The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Email all contributions to the editor, Bill Shadid, W9MXQ (newsletter@ozaukeeradioclub.org). Permission to reprint articles published in any issue is granted provided the Author (as shown in the article) and the Ozaukee Radio Club Newsletter are fully credited in any publication. (v2)

ORC Repeaters on 146.97 (-127.3PL), 224.18 (-127.3PL), 443.75 MHz (+127.3PL or C4FM) - Callsign W9CQO
Web site: www.ozaukeeradioclub.org **Facebook: facebook.com/orcwi**

Volume XLIV	October 2026	Number 10

From the President

de: Mike Harrington, N9FPG

Hello all!

Another Fall Swapfest in the books, decent attendance by both Hams and bees. Thanks to all who helped make this a successful event!

Last week I picked up a nice Yaesu FTDX-10 from a Ham who moved to an apartment, and I am enjoying refamiliarizing myself with this fine radio. So I will have this for my base station and my FT-891 for mobile/park use. Added one more toy, a small amplifier that is used for handheld radios, so 5 watts drive gives about 35 watts or so out. So I can operate a handheld from my basement, hooked up to my external VHF/UHF antenna in my backyard, but with a little more power.

On Saturday 9/26 my local EAA chapter in West Bend had a combination drive in and fly-in event. I used my Yaesu VX6 handheld (a tri-band radio which also receives air band, among other things) to listen in for approaching aircraft, as I was helping get them parked. Since West Bend does not have a control tower, pilots must announce their location/intentions on what is known as the CTAF (Common Traffic Advisory Frequency). That frequency is 123.05 AM for West Bend.

See you are our next meeting!

73's!
Mike Harrington
N9FPG

WallpaperAccess.com

Message from the Editor

Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor, W9MXQ@ARRL.net

Welcome to the October 2026 issue of the Ozaukee Radio Club Newsletter.

The Newsletter starts with Mike Harrington, N9FPG, and his “From the President” column. Take a look as we kick of this month’s Newsletter edition.

Loren Jenz, N9ENR, and Pat Volkmann, W9JI, respectively have excellent articles on the results of the 2026 Fall ORC Swapfest. Check these out and see the successful event presented and staffed by the Ozaukee Radio Club for the local ham community.

Gary Bargholz, N9UUR, Club Treasurer, gives his update along with a tiny bit of a travelog for your enjoyment. Then see Jeananne Bargholz, N9VSV, and her report on the changing seasons and an announcement of soon to be available new Swag items.

Do you frequent the Tuesday night 2M Net (8 PM Central - 146.97 & 224.18 Repeaters)? If not, what are you missing? Tom Trethewey, KC9ONY, let's you in on a few subjects covered last week on that net. Join them!

Don Zank, AA9WP, talks about Usage for the VARA FM Digipeaters that he talked about in his article last month.

Can't see in the dark in your basement? In his 343rd consecutive Computer Corner article, Stan talks about "A Hardware Item for Lighting Your Shop or Station." Good plan as the days are getting shorter and there is more dark than there is light in a typical day!

Bob Schmid, WA9FBO, continues his "The Basics" series, with "Electrons." You thought you understood electrons? Maybe take a look and be enlightened.

Gary Sutcliffe, W9XT, in his "On the Air Activities!" talks about upcoming events, contests, and provides an excellent chart of upcoming events that can be printed as a handy page to keep in your shack. I often remind readers that it is no accident that there is a page at the end of Gary's articles that shows, in a chart format, what is going on in radio contests and other operating events for the current month and the first part of the next. It is there to easily print out as a shack aid for use in the current month.

Your Editor, Bill Shadid, W9MXQ, again this month, brings back another, updated version, of a previous article. This time I talk about my first real ham station, from 1964. The Hammarlund HQ-170AC Receiver and the E. F. Johnson Viking Valiant Transmitter. The speaker for the Hammarlund Receiver is bigger than many of today's transceivers. In addition, I show other details of the individual radios and how I use the same models to this day.

At the same time, I also bring the monthly Vintage Amateur Radio Picture – this month featuring the 1965 vintage Heathkit SB-101 HF Transceiver. A radio for the ages, it competed head on with the Collins Radio KWM-2, and others, at the time.

Tom Trethewey, KC9ONY, details upcoming events – mostly Hamfests but check out a special POTA event in Wisconsin happening this month. Tom also has notes about programs and an invitation to be part of a program for a regular ORC Meeting.

Be sure you check the September 2026 Meeting Minutes supplied by Ken Boston, W9GA, ORC Secretary.

This issues finishes with notes on the September 2026 Monthly Meeting agenda, details on the SWAG program for ORC radio club gear to wear and to use.

Enjoy the October 2026 Edition of the Newsletter.

73, Bill Shadid, W9MXQ – Newsletter Editor

Ozaukee Radio Club Newsletter
October 2026 – Table of Contents

Page	DESCRIPTION
1	**Mike Harrington, N9FPG, From the President** Monthly Update
2	**Bill Shadid, W9MXQ, A Message from the Editor** This Month's Comments & Table of Contents
5	**Loren Jentz, N9ENR** ORC Annual Fall Swapfest Follow-Up
9	**Pat Volkmann, W9JI** ORC Annual Fall Swapfest STEM Summary
12	**Gary Bargholz N9UUR** Notes from the Treasurer
13	**Jeananne Bargholz, N9VSV - 2nd VP** October – Already? (Swag Update)
15	**Tom Trethwey, KC9ONY** What You Missed
16	**Don Zanc, AA9WP** Usage for the VARA FM Digipeater Mode
19	**Ozaukee Radio Club** Repeater Directory
20	**Stan Kaplan, WB9RQR, Computer Corner** No. 343: A Hardware Item for Lighting Your Shop or Station
22	**Bob Schmid, WA9FBO. The Basics** Electrons
24	**Gary Sutcliffe, W9XT, On the Air Activities!** September recap, new WSJT version, 10 GHz, ARRL 250 WAS – Wisconsin week 2, Contests, DX.
30	**Bill Shadid, W9MXQ, Vintage Amateur Radio** Revisiting my First Ham Shack
39	**Bill Shadid, W9MXQ, Vintage Amateur Radio Pictures** The Heathkit SB-101 HF Transceiver
40	**Tom Trethewey, KC9ONY** Upcoming Events
41	**Ken Boston, W9GA** Secretary's Report – Previous Month's Meeting Minutes
43	**Tom Trethewey, KC9ONY** Notes from the 1st Vice-President & Programming Committee Chair
44	**Meeting Agenda** Upcoming Membership Meeting
45	**Jeananne Bargholz, N9VSV** The Swag Spot: Ozaukee Radio Club Gear to Wear and Use.
47	**The Back Page – Quick Notes about Meeting Times and Programs** Details on the Current and Following Month Programs

ORC Annual Fall Swapfest.

de: Loren Jentz, N9ENR

On September 12th, 2026, our club had its annual Fall Swapfest. It was a great time for volunteers, buyers, and sellers who attended. We had a total thirteen volunteers who just ran the Swapfest, and some additional volunteers, both Friday the 11th and Saturday the 12th, who helped both with the hauling and the sales of ORC STEM donation items.

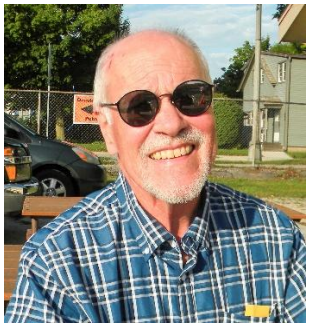
Volunteer help for ORC Swapfests and other ORC sponsored events is essential. Without volunteer help, many club events simply wouldn't be possible. It took 13 volunteers just to put on this small six hour public Swapfest event. There were four parking volunteers, five ticket sales volunteers, two donut and beverage sales volunteers, one announce both operator to give out prizes, and one Fall Swapfest chair person; myself. Over the next few pages, I am honoring those thirteen volunteers by showing their pictures.

Check these pictures of the Thirteen Volunteers and where they helped . . .

AL Lederman N9RXD
Food Sales Volunteer

Bill Greaves K9GN
Ticket Sales Volunteer

Chris Erikson KE9COP
Ticket Sales Volunteer



Chuck Meyer KC9YEP
Ticket Sales Volunteer

Cindy Douglas KA9PZG
Parking Volunteer

David Felland
WB0AFB Parking Volunteer

Evelyn Chenery
Parking Volunteer

Gary Bargholz N9UUR
Ticket Sales Volunteer

John Thielen WA9KNY
Ticket Sales Volunteer

Loren Jentz N9ENR
ORC Fall Swapfest Chair
Volunteer

Mike Harrington N9FPG
Announce/Prize Drawing
Volunteer

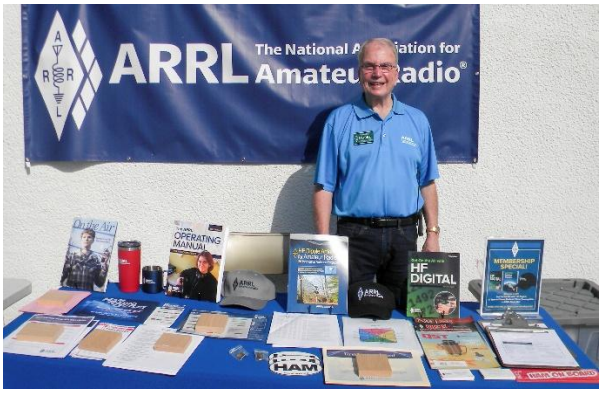
Stan Kaplan WB9RQR
Parking Volunteer

Todd Fast N9DRY
Food Sales Volunteer

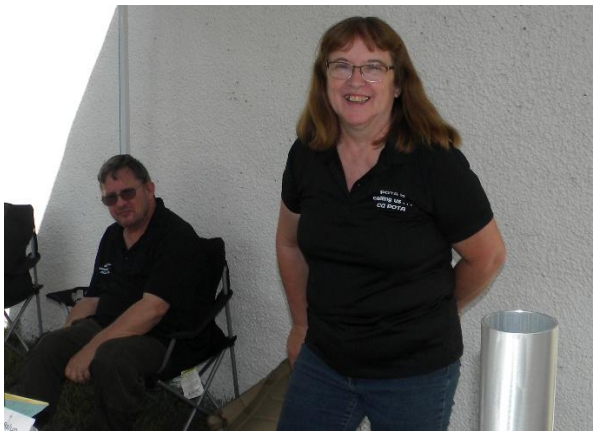
I personally want to thank those who volunteered, and remember that this is a club fundraising event, so when you volunteer you help raise much needed money for the club.

I also want to thank Pat Volkman, W9JI and all of the people that volunteered to work with Pat on raising money for the STEM program at the ORC Fall Swapfest.

Here are some pictures of the 2026 Fall Swapfest Booths and Guests . . .



Tom Czaja KG9EE
ARRL Wisconsin Assistant Section Manager
ARRL Booth



C3 Electronics, LLC Booth

Donuts, Donuts, and Donuts

Flea Market Left Isle

Flea Market Center

Flea Market Right Isle

Below is a list of the 2026 ORC Fall Swapfest prize winners:

1. Grand Prize $50.00 Cash Donated by the Ozaukee Radio Club:
    - Ticket # 00531 Cherri Riedel K9WOC.

2. Bandpass Filter Donated By C3 Electronics LLC:
    - Ticket # 00432 Tim Moczulewski N9SAY.

3. $50.00 ARRL Gift Certificate Donated by the ARRL:
    - Ticket # 00515 Brian Shore KV4EX.

4. $25.00 HRO Gift Certificate Donated by HRO Milwaukee:
    - Ticket # 00420 Allen Sanderson N9WHO

5. $25.00 HRO Gift Certificate Donated by HRO Milwaukee:
    - Ticket # 00439 Greg Deuhs K0PJ

6. $25.00 ARRL Gift Certificate Donated by the ARRL:
    - Ticket # 00464 Dan Zimmerman KZ9B

7. $25.00 ARRL Gift Certificate Donated by the ARRL:
    - Ticket # 00419 Tom Burger KA9KJE

8. N3FJP Software Gift Certificate Donated by N3FJP Amateur Radio Software:
    - Ticket # 00419 Tom Burger KA9KJE

Again, I wish to thank everyone involved in the 2026 ORC Fall Swapfest, and I look forward to next year's ORC Fall Swapfest and being the 2027 ORC Fall Swapfest Chair.

Loren Jentz N9ENR.

2026 Fall Swapfest STEM Summary

de: Pat Volkmann W9JI

We have had another successful Fall Swapfest. We had a very good turnout of volunteers both on Friday and Saturday. Friday's activity was to meet at the barn and load up tables and gear into a truck and then take everything to Fireman's Park. It took two trips but with plenty of help it didn't take too long. Saturday's main task was to sell. We had plenty of help at the STEM tables and took in over $600. When all the fun was over, we had to take tables and unsold items back to the barn. At this point everyone is ready to go home but we had enough help to get this job done.

The Club received several nice equipment donations on Saturday – an Icom 706MKIIG, a Yaesu FT-2800 M two meter transceiver and some additional accessories. Gregg W9DHI has checked out the rigs and found them to be in good working condition. Watch the reflector for more information.

For those who have been to the barn, you know that there was a very large stump next to the silo. The stump made it more difficult to approach the barn, especially when pulling a trailer. Tom KC9ONY arranged for a local company to grind the stump down. It is now a lot easier to drive up to the barn doors to load and unload.

Here are the people who helped out with the STEM equipment and sales at the 2026 Fall Swapfest. If I missed anyone, please let me know and I'll update the list.

Name	Call	Name	Call
Tom	KC9ONY	Rod	WB9AZH
Ben	KC9TZM	Jeananne	N9VSV
Fred	W9KEY	Gary	N9UUR
Tom	W9IPR	Loren	N9ENR
Bill	AC9JV	Jim	K9QLP
Gary	W9XT	Dragi	KD9ZCS
Bill	K9GN	Chris	KE9COP
Pat	W9JI	David	WB0AFB
Gregg	W9DHI		

Take a look at the pictures of some of our Swapfest volunteers. Thank you to Loren Jentz, N9ENR, for sharing the great pictures that he took.

Thanks to everyone who helped out with the Swapfest. We couldn't do it without you.

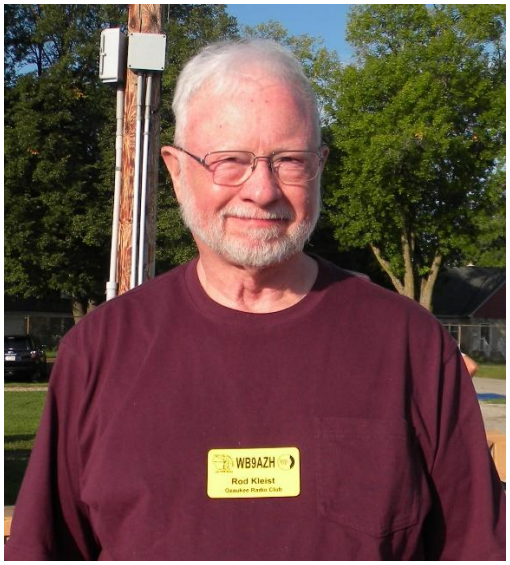
Pat Volkmann, W9JI

Fred W9KEY (N9ENR Photo)

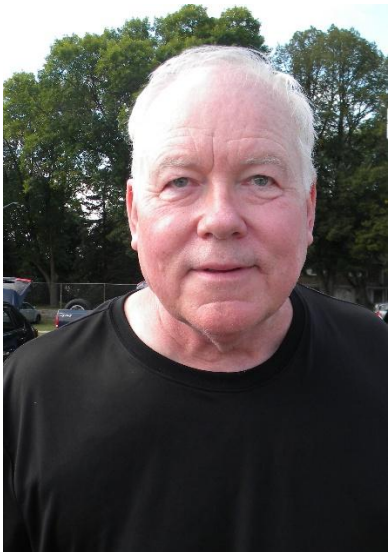
Gary W9XT (N9ENR Photo)

Jeananne N9VSV (N9ENR Photo)

Jim K9QLP (N9ENR Photo)



Rod WB9AZH (N9ENR Photo)



Pat W9JI (N9ENR Photo)

N9VSV working at the STEM tables (N9ENR Photo)

Stuff!!

https://www.shutterstock.com

Notes from the Treasurer

de: Gary Bargholz N9UUR

Hello, Ozaukee Radio Club Membership,

We made it back from France, with only a few days to get ready for the Fall Swapfest.

MUCH wine was consumed in France! Even after the fires there this summer, the harvest looks good. Due to the heat and drought, the grapes on the vines are small, but that concentrates the flavor. Production might be down a little this year, but it should be a very tasty 2026 vintage!

Loren has asked me to run down the numbers for the Swapfest.

We sold 170 entrance tickets at the Gate. My Thanks to all who helped with selling tickets. And especially John WA9KNY, who was there at 5:15 AM, and stayed to the very end to help count all the money we collected.

The refreshments table took in $124 in Coffee, donut, and soda sales. So, all together, after expenses, the club cleared $524.59 for the day. The Scholarship/STEM table also made $612.30.

So, I would say we did great with this year's Fall Swapfest, for a total of $1,126.89. This is a bit down from years past, but still well worth the effort. Thanks to all who helped make it happen!

Chambord Castle, Loir-et-Cher, France

I'll start bugging you about 2027 renewals in November.

73' Gary Bargholz N9UUR
Treasurer - The Ozaukee Radio Club
treasurer@ozaukeeradioclub.org

October – Already?

de: Jeananne Bargholz, N9VSV, 2nd Vice President

I must confess that I'm finding it hard to wrap my head around the fact that it's already October. Our Fall Swapfest is in the books. 2027 Swapfest dates are reserved. Neighbors are already decorating for Halloween, and the air is crisp. We will soon be raking leaves and clearing garden beds. Clearly, I am not ready. I feel as if time is slipping through my fingers.

Speaking of time and confessions, it's not a secret that we now have a really great line of club attire. Getting all the apparel information on our webpage will take some time. Getting all the information to our Webmaster, Gregg W9DHI will take some time. This will change how the *Swag Time* column looks in our newsletter, too! In the meantime, I can list the information here. **Suffice it to say that you will need to contact me directly to order new swag (and I am okay with that).**

All Items include the embroidery of the club logo, and your Name and Callsign

- Port Authority Legacy Jacket
  - Dark Navy/Red (S-5XL) $80.00
- Port Authority Legacy Jacket
  - Dark Navy/Red (S-5XL) $80.00

- Port Authority Men's Smooth Fleece Hooded
  - Jacket Black or Navy (XS-4XL) $75.00
- Port Authority Women's Smooth Fleece Hooded
  - Jacket Black or Navy (S-4XL) $67.00
- Port Authority Tall Long Sleeve Easy Care Shirt
  - Black, Navy, or White (XS-6XL) $55.00
- Corner Stone Short Sleeve Ripstop Shirt
  - Black or Navy(XS-4XL) $65.00
- Port & Co Adult Tee, Short Sleeve
  - Black, Navy, or Red (S-6XL) $37.00
- Port & Co Adult Pocket Tee, Short Sleeve
  - Black, Navy, or Red (S-6XL) $40.00
- Port & Co Adult Tee, Long Sleeve
  - Black, Navy, or Red (S-3XL) $42.00
- Port & Co Women's Short Sleeve T-Shirt
  - Black, Navy, or Red (S-3XL) $35.00
- Port Authority Adult Polo, Short Sleeve w/pocket
  - Black, Navy, or Red (S-3XL) $50.00
- Port Authority Adult Polo, Short Sleeve
  - Black, Navy, or Red (S-3XL) $47.00
- Port Authority Adult Polo, Long Sleeve w/pocket
  - Black or Navy(S-3XL) $55.00
- Port Authority Adult Polo, Long Sleeve
  - Black or Navy (S-3XL) $55.00

Again, these items and prices will be added to our webpage and newsletter with considerably more information in the near future. I intend to collect orders up to and including at our meeting and place a monthly order with the hope that the embroidery work is done by our next meeting. Prices may vary depending on quantity ordered and thus, we would rather you pay when you get your order. Availability and prices may also change depending on the manufacturer.

Call me, email me (I'm in the roster), or talk with me at a meeting.

Oh, and if you didn't notice, the logo above is the embroidered version.

What You Missed

de: Tom Trethewey, KC9ONY

You never know what you might hear on the ORC Tuesday Night Informal Net. It's not all Amateur Radio related.

Some topics heard recently that you missed:

Bristol set screws used in an old Hallicrafters receiver. What's a Bristol set screw? Need to borrow a Bristol tool. Often times replace them with a regular hex set screw.

Astrophotography - Andromeda Galaxy. Software is available to adjust photos taken of the recent lunar eclipse.

Road America has a night where you can walk, bike, or run 4 miles around the track. They also have a night were you can drive your car around the track at 35 mph.
https://www.roadamerica.com/sunset-cruise
https://www.roadamerica.com/4-miles-fitness

There's a new Culver's in West Bend, WI. New Culver's being built in Grafton, WI.

A TID radio Bluetooth microphone was working on a TYT HT.

There is an International Federation of Handie-Talkie Tossing. Really? Yes, they have a website: https://ifhtt.org/ Check it out!

SpaceX crashed a rocket on the moon.

Witte sweet corn was available.

A website to monitor air quality and wildfire smoke: https://www.windy.com/

Route 66 100th anniversary special event stations and 13 Colonies special event station.

$9.50/gal of fuel in Copenhagen in June.

Just a small portion of topics that you missed.
Tuesday's 8:00 PM on the W9CQO repeaters.
https://ozaukeeradioclub.org/homepage-academica_pro_3/repeaters/
We link the 146.97 MHz and 224.180 MHz club repeaters together for the net, so if you have a 220 transceiver, you can try it on the Net.

OZARES: Ozaukee Amateur Radio Emergency Service

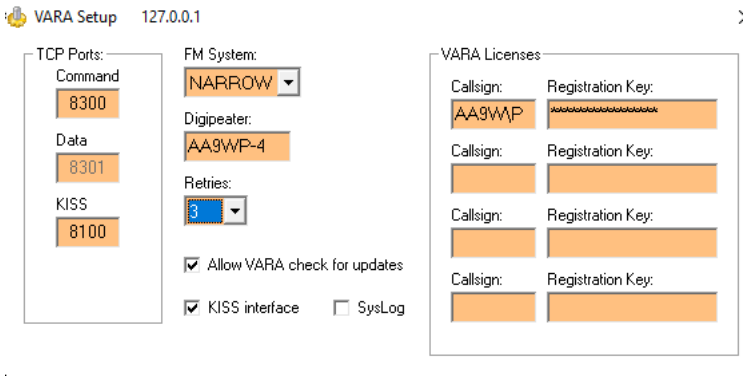
de: Don Zank, AA9WP, aa9wp@arrl.net

Usage for the VARA FM Digipeater Mode

Last month we covered the setup of VARA FM as a digipeater. The use of the digipeater mode increases the coverage area for an operator, as a digipeater station with greater power, a better antenna, or a better location can connect with more stations.

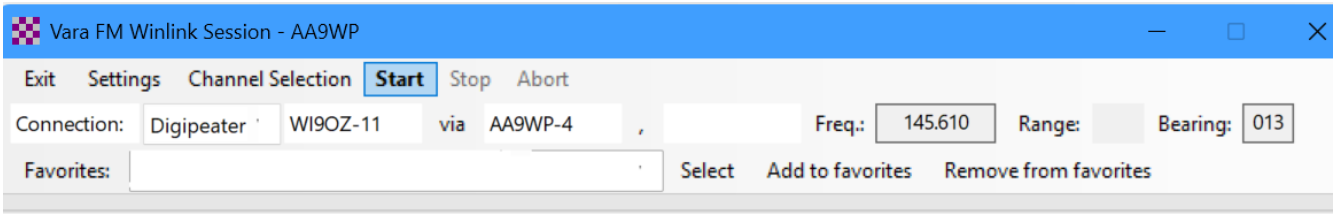
As an example. If during an exercise, an emergency communication event, or just basic operation, a station with low power or a small antenna will be limited to sending or receiving, for our example, WINLINK messages. This can also occur if the station is operating inside a building that limits the range of transmissions. By having a nearby station with Digipeating capability—better antenna and more power—and using the digipeater capabilities provided in VARA FM, WINLINK messages could be sent and received—a great way to transmit forms, files, and other information.

To test this, I set up my Yaesu FT-270 HT with a Signalink. The FT-270 is only capable of 5 watts of output and has an extended rubber duck antenna. This setup would never connect to the OZARES WINLINK station WI9OZ-11 in Saukville.
However, I can set up my other base station, AA9WP, to use the VARA FM Digipeating mode.



I will assign an SSID of AA9WP-4 for this digipeater.

At my FT-270 computer, the VARA FM WINLINK session will be setup as follows:

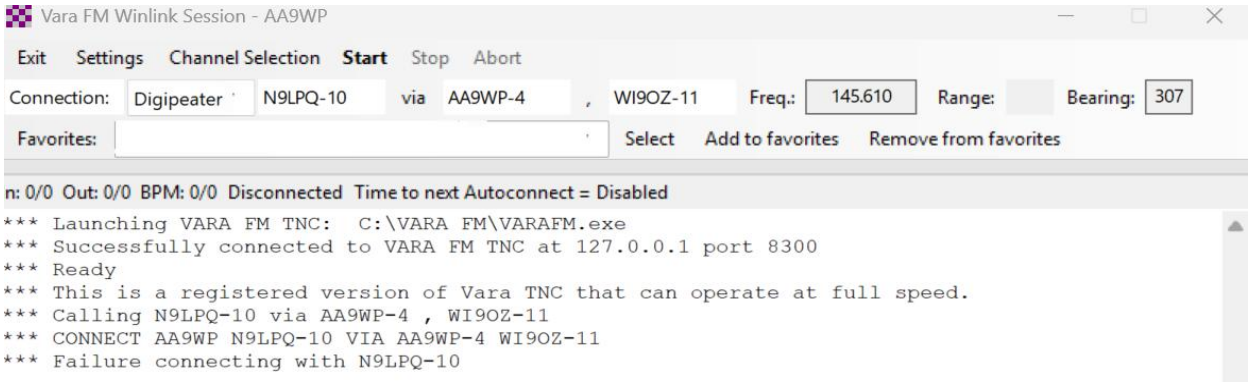


The connection will be changed to Digipeater. The station I want to connect with is WI9OZ-11 and it will be via AA9WP-4.

The result, including sending a message in the Outbox.

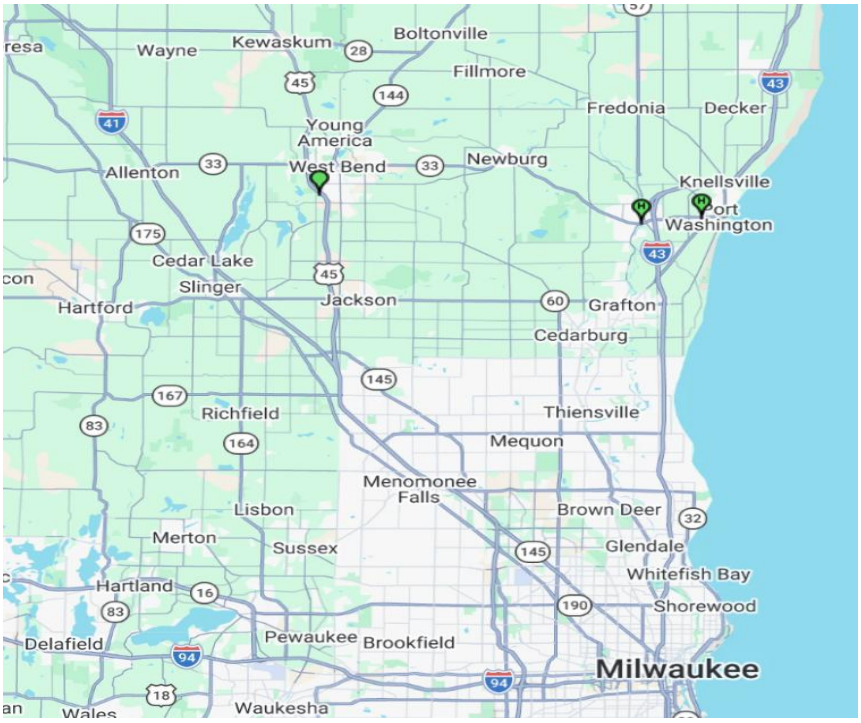
```
*** Connected to Winlink RMS: WI9OZ-11 @ 2026/09/25 19:34:50  Freq: 145.610
Welcome to the OZARES Saukville EOC Gateway
[WL2K-5.0-B2FWIHJM$]
;PQ: 12397261
CMS via WI9OZ >
   ;FW: AA9WP
   [RMS Express-1.8.5.0-B2FHM$]
   ;PR: 57609528
   ; WI9OZ-11 DE AA9WP (EN63AG)
   FC EM UPFH779DR2J0 226 205 0
   F> BB
FS Y
*** Sending UPFH779DR2J0.
--
```

The digipeater is limited to two hops. So, in theory, I should be able to connect to another station such as N9LPQ-10.

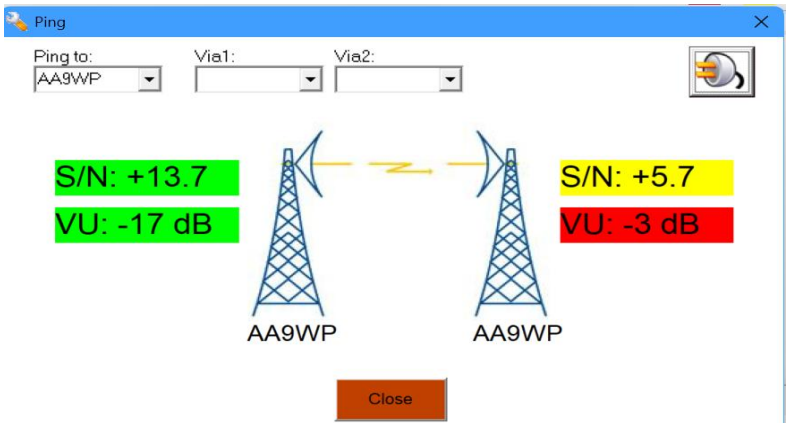


Unfortunately, we could not connect. There is a lack of WINLINK gateways in southeast Wisconsin. A map from WINLINK.org shows two stations in Ozaukee, of which only one is up and running, and one station in Washington County. Thank you N9LPQ.

Ham Radio Outlet did have a WINLINK gateway, but it appears to have been lost with the changes at the facility.



If you wonder what stations you may or may not be able to connect to the Ping test mode can be used. If you can Ping them you can work them.



That is all for now.

73, Don AA9WP

OZARES Repeaters:

- 147.330 MHz (+ Shift) (127.3 PL)
  - FM Mode Only
- 443.525 MHz (+ Shift) (114.8 PL)
  - FM Mode Only

ORC Repeaters are On the Air Awaiting Your Call:

- 146.97 MHz (- Shift) (127.3 PL)
  - FM Mode Only
  - Informal Net Tuesday's 8:00 PM
- 224.18 MHz (- Shift) (127.3 PL)
  - FM Mode Only
- 443.75 MHz (+ Shift) (127.3 PL)
  - FM & Fusion (C4FM) Modes

THE COMPUTER CORNER
No. 343: A Hardware Item For Lighting Your Shop or Station

de: Stan Kaplan, WB9RQR, 715 N. Dries Street, Saukville, WI 53080-1664
wb9rqr@gmail.com

Some of you know I have been repairing lamps for a hardware store since retiring from my regular job – over 30 years ago. I also worked the floor at that store for over 20 of those years and became quite familiar with lighting devices, including everything from standard incandescent light bulbs through fluorescent tubes. More recently that included the change from incandescent and fluorescent to LED (Light Emitting Diode) bulbs. So, I am quite familiar with bulbs, and I am a lighting consumer, too, as we all are! So here is a tip I have come across to help you get rid of those old 4-foot, power-hungry fluorescent fixtures in your station, shop, garage, or closets, if you have not already done so. It will not hurt your wallet and has several other definite advantages. While I will relate my own recent purchase at Costco, you may well find similar great deals at other sources in your area.

By the way, simply purchasing an LED replacement bulb for a 4-foot fluorescent bulb and putting it or a pair in an old fluorescent fixture is not a permanent way to significantly reduce your power consumption. The ballast transformers in old fixtures are the source of a lot of now unnecessary power usage. Feel the ballast end of one of those fixtures that has been on for a few hours and the heat will impress you. Those are watts turned into heat which you really want turned into light. Best to buy a complete LED replacement fixture that does not use those old power-sucking, heavy ballasts. That will also significantly reduce the physical weight of the fixture because the ballast transformers are really exceptionally heavy. They are replaced by lighter, more efficient electronic circuits in the modern LED units that turn a much greater percentage of their consumed watts into light. That is just what you are after in a light fixture/bulb combination!

So, here is my recent experience. On 30 August 2026, I purchased a single carton at Costco containing two 4-foot LED replacement fixtures for typical hanging fluorescent lighting fixtures, at a cost of $28.99 minus a $6.00 sale discount for a total cost of $22.99. I was so pleased with my purchase I did it again on 4 September. In each case, they cost about $11.50 per each four-foot fixture. The two fixtures in each carton are independent and identical, and they can be ganged in strings of two to six or used individually. Each is very lightweight, about 46 inches long, and each comes with all the hardware to mount each directly to ceiling drywall with screws and anchors, or by suspension by a lightweight chain (supplied) to a ceiling, or under a wooden shelf, or in any of a number of other configurations. You turn them on or off with a pull-switch, and a simple cotton string is in

each box to extend the length of the switch pull as you like. A 5-foot two-wire cord terminated in a polarized plug brings each power from the wall socket or from the previous light in a string of up to six. Each fixture draws only 55 watts and provides 5000 lumens of bright white (4000 K) light, just about perfect for a workbench or even an operating position, though in the latter case you might want to move the units a bit further away to tweak the light to your liking. But that is not all the really good stuff!

On the end plate of the fixture is a *motion* slide switch. If the unit is plugged in and motion switch is OFF, the standard pull switch controls the on/off function of the light, as you would expect. On the other hand, if that motion switch is turned ON and the unit is plugged in and energized by a wall switch or the unit's pull-chain switch, the unit will blink once to let you know that the motion feature is active. Thereafter, it will stay on, -or- if nothing moves for 5 minutes within the (up to 20 foot) sensor range, the light will automatically turn off. After that, any movement within range of the sensor will turn the light back on. A very nice power-saving touch, indeed! And thereafter the lights go on automatically when you walk into the darkened room!

I really like the 2 cartons (4 units) I purchased. The only negative I can find is that they use 2-wire supply cord; in my opinion, a well-grounded 3-wire cord would have been somewhat safer. It may be that a 3-wire supply cord would have interfered with the motion circuit, or even the ability to daisy-chain up to six units. At any rate, it might be a good idea to use a GFCI wall outlet where the unit is to be plugged in or down that line in the wall circuit. The carton and instructions both relate that their product is not allowed to cause interference, nor is external interference allow to affect the operation of their light, so if you come across one that does any of this, take it back for a swap to a non-defective unit or your money back.

This pair of units is manufactured in Thailand under direction of the Feit Electric Company. Feit has been manufacturing LED bulbs and fixtures since they first became commercially available in the consumer market. That is some time ago, so they have a great deal of experience designing and having such fixtures built. Warranty: 3 years. Hard to beat!

Happy Computing, in a very well-lit, watt-saving environment!

Electrons

de: Bob Schmid, WA9FBO

"The Basics"

Which came first, wireless telegraphy or the discovery of the electron?

Heinrich Hertz had demonstrated electromagnetic waves in the late 1880s. In 1895 **Guglielmo Marconi** began building practical wireless telegraphy systems (Fig. 1). In 1897 British physicist **J.J. Thomson** discovered the electron and described it as a tiny, negatively charged particle inside atoms. That means early radio pioneers like Hertz and Marconi had no knowledge of the electron, one of the most fundamental building blocks of electricity. They were building receivers, transmitters, and antennas—and experimenting with spark gaps, waves, resonance, and magnetism—before they knew what carried the current. They treated current as a fluid or a mysterious force.

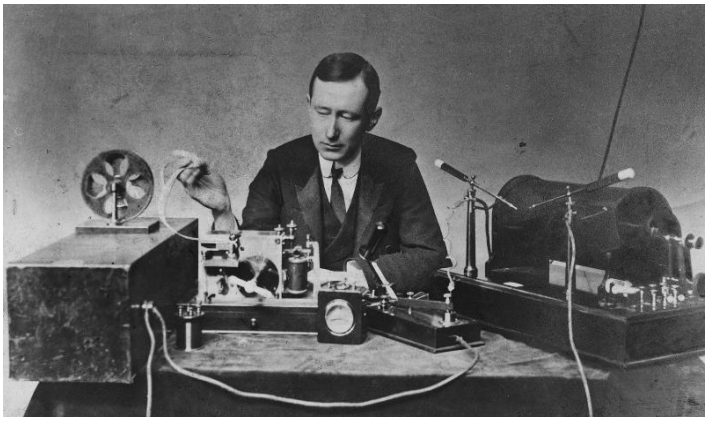


Figure 1 - Marconi with 1890s Receiver & Transmitter

In the 1890s people were still debating whether atoms were real. We now know that electrons are only 1/1800 the mass of a proton. How did Thomson find such a tiny, basically invisible part of an atom and then prove it carried electric current?

From the 1850s through the 1870s, scientists experimented with partially evacuated glass tubes containing metal electrodes. When a high voltage was applied across the electrodes, the low-pressure gas inside the tube would glow, producing colorful discharges that varied with the type of gas used.

The negative electrode was called the **cathode**, and the positive electrode was called the **anode**—terms introduced by **Michael Faraday**. High voltage seemed to cause some kind of "ray" to shoot out of the cathode and travel through the gas toward the anode at the opposite end of the tube. Since the rays appeared to originate from the cathode, they were called **cathode rays**.

Some thought these rays were a new form of light. Others thought they were some kind of invisible fluid.

Figure 2 - Crookes Tube

In the 1870s and 1880s, **William Crookes**, using tubes with much better vacuums (Fig. 2), showed that the mysterious rays traveled in straight lines from the cathode. When an object was placed in their path, it cast a sharp shadow—evidence that the rays weren't just light, but directional and carrying momentum. A tiny paddle wheel spun when struck, suggesting the rays had mass as well. In a better vacuum with less residual gas to glow, the rays themselves became more visible by their effects. When the end of the tube was coated with fluorescent material, it glowed where the rays hit, showing energy transfer. The rays didn't necessarily strike the anode; in many cases, they passed it entirely and hit the back wall of the tube, where the strongest fluorescence was often seen.

Crookes suspected that cathode rays were made of particles, but it wasn't yet proven.

In 1897, J.J. Thomson applied magnetic and electric fields to deflect the rays and found that the rays bent toward a positive plate, showing they had a negative charge. The amount of deflection showed their mass-to-charge ratio was far too small for any known atom, so the rays had to be made of particles smaller than atoms. We call them electrons—a name proposed earlier by Irish physicist **George Johnstone Stoney** for a unit of electric charge, later adopted for the particles Thomson had discovered. At first, many scientists were skeptical; it took several years for the electron to be widely accepted as a real, universal subatomic particle.

Today we remember that old TV sets and oscilloscopes used cathode ray tubes. The glowing dot on the screen was a focused stream of electrons hitting phosphor. It's the same basic physics as Crookes and Thomson's tubes, but with better aiming.

On The Air Activities!

de Gary Sutcliffe, W9XT

Conditions were not great in September. I wasn't very active on HF in September, but I got on some for the CQWW RTTY contest. Ten meters was disappointing, with openings mostly restricted to the south.

The solar flux was around 100 at the time of writing this. It has been pretty low and may indicate that the current solar cycle is fading faster than normal. Usually, sunspot numbers rise more quickly at the start of a new cycle but take longer to reach the bottom after the peak.

If so, 10 meters might be tough this fall and winter, but the low bands should be the best in several years. Even with a solar flux around 100, we can often work Europe on 10 meters, but usually only western and southern countries. Japan and Asia become scarce. Get busy if you are trying to fill in some band countries on 10 or 12 meters.

Gregg, **W9DHI**, picked up some nice DX in September. He picked up C91RU in Mozambique, Franz Josef Land on 20 and 40 meters, and the Seychelles on 15 meters.

New version of WSJT

There are a few updates to WJST, the suite that contains FT8 and the other popular digital modes. They moved the download site from SourceForge to GitHub. I think it is an improvement. Make sure you get your updates from GitHub.

The latest general release is WSJT-X 3.0.2. It is from June of this year. I finally got around to updating. I don’t think most users will notice the changes.

There is a new release candidate you can try if you are adventurous. It is WSJT-X 3.2.0-rc1 and came out around the end of September. It includes a new mode, JTTY. The other WSJT modes just send grids and signal reports. RTTY is a keyboard-to-keyboard conversational mode but performs poorly with very weak signals or when noise is present. JTTY combines the best of both modes. I haven't tried it yet, but I've heard some people are experimenting with JTTY on EME. That would be impressive.

10 GHZ+ Contest

The second weekend of the 10 GHz+ contest was September 19-20. I didn’t get on for the August weekend for various reasons, so I decided to put in a big effort in September. This contest is different in that you can work the same station again, as long as one of the stations has moved at least 10 miles. So, many stations move around. My group stopped at six locations on Lake Michigan on Saturday and five on Sunday. A few of the

Sunday stops were repeats. We worked some stations in Wisconsin, but most were in Michigan.

Lyle, WE9R, stopped by at our Sheboygan stop on Saturday afternoon to see what this 10 GHz stuff was all about. L-R W9XA, W9XT, K9PW. WE9R photo.

Port Washington Saturday around noon. As you can see the weather was not very pleasant.

Working stations multiple times is important since there are not a lot of stations on the microwave bands. Most stations are transverters to a rig operating as an IF on 2 meters. The components are a combination of low noise amplifiers, stable reference oscillators, mixers, PLLs, multipliers, relays, and a power amplifier, usually feeding an 18" satellite TV dish. Some parts are available from Down East Microwave or other sources, along with surplus parts bought at a hamfest. Mine was built by WA9O (SK) in the 1990s from various hamfest parts. I doubt many identical 10 GHz stations exist. Lack of affordable microwave gear is an obstacle to getting hams on the air on these bands.

Hika Park Saturday afternoon. The shelter was appreciated since it was drizzling.

I traveled with Pete, K9PW, Kermit, W9XA. They are from Illinois and made their first stops in Kenosha or Racine. I met them at the lakefront in Milwaukee a couple of miles from the ferry dock. You may remember Kermit as the ARRL Central Division Director for several years. Having W9XA and W9XT in our group caused some confusion at first.

While I only had 10GHz, they had 10, 24, 47, and 122 GHz. Depending on conditions and what bands the other stations we were working with had, they would try some of the higher bands.

Saturday was rainy, and conditions were not all that good. We had to use CW for some contacts because the signals were so poor. Some QSOs were scatter, where the signals reflected off rain or ice particles in storms. You could tell by the signal distortion. It sounds like aurora propagation for those who have made contacts off auroras. Also, you could hear them across a rather large range in azimuth. Normally your antenna must be pointed right on due to the narrow beamwidth of dish antennas.

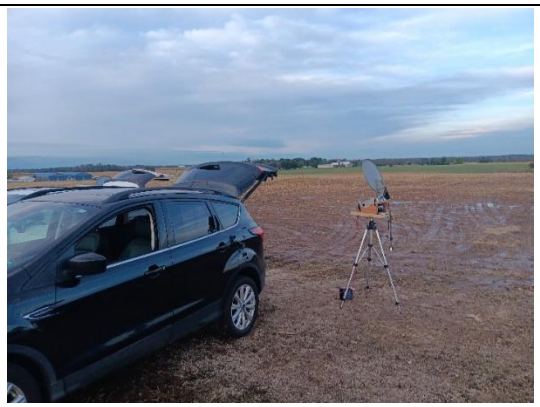
Algoma Sunday morning.

After Milwaukee we moved north to Port Washington, Sheboygan, and some parks along the lake front. We stopped just south of Two Rivers and stayed overnight there.

We were off early on Sunday, leaving the hotel at 6:15 AM. The rain stopped, with scattered clouds but it was very windy. Our first stop was along a road near Two Rivers. That was the only place we tried to beam west. It is high and has a good horizon, essential for microwave work. One concern was what crops we were going to find in the field. There is a saying for microwave work “Corn bad, soybeans good.” Corn is tall and the vegetation will attenuate the signal. Corn also transpires a lot of moisture so even getting above it does not help too much. Soybeans are low, and you can beam over them.

We got there and it was corn, but the crop had already been harvested, so that was good. The bad news is the station in Minnesota we hoped to work was under a big thunderstorm and we could not afford to wait until it passed him, so our first stop was a bust.

We also hooked up with two others, Larry, WA9TT, and Andy, AJ9L, on Sunday at the corn field. We traveled with them but once Larry and Andy stayed behind so we could work them. Stations are supposed to be at least one kilometer apart to count for a QSO.

	
Our first stop Sunday. We got a lot of mud and other brown smelly substances on our shoes. A T-storm at the other end prevented any contacts. Notice the distant horizon with no trees to attenuate the signal.	S-meter pegged by SSB signal from K8DP. He was located across the lake and was running only 8 watts. Sunday afternoon

They later caught up and we moved on. They left around noon on Sunday as did W9XA who developed a bad cable on his 10 GHz gear that prevented hearing anyone.

We operated from a couple of lake front locations north of Two Rivers. The furthest north was in Algoma. Signals Sunday were good and we never needed to go to CW. Under the right conditions an inversion layer will form above the lake. It sort of acts like a waveguide and signals can travel a long distance with little attenuation. Several times they were pegging the meter on my 2M IF radio.

It was a lot of fun. I made 83 contacts with 12 unique stations. The longest contact was about 200 miles. Scoring is based on distance and the bands. Contacts on the higher bands are worth more points for the same distance. You also get bonus points for every unique call sign you work on each band.

ARRL 250 WAS Wisconsin Week 2

The ARRL 250 WAS event continues with the second round of the states. The first week of Wisconsin was in April. The second week starts on October 21 (UTC). Look for W1AW/9 on the HF and possibly the VHF bands, SSB, CW, and digital. Some of the operators are ORC members, including **W9MXQ**, **W9DHI**, **W9XT**, and possibly others.

Contests

The fall contest season starts with the CQ WW Phone contest. It is the last full weekend of October. Because the 31st falls on a Saturday, it is earlier this year, starting at 0000 UTC on October 24. CW WW is the biggest contest of the year with lots of US and DX activity. You can work a station once per band. Stations exchange signal reports and CQ Zones. We are in Zone 4, so we would give our exchange as “59 04”
Work DX stations, including Canada. Multipliers are the number of countries and zones worked per band. QSOs with stations in your own country are worth zero QSO points but

work one US station on each band for the US multiplier. Hawaii and Alaska are considered DX.

You can select from many operating categories. All band, single band (160 -10), high power, low power, QRP, assisted or unassisted, and pretty much every combination of them. Check out the rules to decide what class you want to operate.

The first weekend of November brings us the November CW Sweepstakes. It starts Saturday afternoon on November 7. This is a popular contest. I think it is also one that small stations can be successful with good operating skills. The exchange is long. I will send "001 A W9XT 70 WI" to my first contact. This is somewhat complicated, so I suggest you read the rules and supplementary information online.

DX

October is often considered the best month of the year for DX'ing from this area. We are past the summer absorption and near the equinox, which makes it good for DX'ing. With declining sunspot numbers, you should focus on filling in the holes on the higher bands: 10, 12, and 15 meters. It will be a while before they are this good again.

The Arctic Island Svalbard will be activated October 7-12 by a group of three Norwegian hams. They will be operating with their own call signs with the JW prefix.

Lesotho is a landlocked homeland inside South Africa. A group of five German hams will be operating from there October 16-29. They will be on 160 meters. They will also be on 60 meters, a band most DXpeditions ignore.

S21HRG is a special event station for JOTA. The plan is to introduce ham radio to about 100 scouts in Bangladesh. They will use 80-10m meters, all modes, along with some satellite operation. Look for them October 16-20.

Sao Tome & Principe I. is a fairly rare country. The Intercontinental DX Group out of Europe will activate this location. They will be on 160-6, including 60 meters. They will use CW, SSB, FT8, and RTTY. They will be on the air Oct. 17-31

Senegal in West Africa will be on the air October 28 through November 5 by the Italian DXpedition Team. 160-6M, all modes. Look for 6W/I2TSB and 6W/IK2HKT. Another African country, Mozambique, will be on the air as C8K. The operators are from the Czech Republic. November 9-20.

Heading out to the Pacific, a group of German hams will be going to American Samoa. The plan is to operate Oct 30-Nov 12.

The days are getting shorter, and seasonal propagation is improving. Get radioactive!

W9XT's Top Picks: DXpeditions, Contests, and Events for October and early November 2026

W9XT's DXpedition picks for October and early November 2026					
QTH	**Dates**	**Call**	**Bands**	**Modes**	**Link/notes**
Svalbard	Oct 7-12	JW calls	HF	C/S/D	
Lesotho	Oct 16-29	7P8GE	HF		Including 60M
Bangladesh	Oct 16-20	S21HRG	HF	C/S/D	JOTA event
Sao Tome & Principe I.	October 17-31	S2R	160-6	CSD	Including 60M
Senegal	Oct 28 – Nov	6W/I2TSB & 6W/IK2HKT	160-6	CSD	
American Samoa	Oct 31-Nov 12	KH8A	160-6	CSD	

Modes: C = CW, S = SSB, D = Digital (may include RTTY)

W9XT's contest picks for October and early November 2026					
Name	**Start**	**Length**	**Bands**	**Mode**	**Link**
CQWW DX SSB	0000Z, Oct 24	48 hours	160 + HF	SSB	www.cqww.com
ARRL Sweepstakes	2100Z Nov 7	30 hrs., work 24 maximum	160 + HF	CW	https://contests.arrl.org/ContestRules/SS-Rules.pdf

Dates/Times in UTC. Subtract 6 hours from UTC to get local (CST). HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for October and early November 2026			
Event	**Dates**	**Details**	**Link/notes**
Support Your Parks	Oct 17-18	POTA activity weekend	Lots of POTA activity this weekend.
ARRL WAS 250 WI	Oct 21-27	Wisconsin weekend W1AW/9	

Vintage Amateur Radio

de Bill Shadid, W9MXQ

As this series of articles moves along, they very often remind me of personal experience with the various pieces of equipment of the same model that have been a part of my amateur radio experience with the pieces chronicled in the article. After all, I generally do not write about equipment I have not used. In fact, in most cases the equipment featured is in my possession as the article is being developed.

The disconnect with the articles comes from article focus on an individual product or manufacturer. The fact is, when I became licensed in 1964, that was not reality. Some companies were known for Receivers, some for Transmitters, some for Amplifiers, and some for accessories. There were companies like Hallicrafters and Collins that did both. But, for most of the history of Hallicrafters they were best known for their Receivers. At the same time, companies like E. F. Johnson were known for their Transmitters, Amplifiers, and Accessories. It was interesting to see how Johnson, for instance, would show their products in a ham station setting with a National, Hallicrafters, or Collins Receiver.

My first station fit the norm for the time – 1964 – with separate brands from the Transmitter and Receiver technology leaders – at least as I interpreted technology leadership at the time! My station included an E. F. Johnson Viking Valiant Transmitter and a Hammarlund HQ-170AC Receiver.

Johnson Viking Valiant Transmitter (left)
Hammarlund HQ-170AC-VHF Receiver (right)
Hammarlund S-200 Speaker (center)

W9MXQ Collection

The station above is my recreation of that station from 1964. Most things are as they were then except that the Hammarlund HQ-170AC in this picture is the final model of that radio and is designated as model number HQ-170AC-VHF. That later version was identical to

the HQ-170AC in my original station except that it added a high gain receiver converter and pre-amplifier covering the six-meter and two-meter bands.

The circuitry for the time was noteworthy in that it used the then relatively new RCA Nuvistor[1] ultra-miniature vacuum tubes. While the "VHF" model was very impressive in the 1960's, it would not hold a candle to today's VHF receiver front ends. The HF part of radios of the day, while inferior to today's offerings, had many good traits and can be used in non-competitive[2] communications.

The Hammarlund HQ-170 series Receiver was in near final form (HQ-170AC) when I purchased mine, brand new, in the 1960's from Klaus Radio, Inc., in Peoria, Illinois. Klaus was a full range amateur radio equipment dealer at the time. They remain today as an electronic parts and appliance distribution business. The receiver was ham bands only (the bands allocated to ham radio at that time) with coverage of the 160, 80, 40, 20, 15, 10, and 6-meter bands. So, no general coverage short wave – that feature being assigned to its sister radio, the HQ-180 series, that was essentially identical in coverage. (The HQ-180 series had no provision for VHF coverage.) Here are the model breakdowns of the HQ-170 series radios:

- HQ-170 Receiver
  - Introduced in 1958.
- HQ-170C Receiver
  - Same as HQ-170 but included an optional clock on the front panel.
- HQ-170A Receiver
- HQ-170AC Receiver
  - Same as HQ-170A but included an optional clock on the front panel.
  - This is the one I had in 1964.
- HQ-170A-VHF Receiver
  - The VHF model is very rare today.
  - I do not think these were ever shipped in this form from the factory. That is, without the optional clock.
- HQ-170AC-VHF Receiver
  - Same as HQ-170A-VHF but included an optional clock on the front panel.
  - The VHF model is very rare today.
  - This is the one in my collection now.

To be sure, there were other subtle changes with the release of the "A" version of the HQ-170. One that is immediately noticeable is the front panel color which became a darker gray. This is very obvious in my collection which includes an HQ-180C Receiver that is colored identically to the HQ-170. The darker color is nearly identical to the gray used in the Collins S-Line as can be seen in this picture (next page) of my HQ-170AC-VHF as used at W9MXQ in the Hammarlund Hullabaloo a year ago. The Hammarlund Hullabaloo is a Special Event focused on using Hammarlund Radio Company radios and accessories.

Notice the Hammarlund and Collins in near matching colors. This color change helped the dated extra-large packaging of the Hammarlund look more modern – it truly looked sleeker than its HQ-180 predecessor even though it was exactly the same front panel – with a slightly different lettering pattern as compared to the original.

Hammarlund HQ-170AC-VHF used as a separate Receiver with a Collins KWM-2 Transceiver. Also seen is the Collins 312B-5 Remote VFO for the KWM-2. The 312B-5 was merely in place because it had an internal speaker connected to both the KWM-2 and the HQ-170AC-VHF. They worked surprisingly well together owing to the Collins rig's feature set allowing antenna switching and muting for a remote/separate receiver[3]. The Collins 516F-2 Power Supply is out of site, behind the transceiver. You can also see the Electro Voice EV-638 (with EV-428 PTT Base) Desk Microphone.

W9MXQ Collection

The different versions of the HQ-170 were essentially identical in performance other than the included converter and pre-amplifier for enhanced 6-meter and added 2-meter coverage in the VHF models. The "A" models differed in that they had a solid-state power supply and constant filament voltage (both in receiver power on and power off state) for V2, the First Mixer, and V12, the High Frequency Oscillator. Hammarlund receivers were well known for being unstable unless allowed 30 minutes, or even more, to warm up. The solid-state power supply and the "always on" V2 and V12 circuits helped to mitigate that issue. Still, vacuum tube radios required warm-up and such radios in my use are allowed over an hour to warm-up and stabilize before I use them. ALWAYS!!

The most attractive feature of the HQ-170, way back to its introduction in the 1950's was its use of a Product Detector. Unlike Hallicrafters and National at the time, Hammarlund was looking to the future and the need for a detector more suitable for Single Sideband (SSB) reception. The HQ-170 series offered superior AGC performance to that provided by direct competitors like the Hallicrafters SX-101 and the National NC-300. To be sure, this was soon corrected by Hallicrafters in the later versions of the SX-101 (the Mark III version) and the updated National NC-303. Collins had also been an early user of a Product Detector in the 75A-4 Receiver, vintage 1955 (predating the Hammarlund HQ-170 as originally released).

In early 1964 I had been ready to take my Novice test and get on the air. To that end, and in preparation, I had acquired a used Heathkit DX-20 Transmitter, locally, as the third

owner of this radio used by a new Novice. To go with it, I had a trusty Hallicrafters SX-110 but soon acquired a Hallicrafters SX-101 Receiver. As the story unfolded, I did not get my Novice license, did not take well to the SX-101, and moved toward getting my General License. It was that General License that triggered the purchase of the used Viking Valiant Transmitter and the new Hammarlund HQ-170AC (with the SX-101 used as a trade). That pair greeted the arrival of the General License – WA9MXQ (later leading to the vanity, "W9MXQ" call.) That is why you hear me identify the Valiant and the HQ-170AC as my original station.

The Valiant had been the transmitter owned by my then long time – and still – very good friend, Gary Frankeberger, WA9BJU. Gary is still WA9BJU and is active on the bands from Central Illinois and Arizona. Before getting my license, I used to admire Gary's Valiant and when one became available, I snapped it up and never regretted it. Gary used his Valiant with a Hammarlund HQ-100 Receiver – which I believe he still has. His Valiant, however, is long gone.

The Valiant that now duplicates my original station comes from a local ham friend here in Southeast Wisconsin, John Schroeder, KB9BPM. John had acquired it from a well-known Johnson Restorer, Chuck Hurley, K1TLI[4]. It is an incredible restoration that takes the radio from a good used radio to a piece of artwork!

Here are the accessories that I used with the Valiant and HQ-170AC back in the 1960's. These very accessories are still with me today – just as I bought them "back in the day." For some reason they just never left! They are in use right now in the setup of the Valiant and the HQ-170AC-VHF.

Dow Key Antenna Switching Relay
See description, below, for notes about how this is connected.
Mr. Carlson's Lab© on YouTube™

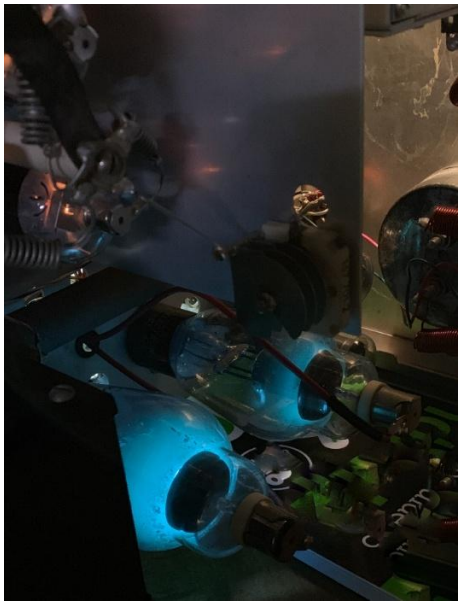
Turner 254C Hi-Z
Ceramic Microphone
W9MXQ Collection

Amphenol
80-MC2M 2-Pin Offset Mic Connector

The left picture shows the Dow Key Antenna Relay. The relay is mounted to the RF Output connector with a double female Barrel Connector. The blue and gray wire pair go to the receiver mute connections present on the Eight-Pin Octal System Socket Connector on the back panel of the HQ-170AC Receiver. The green and black wire pair go to the 120 VAC Antenna Switching connector on the back of the Valiant transmitter. The blue and gray wires are line to mute the Hammarlund Receiver with the transmitters was transmitting. Johnson had a crystal socket used to supply the 120 VAC in transmit to activate the relay. Users had two choices.

1. If we had an old defective crystal we would remove the cover, remove the interior crystal components, put a hole in the top of the old crystal case, install the wires through the hole and to the crystal terminal holes, then close up the crystal case. That is what has been done in this picture.
2. Alternatively, we would take two finishing nails (small enough diameter to fit into the crystal socket) and solder one of the 120 VAC relay lines to each of the two pins. Insert the pins into the socket and you were “ready to rock and roll.” Protect the exposed solder connection with “spaghetti” tubing.

My temporary installation for this article did not include covering the open terminals. If you do this, keep your hands away. Check my warning toward the end of this article. Be careful. Also, beware of the barrel connector mounted relay. This was common, but it was not good for the relay – only good for a quick test installation. Commonly, I mount such relays hanging off a short length of RG-8 coaxial cable. That serves to mechanically isolate the relay from the radio chassis and also tends to isolate this noisy relay from the chassis metal – which makes it louder than it already is!



While not easy to find operational today, a major attraction (to me) on the Valiant Transmitter are its Mercury Vapor 866A Rectifiers in the High Voltage Power Supply of the transmitter. The picture at the left shows the pair operating under load with the full-wave rectifier circuit. The “electric blue” glow is bright (this is not a time exposure) and ripples with the keying of the transmitter on CW or with modulation on SSB. On AM, they just glow brightly. The more current drawn the brighter they flash.

Often these very efficient rectifiers (approaching he efficiency of a solid-state rectifier/diode) are replaced by more plentiful (and more dependable) 3B28 rectifiers. They are more often replaced with diodes as there is no significant voltage increase as with most diode replacement of tube rectifiers.

W9MXQ

I measure Valiant Transmitters as being early or late models and this one is an early version. This is based on my own parameters. Early Valiant Transmitters have their

screen voltage adjustment on a large ceramic resistors with two slider contacts accessible at the underside of the right rear corner of the chassis. The cabinet need to be removed to make the adjustment.

- One slider to set screen voltage on the triple-6146 final amplifier tubes
- One slider to set screen voltage on the double-6146 plate modulator tubes.

Later Valiant Transmitters have the same adjustments but with high wattage potentiometers mounted on the right rear side of the chassis – accessible via holes in the outer cabinet. The cabinet did not need to be removed to make the adjustment.

Remember, this article is more about the particular/individual Valiant and HQ-170AC-VHF radios in my shack than about the E. F. Johnson and Hammarlund product line and the place for these radios in it. There is a particular secret about the Valiant in this article. On its way to John Schroeder, KB9BPM, this transmitter was dropped. Not a severe drop, mind you as no damage was done to the chassis. Two areas of damage were present:

- The meter was cracked. (I might add, the Holy Grail of a Johnson Transmitter!!)
- The 866A Rectifiers were shattered.

Look to the left side of the meter and see that a chip appears to be missing from the crystal. The meter on any Johnson transmitter is worth its weight in gold. They are virtually unobtainium and to some collectors perhaps worth more than the cost for a complete transmitter with a good meter.

I am fortunate in that I have found a replacement – good as new. I have yet to install it, however.

The picture shows what appears to be a missing section of the meter crystal. However, that is not the case. The damage is a crack, not a missing section.

The Mercury Vapor design of the shattered 866A tubes in this radio – they contain mercury. A shattered tube means that mercury could be present somewhere on the chassis. In instances where the base of the tube survives (which is usually does as it is generally a plastic or phenolic piece) and the “drop” was directly on the bottom (on the transmitter’s feet, which it was), the mercury collects in the socket. In such a case, the mercury can be easily collected and removed.

These kinds of issues – like the presence of stray mercury – are just one of many dangers if working with older radios. Remember that mercury is very toxic and must not be handled. If you come across it, contact your waste collection service or your community public works department for proper disposal instructions. (Of course, many of us may remember as kids we would retrieve it out of a broken thermometer and carry it around to show our friends!! Oh, what we did not know then.)

Using this station in a QSO is a treat. AM stations collect around several places in the HF Spectrum. See the chart below. The QSO's that I remember were considerably different from what we do today on SSB – but still do on typical AM QSO's – were much more of a round table with several stations in a single contact as if sitting around a table and taking their turn to talk. There was usually one member of the "circle" who would invariably remember the order of the circle and keep everyone on track. It was unlike today's directed nets – although they existed as well. Nets such as MidCARS, eCARS, SouthCARS, etc. existed then as now. (We also had NorthCARS, but only in the past.)

Check this chart about where to find AM on today's bands.

AM Frequencies (in MHz) As suggested by the ARRL	
160 Meters:	1.885, 1.900, 1.945, 1.985
75 Meters:	3.825, 3.870 (West Coast), 3.880, 3.885
40 Meters:	7.290, 7.295
20 Meters:	14.286
17 Meters:	18.150
15 Meters:	21.285, 21.425
10 Meters:	29.000-29.200

As you can see on the bandswitch, in the early days of the Valiant's marketplace, 11-meters was a ham band. That had ended by the time I received my first Valiant in 1964.

CW operation was much as it is today except for a very high percentage of operators on CW as compared to Phone. The CW band segments were filled with conversational CW that are generally gone today. Semi-break-in, popular along with QSK (full-break-in) today was around but not common.

When I had my first Valiant – and with the one I have today, I still switch to transmit via the transmit toggle switch on the lower right front of the transmitter. It would be easy to use the PTT circuit in the Valiant to be triggered by a foot switch – but actually I rarely use the Valiant on CW today as that mode is so much easier on modern radios. Actually, the very next generation of transmitters after the Valiant made use of semi-break-in.

Good friend, Gary Drasch, K9DJT, and I enjoy a common heritage in that we had the same first radios as General Class operators. Here is Gary, at age 13, at his attractive Valiant and HQ-170C station. Also see the Johnson Matchbox Antenna Tuner. Where I had used the Turner 254C Microphone, Gary used the Astatic D-104 with the PTT Stand. We returned to common ground with the Vibroplex Original bug. We did not discuss it, but I believe I had (and still have in my shack) that same world globe!

K9DJT and I recently discussed our next transmitter. As if staying on the same path, we moved to a Hallicrafters HT-37 Transmitter to replace our Valiant models. To some degree we missed the obvious move of the market to SSB from AM – hindsight being 20-20, we should have started with the HT-37 – the days of the Valiant were already dated!

It is interesting how power is measured today (PEP Output) and how that relates to mid-range transmitters of the 1960's, like the Valiant, when power was defined as a maximum of 1,000 watts DC input to the final amplifier (simply stated). The Valiant ran 200 watts input in Class C, for about 75% efficiency. That translated to 150 watts output, or 600 watts PEP. Only 375 watts AM DC output, such as provided by the Johnson Viking 500, translated to a full 1,500 watts PEP – today's limit. 1960's transmitters such as the Johnson Desk Kilowatt running a full 1000 watts input would show 750 watts output, or 3000 watts PEP!! A big controversy in the amateur radio AM crowd to this day. Stay tuned for the article for more details. I wonder how many of today's SSB users know of, or remember, the defined 4x advantage in PEP power of SSB over AM (reference).

A closing warning – and typical of most of the radios I detail in my articles. These radios are dangerous with 300+ volts in the receivers and 300 to thousands of volts in transmitters and amplifiers.

HIGH VOLTAGE WILL KILL YOU!! LIKE IN DEAD!! NO RETURN!! DO NOT PASS GO AND DO NOT COLLECT $200!!

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he often adds commentary that makes it into the article. Bob and I both own numerous pieces of Hammarlund equipment. Between the two of us, however, I believe that I only have any E. F. Johnson gear. Many comments herein are subject to

opinions that W9DYQ and I hold and believe. You experience may differ – and if they do, I would like to hear from you for further discussion.

I sincerely appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, W9MXQ@earthlink.net.

Credits and Comments:

[1] Reference https://en.wikipedia.org/wiki/Nuvistor for details of the RCA Nuvistor Vacuum Tube.

[2] A Hammarlund HQ-170AC or HQ-170AC-VHF Receiver would not be a good choice to run in the CQ World-Wide DX Contact as it plays out, today, for example. The same performance limitations would apply to even less technically stressful operations, such as Field Day. On the other hand, a casual QSO or checking into a traffic or technical net is quite pleasurable with the same radio – or any vintage radio.

[3] An included feature in transceivers to allow for including a separate receiver was common in the time of the Collins KWM-2 and still is in transceivers to this day. Most notable of transceivers that are contemporaries of the KWM-2 with this feature were the Drake TR-3 and TR-4, the Hallicrafters SR-150, and others. Check your vintage transceiver instruction manual for details.

[4] John Hurley operates a restoration business called E. F. Johnson Radio Restorations. Check out his restoration examples at https://johnsonradioresto.com/.

© W9MXQ

E. F. Johnson pushed the envelope on a medium power by updating the Viking Valiant to the new look of the Viking Valiant II. It incorporated out of the box compatibility with the Viking Single Sideband Adapter. So, with this transmitter and the adapter one had a plated modulated AM Transmitter plus good power on Single Sideband. For a time, I owned and used both the Viking Valiant II and the Viking Sideband Adapter.

Vintage Amateur Radio Pictures

de: Bill Shadid, W9MXQ – W9MXQ@ARRL.net

The amateur radio market was hit hard by the forward thinking Collins Radio Company when the Collins S-Line Separate 75S-1 Receiver, 32S-1Transmitter, and KWM-2 Transceiver were introduced. Not to be out-done, Hallicrafters (with the SX-117 Receiver, HT-44 Transmitter, and SR-150 Transceiver), Heathkit (with the SB-300 Receiver, SB-400 Transmitter, and SB-100 Transceiver), and Drake (with the R-4 Receiver, T-4X Transmitter, and TR-3 Transceiver) soon went head to head with the Collins effort.

Heathkit and Drake stayed in the market for the long term and met or even equaled Collins in performance. Hallicrafters stayed but left to pursue more lucrative military communications equipment long before the others.

Probably the most popular of Heathkit's SB-Line at the time was the SB-100 HF Transceiver that was improved over in its vacuum tube form to include the SB-101 and even later SB-102 form. Ultimately it was replaced in function with an all solid-state replacement, the SB-104 (and the final SB-104A) versions.

Heathkit SB-101 HF Transceiver

First Marketed in 1965 as the SB-100, followed in 1967 with the SB-101 Update
(Not shown are the matching SB-600 Speaker Console with HP-23 AC Power Supply)
W9MXQ Photo

Upcoming Events

de: Tom Trethewey, KC9ONY

10/16-18/2026 – International
Scouting's Jamboree-on-the-Air (JOTA)
https://www.scouting.org/international/jota-joti/jota/

JOTA Guidelines for Amateur Radio Operators:
https://www.scouting.org/international/jota-joti/jota/operators-guides/

10/17/2026 – Lancaster, WI
Hidden Valleys Amateur Radio Club - 3rd Annual Free Hamfest
https://www.kc9kq.net/hamfest/

10/17-18/2026 – United States of America
POTA Support Your Parks – Autumn POTA event
https://docs.pota.app/docs/events.html

11/08/2026 – Oshkosh, WI
Fox Cities Amateur Radio Club - 2026 FCARC Hamfest
https://fcarc.club/hamfest

4/24/2027 – Cedarburg, WI
Ozaukee Radio Club, Incorporated - 47th Annual Spring Indoor Swapfest
https://ozaukeeradioclub.org/

Ozaukee Radio Club Minutes of Membership Meeting. 9/9/2026

de: Kenneth Boston, W9GA, Secretary

The September 2026 meeting was held in a hybrid format, at the Grafton Senior center. Our President Mike N9FPG began the meeting at 7:00 PM whereupon a go-around was conducted in the room and with the zoom attendees. Mike also announced that he brought a number of QSL cards received for the recent lighthouse event at which several members were active participants. These were laid out and on display at the meeting

Program: Tom KC9ONY introduced Gary W9XT who gave a presentation here at the meeting on the use of antenna modeling software in designing and building antennas and modeling their performance in the location where they are installed. Since evaluating an antenna on a physical range is expensive and time consuming, modeling the design is cheaper and easier. The programs depend on basic physics; using the EM field present around the physical conductors of the antenna and evaluates the field around the antenna and its parameters in real space. Most programs rely on the NE.C, which was developed by the government and now used in private sourced programs. By breaking the antenna design into segments and entering these into the programs the performance can be estimated. Next, Gary discussed two programs; HFTA and TERA, for evaluating antenna performance over real terrain, with plots of their field strength in elevation and azimuth being seen. Most of these programs are freeware, or at a modest cost. Gary answered a few questions on their use to close the presentation.

50/50 Raffle: Conducted by N9VSV; this was won by Rich N9RCH with a pot of $20 (and $20 split going to the STEM fund).

Scholarship Auction; Gary W9XT auctioned off a few 'tackle' boxes containing various parts and featured one filled with RF connectors and adaptors.

Committee reports: (no reports: RPT VP, Tech)

Pres: Mike N9FPG reiterated that he has QSL cards received for the lighthouse event, and thanks W9JI for his work with the STEM committee.

1st VP: Tom KC9ONYwould like to see a few more participants for the project night program to be given in October.

2nd VP: Jeananne N9VSV updates the members on the new SWAG prices posted on the webpage, along with information on what is available.

Treasurer: Gary N9UUR has put out on the tables the latest financial report; (plus Gary was modeling our new club T-shirts!!) overall club finances are solvent, with the CDs maturing soon and to be rolled over. The Lighthouse event expenses were within the budget also! K9QLP moved to accept the financial report, N9RCH 2nd and motion passed.

Secretary: Ken W9GA; posted the minutes in newsletter and on remailer; N9RXD moved to accept, W9DHI 2nd and the motion passed.

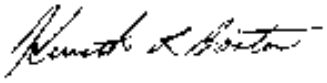
Fall Swapfest: Loren N9ENR is still looking for a few members for support at the Fall Swapfest, please contact him if you are available!

OLD business: none

NEW business: none

Adjournment: W9DHI moved to adjourn, motion carried; time end was 8:19 PM. There were 9 Zoom attendees, 31 on site attendees.

Respectfully submitted;



Kenneth Boston W9GA, secretary

Ozaukee Radio Club		
9 September 2026 Meeting Attendance		
Gary N9UUR	Jim K9QLP	John WA9KNY
Jeananne N9VSV	Loren N9ENR	Fred W9KEY
Peter W0NG	Todd N9DRY	Mike KE9DLY
Ben KC9TZM	Tony AD9BR	Ron KD9VBB
Mike N9FPG	Ken W9GA	Kent K9ZMU
Gregg W9DHI	Gary K9DJT	Jim N9WIU
William AC9JV	Bill W9MXQ	Rod WB9AZH
Gary W9XT	Tom W9IPR	Jim KC9EAT
Tom KC9ONY	Paul W9PEM	Bill K9GN
Jodi KC9EOX	Cindy KA9PZG	
Al N9RXD	Rich N9RCH	
Attending on Zoom		
Bob WI9BOB	Don AA9WP	Gregory K0PJ
Stan WB9RQR	Jan K9JET	Markus KD9UWG
Nancy KC9FZK	Ray W9KHH	Don K9MOI

Notes from the 1st Vice-President and Programming Committee Chair

de: Tom Trethewey, KC9ONY

October Meeting

This Month's Meeting: Wednesday, October 14, 2026, 7:00 PM

Program: Project Night.

Various ORC club members will present projects that they have worked on.

An invitation will be sent out a few days before the meeting.

.

Program Calendar

November: Calculations in Ham Radio History, Pat Volkmann W9JI

December: To Be Determined

January: Election of Officers

February: SOTA (Summits on the Air), Steve Dubberstein, K9WO

Call for Programs

You don't need to be an expert to present. If you have ideas or topics for a program at one of our upcoming meetings or have seen a presentation you think the ORC members would appreciate, please reach out to me or any board member.
Contact me at: 1stvp@ozaukeeradioclub.org.

Most of our programs are recorded and available on our YouTube Channel: https://www.youtube.com/@ozaukeeradioclub835/videos.

ORC Meeting Agenda

14BER 2026

1. 6:45 – 7:00 PM
   Check-In and Introductions
2. 7:00 PM Call to Order:
   President, Mike Harrington (N9FPG)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Project Night – Presented by Various ORC Members.
5. 1st VP Report:
   Tom Trethewey, KC9ONY
6. 2nd VP Report:
   Jeananne Bargholz (N9VSV)
7. Repeater VP Report:
   Gregg Lengling (W9DHI)
8. Secretary's Report:
   Ken Boston (W9GA)
9. Treasurer's Report:
   Gary Bargholz (N9UUR)
10. Committee Reports
11. OLD BUSINESS
12. NEW BUSINESS
13. Adjournment

tags

Ozaukee Radio Club Swag Spot

de: Jeananne Bargholz, N9VSV

Listing of available Ozaukee Radio Club Swag Items for your review and selection . . .

Tumbler – Front

Tumbler – Back

Tumbler Caps

Personalized Polar Camel 20oz Tumbler
$33.00 (your choice of standard or slider cap)
$3.00 additional caps
9 colors available: black, red, royal blue, teal, purple, dark gray, navy blue, maroon and green. The font is standard; all you need to decide is cap style, "just callsign" or "name and callsign." If "name and callsign," then, name on line one or on line two?

Name Badge
All new members get their first name badge free.

Magnetic "clasp;" one size fits all
The font is standard.

Replacement or additional badges: **$10.00**
Replacement Magnet: **$1.00**

Personalized Cap
Caps are 100% Cotton w/Velcro closure: $33.00

- **Khaki cap with navy blue embroidery or Navy Blue cap with yellow embroidery**
- **Callsign is above name and club name is on back**
- **Font is standard**
- **One-size fits most.**
  Cap size range is 6 5/8 – 8. Head size range is 20 7/8" – 25 1/8".

To Order Swag:

Order on our Webpage and pay right away (with PayPal):

https://ozaukeeradioclub.org/homepage-academica_pro_3/orc-gear-swag/

Or you may contact me directly and send a check or pay for your items at the next meeting. Contact me at 2ndvp@ozaukeeradioclub.org. I'm also in the roster.

If you don't get to the meetings on a regular basis, we'll have to figure out a way to get your items delivered. USPS is an option but at the expense of the member.

The Back Page

This Month's ORC Meeting
Hybrid In-Person/Zoom Meeting
14 October 2026

Program:

Program: Project Night
Member Project Presentations

6:30 PM – Doors Open

6:45-7:00 PM – Zoom Check-In

7:00 PM – Meeting Begins

Next Month's ORC Meeting
Hybrid In-Person/Zoom Meeting
11 November 2026

Program:

Program: Calculations in Ham Radio History
Pat Volkmann W9JI

6:30 PM – Doors Open

6:45-7:00 PM – Zoom Check-In

7:00 PM – Meeting Begins