

Motion to adjourn by Bob-KD0LYN, seconded by many, motion passed

Mike-N0PDG, Bruce-KE0NIT and Ryan won the radios at the Club Picnic

ARAC Club Meeting Minutes

August 8, 2019

Present:

President Gene Ellefsen-N0VRM
Vice President Mike Lovold-N0PDG
Secretary Robin Davis
Third Year Board Gary Minter-KD9ABS
Second Year Board Dave Davis-AA0AC
First Year Board Bob Boyd-KD0YLN
Parliamentarian Grant Forsyth-KC0WUP
Special Events – Open / Gene Ellefsen-N0VRM acting
Ham Fest / Education Bob Schultz-KC0NFB
Repeater Randy Wabik-KR0B
Testing Doug Nelson-AA0AW

Absent:

Treasurer / Membership Bruce Carlson-KE0NIT
Chaplain (Visiting) Rolland Bockbrader-KB0CK
Property / Picnic Scott Ahlgren-N0VYU
Newsletter / Historian Kim Waller-KE0NQS
Newsletter Steve Waller-KE0NQT
Web Site Thomas Dorr-KE0RHA
Repeater Derek McCorison-W0DNF
Repeater Randy Haglin-N0BZZ

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

Minutes:

Minutes are posted on the web page and in the newsletter. Motion to approve by Bob-KD0YLN, seconded by Gary-KD9ABS, motion passed

Treasurer's Report:

Presented by Gene-N0VRM

Checking	2,815.96
Savings	1,371.01
Cash Subtotal	\$4,186.97
Outstanding Check (Repeater # 1414).....	-1,100.00
Subtotal.....	-\$1,100.00
Winter CD	1,707.19
Summer CD	1,700.00
CD Subtotal	\$3,407.19
Grand Total.....	\$6,494.16

Motion to approve by Bob-KC0NFB, seconded by Mike-N0PDG, motion approved

Question – what is the interest rate on CD? We don't know because Bruce-KE0NIT is absent. Gene-N0VRM will follow up to get the information

Committees:

Education:

Bob-KC0NFB was requested, again, to have a Technician's class, starting September 29, 2019, followed by testing on December 10, 2019. There will also be a study group for both General and Extra, led by Diane Saunders-K0DSL. Email Bob-KC0NFB if interested in attending the study group

Continued on Page 5

ARAC Club Meeting Minutes, Continued from Page 4

Repeater:

Gene-N0VRM gave a key to Randy Haglin-N0BZZ for Mahtowa. It is not a plug and play situation but will require some programming. Randy-N0BZZ is going to tweak things while he is there, over the next two (2) weeks. There will be a brush cleaning crew heading to the Mahtowa Repeater site next Wednesday, to cut the grass, cut back the brush, etc. Anyone else who is available to work, get a hold of Gene-N0VRM. They will also be marking trees for removal. As many of you know, a clump of poplars came down and one hit the guy wire. We did have it all inspected. No problems but the trees need to be removed. Set an additional time to go and remove the trees

New Business:

From the Board:

Randy-N0BZZ has asked financial help to maintain the Packet and APRS at Atkin and Tamarack Repeater Sites. Spirit Valley Amateurs is donating \$100.00 to cover the expense this year. Motion seconded by Grant-KC0WUP as it sounds like cheap rent, motion passed to pay \$120.00 for next year, splitting it with Spirit Valley Amateurs

Aerial Lift Bridge Anniversary:

City of Duluth wanted us to put them on our liability insurance policy. Our insurance is through ARRL and we ran into some problems. Diane Saunders-K0DSL discussed with Dave Miller-W0NWO, he talked to his insurance carrier, and they wrote a policy for \$188.00 to cover. Seconded by Doug-AA0AW, to pay \$188.00 for a liability insurance policy naming the City of Duluth. We will get a lot of PR from this event, good promotion for Ham Radio. It has been advertised. N0B (November Zero Bridge) will be the special events call sign. Motion passed. Suggest to have board continue to inquire about the riders available through ARRL. Other Clubs must have run into this situation before. ARRL isn't doing us any favors but the policy is reasonable. The event is one week from Saturday, on August 24, 2019, set up at 7:00 am and ends at 6:00 pm. The portable tower will be set up the night before. 90th Anniversary of Aerial Lift Bridge. Suggestion to send out a news release to local media promoting the Bridge and Ham Radio

Ham Radio Equipment:

Sue Magnus is going to have a rummage sale and there are still some radio related things in this sale. She is located on Highway 194

Superior Man Trialathon:

This is the seventh year we're handling the Health and Welfare for the Trialathon. There are a lot of dynamics involved in this race, which will be starting on Saturday, August 10, 2019. Blues Fest is also starting today, August 8, 2019. The Tall Ships will start on Sunday, August 11, 2019. The 94 will be used, under the blanket request for the repeater to be used for races. Starting at Leif Erickson Park this year, which is a change. They will be swimming in Lake Superior this year as well. They will bike from 21st and London Rd to the Expressway, finish at Leif Erickson Park. They will then run 13.1-mile run from the Park to 43rd Ave E and do it twice, on the Lakewalk. Traffic will yield to the runners this year

Program:

September Matt Holt, Dakota Director

October - Rock of Ages program

November is open – Mike-N0PDG is looking for suggestions

ARAC Anniversary:

Arrowhead Radio Amateur Club will be 90 year old in December, on December 3, 2019. Looking to have some special events to celebrate our 90th Anniversary. Suggestions? Please talk to Gene-N0VRM or one of the Board members

Voltage Regulator:

Paul Vander Horck-AD0YI state he likes building electronic devices and he brought the parts for a voltage regulator and instructions on how to build one. Please see Paul-AD0YI today if interested

\$5.00 door prize won by Mark-KE0HHL

Motion to adjourn by Bob-KC0NFB, seconded by many, motion passed at 7:26 pm

Program to follow a short break

Prez Sez...

Hi Everyone!

This is your President speaking. We had a great event down at the Aerial Lift Bridge celebrating the 90th anniversary of the conversion to a lift span. Diane, KØDSL set up a Special Event Station on the grounds of the Marine Museum. We made about 300 contacts and talked to a lot of visitors about what we doing. Thanks Diane for putting this together.

It is starting to feel like Fall in the air and speaking of Fall, the Carlton Fall Fest is September 28 in the Four Seasons Building located on Hwy 210 under the Water Tower. Hope to see a lot of you there !!

Gene NØVRM 73!

CARLTON COUNTY ARES/RACES



Fallfest 2019

Seventh year at the new location!

Saturday September 28
9 am – 1 pm

FOUR SEASONS EVENT CENTER

90 Chestnut Ave, Carlton, MN 55718

Located on Hwy 210, 2 miles East of I-35 going towards Carlton
Under the Water Tower!

ADMISSION: \$3 (12 & under FREE)

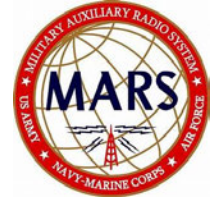
Free Parking - Bring Your RV!

**RADIOS, ELECTRONIC EQUIPMENT, SUPPLIES,
AND EMERGENCY RESPONSE GEAR**

DOOR PRIZES and \$100 GRAND PRIZE!

SEE EVENT AD ON PAGE 11 FOR TABLE INFO & MORE!

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 antenna's 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.

For even more information please open and read the attachment.

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

Contest Calendar - September 2019

Tennessee QSO Party	1800Z, Sep 1 to 0300Z, Sep 2
RSGB FT4 Contest Series	1900Z-1959Z, Sep 2
MI QRP Labor Day CW Sprint	2300Z, Sep 2 to 0300Z, Sep 3
ARS Spartan Sprint	0100Z-0300Z, Sep 3
Phone Fray	0230Z-0300Z, Sep 4
CWops Mini-CWT Test	1300Z-1400Z, Sep 4 and 1900Z-2000Z, Sep 4 and 0300Z-0400Z, Sep 5
UKEICC 80m Contest	2000Z-2100Z, Sep 4
G3ZQS Memorial Straight Key Contest	2300Z, Sep 4 to 2300Z, Sep 6
NRAU 10m Activity Contest	1700Z-1800Z, Sep 5 (CW) and 1800Z-1900Z, Sep 5 (SSB) and 1900Z-2000Z, Sep 5 (FM) and 2000Z-2100Z, Sep 5 (Dig)
SKCC Sprint Europe	1900Z-2100Z, Sep 5
NCCC RTTY Sprint	0145Z-0215Z, Sep 6
NCCC Sprint	0230Z-0300Z, Sep 6
CWops CW Open	0000Z-0359Z, Sep 7 and 1200Z-1559Z, Sep 7 and 2000Z-2359Z, Sep 7
Russian RTTY WW Contest	0000Z-2359Z, Sep 7
All Asian DX Contest, Phone	0000Z, Sep 7 to 2400Z, Sep 8
Wake-Up! QRP Sprint	0600Z-0629Z, Sep 7 and 0630Z-0659Z, Sep 7 and 0700Z-0729Z, Sep 7 and 0730Z-0800Z, Sep 7
SKCC Weekend Sprintathon	1200Z, Sep 7 to 2400Z, Sep 8
Nebraska QSO Party	1300Z, Sep 7 to 0100Z, Sep 8
RSGB SSB Field Day	1300Z, Sep 7 to 1300Z, Sep 8
IARU Region 1 Field Day, SSB	1300Z, Sep 7 to 1259Z, Sep 8
Ohio State Parks on the Air	1400Z-2200Z, Sep 7
AGCW Straight Key Party	1600Z-1900Z, Sep 7
PODXS 070 Club Jay Hudak Memorial 80m Sprint	2000Z, Sep 7 to 2000Z, Sep 8
North American Sprint, CW	0000Z-0400Z, Sep 8
WAB 144 MHz QRO Phone	1000Z-1400Z, Sep 8
Swiss HTC QRP Sprint	1300Z-1900Z, Sep 8

Continued on Page 10

Contest Calendar - September 2019, Continued

4 States QRP Group Second Sunday Sprint	0000Z-0200Z, Sep 9
RSGB 80m Autumn Series, SSB	1900Z-2030Z, Sep 9
Phone Fray	0230Z-0300Z, Sep 11
CWops Mini-CWT Test	1300Z-1400Z, Sep 11 and 1900Z-2000Z, Sep 11 and 0300Z-0400Z, Sep 12
NCCC RTTY Sprint	0145Z-0215Z, Sep 13
NCCC Sprint	0230Z-0300Z, Sep 13
WAE DX Contest, SSB	0000Z, Sep 14 to 2359Z, Sep 15
FOC QSO Party	0000Z-2359Z, Sep 14
SARL Field Day Contest	1000Z, Sep 14 to 1000Z, Sep 15
Texas QSO Party	1400Z, Sep 14 to 0200Z, Sep 15 and 1400Z-2000Z, Sep 15
Russian Cup Digital Contest	1500Z-1859Z, Sep 14 and 0600Z-0959Z, Sep 15
Alabama QSO Party	1500Z, Sep 14 to 0300Z, Sep 15
ARRL September VHF Contest	1800Z, Sep 14 to 0300Z, Sep 16
North American Sprint, RTTY	0000Z-0400Z, Sep 15
Classic Exchange, CW	1300Z, Sep 15 to 0700Z, Sep 16 and 1300Z, Sep 17 to 0700Z, Sep 18
BARTG Sprint 75	1700Z-2059Z, Sep 15
Run for the Bacon QRP Contest	0100Z-0300Z, Sep 16
Phone Fray	0230Z-0300Z, Sep 18
CWops Mini-CWT Test	1300Z-1400Z, Sep 18 and 1900Z-2000Z, Sep 18 and 0300Z-0400Z, Sep 19
RSGB 80m Autumn Series, CW	1900Z-2030Z, Sep 18
NAQCC CW Sprint	0030Z-0230Z, Sep 19
NCCC RTTY Sprint	0145Z-0215Z, Sep 20
NCCC Sprint	0230Z-0300Z, Sep 20
AGB NEMIGA Contest	2100Z-2400Z, Sep 20
Collegiate QSO Party	0000Z, Sep 21 to 2359Z, Sep 22
ARRL EME Contest	0000Z, Sep 21 to 2359Z, Sep 22
ARRL 10 GHz and Up Contest	0600 local, Sep 21 to 2400 local, Sep 22
SARL VHF/UHF Digital Contest	1000Z, Sep 21 to 1000Z, Sep 22
All Africa International DX Contest	1200Z, Sep 22 to 1200Z, Sep 22
Scandinavian Activity Contest, CW	1200Z, Sep 21 to 1200Z, Sep 22
SRT HF Contest SSB	1300Z, Sep 21 to 1300Z, Sep 22

Continued on Page 11

Contest Calendar - September 2019, Continued

Iowa QSO Party	1400Z, Sep 21 to 0200Z, Sep 22
AGCW VHF/UHF Contest	1400Z-1700Z, Sep 21 (144) and 1700Z-1800Z, Sep 21 (432)
QRP Afield	1500Z-2100Z, Sep 21
Washington State Salmon Run	1600Z, Sep 21 to 0700Z, Sep 22 and 1600Z-2400Z, Sep 22
New Jersey QSO Party	1600Z, Sep 21 to 0359Z, Sep 22
New Hampshire QSO Party	1600Z, Sep 21 to 0400Z, Sep 22 and 1600Z-2200Z, Sep 22
Feld Hell Sprint	1800Z-1959Z, Sep 21
Classic Exchange, Phone	1300Z, Sep 22 to 0700Z, Sep 23 and 1300Z, Sep 24 to 0700Z, Sep 25
144 MHz Fall Sprint	1900 local - 2300 local, Sep 23
SKCC Sprint	0000Z-0200Z, Sep 25
Phone Fray	0230Z-0300Z, Sep 25
CWops Mini-CWT Test	1300Z-1400Z, Sep 25 and 1900Z-2000Z, Sep 25 and 0300Z-0400Z, Sep 26
UKEICC 80m Contest	2000Z-2100Z, Sep 25
RSGB 80m Autumn Series, Data	1900Z-2030Z, Sep 26
NCCC RTTY Sprint	0145Z-0215Z, Sep 27
NCCC Sprint	0230Z-0300Z, Sep 27
CQ Worldwide DX Contest, RTTY	0000Z, Sep 28 to 2400Z, Sep 29
Maine QSO Party	1200Z, Sep 28 to 1200Z, Sep 29
QCX Challenge	1300Z-1400Z, Sep 30 and 1900Z-2000Z, Sep 30 and 0300Z-0400Z, Oct 1

**For upcoming contests in Oct/Nov/Dec 2019
visit www.contestcalendar.com/contestcal.html**

CARLTON COUNTY ARES/RACES



Fallfest 2019

Seventh year at the new location!

Saturday September 28
9 am – 1 pm

FOUR SEASONS EVENT CENTER

90 Chestnut Ave, Carlton, MN 55718

Located on Hwy 210, 2 miles East of I-35 going towards Carlton
Under the Water Tower!

ADMISSION: \$3 (12 & under FREE)

Free Parking - Bring Your RV!

**RADIOS, ELECTRONIC EQUIPMENT, SUPPLIES,
AND EMERGENCY RESPONSE GEAR**

DOOR PRIZES and \$100 GRAND PRIZE!

ATTENTION DEALERS, VENDORS & HAMS with Good Stuff!

RESERVE YOUR TABLE TODAY! 4' table: \$2 8' table: \$4

TABLE RESERVATIONS: John Cavanaugh KC0AFE

johnxcavanaugh@yahoo.com or Cliff Tanner AC0FO cliff.tanner@gmail.com

Talk-in on: W0GKP Repeater

146.940 (-) [103.5] – Duluth 147.000 (-) [103.5] – Mahtowah

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

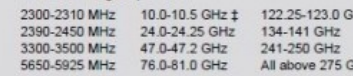
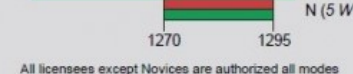
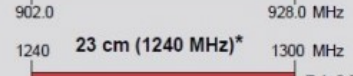
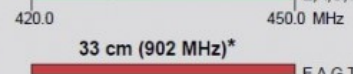
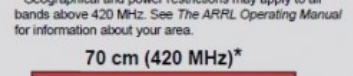
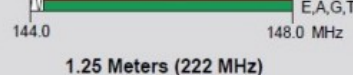
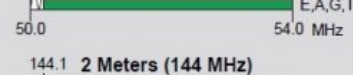
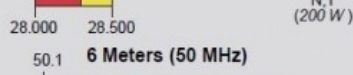
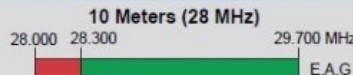
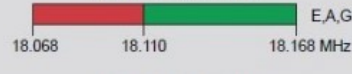
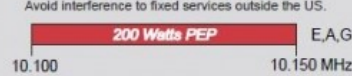
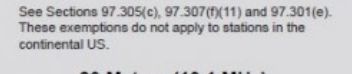
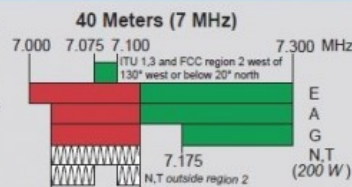
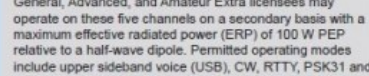
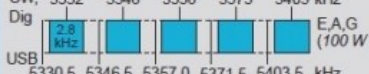
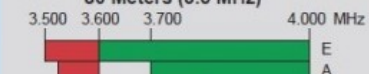
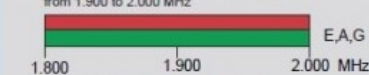
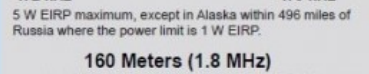
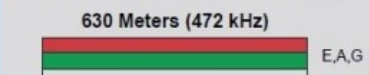
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

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.



KEY

Note: CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

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

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

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

ARRL We're At Your Service

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

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

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Toll-Free 1-888-277-5289 (860-594-0338)
email: membership@arrl.org

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

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

Nets... Nets... Nets... Nets... Nets... Nets... Nets... 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 KEØNQSmn@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

Wanted!

Looking to buy a non-working Icom 706 for parts. Email me: anordin@aol.com

Please email your for sales or wanted items to Kim, KEØNQS, at KEØNQS.mn@gmail.com

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

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.

CLUB REPEATER
WØGKP
146.94 (-)
CTCSS TONE
103.5

Next ARAC Board Meeting

Tuesday, Sept. 3, 2019
@ 1830
Sammy's West Duluth

Next ARAC Club Meeting

7 p.m. Thursday
September 12, 2019
Copper Top Church

2019 HOLIDAYS

July 4	Independence Day
September 2	Labor Day
November 11	Veteran's Day
November 28	Thanksgiving
December 25	Christmas Day

UPCOMING LOCAL EVENTS

- Sept 6&7 Superior Fall Trail
- Sept 14 NS Inline Marathon
- Sept 28 Carlton Fallfest

Upcoming MEETING PROGRAMS

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

Duluth Area Repeaters



ARAC System WØGKP

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

N9MMU/N9QWH System (WI)

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

WECOMM – WI Statewide Linked System WE9COM

147.075 plus 110.9 Meteor Hill (closest repeater to Duluth)

LSAC System #1

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

NARC System NAØRC

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

Stand Alone Repeaters

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

Fusion and D Star

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

147.15Ø	plus	151.4	NTØB Gilbert Fusion Rptr
145.17Ø	minus	11Ø.9	WA9KLM Superior – Douglas County RACES/ARES Fusion Repeater

443.1ØØ +5.ØØ 1Ø3.5 KBØYHX Cloquet – Carlton County RACES/ARES Fusion Repeater

444.3ØØ +5.ØØ 1Ø3.5 NØEO Spirit Valley Amateurs Fusion Repeater WIRES-X NØEO

147.375 plus NØEO D Star
442.2ØØ plus NØEO D Star

[Repeater list compiled by Dr. Frequency—KCØWDQ]

ST. Louis County Department of Emergency Services Net Control Roster

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

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

Ten Meter SSB Net Control Roster

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

Sunday Nights at 2ØØØ on 28.45Ø MHz USB

Ten Meter CW Net Control Roster

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

Sunday Nights at 193Ø on 28.125 MHz

Northland Weather Group Net Control Roster

KCØMKS Jeff Nast

Monday Nights at 2ØØØ on the ARAC System

Douglas County Net

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

Central Carlton County Net

Tuesday Nights at 2Ø3Ø on the ARAC System

Lake County RACES/ARES Net

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



Elmers



El-mer / el-mər/ [el-mer]

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

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

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

Contact Kim or Steve Waller to include your name in this list-

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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



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 LSAC & ARAC

SEPTEMBER

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

CLUB EVENTS

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 CW 1930 NØPDG USB 2000 WØLWU ES 2100 AAØME	2	3 ARAC BOARD MEETING 1900 Sammy's West Duluth DC Net 2000 CC Net 2030	4	5	6	7
8 CW 1930 AAØAW USB 2000 K9KDK 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	12 ARAC Club Meeting @ 1900 Coppertop	13	14
15 CW 1930 NØPDG USB 2000 WØDIO ES 2100 AAØAW	16 WX 2000 KCØMKS	17 DC Net 2000 CC Net 2030	18 St. Louis County ARES/RACES Mtg 1630 Pike Lake EOC	19	20	21
22 CW 1930 AAØAW USB 2000 NØVRM ES 2100 KCØWDQ	23 WX 2000 KCØMKS	24 DC Net 2000 CC Net 2030	25 Lake County Net 1900	26 Carlton County ARES/RACES Meeting 1900 CC EOC	27	28 Club Breakfast @ The Chalet 0730-0800 Carlton Fallfest 0900-1300
29 CW 1930 NØPDG USB 2000 NØPDG ES 2100 WØNWO	30 WX 2000 KCØMKS					

Get this newsletter *faster*
via email!

Email Doug AAØAW at
aa0aw@chartermi.net

Next Meeting: Thursday,
Sept. 12, 2019 - 7 pm

CONGRATULATIONS

To new hams who have joined our community in the last few weeks, as well as those who have newly upgraded — to General or Extra:

Dave Schreyer KA0FYB - New Club Member!

ARAC Committee Chairs

Club License Trustee:

Ray Barnes KEØZN

Control Operators:

AAØAW - NØKXT - KCØNFB

Newsletter:

Kim KEØNQS & Steve KEØNQT Waller

Education Chair:

Bob Schulz KCØNFB

Hamfest Chair:

Bob Schulz KCØNFB

Chaplains:

Visiting Chaplains:

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:

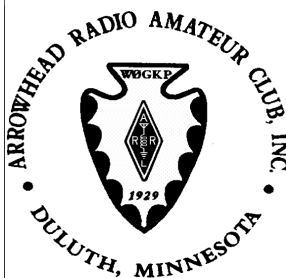
Dennis Anderson WØDIO

Picnic Chair:

Scott Ahlgren, NØVYU

Repeater Chairs:

Randy Haglin NØBZZ
Randy Wabik KAØJZV



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.



Your Story, Continued from Page 1

you've known through the years. They deserve not to be "lost" to history, with merely a name and call sign listed in a ARAC membership roster from years gone by. And who better to tell *your* story, when you're still with us an can tell us important details no one else would know!

Your ARAC story may be a family story. You dad, your mom, your siblings may have participated as hams. You may be a first generation ham, with your spouse and kids enjoying amateur radio along side you.

Whatever your history with amateur radio is, we need you to tell us about it--don't assume we know. Start by answering the question of who most influenced you to join the hobby and tell us all about them. We'd like to compile this very important history into a combination of a digitally written record, photos and also on video. Maybe you even have some artifacts like old QSL cards, newsletters or membership cards of which you can allow us to capture images.

Please contact Club Historian Kim Waller KEØNQS at keønqs.mn@gmail.com to tell me what information you are willing to share. Our 90th Anniversary is just around the corner on December 2nd and I'd so appreciate having more artifacts and shared stories by then. Every single club member is important and brings rich knowledge and interesting context to our history. ★

Art Wright, WØGKM at 99 in 2012



Duluth, Minnesota 55811 U.S.A.
ST. LOUIS COUNTY

WØRXL

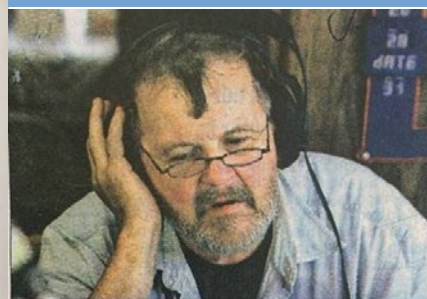
RXL Since 1934

RADIO _____ Confirming our 2-way QSO _____
at _____ GMT on _____ MHz CW SSB RST _____
 Transceiver _____ Linear Amp _____
 Receiver _____ Antenna _____ Pse QSL _____
 Transmitter _____ Output _____ w Txn QSL _____
Remarks _____

2137 Appalachian St. 73, Howard J. Pramann

QSL Card Courtesy Howard Pramann Collection WØRXL

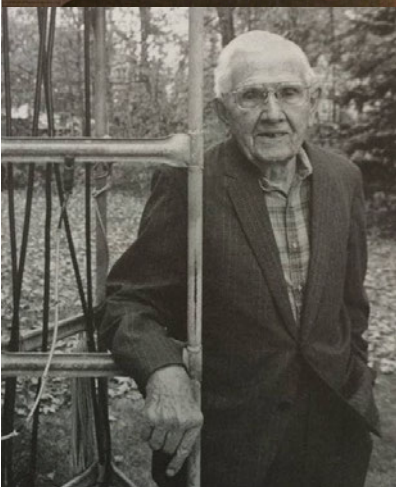
Doug Nelson, AAØAW in 2008



Derek Montgomery / News Tribune
Duluthian Doug Nelson, AAØAW, operates a Morse code station Saturday afternoon with a number of other amateur radio operators at the Thompson Hill Travel Information Center in Duluth.

Bill Holm WØNRU & Carl Johnson WØGKP
at Northwest Radio

Image Courtesy Dan KDØCRZ and Donna Holm Collection



Pictured here in 1993, Bill Wasbotten was recognized as one of amateur radio radio's elite operators
Newspaper clipping courtesy WØRXL - Howard Pramann Collection



HANDBOOK OF THE ARROWHEAD RADIO AMATEUR CLUB

Again let me introduce myself. My name is Doug and my call is AAØAW. I am currently the President of the Arrowhead Radio Amateur Club (ARAC). This is our second edition of this club handbook. The first one was printed about four years ago. Since then many things have changed and we also we ran out of our first printing. In this edition of the handbook we again have tried to include everything we could think of to keep our members informed. It is also acts as reference guide to what the ARAC is and does. We have included an updated listing of local hams as best we could along with some detailed descriptions of positions and functions. If, when you read this handbook, you find anything that needs to be updated or corrected please let us know. Thank you to all who have donated time and information to the production of this booklet.

Revised 4/96

Courtesy Gene Ellefsen - NØVRM