



Early 2020 was the time when the Pandemic was gaining steam and we were getting worried about contact with other people. We started meeting on Zoom and learned pretty quickly how to use it. Zoom was one of the ways that I got to know many of you better as we had much more time to talk after the meetings. Zoom continues to be a part of our monthly meetings which are now a combination of in-person and video.

I don't know what the future holds for the ORC, but I am confident that we will adapt to new situations as they confront us. Our Club is full of resourceful, creative, and innovative people who have demonstrated they want to keep the Club going, regardless of the challenges before us.

I will continue to remain involved with the club and I am looking forward to working with the ORC Board as the Past President and as Chair of the STEM Committee. I will also continue to work to find programs for the monthly meetings, at least for the time being. I want to thank all of you for the support you have provided during my tenure, and I ask that you provide that same support and respect to our new officers.

See you at the meeting.

Pat Volkmann W9JI

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# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ

Please note Club President, Pat Volkmann, W9JI, on Page 1 for his last monthly message. It has been great working with you, Pat. But I know that these pages will be seeing your writing going forward. Upcoming elections are the source of our future leadership team so all please exercise your voting rights and let's get our new leadership team in place! Do you want to serve the club and help make it a success – this is your chance to step up and volunteer.

I am making some order of appearance changes to articles beginning in this issue. A rough guideline for articles' appearance is as follows:

1. President's Message
2. Editor's Message
3. Featured New Author Article
  - This Month – see Paul Martis, W9PEM
4. Operating / "Getting on the Air" Articles
  - Monthly Column – Don Zank, AA9WP - ARES
  - Monthly Column – Gary Sutcliffe, W9XT – On the Air Activities!
5. First Person Articles – Personal Articles from Members on their activities and/or focus within the hobby.
6. How To Articles
  - Monthly Column – Stan Kaplan, WB9RQR – Personal Computers
7. Radio History Articles
  - Monthly Column – Bill Shadid, W9MXQ – Vintage Amateur Radio
8. Minutes of the Past ORC Meeting and Next Month's Schedule

Let me know what you think.

Please remember – repeating from the past:

I am looking for first person articles on your life in ham radio, an event you attended, or an event you led. Do you need help to get published – well, that is why I have the title of Editor. Let me know and we will work together to get your story into print. Contact me at [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org).

Enjoy the Newsletter!!

Let's first check out the Table of Contents:

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January 2023 – Table of Contents**

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Onward To the Newsletter

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# My Adventures

## An old HT, a New Weather Station, and Some APRS

de: Paul Martis W9PEM



I've been licensed since 2001 and my first radio was a Kenwood TH-D7A HT that I bought used on eBay. I used that on and off for several years as a regular FM voice HT and occasionally explored the APRS functionality with a serial GPS. I didn't do much with the hobby for a good 15 years or so and recently got back into operating more about 3 to 4 years ago when I decided to finally upgrade my license to General in 2018.

One of the aspects of the hobby I enjoy more recently is refurbishing or revitalizing older gear. I picked up a couple of Kenwood TS-440S/AT units last year, cleaned out the notoriously bad VCO staking material, tuned them up, and got them back on the air after what was probably 20 years of them sitting in someone's basement. I hooked them up to sound card/PTT interfaces and got them running on digital modes like Vara HF, FT8, and JS8Call. Going through that made me wonder what could be done with my original Kenwood HT that was lying around unused.

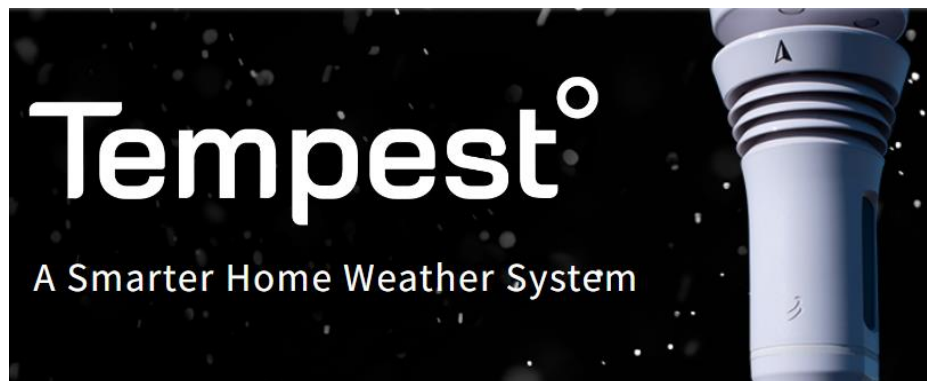
I never really got tired of APRS - I had a Yaesu FTM-400XDR for a bit a couple of years ago that I liked using in the car with APRS tracking but, again, I went through a lull, and it wasn't being used and I sold that off (looking back now, probably should have held on to it with them being discontinued). So, I asked myself: what else could I do with APRS with that TH-D7A besides letting the world know my exact position? Looking around the map on [aprs.fi](http://aprs.fi) I noticed a whole lot of weather stations and started researching how those were getting into the system. This is where a great nexus of interests happened in a short time.

All things weather is another one of my interests. I took atmospheric science classes in college and even once considered majoring in meteorology before deciding on electrical engineering. At my last job I was the engineering manager over weather and environmental monitoring systems (weather stations, soil sensors, wireless communications, IoT, etc.). I love knowing and predicting and monitoring the weather and I have a small weather station on my house which provides the real-time stream of information that I crave. So, I wondered: how do I get the data from that station on the air via APRS?

Back to the Kenwood TH-D7A: it has a built-in APRS TNC (so it can decode, and display received APRS beacons/messages) and it can also go into a mode for packet operation. I had used it early on in the APRS mode as I mentioned, but I never explored the packet features. I fashioned up a USB-to-RS232-to-2.5mm TRS cable for the PC jack and I started exploring how the TNC worked. I first managed to get it to work with

the Outpost Packet Message Manager (PMM) Winlink client, connecting up to the OZARES Winlink gateway in Saukville. Side note: Winlink Express only seems to work in KISS mode and the TH-D7A doesn't have a very full-featured KISS mode on the TNC so, despite my many attempts to fiddle with settings, I could never get it to work with WinLINK Express. I got it working with PMM by using the TM-D710 setting and manually starting up the packet mode TNC on the HT. Later I picked up a Digirig Mobile and was connecting to the same RMS gateway with Vara FM, which worked really great.

With solid packet data connections established between the HT and my PC, I started looking at how to use that for APRS. Luckily the same TM-D710 trick used to get for Outpost PMM also worked in the APRSIS32 Windows APRS client. I'm not a super fan of that software as it is pretty clunky in many ways, but I settled on that because I learned that it could generate APRS weather object data from weather station outputs, specifically those using the Cumulus software (Davis, La Crosse, Oregon Scientific), via a specially formatted wxnow.txt file. Now, I don't have one of those weather stations and instead I am using a WeatherFlow Tempest station on my roof. The Tempest is great, but the system is designed around IP connections and web/mobile applications, not serial ports, and PC software. So, what I really needed was a different way to generate that wxnow.txt file with my station's data so APRSIS32 can properly update the weather station object.



I did some digging about how the Tempest outdoor sensor unit communicates with the indoor Wi-Fi hub and stumbled upon a UDP API. Apparently, the hub generates weather data messages in JSON as they are received from the outdoor unit and broadcasts those messages over port 50222 on the LAN to which the hub is connected. Since my PC is connected to the same LAN from my Wi-Fi routers in the house, it was able to monitor these UDP messages. Some snooping with Wireshark confirmed that. I was getting closer but now needed a way to take the pertinent data out of these messages, generate the necessary text strings for the wxnow.txt file, and save that with updated data regularly so APRSIS32 could use that to update the weather station object.

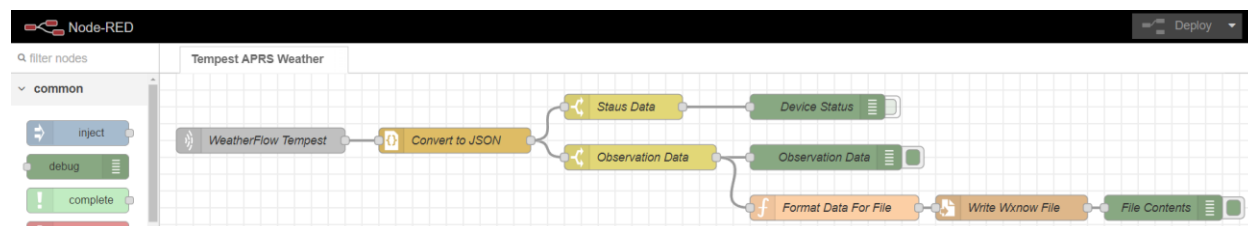
This brings me to a third interest of mine: Internet-of-Things (IoT) and developing code to capture/parse/convert/post/display data, typically from sensors or other connected devices. I've driven the development of multiple commercial IoT systems for different industries during my career and in each case, I found the easiest way to prototype data

messaging systems is through a tool called Node-Red. Node-Red is a visual flow-based programming tool that is perfect for interacting with modern APIs, hardware, and other data sources, and manipulating data. I've run Node-Red on Raspberry Pis, Windows PCs, and various Cloud computing systems. There is actually a pretty active community I discovered along the way (<https://groups.io/g/nodered-hamradio/>) that leverages Node-Red for various ham radio-related projects (often for creating logging/contesting dashboards and for controlling radios/amps/rotators/etc.).

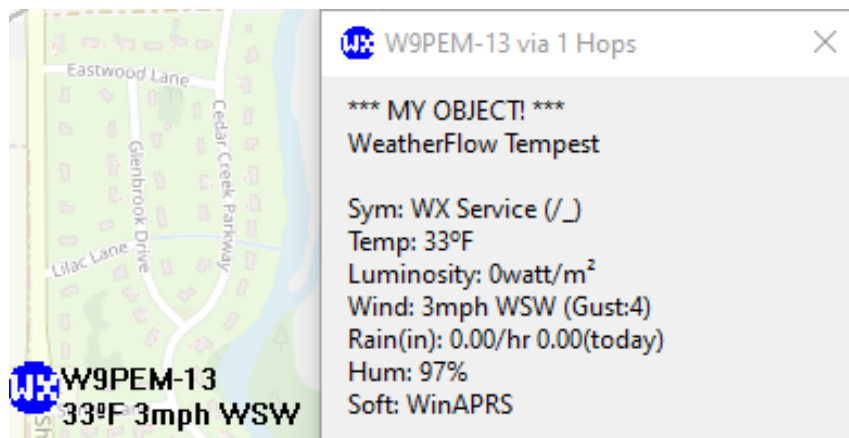
# Node-RED

Low-code programming for event-driven applications

In Node-Red each "flow" is triggered when a data source or other input "node" changes (new data received, timer elapses, buttons pressed, etc.). In my case, I have a flow set-up that listens on that UDP port for the Tempest data on the LAN from the hub, looks for specific packets that contain the weather observation data, parses the JSON structure for the specific key/value pairs corresponding to wind direction, speed, gusts, temperature, humidity, rainfall, pressure, and solar radiation. These data points are then formatted in the way that APRSIS32 expects for the wxnow.txt file and the file updated regularly as new data comes on the LAN and triggers the flow. APRSIS32 sees the updated timestamp in the wxnow.txt file and knows it has fresh data to beacon out in a formatted APRS message. Here is an image of the flow:



I have this setup where it can either use the direct [aprs.is](https://aprs.fi) Internet connection or, more often, I just use the TH-D7A's packet-mode TNC connected over a serial port to get the messages out. From my QTH around Cedarburg/Grafton, I am able to reliably hit at least 2 digipeaters which relay my RF messages to the [aprs.is](https://aprs.fi) system so I can monitor my setup via [aprs.fi](https://aprs.fi) or other mobile apps. I just have to leave APRSIS32 running along with Node-Red, and I have my weather station data showing up. It even then feeds into the APRSWXNET/CWOP system - you can find it at W9PEM-13. I'll probably move this setup to a Raspberry Pi running Node-Red and have it connected directly to the HT (or some other radio) for a more permanent APRS weather station setup. Here's what it looks like presently within APRSIS32:



It's been fun bringing together these three interests - amateur radio, weather, and IoT - together recently to make this happen. I've learned a lot along the way, and I've grown to appreciate the capabilities of my little TH-D7A HT more and more. It's really cool to be able to simultaneously (well, at least with the same HT hooked up to the PC and by using both bands on the radio - can't RX while TX'ing obviously) 1. monitor local RF APRS messages 2. contribute weather station data (both over RF and the Internet via digipeaters) and 3. connect to the Winlink system over Vara FM. Oh and I forgot to mention I can still use it for my original purpose - FM voice on local repeaters for checking into nets. That HT might be old and outdated, but I'm making the most out of it!

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**Kirk goes back in time to 2005 . . .  
and finds this amazing piece of vintage electronics . . .  
coveted by collectors in his time!!  
“Spock – do we still have those ORC Newsletter Archives?”**

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**OZARES: Ozaukee Amateur Radio Emergency Services**  
de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)



**National Incident Management System  
(NIMS) Communication**

The National Incident Management System, or NIMS, was created in 2004 to provide a systematic approach to sharing resources, systems and to “act collaboratively” during threats, hazards, and other incidents. As they put it: “NIMS provides stakeholders across the whole community with the shared vocabulary, systems, and processes to successfully deliver the capabilities described in the National Preparedness System.”

Last month I listed the key principles from the National Incident Management System (NIMS) provided under the Communications and Information Management component. This month we will look at the first principle of interoperability.

This can be defined in two parts:

- Operability - The ability to establish and sustain communications in support of day-to-day mission operations.
- Interoperability - The ability to communicate among jurisdictions, disciplines, and levels of government, using a variety of frequency bands, as needed and as authorized.

**But Interoperability is not the ability for everyone to talk to everyone else.**

The definition supplied from the Auxiliary Communications Field Operation Guide (AUXFOG) from the Department of Homeland Security is: “Interoperability: The ability of emergency responders to communicate among jurisdictions, disciplines, frequency bands, and levels of government as needed and as authorized. System operability is required for system interoperability.”

Basically, the incident commander, the authority having jurisdiction, first responders, and other government officials must be able to communicate and share information. In the past years, we have watched the vendors of communication equipment, working with first responders, create new technologies for communications. This includes the new FirstNet system: <https://www.firstnet.gov/>

So, what is amateur radio interoperability? Hams talking to hams? Yes, in a sense. Communications must be robust between our locally served agencies, which includes hospitals, the Red Cross, and county public health officials.

Communications with local ARES groups and their respective served agencies must be maintained. This will also include statewide and national ARES groups.

The importance of amateur radio communications can be found in the Wisconsin Field Operations Guide or WI-FOG

[https://oec.wi.gov/wp-content/library/2021/WI\\_FOG\\_2.3\\_2021\\_Final\\_Full\\_Size.pdf](https://oec.wi.gov/wp-content/library/2021/WI_FOG_2.3_2021_Final_Full_Size.pdf)

Chapter 11. The chapter provides a list of assigned frequencies for each county. Operators in neighboring counties must be aware and capable of operating on their neighbor's assigned frequencies.

Another group that ARES members must be capable of performing interoperable operations with is the Military Amateur Radio Service, MARS. Several times during the year MARS will conduct their COMEX exercises. The exercises emphasize situational awareness, message passing and monitoring on the 60-meter band.

Another is the SHARES, the Shared High Frequency Amateur Radio Emergency Services, a program administered by the Department of Homeland Security's National Coordinating Center for Communications, NCC.

The members and operators of SHARES stations will provide message handling if cell or landline telephones become inoperable.

"SHARES members, 3290 HF radio stations from almost 600 federal, state, and industry organizations participate in this program. SHARES users rely on HF radio communications to perform critical functions, including those areas related to leadership, safety, maintenance of law and order, finance, and public health. This program also provides the emergency response community with a single interagency emergency message handling and frequency sharing system. SHARES promotes interoperability between HF radio systems and promotes awareness of applicable regulatory, procedural, and technical issues."

<https://www.cisa.gov/shares-program-information>

### **Resources to check out.**

National Interoperability Field Operation Guide or NIFOG:

[https://www.cisa.gov/sites/default/files/video/NIFOG\\_2.01\\_508\\_FINAL\\_VERSION\\_5\\_11\\_22\\_0.pdf](https://www.cisa.gov/sites/default/files/video/NIFOG_2.01_508_FINAL_VERSION_5_11_22_0.pdf)

Auxiliary Communications Field Operations Guide or AUXFOG:

[https://www.cisa.gov/sites/default/files/publications/AUXFOG\\_June\\_2016\\_-\\_508\\_Reviewed\\_-\\_Final\\_\(2-16-17\)\\_0.pdf](https://www.cisa.gov/sites/default/files/publications/AUXFOG_June_2016_-_508_Reviewed_-_Final_(2-16-17)_0.pdf)

# OZARES Winter Field Day

de: Don Zank, AA9WP

Please join Roland, KB9TMB, John, NO9X and Dave, KD9JYL, and whoever else may show to participate in Winter Field Day, 2023.

The OZARES Winter Field Day operation will be a good test of setting up and operating a field station in winter. This will be more of an ARES exercise than a contest exercise.

Modes of operation will be VHF-FM; WINLINK including 2m FM and HF; and HF phone. They will be testing local simplex VHF connections in the South East District on 146.520. They can be reached on WINLINK using either WI9OZ or NO9X.

- **What:** OZARES Winter Field Day activation
- **Where:** Upper Lake Park (picnic area 1) Port Washington
- **When:** January 28, 2023. 12:00 PM – 3:00 PM
- **Talk-In:** 147.330



© Sarge Speaks Out

# On The Air Activities!

de Gary Sutcliffe, W9XT



January is a time for looking back and looking forward. We saw some good things in 2022. The year started in the doldrums of the low sunspot period as the sunspot count increased. At the end, we saw some propagation on the higher HF bands that we had not seen in about six years. It was a long drought!

COVID eased, and we started seeing more hamfests and in person meetings after the shutdown. Of course, as hams we have more ways to communicate than most people, but there is a lot to be said about face to face interaction.

Travel restrictions were relaxed, and we saw an increase of DXpeditions as hams were allowed to travel to more areas of the world. As a serious DXer with 50 years of hunting, many of the new band and mode countries I need will only be activated by DXpeditions.

Looking forward, we can expect propagation to improve on the higher HF bands. I am hopeful that the current cycle might reach the point we get some F layer propagation on 6 meters. The last time we had that regularly was 2000 and 2001.

DXpeditions will continue to rise. Just this month, we will have the #2 and #3 most needed DXCC entities on the air. It is an exciting way to start the year! However, the one thing going forward that concerns me is that ham events like hamfests seem to be disappearing.

## Recent Contest and Operating Events recap

Bill, W9MXQ, reported operating the Twelve Days of Christmas event. He got the sweep of all twelve stations three different ways. Bill worked them all on CW and SSB, using a Drake TR5 transceiver running 50 watts. Bill then did it mixed CW and SSB QRP using a Yaesu FT-817ND. Gary, N9UUR, reported working some of the special event stations but did not get a sweep.

The ARRL 10 Meter Contest in December had several ORC members active. Conditions were probably the best in about six years. Bill, W9MXQ, had 278 phone and 37 CW contacts, again with his Drake TR5. Other calls heard were Vic, WT9Q, Fred, W9KEY, Ray, W9KHH, and Don, AA9WP. I'm sorry if I missed anyone.

Fred, W9KEY, thought the conditions were much better than in 2021, even though the late afternoon and evening propagation was down. Operating phone only, he made 418 contacts in 41 states and 47 DX countries. Fred mentioned that contests are a great way to pick up new states and countries for awards. You don't have to operate a contest to win the event. The increased activity brings out stations and countries that are not on

that often, so operate to work on awards. The serious competitors will appreciate your contacts.

Fred also mentioned that in 2022, he added 19 confirmed countries to bring his total up to 197. He is learning that new ones are getting harder to find. That is true, but 2023 will bring many DXpeditions, which will be covered later.

I went mixed mode unlimited, low power in the 10 Meter contest. For the last few years, I went CW only because poor conditions would make SSB extremely frustrating. With better conditions, I would make more contacts by jumping back and forth between modes. My goal was 1000 QSOs, but I ended up about 20 short. About 2/3 were CW because they are worth more points.

### **HAARP Asteroid Bounce**

With only a few days' notice, HAARP announced they would try to bounce low frequency signals off a 500' asteroid that was to pass within about two lunar distances of the earth on December 27. HAARP is the High-frequency Active Auroral Research Program. They do ionospheric research by heating sections of the ionosphere with RF and similar experiments. But with their high-power station, they think they could learn something about the internal composition of asteroids. Unfortunately, according to some of the tin foil hat crowd, they are also doing nefarious things like weather modification. I don't really believe that.

Back in January of 2008, they were bouncing signals off the moon just outside of our 40M band. You could pick them up quite well with just a dipole. It was pretty cool. When they announced that they would try to do it with Near-Earth Asteroid 2010 XC15 and wanted hams to listen and send them reports, I figured I needed to check this out.

They provided some basic information but really didn't offer any advice. Some of the information was kind of cryptic. They mentioned a 30 kHz bandwidth "linear FM" signal along with an eleven-hour window and a frequency. Their website had not been updated in some time and still had information on their upcoming October 2022 experiments and nothing about this test. I did a little investigation and looked up their FCC experimental license. They are authorized to run 3.6 Gigawatts ERP in their 9 MHz allocation. Talk about QRO!

I figured hearing them off the asteroid would be a long shot due to distance and the small size, 500' vs. almost a 2200-mile diameter for the moon. But you never know until your try.

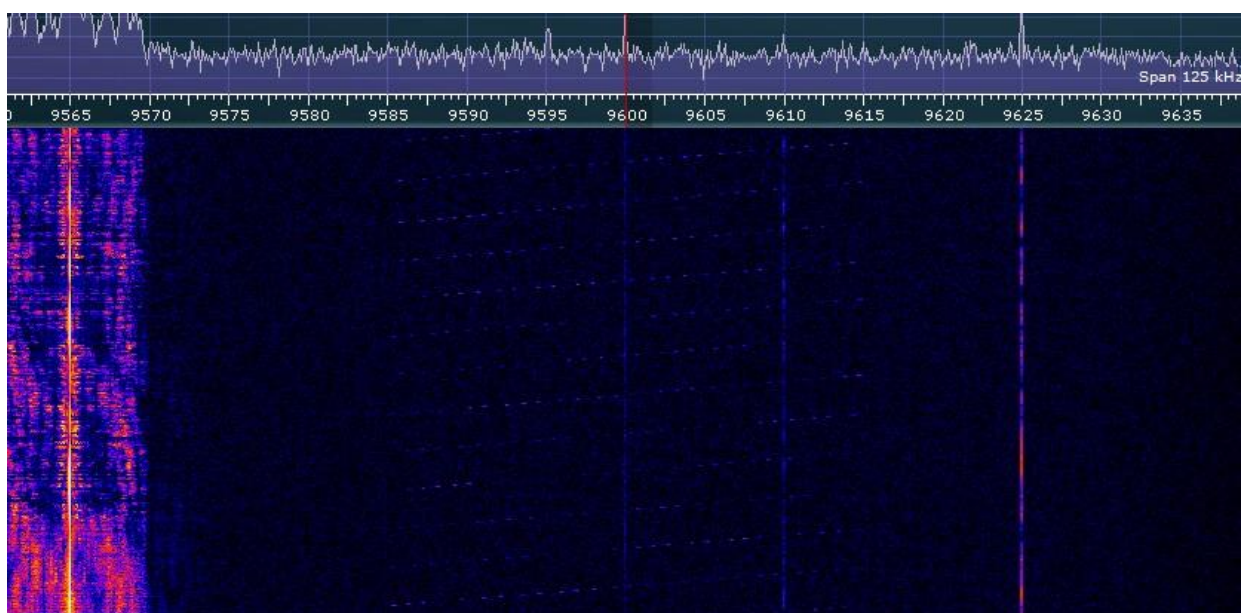
With 3.6 GW, they should be pretty strong on sky wave. During their 40M EME tests, you could often hear a short tone from the direct signal, then 2.5 seconds later, hear a weaker, hollow sounding tone off the moon. So, I figured that if I were lucky enough to hear echoes, it would follow a similar pattern.

When I first got on to listen, it was about 6:00 AM. I was listening on my FTDX5000. There was a Chinese broadcast station on that frequency. After about an hour, they signed off. After that I was still not hearing anything. They were saying they would transmit above and below 9.6 MHz. Where are they changing frequency? If so, how far would they go? So, I decided to fire up my RSPduo SDR that I picked up at Dayton earlier this year. It would have a band scope to look for them, plus I could play around with different modes and bandwidths.

After hooking it up, setting up the software, and figuring out that I was not getting a signal because of a bad cable, I started seeing signals around 9.6 MHz. They were SW broadcast stations, but 9.6 was clear. I left it on, and about an hour later, I started to hear short chirps every two seconds like they said they would. I was able to get a quick screen shot of the spectrum waterfall. By the time I was able to start recording they had faded out. Several hours later, I had the same experience, a quick screen shot but they either faded out or stopped transmitting before I could record the audio.

I thought the whole thing was kind of strange. If HAARP wanted to get help from hams, they should have given out more information. For example, what would be the best way to listen for them? What kind of signal strengths would have been best? If they were only transmitting from time to time, they should have had a way to communicate that.

One thing puzzles me. They transmitted the chirps every two seconds. At the distance to the asteroid, round trip time would be around 5 seconds. That means they would transmit a chirp, then a second chirp before you would receive the first one. It would be more difficult to separate ones from the asteroid from sky wave signals, except, of course, for strength. It would have been easier if they transmitted every 6 seconds or so. I'm sure they had their reasons. That probably would not have been an issue for their big receiving sites in California and New Mexico, but it would have helped out the hams.



HAARP asteroid experiment signals. Notice (above) the faint diagonal lines centered on 9.6 MHz. Those are the short transmission bursts that start 15KHz below and end 15KHz above the center frequency. They are light since they are very weak. The bright band to the left is an AM short wave broadcast station. It is unclear what the line at 9625 actually is.

So, were the signals I heard off the asteroid? Probably not. As you would expect, I don't have a high gain antenna with azimuth and elevation controls for 9.6 MHz. But I figured that my dipoles or 40M Yagi would work reasonably well, at least for sky wave signals from HAARP. But the other signals nearby were much stronger on my 30M vertical. That makes sense since the 30M band is only about 500 kHz above their transmit frequency. But it also has a low take off angle. That is great for distant broadcast signals, but maybe not so much for asteroids high above the horizon.

But maybe they were reflections off Asteroid 2010 XC15. I expected to have a good sky wave signal from the transmitter. But they have large arrays. You don't get 3.6 GW ERP with antennas without a lot of gain, and gain means you take power going in other directions and move it in the direction you favor. Side lobes would reduce the gain in the desired direction. Could that explain little or no sky wave? The short receive periods are what I would expect from signals bounced off it. That would be brief periods with a lot of QSB as asteroid rotation and other effects would hurt or improve the signal coming back.

I also had conversations with other hams who pointed out things like the D layer absorption up in Alaska was very high at 10MHz then. The D layer is what absorbs low frequency signals during the day. It is why we don't hear distant stations during the day on the AM broadcast band. So, it is likely little signal would have reached us. So maybe I actually did pick up a signal that bounced off an asteroid. I guess I will never know.

## **December Meteor Scatter & Bandwidths**

Last month I mentioned the Geminids meteor shower. Activity seemed a bit low, but I picked up a new grid on 6 meters and another on 2 meters, so I considered it a success. I believe Gary, K9DJT, also picked up new grids.

The most common mode for VHF meteor scatter is MSK144, one of the WSJT suite of programs that includes the popular FT8. With FT8, the transmission times are long, and the data rate is low, allowing the decoding of very weak signals. The lower the data rate, the deeper into the noise you can go.

With meteor scatter, the meteor burns up in the atmosphere and creates a trail of ionized gas. The size of the trail depends on the size of the meteor. We bounce our signals off those ionized trails. The length of time this happens depends on the meteor's size and frequency. Larger rocks and lower frequencies result in longer periods the trail can support signal reflection. Some trails are very short, well under one second.

MSK144 transmits with 15 second sequences like FT8 but transmits data much faster. The time to transmit a complete exchange is than a second. So, if a meteor comes through in that 15 second period, a short "ping" will suffice to get the next sequence through. Because the data rate is so high, MSK144 and similar modulation techniques are only allowed on 6 Meters and above.

While looking to work some stations, I came across a station wanting to work scatter on 10 meters. He was using the JT9 Fast mode, another WSJT mode. Its data rate is low enough to be legal on 10M. So, I switched over to JT9 Fast and quickly had a meteor scatter QSO with him in New Jersey.

I'm not terribly interested in 10-meter digital meteor scatter. I have made many meteor contacts using CW and SSB during the ARRL 10 Meter Contests during low sunspot years. Now that we have better conditions, FT8 is a much better mode if you want to make digital contacts on 10 meters.

But this brings up an important point. The current FCC rules on data modes are archaic. They were written when RTTY was the only data mode. They specified the maximum symbol rate we could use, and 45 baud became the ham standard for RTTY. That was fine for the time, but technology has advanced to the point where the old standard is obsolete.

Rather than symbol rate, maximum bandwidth is a better method. Those of you who were involved with personal computers in the early days may have had dial-up to connect to bulletin boards and, later, the Internet. Early modems interfaced our computers to the phone line. The early ones only did 1200 or 2400 baud. Even earlier ones were limited to 300 baud. The bandwidth of a standard telephone voice line limited the speed. Over time new techniques were developed to transmit 56K on the phone lines. The current ham situation is as if you were only allowed to use your 300 baud modem to connect to the Internet, instead of available higher speed ones.

Those technologies could be used on HF if the FCC regulations permitted it. It is interesting to note that the FCC often gives special temporary permission to use higher speed data modes for emergency traffic during hurricanes. The FCC was going through the rule change process when COVID hit. They were essentially shut down. Even though things have opened up, they are way behind, and ham rule changes are not high on the FCC priority list.

Congresswoman Debbie Lesko (AZ) introduced a bill to require the FCC to amend the rules that would allow digital modulation techniques as long as they occupied a bandwidth of less than 2.8 kHz, the bandwidth of an SSB signal. Hopefully, that will pass.

## **DX**

The Crozet Island DXpedition I mentioned last month started on the 24<sup>th</sup> of December with the call sign FT8WW. Thierry, F6CUK, took a couple of days to set the station up



and put-up antennas. High winds are the norm there, and that slowed progress. He got on Christmas eve our time. I got back from family events and turned on the rig. It was pretty late, and the Europeans were probably in bed, and probably most US DXers were doing Christmas stuff, so the competition was somewhat lighter than you would expect at the start of a DXpedition that so many DXers need.

I was lucky enough to work with him in his first session, which I never expected. He was on 30-meter FT8. Gary, K9DJT, spent a lot of time breaking the pile ups. Here is his story.

### **Working FT8WW the Hard Way**

It is exciting to have DXpeditions active once again. Especially when one is the third most wanted in the world. The downside is that it's a one-man show and if that isn't enough, I wasn't able to hear him while other members of the Greater Milwaukee DX Association (GMDXA) were working him left and right. It's one of the very few times I was actually getting bummed out while attempting to work a DXpedition.

FT8WW was spending the majority of his time on 30m FT8 and I merely decoded him one or two times using my only 30m resonant antenna, a Hustler 5-BTV vertical. Oh, how I regretted not having a 30m beam. Then the thought of using my 20m beam came to mind. I switched to it and lo and behold I started receiving consistent decodes! Things were looking up until I tried matching it with my Elecraft KAT500 automatic tuner. It wasn't happy so I dug out an old Dentron manual tuner that wasn't being used and voila, it worked. I had a 1:1 match. I'm thinking, here we go! I literally called for hours on end over a couple of days with no joy.

Feeling sorry for myself, I began whining to Lyle, WE9R, about my lack of success when he reminded me that the beam wasn't resonant on 30m. Of course, he was correct. I've always been aware that a 1:1 SWR doesn't necessarily mean an antenna is an efficient antenna. It was time to go to plan "B." Having a transceiver with two receivers and selectable antenna connectors provided an opportunity to split my antenna system apart. Without too much effort, I was able to connect the Tri-bander (20m) to ANT-1 and use it as the receive antenna on the "Main" radio. At this point, I connected the 30m resonant vertical to ANT-2 which was selected as the "Sub" radio transmit antenna. Now, operating in split mode, I was able to receive 30m signals using the 20m beam, and transmit 30m signals using an efficient resonant antenna, i.e., the vertical. The next day FT8WW wound up in my log and I into his. HAPPY NEW YEAR to me!

And Happy New Year to you...  
73, Gary K9DJT

Fortunately, Gary stuck with it. After watching the Packers trounce the Vikings on New Year's Day, Gary turned on the radio and got him after only four calls. You can't start a year much better than that! Did anyone else work FT8WW?

The FT8WW operation will go on to January 26. Thierry is trying to maximize the number of contacts with DXers needing it for all-time new ones (ATNO), so he has been operating only 20- and 30-meter FT8, and a little CW on both bands. I worked Crozet on 20-meter CW back in 1983, so I have not tried to work them on 20, lest I take a contact away from someone who needs it. He says he will try SSB on the higher HF bands as the number of stations needing him on any band or mode drops.

The best times for us seem to be in the evening on 30 meters. Sometimes he will be copyable in the late afternoon, but the best signals seem to be between about 7:00-10:00 PM local time. In the mornings, the 20-meter long path seems to work best. Long path means pointing your beam in the opposite direction you usually would, southeast in this case. All in all, 30-meter FT8 seems to be our best shot. Only a few of my Wisconsin DX friends have been successful on 20, but a fair number have made a contact on 30.

Thierry is running a version of FT8 called MSHV. It is somewhat like the F/H mode in WSJT with multiple QSO streams, except callers do not change frequency once the QSO begins. Just use the regular mode, and DO NOT SET it for F/H. He is also requesting you start sending TX 2 instead of TX 1. This is because he does not need your grid, and it saves time. So instead of sending "FT8WW W9XT EN53", I would start by sending "FT8WW W9XT -10" when trying to work him. I would also recommend changing TX 4 to RRR instead of RR73. This forces the other station to send a 73. I have been hearing a lot of comments about not getting a confirmation from FT8WW and contacts not showing up on the online search.

Logs are updated periodically, and you can check if you made it by going to the website: <https://clublog.org/charts/?c=FT8WW> and entering your call sign.

Check to make sure the last upload was after your QSO. If it is and your contact does not appear, you probably worked a pirate. Unfortunately, there have been several miscreants pretending to be him. Most of them seem to be on 20 meters.

The website <http://crozet2022.r-e-f.org.news/html> has updates every few days with the English version in blue. There has been some criticism of the operation. It is unfounded. The operator is taking several months to make this trip to operate. He has restrictions on frequencies and operating times but has been making a lot of contacts, averaging over 1000/day. I think he is doing an excellent job.

The biggest DXpedition in a long time will be starting out later this month. It is to #2 most needed Bouvet Island in the South Atlantic. If you draw a line between the southern tip of South America and the southern end of Africa, Bouvet is roughly in the middle

of the line. It is said to be the most distant place from civilization on earth. Even the Astronauts on the ISS are closer to other people.

Since it is so remote, transportation is difficult and expensive. Landing on a rock covered in ice is no picnic. High wind and waves make it more difficult and dangerous. The last two attempts to the island had to be aborted. So, it is not surprising that it is the second most needed DXCC entity.

The team plans to leave from the Falkland Islands about January 14<sup>th</sup>. It could take as long as two weeks to arrive at the island. Weather conditions will determine how soon they can land and set up. The plan is to operate for 22 days. The large team expects to have as many as 12 stations on the air at peak times. That should give everyone a chance if they are patient, but many things could cut the operation short, so don't wait too long.

This is a very well-organized operation. It is also very expensive, with a budget of \$720,000. Consider contributing a few dollars if you make a contact and want a QSL. It is unlikely that anyone else will be going there for a long time.

The 3Y0J group has a very nice web page. If you plan to try to work them, I suggest you check it out.

<https://www.3y0j.no/>

With the #2 and #3 most wanted entities on the air in January, it is hard to imagine any other interesting DXpeditions, but there are.

Senegal is currently on the air, and Gary, N9UUR, has already worked him, 6W1/WA3DX. The operator will be visiting different areas of Senegal using 6Wn/WA3DX. The last number will change as he operates from different regions of the country. Most of the operation will be FT8, and he will be there until January 20.

A group of Czech ops will activate the Republic of the Congo. The dates are January 6-21. They will be on 160-6 meters, CW, SSB, and digital. This one used to be rare but has become more common in recent years. The lack of propagation on 10 and 12 meters in the last few years should increase interest in this operation. Look for TN8K.

Bob, W9XY, and Ken, K4WW, both friends of mine, will be joined by the famous DXpedition op Nodir, EY8MM, traveling to Ethiopia. The group will operate from the Addis Ababa Institute of Technology, ET3AA. Bob and Ken have made several trips over the last few years to help the students at their radio club station with operator training, station setup, antenna repairs, etc. They are scheduled to be there January 14-21.

Contacts on the low bands from ET3AA have been a problem in previous trips. Getting permission to stay at night has been an issue due to security issues. It is a pretty dangerous place. Very high noise levels have hampered the times they were allowed to op-

erate at night. They hope to get permission to operate at night and hopefully have some quiet conditions on this trip.

A group of Japanese hams will put Palau on the air on January 13-20. Then a second group will take over from January 20-27. Each operator will be using their own T88 call sign.

There are also a bunch of hams planning operations worldwide by themselves in January, often as part of a vacation. I generally don't cover them here unless I have some particular reason. However, if you are active, you might run across one of them.

## **Contests**

January is a busy contest month. The ARRL RTTY Roundup will start the day after this newsletter comes out. It was covered in last month's column. Don't forget, you can't use FT8 this year in the RTTY RU.

January 21 is the start date of the ARRL January VHF contest. The January event is not as popular as the June event, with its chance of good sporadic E propagation on 6 meters, and the September event with its potential for tropo. Rover operation can be down if it is frigid or snow storms are forecast, but it will give you an opportunity to dust off the VHF equipment.

Down on lower frequencies is the CQ 160 Meter Contest. The CW weekend starts on January 28. There is a new rule that is sort of interesting. Noise is a problem on 160 meters, and one solution is low noise receiving antennas. Another solution is to put a remote receiver in a quiet location. The single op assisted category allows the use of a single remote receiver as long as it is located within 100 KM of the transmit location. This is in addition to a receiver at the transmitter site. It will be interesting to see how many stations take advantage of this rule.

Two North American QSO Parties are this month, with the CW version starting at noon local time on Saturday, January 15. The phone version is on January 22. This is a great contest for smaller stations because low antennas can be very effective in working other states. Use low power and send your name and state as the exchange.

Expect to hear a lot of Freds on the NAQPs this month. If a member of a club or famous contester becomes a silent key, others often use his name in their exchange in the next NAQP to honor him. Fred Laun, K3ZO, passed away on January 3. He was a legend in ham radio. Originally from Wisconsin, Fred attended the University of Wisconsin and was instrumental in the university club station, W9YT. After that, he joined the State Department and was stationed overseas in several countries, where he often set up a ham station.

Long-time ORC members will remember Leon Rediske, K9GCF (SK). Leon was one of Fred's college friends, possibly even a roommate at UW. Fred would sometimes be in

Wisconsin during the summer and came out this way to have dinner with Leon. As a W9YT alumnus, I was invited to join them a couple of times. It was a real honor. Fred was also a regular at the Dayton Hamvention®.

I worked K3ZO on phone during the ARRL 10 Meter contest last month. It was always special when you work someone of such prominence, and they remember your name, saying "thanks, Gary" after you give your exchange. Little did I expect last month it would be our final QSO.

## **Operating Activities**

Last month I mentioned the WRTC Award (World Radio Team Competition). It runs the entire month of January, so I am covering it again here. Basically, it is to work special event stations publicizing the WRTC, which will be held in July. Most of the stations you work will have WRTC as their suffix. US stations will be N#W, N9W being the one for our region. I have been invited to be one of the N9W operators, so if you hear the call, it could be me. Check last month's newsletter for details of the award. I think Vic, WT9Q, qualified for the basic award on the first day!

The ARRL will try to repeat the success of the ARRL Centennial operating event held back in 2014. If you were on the air back then, you tried to work the W1AW portable stations as they operated for a week in each state. You also got points for working ARRL members, with higher point values for working hams with special positions in the ARRL.

This time the program is called Volunteers On The Air, VOTA. The idea is to honor hams that volunteer to improve our great hobby. They point out how difficult it is to get people to volunteer these days, including running for club offices, helping out on committees, etc. Sound familiar?

You don't have to do anything special to participate other than operate. Points are based on logs sent into the Logbook of The World. Apparently, you do not even have to use LoTW yourself, but only contacts you make count if the other stations send in their logs. So, if you are not an LoTW user, now might be a good time to sign up. You want to give the station you contact points for working you.

It looks like the details have not been settled. They recommend checking back for updates. From the preliminary schedule, W1AW/0 from Nebraska will appear on January 11 for a week as the first W1AW/# state activation.

<http://www.arrl.org/volunteers-on-the-air>

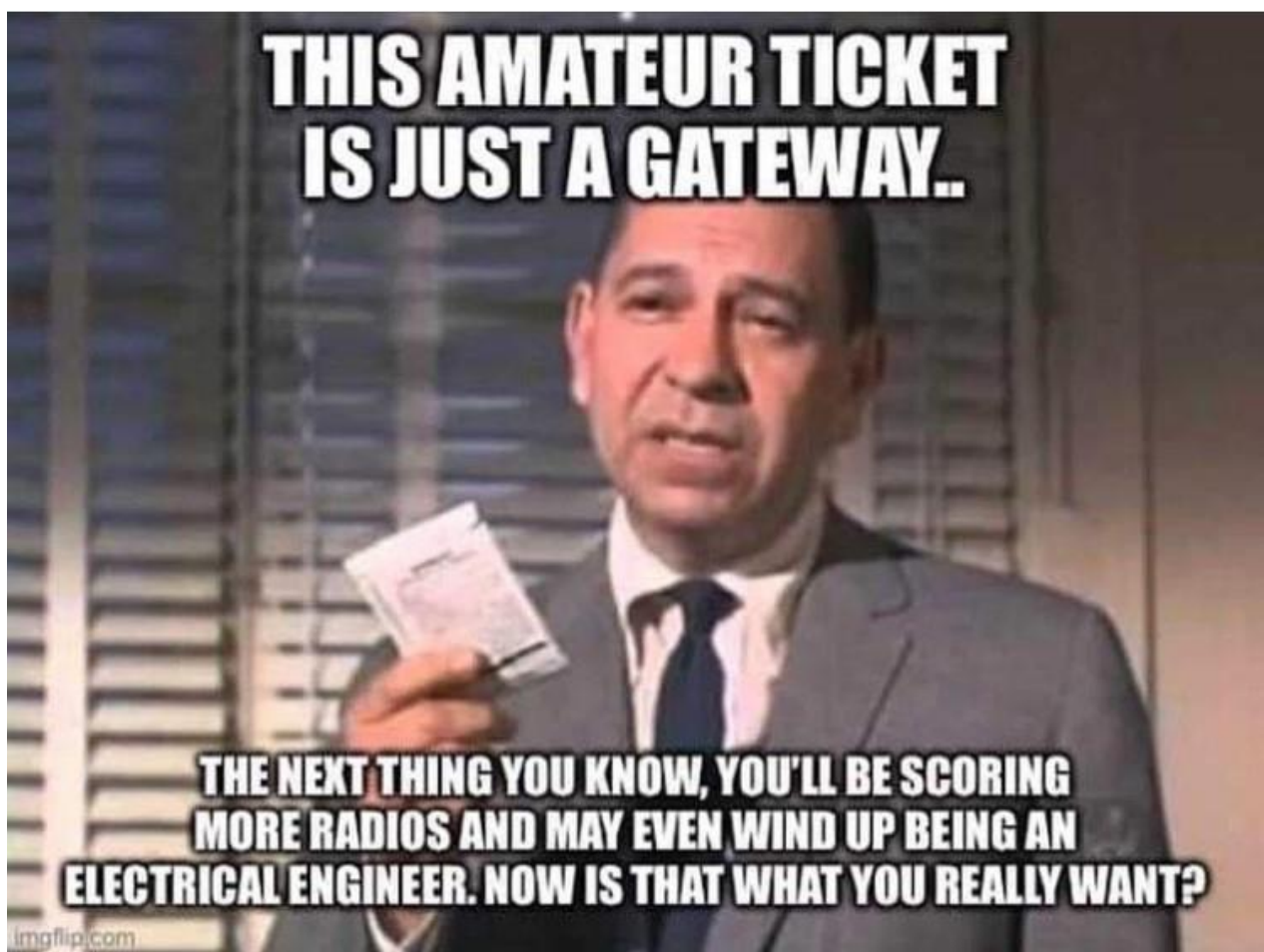
If VHF simplex operation is more your style, check into the Winterheat event running all of January. The goal is to contact stations on designated simplex frequencies on the 2 meter through 33 cm band FM frequencies. You must make the contacts using voice modes, including traditional analog FM or one of the digital voice modes.

You need to sign up for Winterheat. Rules and registration information are at:

<https://hamactive.com/>

The Winterheat event was mentioned by Robert, N9LPQ, in a posting to the ORC email reflector. Let me know if you have an event or contest you would like mentioned.

That wraps up January. With the Holidays over, you may have more time for some on-air operating. There are undoubtedly many things to do on the radio this month. Check my Monthly Activities Chart on the following page.



**You have been warned!!**

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for January and early February 2023

W9XT's contest picks for January and early February 2023					
Name	Start	Length	Bands	Mode	Link
ARRL RTTY Roundup	Jan 7, 1800Z	30, work 24 max	HF	RTTY	<a href="https://contests.arrl.org/ContestRules/RTTY-RU-Rules.pdf">https://contests.arrl.org/Contest Rules/RTTY-RU-Rules.pdf</a>
NAQP CW	Jan 15, 1800Z	12, work 10 max	HF	CW	<a href="http://www.ncjweb.com">www.ncjweb.com</a>
ARRL January VHF Contest	Jan 21, 1800Z	34 hours	VHF	C/S/D	<a href="http://www.arrl.org/january-vhf">www.arrl.org/january-vhf</a>
NAQP Phone	Jan 21, 1800Z	12, work 10 max	HF	SSB	<a href="http://www.ncjweb.com">www.ncjweb.com</a>
CQ 160 Meter Contest CW	Jan 28, 2200Z	48, 30 max	160	CW	<a href="http://www.cq160.com">www.cq160.com</a>

Dates/Times in UTC. Subtract 6 hours from UTC to get local (CST). HF = 80, 40, 20, 15, 10 Meters. Modes: C = CW, S = SSB, D = Digital (may include RTTY)

W9XT's DXpedition picks for January and early February 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Crozet	Until Jan 26	FT8WW	30, 20	C/D	SSB on higher bands later
Senegal	Until Jan 20	6Wn/WA3DX		FT8	Different 6W prefixes as he travels
Rep. of the Congo	Jan 10-19	TN8K	160, HF, 6M	C/W/D	<a href="https://www.cdpx.cz/">https://www.cdpx.cz/</a>
Palau	Jan 13-27	T88	HF	C/W/D	Each op has their own T88 call
Ethiopia	Jan 14-21	ET3AA			
Bouvet	~Jan 26- Feb 28	3Y0J	HF	C/W/D	<a href="http://crozet2022.r-e-f.org.news/html">http://crozet2022.r-e-f.org.news/html</a>

Modes: C = CW, S = SSB, D = Digital (may include RTTY) HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for January and early February 2023			
Event	Dates	Details	Link/notes
WRTC Award	Jan 1-31		<a href="https://www.wrtc2022.it/en/wrtc-2023-award-31.asp">https://www.wrtc2022.it/en/wrtc-2023-award-31.asp</a>
ARRL Volunteers On The Air	Jan 1- Dec 31	Just make contacts!	<a href="http://www.arrl.org/volunteers-on-the-air">http://www.arrl.org/volunteers-on-the-air</a>
Winterheat	Jan 1-31	VHF simplex	<a href="https://hamactive.com/">https://hamactive.com/</a>

# THE COMPUTER CORNER

## No. 298: LINUX 3: EXPLORE AND ORGANIZE

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

OK, you have a fired-up Linux machine, and you are looking at the desktop. The first thing is to organize the desktop itself. You might say, there is nothing to organize. A fresh copy of Vanessa's desktop shows one thing only ... a Computer icon. So perhaps the first thing is to put a couple of working icons on the desktop. Easy as pie! Move the cursor to the tray, click the Linux icon (yep, just where the Windows icon was in a Windows tray) and you see a list of applications, much like in Windows. Pull the slider bar down to Desktop and click it (or just type desktop in the editing space where the vertical bar was flashing) and you will have a menu of Desktop Icons. Select all 5 (Computer, Home, Trash, Mounted Drives and Network). As you select them or deselect them, they will appear and disappear from the desktop, except maybe Mounted Drives if you don't have any. Cool! Leave them all selected for now. You should feel quite at home now, with a trash can on your desktop. Close the list of applications.

Click the Linux icon in the tray again and note the list of application groups on the left – Accessories, Graphics, and so on. Roll your pointer over Preferences and click on Date and Time. Note your region on the map which should include America and Chicago. You might want to deselect Use 24h clock so that time is shown as usual (9:32 PM instead of 2132 PM) in the tray. Select Display the Date if you like (see how it looks in the tray) but not Display seconds unless you really want to do that. Anything you change is reversible, so play until it looks the way you like. Then close Date and Time.

That should give you a good start on getting the feel of things, and you can now explore to your heart's content. But you also need to prepare for doing some work. For example, where do you start to compose letters or articles or just notes of things to do? How about a folder of Documents? Well, there is one of those already, but make it your own – call it MyDocs. Right click an empty spot on the desktop and select Create New Folder. There it is, a new folder named Untitled Folder. It should be highlighted already, so type MyDocs, hit the Enter key and it becomes the new folder's title. Double click it and you are looking at its contents, which do not yet exist. Right click in the folder's empty space and select Create New Document. Click Empty Document and Untitled Document appears with a plain text icon above. Double click it and you are ready to edit Untitled Document which might be a reminder note to yourself to order that turkey for next weekend. Type the note and click File, then Save, then click the x in the upper left corner to close the file. Right click the file and select Rename. Type in Turkey Reminder, or better TURKEY REMINDER! and press the Enter key. You now have a perfectly good reminder note in MyDocs, written in plain text. On the other hand, while this reminder note is hot right now, you will probably want to erase it when you have placed the order. Furthermore, you probably don't want it buried in MyDocs, but rather want it "in your face" on the desktop, so that it bugs you until you do it. So put the arrow on the TURKEY REMINDER! icon in MyDocs, press the left mouse button, hold it down,



then move the mouse to drag the icon out of MyDocs and on to the desktop where you will more easily see it. Release the mouse button and you are done.

How about a nicely formatted letter, using Libre Office? Left click the Start button (the Linux Logo in the tray) and put the arrow on Office in the first column of applications. Roll down to LibreOffice Writer in the right column and click it. The Writer will start a new document, Untitled 1, and you can compose away and learn about a good, flexible editor, fully equal in scope and compatibility with Microsoft's Word. It even looks like Microsoft Word! Compose a few lines, and when done, click on the bar attached to the right of the Save icon (looks like a 3½ inch floppy, third icon in from the leftmost). Select **Save As** and it will suggest Untitled 1 as a title, to be saved in Desktop, MyDocs. Change that name (Untitled 1) to **Letter to Aunt Sue.docx**, click Save, and now it can be read by anyone using MS Word (the .odt format versus the .docx format are beyond the scope of this article ... read about them on your own). Select Use Word 2007-365 Format. Close LibreOffice Writer down and double click MyDocs on the Desktop. In it should appear **Letter to Aunt Sue.docx** if you followed the above instructions. Clicking the .docx file will bring up the file in LibreOffice Writer for reading or additional editing. Not Thanksgiving Reminder, though, on the desktop. That was created in **xed**, a small and lightweight plain vanilla text editor that comes with Vanessa and **xed** will be called up to read or further edit the file if you click on it out on the desktop. However, you can import it into Writer for reading or additional editing, if you like, or changing it to .docx or .doc file format. That is another story, though.

You are well into getting started at this point. A few tips. You can create a folder inside a folder. Thus, you can create a folder named Newsletter Articles inside MyDocs. Further, you can create folders named 2020, 2021, 2022 inside Newsletter Articles. So, organize to your heart's content. And, by the way, folders used to be called directories before Microsoft decided to change the terminology (to muddy up the waters of clarity?). Folders and directories are identical.

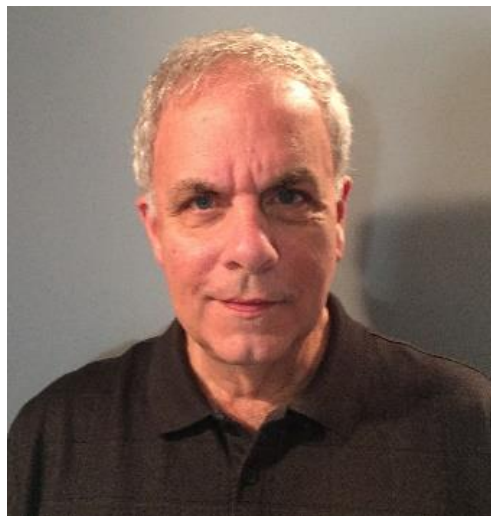
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## **ORC Repeaters are On the Air – Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



Throughout the time we have used HF in amateur radio as well as for military, embassy service, agency service, or research use, the manufacturers have produced what we will call professional receivers. The major manufacturers in the United States, starting in the 1930's, always had a top line radio that they sold to the aforementioned areas of business. Perhaps the longest in this domestic market was Collins Radio Company.

Collins, always a player in the transmitter market, began to supply product in the commercial and professional market after World War II. Starting with the Amateur Radio market Model 75A-1 (then called the 75A) in 1947, Collins moved the technology into the General Coverage market with the introduction of the 51J-1 Receiver in 1949. The 51J-1 was followed by the 51J-2, then the 51J-3 in 1952, and finally the 51J-4 in 1954, the 51J series made a name for itself as stable and capable designs. The parallel design of the 75A-1 (already mentioned), 75A-2, 75A-3, and 75A-4 Amateur Radio Band (not General Coverage) models. Readers will recall that the 75A-4 gained a great reputation as a stand-alone receiver used with Collins and other brand transmitters, it may be best known as the receiver side of the famous Collins Gold Dust Twins, the 75A-4 Receiver working with the 1,000-watt Collins KWS-1 Transmitter.

This article will cover the successor to the 51J-4 Receiver, the 51S-1, introduced in 1959<sup>1</sup>. I can only say that my nick name for this radio is "Collection Perfection,"



**Collins 51S-1 Receiver – "Collection Perfection"**

**W9MXQ Collection**

The use of the “S” in the model’s name and an appearance that borrows from the “S” Line radios of the day, the 51S-1 is not related to the 75S-1 Amateur Band Receiver that came out in 1958. Perhaps there were technical similarities due to being developed at the same time, but the 51S-1 was targeting a different market. But, that said, the cabinet size is similar (same size front panel), the knobs were the same, as were meters, general readout appearance, etc. The error of thinking that the 51S-1 was a general coverage version of the 75S-1 is a natural, if incorrect, one.

Below is the radio that developed before the Collins 51S-1, the Collins 51J-4. At over twice the volume of the 51S-1, the 51J-4 was a very capable but very massive instrument. Fellow appreciators of this vintage of equipment will see the similarity of the front panel design of the 51J-4 to the 75A-4 Amateur Band Receiver.



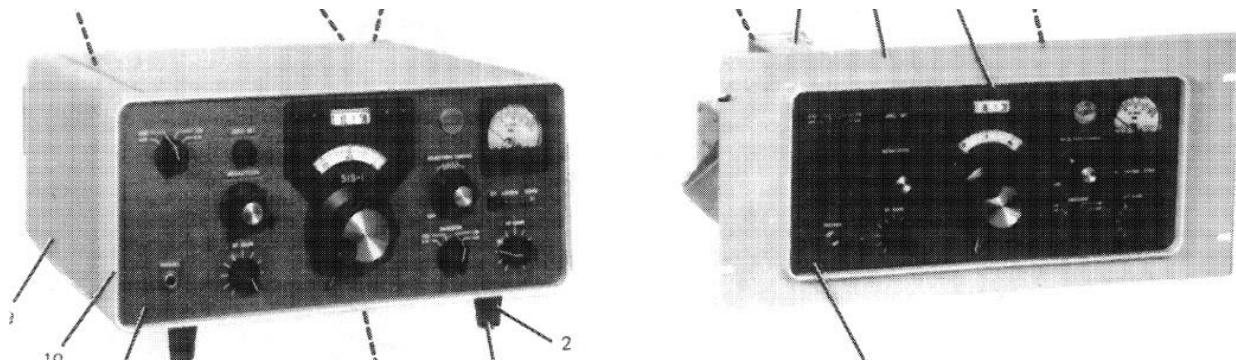
**Collins 51J-4 General Coverage Receiver (circa 1964)**

**RigReference**

At 28 Pounds, the 51S-1 is a lightweight compared to its predecessor, the 51J-4, at 43 pounds. Those 43 pounds, however, did not include the optional outer (desktop) cabinet. The 51J-4 (as did its predecessor 51J-1, 51J-2, and 51J-3 models) was standard as a rack mounted radio. My guess would be that the cabinet would add another 20 pounds. The 51S-1 came standard as a desktop unit with a rack mount option available, as shown below.

While not pertinent to this article, it must be mentioned for collectors that the 51J-3 Receivers carried the military R-388 designation while the 51J-4 carried the R-390 designation. There were other features to the R-388 and R-390, depending on the exact mili-

tary contract language at the time of purchase. Also important was that the 51J-4 continued to be built for government contracts for four years into the marketing time of the 51S-1. The 51S-1 was marketed from 1959 through 1975 while the 51J-4 overlapped a bit as it was marketed from 1954 through 1963. Military installations do not necessarily support an immediate acceptance of a new model – and to be sure, the 51J-4 was, and to some degree still is, a competitive radio design.



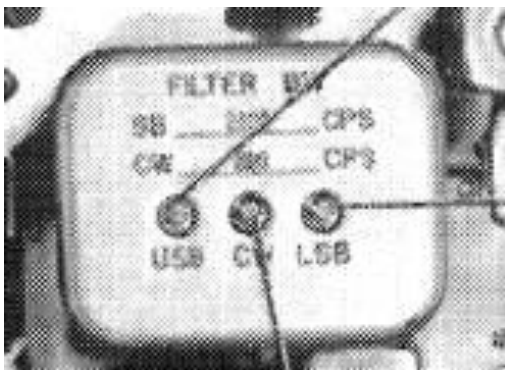
**Collins 51S-1 as a Desktop Unit (Left) and as a Rackmount Unit (Right)**

W9MXQ – Collins 51S-1 Service Manual<sup>2</sup>

The Collins 51S-1 is a hands down pleasure to operate and to hear on the HF Bands. I refer to it as “Collection Perfection” because of its smooth audio and effective mechanical filters on AM and SSB. It does use a crystal filter, however, on CW. Bandwidth options that were standard with the radio are as follows:

Mode	3dB down Bandwidth	Optional Bandwidth
AM	5 kHz	6 kHz
USB	2.75 kHz	3.1 kHz
LSB	2.75 kHz	3.1 kHz
CW	800 Hz	300 Hz

There is little documented on the optional bandwidths. Perhaps they were not generally available to buyers off the shelf of the radio – maybe only part of a contract. Note the Filter Box on the top of the 51S-1 Chassis:



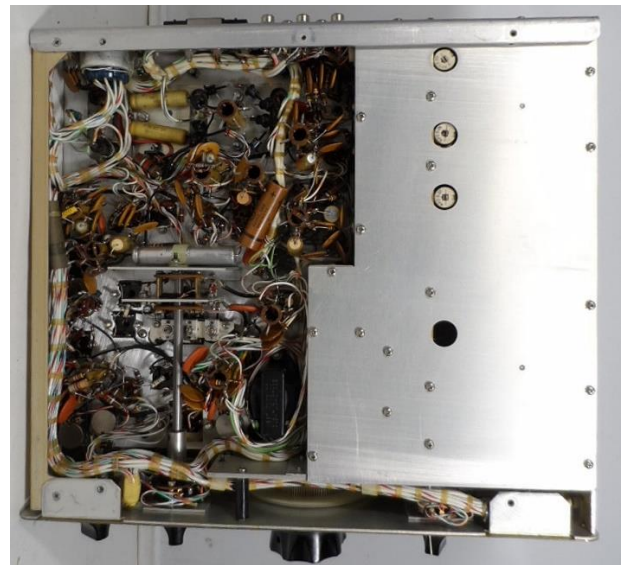
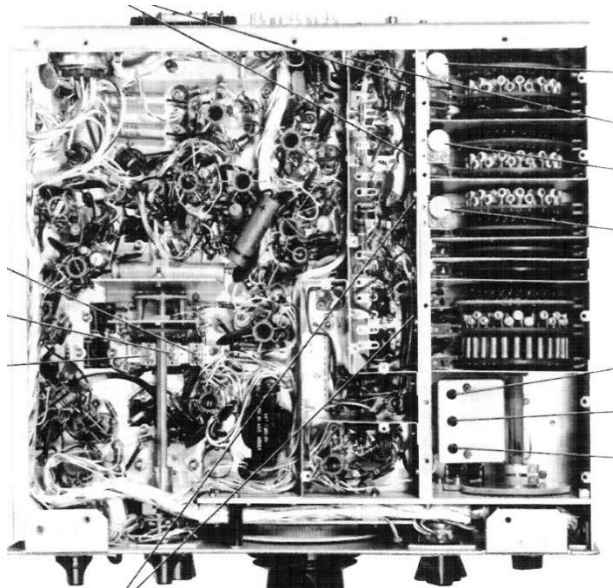
Filters for CW and SSB (LSB and USB) were housed in a “Filter Box” on top of the receiver chassis. Adjustment points were a part of the alignment process. Without a complete understanding of the filters’ operation my suggestion that the user refrain from touching these controls.

W9MXQ - Collins 51S-1 Service Manual

A feature way ahead of its time with the introduction of the 75A-1 and 51J-1 Receivers in the 1940's was the use of heterodyne band (frequency range) crystals mixed with a High Frequency Oscillator and precision Permeably Tuned Oscillator (PTO) for the VFO set a new standard for frequency stability.

The 51S-1 was tuned in 1,000 kHz ranges from 0.2 kHz to 30 MHz. Each range, for a total of 30, includes a crystal with a frequency alignment trimmer. So, 30 independent crystals and trimmers. The 51S-1 in this review is so close in alignment band to band that if the Crystal Calibrator is engaged and the bandswitch is moved through its 30-position range, every band is audible from the lowest to the highest band. Those familiar with the concept involved will understand what I mean – to others, this radio begins to approach the frequency accuracy and linearity experienced in a modern solid-state radio using phase lock oscillators.

For some idea of the design of the bandswitch in this radio, look at this view of the bottom of the chassis:



### **Collins 51S-1 Chassis – Bottom View**

**Bandswitch Shield Removed**

**Bandswitch Shield Installed**

W9MXQ

W9MXQ

Collins 51S-1 Service Manual

Collins 51S-1 Photo

In the left picture, observe the detail of the bandswitch on the right side. You can see on the top three visible rotary switch wafers trimmers used for alignment of each band. Lower in the picture you can see one wafer with crystal oscillator trimmer capacitors and below that the wafer holding the individual crystals. If you are wondering how to access all thirty positions, rest easy!! The wafers rotate and individual crystals and trimmers are accessible as the switch is rotated. The right picture shows the Bandswitch Shield installed – protecting the delicate bandswitch.

The tuning of the Collins 51S-1 is a combination of mechanical digital system to get to the band then an analog dial to tune the 1000 kHz span for each band. The system is straight forward and accurate – far easier to use with immediate frequency accuracy when compared to other general coverage receivers of the day using main tuning and separate bandsread dials. Here is a picture of the band setting and tuning setup in the 51S-1:



## **Collins 51S-1 Receiver**

### **Tuning, Band Set / MHz Dial, and Bandswitch (MEGACYCLES)**

**W9MXQ – 51S-1 Service Manual**

Tuning, as mentioned, on this radio is relatively easy. Note the Bandswitch (MEGACYCLES) knob. That is turned until the left two digits of the mechanical digital readout indicates the 1000 Hz frequency span you want to use. In this case the radio is set to receive in the 7 MHz band – see the “07” in the left, two-digit reading at the top of the readout panel. Now, using the Main Tuning Knob, turn the knob as many revolutions as

necessary to get the proper 100 kHz range you want to tune. Use the finger hole in the Main Tuning Knob for large excursions. You can see here that I wanted the radio to be on the 7 MHz range and tune from 7.1 MHz at the low side of the range. After that, set the main tuning knob, in this example, to “50” so the radio is tuned to 7.150.0 MHz.

Just for reference, check how this can relate from band to band. If the “150’ part of the readout is left in place and the MEGACYCLE switch is turned to “14,” then the radio would be tuned to 14.150 MHz

A major feature of the 51S-1 is what Collins calls, REJECTION TUNING. This is an effective Q-Multiplier that can help with a wide range of noise or the rejection of heterodyne tones. While this control is intended more for the AM station to AM station interference common in the 1950’s through the 1960’s, it works well at different adjustment points on today’s bands to reduce noise. It will reject carriers on SSB stations.



**Collins 51S-1 Receiver**

**REJECTION TUNING is between the Readout and the Signal Meter**

**W9MXQ**

The 51S-1 came in several models, tied to operating voltage, cabinetry, and rear connection array. Those differences were primarily tied to installation realities and not to operating specifications when used as a high frequency receiver.

Check the following chart for a complete list of model differences.

Model Number	Specifics
51S-1	Desk Cabinet, 115/230 VAC, 50 to 400 Hz – 125 watts
51S-1A	Desk Cabinet, 28 VDC Transistorized Power Supply – 4.5 Amperes
51S-1F	Rack Cabinet, 115/230 VAC, 50 to 400 Hz – 125 watts
51S-1AF	Rack Cabinet, 28 VDC Transistorized Power Supply – 4.5 Amperes
51S-1B	Same as 51S-1 but with Rear Mounted Military Connector Box

The 51S-1 and 51S-1A are designed to be desktop mounted or they may be setup with a Collins optional shock mount system base. This was suitable for some aircraft installations. The receiver in all forms require a 4- or 600-ohm speaker or headphone connection to get audio output. The 51S-1B has an added 150-ohm impedance output.

Here is a Collins 51S-1 Receiver mounted on the Collins 350D-5 Shock Mount Assembly:



**W9MXQ – Collins 51S-1 Service Manual**

The rear panel of the Collins 51S-1 showed connections to the outside world and indicated the radio's flexibility:



**Collins 51S-1 HF Receiver – Rear Panel Inset View**

**W9MXQ**



You can see many connections to the interior circuitry including antenna, muting connection for interconnection to a transmitter, IF Output that could feed an SDR in today's world, and a large, 9-Pin "Octal" connector for power input connections.

That 9-pin connector is wired for how the radio is powered. For instance, on the 51S-1 at W9MXQ it is wired for 120 VAC. But with some wiring changed at the connector it could be wired for 240 VC just as easily without making changes inside the radio.

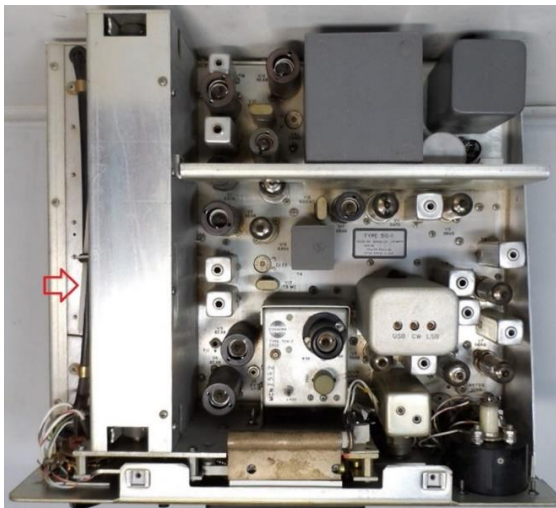
For perspective, here is the entire back panel of the receiver:



**Collins 51S-1 HF Receiver – Rear Panel View**

W9MXQ

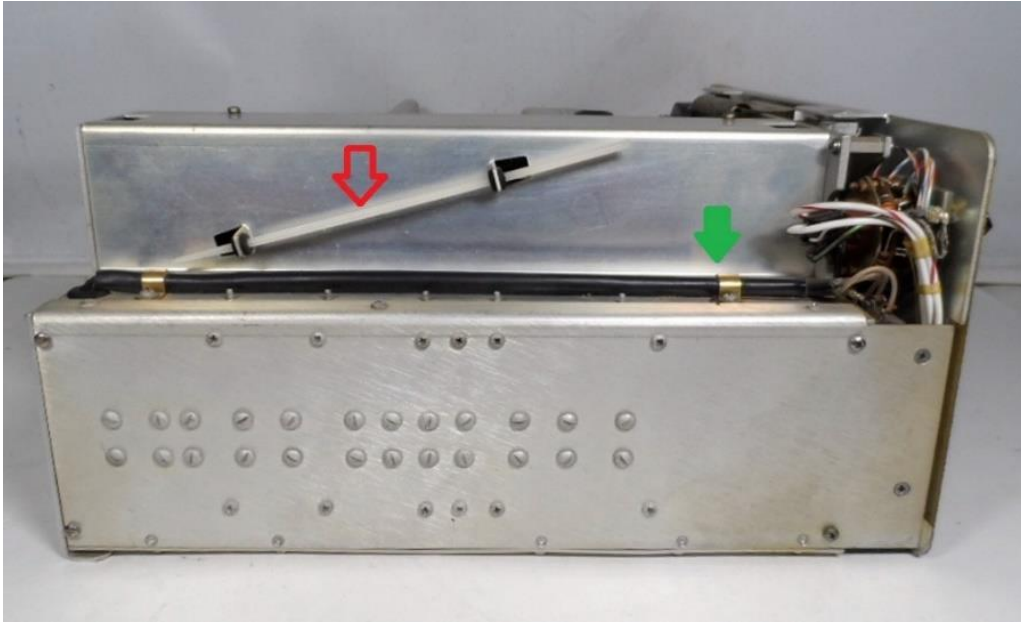
And here is a view of the interior of the radio: (See the red arrow showing the alignment tool included with the radio – almost always missing on a 51S-1 you find today.)



**Collins 51S-1 HF Receiver – Top View – Front Panel at the Bottom**

W9MXQ

Now see the picture below showing the left side of the radio with a better view of that alignment tool. Again, in this view, note the red arrow for the alignment tool. Now, look at the green arrow for a bit of a surprise:



### Left side View – Collins 51S-1 Receiver

Red Arrow for another view of the Alignment Tool. Note the green arrow at the hold down bracket for the black cable – that is the location of a Bristol™ wrench for use in removing front panel knobs. The Alignment Tool is a feature that is often missing but the Bristol™ wrench was unexpected. It was most likely placed there by a previous owner. The Bristol™ wrench is not listed as a part of the radio as originally sold.

W9MXQ

The 51S-1 Receiver is designed to receive, as noted before, on 30 ranges of 1000 kHz wide, starting at 200 kHz. However, the front end of the receiver was designed to work from 2 through 30 MHz. That means that the North American AM Broadcast Band and the 160-meter amateur radio band would have limited sensitivity – as detailed below:

Frequency Range	Mode	Sensitivity
0.2 to 0.5 MHz	AM	20uV for NLT 10-db Signal to Noise/Noise
	SSB/CW	4.0uV for NLT 10-db Signal to Noise/Noise
0.5 to 2 MHz	AM	15uV for NLT 10-db Signal to Noise/Noise
	SSB/CW	3.0uV for NLT 10-db Signal to Noise/Noise
2 to 30 MHz	AM	3.0uV for NLT 10-db Signal to Noise/Noise
	SSB/CW	0.6uV for NLT 10-db Signal to Noise/Noise

W9MXQ – Collins 51S-1 Service Manual

For low sensitivity, below 2 MHz, Collins offered a Preamplifier, model 55G-1:



Collins 55G-1 Preamplifier for the 51S-1 Receiver. The 55G-1 included an internal AC Power Supply plus a speaker for the radio.

**KE9PQ**

A 55G-1 Preamplifier is desirable but today costs hundreds of dollars due to its very limited availability. A simple homebrew MOSFET amplifier would do the same thing in today's world. As noted, it does include a speaker for the receiver. If you cannot justify the 55G-1 to gain the use of a speaker, I might suggest the Collins 312B-3 Speaker that also matches the Collins S-Line (75S-1, 75S-3, and KWM-2) Radios.

Maybe due to age or original design, or who knows why, I do not like the sound of most Collins Speakers. I have them built into the 312B-3 for this receiver, the 75S-3B Receiver, the KWM-2, and KWM-2A Transceivers. Also, the same speaker unit is in the 312B-4 Console for the 75S-3B / 32S-3 Pair and the 312B-5 Console /Remote VFO units for the KWM-2 and KWM-2A Transceivers. I am more likely to use a repurposed mini-Stereo Speaker or a Heathkit SB-600 or SB-604 Speaker with my Collins gear. Here is a picture of the Collins 312B-3 Speaker:



**Collins 312B-3 Speaker Console**

**W9MXQ**

There was also a 312C-1 Rack Mount Speaker, but little information remains on this product. Sometimes accessories are announced but never produced for one reason or another. Similarly, I have never seen the optional bandwidth filters for this radio.

Modern Collins radios – radios that succeeded the 51S-1 – continued as new designs. All of these were in competition with radios from Drake<sup>3</sup>, Ten-Tec<sup>3</sup>, Icom<sup>3</sup>, and Rhode & Schwartz, and Siemens, to name only a few. There were others yet from Kenwood, Radio Shack, Uniden, and Yaesu but they were not of the so-called professional variety.

The story of the Collins 51S-1 Receiver exceeds what can be said in a single installment. Stay tuned for Part 2 of this receiver’s story for other details of this fine receiver and perhaps a further window into the radios like her.

Part 2 will include:

- 51S-1 Significant Operating Characteristics.
- 51S-1 Metering – that is, no simple S-Meter here!
- 51S-1 Appearance – “Hey, your meter face is a different color than mine?”
- 51S-1 Original Competition from domestic (USA) manufacturers.
- 51S-1 Model Variants. “What color would you like your radio to be?”
- 51S-1 Bandwidth Filter Cover variances.
- 51S-1 Early engineering prototype version.
- 51S-1 Successor Collins Models.
- And maybe more....

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

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. Certainly, in any technical article, it is good to have a second person review the thought process.

### Notes and Credits:

<sup>1</sup> The Collins 51S-1 Receiver in this article was built in 1968 in the Anamosa, Iowa, Collins factory. Anamosa is about 27 miles east northeast of the Cedar Rapids headquarters for Collins Radio Company (now Collins Aerospace).

<sup>2</sup> References to the Collins 51S-1 Service Manual are a reference to the Collins Instruction Book, Collins 51S-1/1A/1F/1AF/1B Receiver as received with the Collins 51S-1 in this article.

<sup>3</sup> These radios were marketed after the Collins 51S-1 but were likely considered as replacements. As an owner now and over time of some the Drake and Icom competition, it is clear that in many ways the Collins 51S-1 was the equal of its competition even after its product life cycle had ended. Perhaps the area where the 51S-1 was bested by its late competition would be in the area of frequency stability – especially at start-up.



TM

©W9MXQ

## **Ozaukee Radio Club Minutes of Membership Meeting. 12/14/2022**

**de: Ken Boston, W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom.

ORC 2<sup>nd</sup> V.P. Bill K9GN officially initiated the meeting at 7:47 PM [late because of some technical issues loading the presentation, and a bad computer]; with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. Bill informed us that the annual dues were coming due very soon.

### **Program:**

Fred KD9IGO gave a presentation on his design process for his antenna project, an 80-meter horizontal loop, in a 4-sided square design, fed with ladder line from a tuner. This antenna proves to be a decent performer on several higher bands, and Fred presented several slides showing SWR performance and side/main lobes for all the higher, harmonically related bands.[40, 20, 10 meters] Fred's system uses an external tuner to match his antenna to his ICOM 7610, due to the wider swings in impedance.

### **50/50 Raffle:**

This was won by Fred W9KEY, winning an award of \$8.50

### **Scholarship Auction:**

Stan WB9RQR held a short auction; included were some fans, computer drive and a coax switch.

### **Committee reports:**

[there were no first or second VP reports and no RPT VP report]

Treasurer: Gary N9UUR handed out balance sheets, ORC has 49 paid members for 2023 so far. The November treasurers' report was accepted; motion made by W9QLP; 2<sup>nd</sup> by WB9RQR and carried.

Secretary: Ken W9GA reported the Nov 2022 minutes are posted; a motion to accept was made by N9VSV; 2<sup>nd</sup> by K9GN, and motion carried.

Scholarship/STEM: W9IPR was not present; Bill K9GN made a short report on the recent committee zoom meetings; working up a proposal for local STEM activities and support, including creating some local area scholarships.

Tech committee: W9DHI will arrange to repair the Laptop used for the Zoom link

**OLD business:**

W9GA has completed our club update at ARRL. Elections of club officers in January 2023, slate of officers: Pres-Bill K9GN; 1stVP-Jeananne N9VSV; 2ndVP-OPEN?; Sec-Ken W9GA; Treas-Gary N9UUR.

**NEW business:**

N9UUR made a motion that the club dues be increased from \$15 to \$20; motion 2<sup>nd</sup> by W9GA and carried.

**Adjournment:**

WB9RQR moved to adjourn, KD9DRQ 2<sup>nd</sup>, motion carried; time ending was 9:15 PM. There were 18 in-person attendees, 24 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- January – Elections, “The Secret Listeners” video
- February – Open

We really do need some programs for the coming year. I don't have anything scheduled after January. Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

Many of our presenters use Microsoft's PowerPoint to organize and present their information. If you don't have access to or aren't familiar with PowerPoint, there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here: <http://www.openoffice.us.com/>

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*January 11, 2023*

- |  |  |
|--|--|
| 1. 7:15 – 7:30 PM<br>Check-In and Introductions                          | 7. 2 <sup>nd</sup> VP Report:<br>Bill Greaves (K9GN) |
| 2. 7:30 PM Call to Order:<br>President Pat Volkmann (W9JI)               | 8. Repeater VP Report:<br>Gregg Lengling (W9DHI)     |
| 3. Announcements, Bragging Rights, Show &<br>Tell, Upcoming Events, etc. | 9. Secretary's Report:<br>Ken Boston (W9GA)          |
| 4. Presentation:<br>Elections<br>“Secret Listeners” Video                | 10. Treasurer's Report:<br>Gary Bargholz (N9UUR)     |
| 5. President's Update:<br>Pat Volkmann (W9JI)                            | 11. Committee Reports                                |
| 6. 1 <sup>st</sup> VP Report:<br>Ben Evans (K9UZ)                        | 12. OLD BUSINESS                                     |
|  | 13. NEW BUSINESS                                     |
|  | 14. Adjournment                                      |



**Next Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
8 February 2023**

**Program:**

Open – Watch for Details

7:00 PM – Doors Open

7:15-7:30 PM – Zoom Check-In

7:30 PM – Meeting Begins





# 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.

ORC Repeaters on 146.97 (-127.3PL), 224.18 (-127.3PL), 443.75 MHz (+127.3PL) - Callsign W9CQO  
Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org)

Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XLI

February 2023

Number 2

## From the President

de: Bill Greaves, K9GN



I look forward to the coming year as your president. The year will be a big learning experience, especially following the excellent three years Pat W9JI has given to ORC. All of your Board members, officers, and committee chairs are dedicated volunteers helping to lead the club. Being a member of this group is an honor and a privilege as well as a responsibility. These individuals are just like you – dedicated members who enjoy ham radio and take a turn to help out the club.

While I have not asked Pat W9JI Volkmann his shoe size – I know they are big! Pat was President of ORC for arguably three of the toughest years in ORC's history. He began his first year just as the novel coronavirus pandemic began and severe restrictions on in-person meetings and activities began. He led the club through all of this with member input, common sense, and innovation not only to sustain but also to build ORC into a stronger and more resilient organization. The hybrid/Zoom meetings we now enjoy is but one example. I thank Pat for his highly successful three years as ORC President, and I believe I am joined by the entire membership. Thank you, Pat!

Pat remains on the Board as Past-President. Also, he has taken over as Chair of the STEM Committee. Tom W9IPR Ruhlmann helped lead the successful Scholarship Committee that met its goal and now is serving on the new STEM Committee with Gary W9XT Sutcliffe, Bill W9MXQ Shadid, and Gary N9UUR Bargholz. The February meeting program will be about STEM activities in the local area and opportunities for our club.

Personally, I am a “new, old ham” who re-joined ORC in 2020. After getting my novice license in the mid-1960s, I upgraded to general in the mid-1970s, and then upgraded again in late 2020. After my novice days, my on-air activity has been occasional 2 meters, mainly portable and mobile. Life was busy with family and career, and I always enjoyed

the monthly QST and CQ magazines with their new product reviews and all things amateur radio. I joined ORC to meet and chat with other local hams and learn by doing. I met members at the monthly meetings, online at first, and went to my first ever Field Day in 2021. I felt like a sponge soaking everything up from the more experienced members, which was pretty much everyone. And I still feel that way! We have a friendly and helpful membership who have tremendous knowledge and experience. I'm relying on that helpful advice as I gradually build my own ham station in my basement. I'll detail my progress in future newsletters.

I would be pleased to speak with any member about any activity of the ORC to enhance your enjoyment of amateur radio and how you believe we can all improve our ORC.

73, Bill K9GN

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# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ

Please note Club President, Bill Greaves, K9GN, on Page 1 for his first monthly message.

Take a look at several new or returning authors this month. It is nice to see Tom Trethewey, KC9ONY, with his several offerings – along with a bit of a challenge from his “Fun on the Interstate” article. And, nice to see Jim Albrinck, K9QLP, with an interesting article – and an opportunity for some interesting operating. I added a note referencing Jim’s discussion of 10-meter FM – but want to add that just minutes ago I made my first 10-meter FM Simplex contact with a Japanese station, just above 29.0 MHz. I am a frequent user of 10-meter FM Repeaters in the Caribbean for contacts to Europe.

Tom Ruhlmann, W9IPR, along with Ray Brunette, Jr., provide us with an obituary for Ray’s father, Ray, Sr. Ray Brunette, W9BUJ, was one of the Ozaukee Radio Club’s early members. Ray Brunette, Jr., runs the family business, Lake-View Electronics. Lake-View’s website is [www.lvelectronics.com](http://www.lvelectronics.com). You can reach them at their incoming sales email of [sales@lvelectronics.com](mailto:sales@lvelectronics.com). Ray reminds us that if hams deal with him or his son, Chris, receive discounted pricing. Give them a try – they are local business and are willing to help hams. What more could we ask?

Check out references to the Wisconsin QSO Party – coming up in March. General information appears on Page 11. Also look for the event in the monthly On the Air Activities column, penned by Gary Sutcliffe, W9XT. Lots of other activities there as well.

Don Zank, AA9WP, continues a series on NIMS Communication. Don’s well written articles are a window on emergency communications and techniques.

Stan Kaplan, WB9RQR is back with his long running series – 299<sup>th</sup> in his series – on Linux and other operating systems. Say, this being is his 299<sup>th</sup> article – next month would seem to be an approaching milestone!

I bring you two articles this month with Part 2 of my two-article series on the Collins 51S-1 Professional Communications Receiver. As with all my articles, I only write about radios I have used. A second article is on a long-time power mystery in my house. Check it out!

Finally, check out Ken Boston, W9GA, not only for the January meeting minutes but also on pages 42 and 43 for ballots to elect ORC Turkey of the Year and ORC Ham of the Year for 2023.

This Newsletter is about you and what you do. I am totally impressed with the volume of material submitted this month. Keep it up, folks.

Check out the Table of Contents on the very next page.

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February 2023 – Table of Contents**

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Onward To the Newsletter

# Expanding Club Membership

de: Tom Trethewey, KC9ONY

A recent ARRL Club News issue had an article titled “Two Simple Tricks to Expand Club Membership.” You can read it at the link below:

<http://www.arrl.org/club-news?issue=2023-01-17#toc05>

When I started coming to the ORC meetings, I recall someone was tasked with making sure those without a name tag would have a temporary sticker to show their name and call sign. If no call sign yet, at least the name. At the start of the meeting, we would do like we do now...go around the room to introduce each person and their call sign, if they had one. It's a good way to put a name and call sign to a face, even for club members. Perhaps we could consider finding a volunteer to be responsible for making sure everyone has some sort of name tag?

The article also talks about club members monitoring the club repeaters. This is a good idea to answering unfamiliar call signs and also promoting our events. There are some of us that monitor some of the repeaters quite frequently, but we can't do it all day long. I admit I find myself not monitoring the club's UHF repeater (443.750 MHz) very often either. I'm hoping we could get some volunteers to monitor one or more repeaters on a regular basis at a scheduled time. So, if by chance there is a new ham heard on the repeater, they can at least be acknowledged and invited to the club meetings.

I currently run the Net on our 146.97 MHz repeater Tuesdays at 8 PM. I'd also like to encourage someone to create a Net on one of the other club repeaters. Again, we have been linking up the 220 repeater to the 2m for the Tuesday Night Informal Net. I am thinking someone could create a 220 Net and a 440 Net. It could be a daytime Net or a weekend Net, which might make it easier to attract more participants. I've heard that some of the repeaters down by Racine are getting activity, as well as some repeaters up near Door County. There's no reason why we couldn't get our repeaters more active as well.

What are your thoughts to expand our membership and/or repeater monitoring?

73,

Tom, KC9ONY

# Fun On 10-Meters

de: Jim Albrinck, K9QLP

Tom, KC9ONY, has been telling me for years to write up something about the 10-meter remote base on our 224.18 repeater. Well Tom, you asked for it.

The 224.18 repeater has for many years had the capability to hook up to a 10-meter remote base at the repeater site. The remote base operates on 29.600 FM and puts out around 60 watts into a rigid dipole, horizontally mounted on the 146.97/224.18 tower. Any control op can activate the system and monitor it while it's in use. Even a Novice or Technician class operator can access it via the 224.18 system, as long as a control operator is able to monitor. I have an old scanner in the shack that I use to monitor 29.600 FM. When I hear activity on 10 meters, I turn 29.600 on to play through the 224.18 repeater. You can tell when it's on by the different courtesy tone on 224.18. It's a rising tone, not a simple "dit" like 97. I have worked stations all over the US and some foreign countries via the link to 220. Recently I worked Irish and German hams while driving around Cedarburg using my 220 mobile.

We are frequency bound to 29.600 via the repeater, but don't tie it up too long as it's the FM calling frequency. If you have an HF rig, QSY down to 29.500 and rag-chew.

The repeater pairs are a lot of fun too.

29.610/29.510  
29.620/29.520  
29.630/29.530  
29.640/29.540  
29.650/29.550  
29.660/29.560  
Output/Input

There is a repeater transmitting from the Empire State building on 29.620 cross-linked to VHF repeaters. I had a conversation with a cab driver in Manhattan during one opening. The AM stations have been showing up too. Look at 29.000 and up every 10 KHz. I worked France, England, Ireland, Bermuda, etc., on 10 AM. Armchair copy all the way. I used my TS850-S at 100 watts on FM and 52 watts on AM into a 10-meter dipole at 25 feet. It's the same antenna that I used with a converted CB sideband rig in the late 1980's to win a bet with K9CAN/SK that I could get my 10-meter DXCC and CQDX awards using that setup and 12 watts PEP. I must admit, however, that it took 3 years to get all the snail mail QSL cards and 10 meters was exceptionally hot from 1987 through 1990. My ICOM 505 Six-meter rig also performed well during that period. I worked over 170 grid squares USB and CW with 10 watts and a rigid dipole at 30 feet to get the VUCC on six meters.

The bottom line is with 10 meters doing well, try some of the modes not usually used on HF. Ten meters is the only HF band where FM mode is permitted and it's fun to use it for

a change. Normally the repeaters have no PL requirement, but with PL capability in some newer radios that may change.

As a final point, contact, myself, W9DHI, KC9ONY, or another control operator to turn on the link. The link will be closed if no control operator ceases to be available.

73 de Jim, K9QLP

*Editor's Note:* Those of you working the TN8K, Republic of The Congo DXPedition – how many of you noticed that they frequently held a split setup, just above 20 MHz on 10-Meter FM? I was not able to get them on FM (but sure did try). They were there many days during their operation with very large pileups. W9MXQ

---



**Easiest Contest Anywhere – and Fun, too!!**

**All you have to do is work the Parks On The Air  
(POTA) station – the rest is  
automatic. Check them out at:**

**<https://parksontheair.com/>**

---

## Fun On 1.25-Meters

de: Tom Trethewey, KC9ONY

Are you a proud owner of a 1.25-meter (222 MHz) radio, but haven't used it in a while? If so, blow the dust off of it and power it up on the Ozaukee Radio Club (ORC) 224.180 MHz repeater! You'll be surprised on the range of the repeater itself.

As Jim K9QLP noted in his article in this newsletter, the ORC 220 repeater can link up to a 10-meter transceiver for some remote HF fun. The controller used in the 220-repeater system can also link to a 2-meter transceiver, but not at the same time as the 10-meter transceiver. The 2-meter transceiver is fixed on the ORC 2-meter frequencies and is then picked up by the ORC 2-meter repeater system.

For a while now, we have been linking the 220 to 2-meter for use on the ORC's Tuesday Night 2-meter Informal Net at 8 PM. Thus, you can use your 220 radio to participate in the Informal Net. Give it a try!

I'm wondering if anyone would be interested in starting a 220 Net?

---



**Did I mention  
Summits on the Air  
(SOTA)?**

<https://www.sota.org.uk/>

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# Fun On the Interstate

de: Tom Trethewey, KC9ONY

Recently, Loren N9ENR and I were traveling back to Wisconsin from a hamfest in Illinois. We were in two cars and talking via D-STAR simplex. Then I heard some horn honking. What was that? It was about 8 beeps then quiet....again, 8 beeps then quiet. As I-94/I-294 is rather busy on a Sunday late afternoon, it was hard to tell where it was coming from. I'm guessing it was coming from a landscaping type of truck that had a cherry picker on top, in the lane to the left of me.

I told Loren I heard some beeping, which sounded familiar. Could it be the "shave and a haircut, two bits" tune? Do you remember that? See the link below:

[https://en.wikipedia.org/wiki/Shave\\_and\\_a\\_Haircut](https://en.wikipedia.org/wiki/Shave_and_a_Haircut)

or

[https://www.youtube.com/watch?v=YQdX\\_TeOhf0](https://www.youtube.com/watch?v=YQdX_TeOhf0)

No, that's only 7 beats. I'm hearing 8 beeps.

There it is again. Still can't tell for sure if it's from the truck. Well, instead of 8 beeps, it's more like two sets of 4 beeps:

Beep...beep, beep, beep....  
Beep, beep...beep, beep.

It's bugging me that it sounds familiar. I attempted to convey the sound to Loren over the microphone. He said it sounds like.....?????

Do you know what it was? The answer coming in the March newsletter!

73,  
Tom  
de KC9ONY

## Ray Brunette, W9BUJ – Silent Key

Edited by Tom Ruhlmann, W9IPR, and Ray Brunette, Jr.

Ray Brunette, one of our very early ORC members died December 22<sup>nd</sup>, 2022.



Ray was born in Duck Creek WI. , a suburb of Green Bay, May 26, 1929. He excelled in baseball during high school and was initially recruited by the Cleveland Indians where he tried out for their farm team. He truly loved playing ball and was still playing Senior League softball at age 83.

As a youth he was tutored in electronics and “HAM” radio by his “HAM” uncle, Carl Schaff. This proved invaluable when he joined the U.S. Army where he continued his technical training and ended up teaching radar systems which were relatively new at the time. This led

to his earning a commercial broadcast engineers license and a job at the ship to shore radio station in Port Washington. It was in Port Washington that he met his wife Renee, and they started their family.

In 1961, Ray went to WITI (Channel 6) and assisted in building the station on Donges Bay Road. This was followed by the expansion of the station, and you will now note their tower in Estabrook Park near Capitol Drive in Milwaukee.

Another “old time” ORC member, Sandy Wirth (W9BTN), started a CB electronics company, KRIS electronics, and recruited Ray as a national sales manager. As CB started to fade and Allied Electronics moved to the area Ray became their branch manager. Allied (TANDY) became more interested in retail electronics so then Ray moved to Newark Electronics as branch manager. While at Newark Electronics he realized that if he could operate the business for someone else, he could operate his own electronics distributor operation. He then founded Lake View Electronics in 1973 originally in a residence in Thiensville. Then he expanded as the business grew and in 1976, he converted a service station on Port Washington Road to his new location. With further growth, in 1989 he bought land along Interstate 43 at exit 89 and built the present facilities where his son now manages the wholesale operation.

Ray especially enjoyed going to Swapfests and buying “bargains” which he intended to repair and resale at a profit (sometimes). He and his nephew, Rodger Davies of Utah, often rode with us to the Dayton Hamfest and their stories did much to make the trip shorter.

He and Renee enjoyed the warmer weather. So, they bought a diesel RV and traveled the coasts and, during the winter, the South. It was on a trip to Texas that he was talking

to a fellow ham in Corpus Christi on VHF who invited Ray to park at his place. They did for several years and then bought the place.

Ray is survived by his wife, Renee, and his son Ray Jr. and family who now run the business.

There will be a memorial service for Ray at St. Francis Borgia in Cedarburg at noon on 26<sup>th</sup> of May. **See other notes in the “From the Editor” Column” on Page 3.**

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## Wisconsin QSO Party

**March 12, 2023 - 1800Z to 0100Z March 13**  
(1:00PM CDT to 8:00PM CDT on Sunday, March 12)  
> *First day of Daylight-Saving Time* <



### Event Sponsor

Remember to send in your log and credit the  
Ozaukee Radio Club for your entry.  
Spell it out – Ozaukee Radio Club – not “ORC.”  
Rules: [http://warac.org/wqp/2023/wiqp\\_rules.htm](http://warac.org/wqp/2023/wiqp_rules.htm)

CW, Phone and Digital (RTTY, PSK, Olivia, Feld-Hell)  
FT8/FT4 QSO's are not accepted.

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# Do Not take AC Line Feed Voltage for Granted

de Bill Shadid, W9MXQ



In my professional life, I traveled throughout much of Western Europe, China, and SE Asia, plus some of South America, Australia, as well as Mexico and Canada. One of the biggest considerations, as I carted my necessary computer and cell phone tools from place to place, was the prevailing AC voltage. Mostly I found that I focused on adapter and plugs to accommodate everything from 100 volts in Japan to 240 volts in the UK and Europe. Many/most times, hotels focusing on western guests, in China, provided 120 VAC for their American/Canadian/Mexican guests. There were a multitude of styles of wall connectors. Sometimes different from city to city in China. It was all pretty much dependable with the exception of

Eastern Europe and China in early years of my travels (1975-onward) when voltage could drop as much as 20% during peak load times. Most of that problem had gone away by my last China, Taiwan, Hong Kong, and SE Asia trip in 2015. (Actually, Hong Kong and Taiwan are like being in London or New York.)

But, as I have recently learned, never take line voltage for granted – even if you live in the United States or Canada.

In the past several months, I have noticed progressively worsening issues with LED replacement bulbs in the house flickering. Oddly, the same brand of bulb would flicker at the same time (totally in sync!!) – an aggravating flicker that was not something one could not just ignore. Several times a second is definitely more aggravating than what is noticed by being in 40Hz or 50Hz AC power for a person used to 60Hz. Mentally, the mind becomes accustomed to 40Hz or 50Hz but the much slower flicker of these lamps in my home was over the top. (I have a collection of Sylvania and Feit branded LED replacement bulbs that have totally replaced our incandescent and fluorescent bulbs.)

The situation with the more frequently aggravating Sylvania bulbs initially seemed solved by removing them and replacing them with Feit brand bulbs.

That solved the problem, right? For a while, yes it did. But other things started to happen that only added to the confusion. During the period of this “adventure,” I had the third occurrence of a burned-out blower motor on the furnace in the house. The furnace technician – who we have used since buying this house, newly built, in 1998 – was puzzled because he said he had installed dozens of the same Carrier furnace but only mine had burned out a blower motor – let alone three of them. For other reasons, the furnace was replaced in 2019 with a Goodman furnace. For the first clue, not recognized at the time, the Goodman blower was a DC motor, not an AC motor like the Carrier.

Over the recent Christmas and New Year's holiday, the problem reached a climax, I was noticing that several things were happening:

1. My ham radio transceiver (200-watt Yaesu FTdx-101MP) could no longer reach full power. No high SWR was seen. The connected Ameritron ALS-1300 Linear Amplifier did not change in output. (Major clue here – not known at the time.)
2. My vintage Drake L7 Linear Amplifier used with my also vintage Drake TR7A transceiver could not seemingly load to more than about 900 watts before the amplifier cooling fan moving to high, they higher, speed. The L7 fan was running in its highest speed position – which I do not ever remember it doing since my former days running full power RTTY.
3. We noticed that the microwave oven was overly quiet – slower fan operation.
4. The furnace seemed to not be able to keep up with formerly easily accommodated outside temperatures.
5. The Feit bulbs were flickering like the Sylvania's had been doing.
6. The circuit GFI Breaker feeding the incoming Spectrum Modem, the Wi-Fi Router, and three VoIP adapters was frequently blowing – at least once or twice a day.

Why I never did this before is a mystery, but I decided to make some voltage tests in the house. Does one ever confirm they have 240 and 120 volts at our circuit outlets? (I do now!!) Well, at first there was little mystery. 120 VAC at the regular outlets and 240 VAC at the one 240-volt line outlet in the house. Understand, however, that none of this was a 100% occurrence. I started making regular checks and in the basement shack where I have a 750-watt (at the setting I am using), 120 VAC, heater in my ham shack. I noticed that when it would cycle it on the voltage would drop to 108 volts – and, gee, the Feit LED bulbs would flicker. At the first time found, this was not a repeatable occurrence – only occurring intermittently.

Finally, on the Thursday before New Year's it came to the point of getting out of hand. I would still read 240 VAC (on a 240 volt outlet) but when checking 120 VAC outlets, some were at 108-volts, and some were at 132 volts. I called an electrician, who arrived the next day. Initially he found no problem but asked what was running in the house. We confirmed that at that moment only a few lights were on – maybe four LED bulbs at <13 watts each. Essentially no load. At his suggestion, we put a cup of water in the microwave which started with loud fan noise but quickly quieted down as that side of the line sagged in voltage. He then confirmed that he saw the 108 on the with the microwave running and 132 VAC on the other side of the 120-0-120 system. He immediately went to the meter outside the house and confirmed that there was a feed problem.

The technician called WE Energies and we had a brief conversation on the speaker phone at which time I was advised to keep high current items off, and they would “arrive within 30-minutes.” Actually, under ten minutes later the WE Energies truck was in front of my house with a tech from there saying he felt he knew what was wrong, to leave my service active, and he would return with an answer. At that point, he went to the service box in the back yard. (We have underground service.)

The WE Energies technician confirmed that the ground lead in the back yard Distribution Box had pulled loose. He could not comment on whether it had been intermittent before

that point, but he said he resolved the issue and that it should not occur again. There are three houses fed by this distribution box. That distribution box is fed by on-ground transformer cabinet elsewhere on the utility easement behind six houses in our “cluster.” The problem was apparently tied to underground service and the relatively light weight distribution box. The feed cable from the house is buried quite deep and remains stable as the box moves up and down with freeze and thaw cycles. Without a specialized installation process, this works the connections loose over time.

On additional item. The electrical contractor technician who was here first had advised me (and upon arrival warned the WE Energies technician) that he felt a shock when touching the outside box holding the service meter. That clue allowed the WE Energies technician to guess, before checking the service point, what was wrong. The floating ground was the cause of the shock. And, I had experienced it once during this occurrence. I will not provide details because while I understand the issue, I do not want to make an error in my description. (I do have a ham license but my finding over the years is that this qualifies me to turn on the radio and connect the antenna!!) But be aware of the symptoms outlined here – the potential for injury (or worse) is present here. My personal clue to that statement is tied to the speed of response to the problem by WE Energies!!

So, let's review the symptoms and the results:

1. My ham radio transceiver (200-watt Yaesu FTdx-101MP) could no longer reach full power. No high SWR was seen. Connected Ameritron ALS-1300 Linear Amplifier did not change in output.
  - Radio was on the 108 VAC side of the occurrence.
  - Problem now corrected – all radios operate at full power.
  - ALS-1300 was running across the 240 VAC line.
    - Somewhat unique, the ALS-1300 when wired for 240 VAC has no internal item or accessory still on 120 VAC operation,
2. My Drake L7 Linear Amplifier used with my Drake TR7A vintage station could not seemingly load to more than about 900 watts, on the high-voltage (SSB) mode position. And the L7 fan was running in high-speed position – which I do not ever remember it doing since my days running full power RTTY.
  - Fan in the L7 was running too slow – so temperature sensor set the fan to high-speed operation. Fan in the L7 was, as it happens, on the low side of the 120 VAC line – the one side of the 240 VAC input.
  - Filaments on the 3-500z were off the filament transformer which operates from the 240 VAC line. So, no tube damage.
  - Older American-made Solid-State Transceivers (like the TR7, TR7A, and TR5) do not use regulated voltage for the Power Amplifier<sup>1</sup>. They have a separate feed for low current 13.6 VDC. “The higher current, unregulated, “12 VDC” line was sagging and therefore the drive from the TR7A was not as expected.
3. We noticed that the microwave ovens (two in the house) were overly quiet – slower fan operation.
  - Microwave ovens were on the 108 VAC side of the occurrence – now corrected.

- Fan motor was running slow – so it was quieter.
4. The furnace seemed to not be able to keep up with formerly easily accommodated outside temperatures.
    - Furnace and fan were on the 108 VAC side of the occurrence – now corrected.
    - The DC fan was not damaged but it ran slow – limited heat distribution.
    - The older furnace's AC motor was damaged by the AC voltage being too low to allow the starter winding in the motor to disengage.
  5. The formerly proper operating Feit bulbs were flickering like the Sylvania's had.
    - Study with a Variac™ later showed that the Feit bulbs started flickering at about 113 volts while the Sylvania bulbs would start to flicker at 116 volts. So, as the voltage dropped, they would begin to flicker. Sylvania seemed worse because it needed a higher voltage.
    - I had not discarded the Sylvania bulbs – some are back in service.
  6. The circuit carrying the incoming Spectrum Service Modem, the Wi-Fi Router, and three VoIP adapters was blowing – at least once or twice a day. Clue for later – this circuit has a GFI breaker in the outlet.
    - GFI circuit was on the 132 VAC side of the occurrence – now corrected.
    - I surmise that the extra high voltage caused the GFI to trip.

Many items in the house were on the high (132 VAC) side of the line – any damage or life limiting situations have yet to make themselves known. Initially, items on lower voltage will be more evident than those on high voltage. Over time, either could have suffered life shortening issues.

Epilog: For the past several months I had been experiencing a lot of interference to broadcast radios and televisions in the house from my ham station. I had not experienced that before and it has stopped since the power feed problem was corrected. Both technicians involved in this issue reported stray voltage on the grounded utility meter box – in spite of the fact that there is a ground rod at the circuit breaker box and then a separate ground, connected to the utility ground at the ham shack. Was this an issue? I can only report the results.

Lesson learned: Take nothing for granted – certainly not the power feed to your property.

One additional note from a Home Improvement Internet Site<sup>2</sup>:

### **Service Drop Repairs**

While homeowners in many municipalities are allowed to do their own electrical work, this applies to household projects like replacing outlets and lights, running electrical cables, and maybe even installing new circuits.

However, homeowners are not allowed to work on any part of the utility's service drop. For one thing, the service drop belongs to the utility company, not to the

homeowner. For another, power in the service drop cables can be shut off only by the utility company.

Homeowners also should not attempt any work on the cables between the service drop and the home's electrical service panel. As with the service drop, power in these cables is live at all times unless the power company shuts it off. If you have a problem with the service drop supplying your home, call the utility company. If you have a problem with the service head or the cables between the service point and your home's service panel, call a licensed electrician.

### Credits and Comments:

<sup>1</sup> Linear Amplifiers operating in Class AB1 do not need regulated 13.6 VDC supply voltage. Check the Theory of Operation section of your radio manual for details. Add to that the easier delivery of high current power supply voltage to the transmitter power amplifier was not as easy as today. So, many transmitter or transceivers in the early days of solid-state radios provided low current, regulated 13.6VDC and unregulated high current ~12 VDC. In this case the high current supply was sagging in voltage so the transmitter could not reach full power. Cases in point are the PS7 and PS75 AC Power Supplies for the TR7 and TR7A and the TR5, respectively, has a brute force, unregulated, nominal 12VDC plus a separate regulated 13.6 VDC line.

<sup>2</sup> Reference, <https://www.thespruce.com/electric-service-drop-basics-1821517>

© W9MXQ

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**Be careful!!**  
**Don't let this be the last sound you ever hear!!**

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## OZARES: Ozaukee Amateur Radio Emergency Services

by Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

### National Incident Management System (NIMS) Communication



We continue our examination of the requirements from the National Incident Management System or NIMS. Our starting point last month was interoperability and this month we will continue with:

#### **Reliability, Scalability, and Portability.**

Their brief definitions are:

- **Reliability:** able to function in the context of any emergency
- **Portability:** built on standardized radio technologies, protocols, and frequencies
- **Scalability:** suitable for use on a large or small scale as the needs of the incident dictate.

We can dig a little deeper into the definitions to get a better understanding.

**Reliability** is the ability to function in any emergency or to be able to work under various conditions. This extends beyond hardware reliability and includes the user's ability, knowledge, and familiarity with radios and auxiliary equipment.

**Scalability** is defined as the ability of a system to expand or contract with the size of the incident. Systems included are communications and operations. An increasing incident size could mean working in another jurisdiction or receiving support from another jurisdiction. Basically, the ability to work together to maintain communications. In more complex and growing incidents it becomes vital that everyone is on the same page.

**Portability** is defined as the "effective integration, transport, and deployment of communication systems." This is where standardization of technologies, operating protocols, and frequencies allow scalability as mentioned above. In the world of first responders, all communicators must be familiar and comfortable with working within all parts of the communication system.

So, what does all of the above mean to Amateur Radio Emergency Service, ARES®? As far as reliability, the faults that can occur that prevent reliable operation can be broken into three categories:

(1) **Hardware**, (2) **Software**, and (3) **Human**.

1. **Hardware** points of failure will include complete, intermittent, or partial failures. Failures can occur to radios, power supplies, (which include batteries) antennas, and accessory components such as terminal node controllers, sound cards, and computers. Other points of failure include the wired connections between power supplies, microphones, headsets, antennas, and other components.
2. **Software** failures would include computer programs that lockup or have confusing functions in the program. Included in this list would be radios that are difficult to program or operate. Unstable computer operating systems, although maybe more infrequent, is another source.
3. **Human** failures are probably the largest and most frequent source of failures. The list of human failures is long and ranges from simple things, such as picking up the wrong microphone or transmitting on the wrong side of a two-band radio to more complex ones, such as the lack of knowledge or training in basic radio programming and operation. Another source of radio operation failures is the increasing complexity of radios and menu-driven operations and setup.

Outside of radio hardware and software, we could include the failure to understand radio propagation and not being comfortable speaking on the air.

Then when you toss in operating in a stressful situation and another source of many of the human failures or weaknesses. The ability to think of your feet is important but cannot be overrated.

So, what can ARES operators do about the reliability issue? We all know that a large price tag does not necessarily mean quality. But is the cheapest radio available going to be a reliable radio? Is it going to be easy to work with? And, because ARES is an all-volunteer operation, spending lavishly is not an option available to everyone.

How about using home-built equipment? There is the advantage of understanding how that piece of equipment works which allows for quick repairs. But the downside can be an issue of quality? That will depend much on the skill of the builder. Home-built equipment may work well at the home QTH but may not fly when out in the field. We are all aware of the many times we work with the "make-do" setups at home that are inconvenient and inefficient but cannot be counted on to support our served agencies.

Scalability and portability work are overlapping requirements. Scalability, or the ability to expand and contract with an event, and portability, or the integration and deployment of communication equipment, are based on some common characteristics. The successful implementation of either or both will require common operating procedures and common radio protocols. The ARES organizations in the Wisconsin South East District are county based. For the counties to support each other during events the use of standardized operating procedures, frequency plans, repeater offsets, and pl tones will be necessary. The frequency channels, repeater, and simplex should be programmed into all radios to allow easy implementation into another jurisdiction.

So how can ARES operators best address the requirements of reliability, scalability, and portability?

In my opinion, the most effective ways are training, testing, and exercise.

Training with your equipment, including reading the manual, should improve the reliability of the equipment and the operator. You could work with another operator who has similar equipment to improve each other's knowledge and effectiveness. A further step could be expanding your training with different equipment and setups from other hams.

Scalability and portability can be addressed by participating in training during net exercises, participating in the National Traffic System, and taking further FEMA training courses. The skills learned will improve your abilities and capabilities to work with others outside your local group.

All of the above can be tested and improved by participating in simulated exercises. Exercises that require working in various environments, locations, and different groups will test the reliability of equipment and operators. Knowledge of the scalability and portability of your setup can be acquired during an exercise. A well-planned training event is the best time to test and exercise yourself as an operator, test and exercise your equipment, and test and exercise the ability of a team(s).

73,  
Don  
AA9WP

**OZARES Repeaters:**

147.330, + 127.3 uplink tone

443.525 + 114.8 uplink tone

**Practice Nets:** First and second Thursdays 7 pm Labor Day to Memorial Day; 8 pm Memorial Day to Labor Day

**Monthly meeting:** Third Thursday of the month at 7 pm

**Training Net:** Last Tuesday of the month

# On The Air Activities!

de Gary Sutcliffe, W9XT



If you were not operating on the HF bands in January, you missed a real treat. We had the highest sunspot numbers in eight years, and the higher bands were full of juicy DX.

Bill, W9MXQ, picked up all-time new ones (ATNO). Crozet, Ethiopia, Palau, China, Togo, Thailand, Malawi, and Taiwan. All of these were worked on 12 or 10 meters. Bill also notes that he has a self-imposed limit of 20W on FT8. It makes it more challenging!

Fred, W9KEY, also commented that the high bands were hot. He reports working 11 Japanese stations in a row on 10-meter FT4 on January 22. He thought that was extraordinary until he repeated it a few days later. Fred notes that 10 meters can be active from mid-morning until mid-afternoon. Fred must be sleeping in late because I see the band opening around 6:30 AM, almost 45 minutes before sunrise, and staying open as much as an hour after sunset or later.

On January 20, I checked out 10 meters about 10 minutes after sunrise. I was surprised to hear Japan. You usually hear Japan in the afternoon and turn your beam to the northwest. Instead, I was beaming southeast and saw one calling CQ on FT8. I worked him and immediately had a pile of 4-5 JA callers. This long path opening only lasted a few minutes, and I put about 5 in the log before the path closed. I'm not sure I have ever contacted Japan long path before.

Then on January 31, I worked a station in the Philippines long path on 10. It was just after sunrise. Working into Southeast Asia and Australia is not really unusual but getting to Japan or the Philippines is rare. It was undoubtedly helped by FT8, which was not around the last time we had conditions this good.

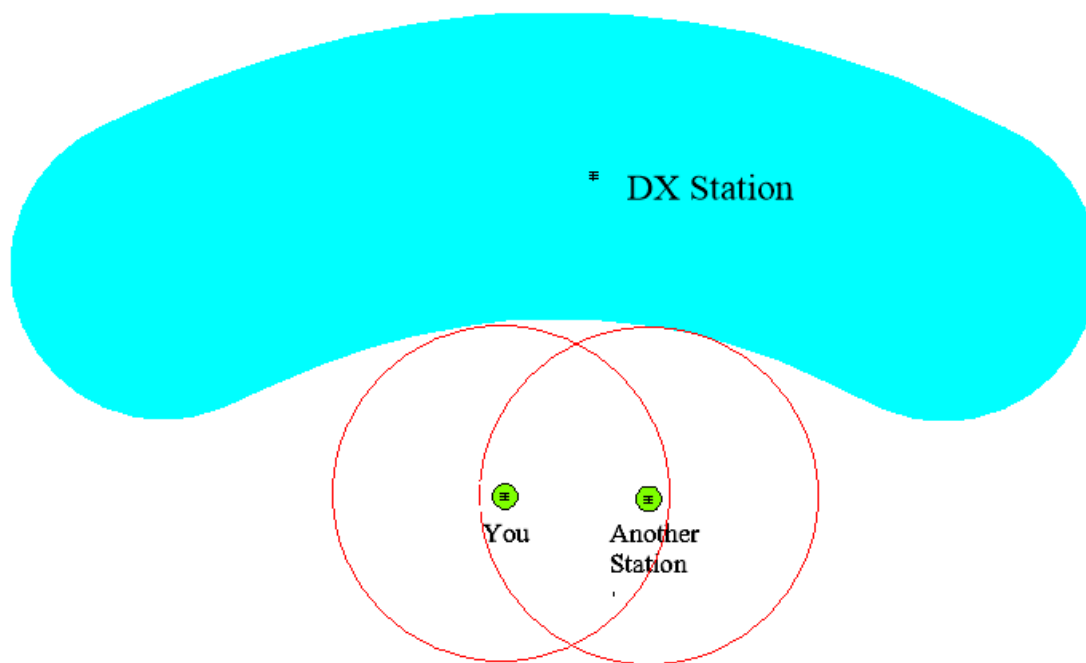
It sure has been a lot of fun, and it should be getting even better for the next couple of years. Signals will get stronger, and band opening will start earlier and close later. There will be times when 20 and even 15 meters will be open all night and days when 10 meters will be open until at least 10:00 PM local time.

The solar flux peaked at around 230 in January, dropping to 130 by the end of the month. The numbers jump around a lot. Still, 130 is not bad compared to where we were a year ago, and the long-term trend is upward.

Fred also noted that you should upgrade your WSJT program if you operate FT4 or FT8. The current version is 2.6.1. There have been a few changes, including better decodes in QRM. That will be even more important as activity picks up and the bands are more crowded. Note the download site for WSJT has been changed. The new site is: <https://sourceforge.net/projects/wsjt/>

The excellent conditions have made FT8 a victim of its own success. There are more stations, and it is often nearly impossible to find a clear frequency. Even if you do, someone in your skip zone won't hear you and may plop right on your frequency, and you QRM each other.

The skip zone is the area beyond ground wave but less than where the sky wave returns to earth. You can't hear signals inside the skip zone, but more distant stations can hear both of you. If you think this might be happening, change your frequency.



**Skip zone example. The green areas represent the ground wave distance. The areas inside the red circles are the skip zone. Signals originating inside the skip zone and outside the groundwave area cannot be heard. Both of you can hear stations in the light blue area. The DX station hears both of you.**

## WIQP

It's not too early to start thinking about the Wisconsin QSO Party. It starts Sunday, March 12 at 1800Z. Note that we change to daylight savings time earlier that Sunday morning, so it begins at 1:00 PM local.

Last year we won the club competition quite handily. But the club that is always in the hunt didn't have an entry from one of its best operators. It would have been very close if he had put in his usual effort. We don't want to risk that again, so please plan to put in some time. You can use HF and VHF bands. Voice and CW modes are acceptable, as well as RTTY. Sorry, FT8/4 is not allowed, but those modes are very slow, even for

contests that allow it. I don't know if anyone uses RTTY. I never thought it was worth the trouble in the WIQP.

Last year we won the club competition quite handily. But the club that is always in the hunt didn't have an entry from one of its best operators. It would have been very close if he had put in his usual effort. We don't want to risk that again, so please plan to put in some time. You can use HF and VHF bands. Voice and CW modes are acceptable, as well as RTTY. Sorry, FT8/4 is not allowed, but those modes are very slow, even for contests that allow it. I don't know if anyone uses RTTY. I never thought it was worth the trouble.

We have another newsletter and meeting before the WIQP, so there will be more information next month. But if you plan ahead, you might want to check out the WIQP page. <https://www.warac.org/wqp/wqp.htm>

### **WWV Special Event**

The WWV Amateur Radio Club will have a special event starting on March 6. It is to celebrate 100 years of the first standard frequency broadcasts from the station WWV in Fort Collins, CO. They will be operating under the club call sign WW0WWV on 80-10 meters, CW, SSB, and digital modes.

WWV is an important part of the National Institute of Science and Technology (NIST). They have been an essential resource for radio communications and science by providing extremely accurate time and frequency standards. Thanks to Fred, W9KEY, for passing this on.

### **DXpeditions**

January had its share of good DXpeditions. The big one was to Crozet Island, FT8WW. Several members contacted him, as reported last month. More may have completed a contact after the newsletter publication date. The operator had a permit to operate for a few weeks, starting when he arrived. That has expired, but he is stuck there until the next supply ship arrives on March 20. He is trying to get permission to operate more, but that is still ongoing.

Most of the stations in the area worked him on 30 and 20 meters. I worked the island years ago on 20 CW, so I didn't try to work him on 20 with so many others needing the contact. I didn't want to take a QSO away from someone who really needed it. I barely heard him once on 15 meters. It does not look like we had very good propagation there on 15, and the last I saw, only a few US stations made contacts there.

The ET3AA operation, which included W9XY and former Wisconsin native K4WW, was a success. They made a lot of contacts on the higher bands. I picked up new band countries on 30 and 12 meters as well as a new digital country. Bill, W9MXQ, picked up ET3AA as an all-time new country. Bill notes it was more than a simple contact, citing working a

personal friend was special, and said he had a couple of email exchanges with Bob while he was in Ethiopia.

Unfortunately, they could not solve the noise problem on the low bands, so they didn't attempt to make contacts on them after the first nights.

Only part of the trip was for operating. A key point was helping the technical institute in Addis Ababa with their ham station and training operators. Bob, W9XY, is a Greater Milwaukee DX Association member and posted many pictures on their website. You have to scroll down a ways to see most of them. You do not have to be on Face Book to view the page.

<https://www.facebook.com/groups/551826123032517>

Now, the one we are all waiting for is the 3Y0J operation to Bouvet. They arrived on January 30. It took them 12 days to get there on the high seas. Many had severe cases of seasickness. They reported some landings on January 31, but I have not heard how much equipment was landed, or anything more about when they first expect to be on the air. Hopefully they will be by the time you read this.

Expect the pile ups to be huge. Fortunately, they have a lot of operators, a lot of stations, and three weeks on the island. If they can operate the whole time, everyone should be able to make a contact. I often don't bother trying on the first few days of a major operation, knowing it will be easier in a few days. Of course, there is a danger sometimes they have to leave early, usually due to the weather.

The web page has a lot of information. <https://www.3y0j.no/>

Click on the operations tab to learn where and how they will operate. Note that they will always operate split. Never call them on their frequency.

A group of Czech operators will be visiting Agalega & St. Brandon Islands in the Indian Ocean February 24-March 4. This is a pretty long distance, but there have recently been plenty of openings to Mauritius (3B8) and Reunion Islands (FR4) on the higher bands. Contacting this location would have been impossible on the higher HF bands in the last 6-7 years. This will be the first time FT8 has been used from this DXCC entity.

The ARRL DX contests are coming up, with the CW weekend in February and the phone weekend in March. There will be many operations to DX locations to operate these contests, so getting on a few days before can be productive, especially on the WARC bands since they will not be on these bands during the contest. One operation is by Tom, AA9A, from up around Green Bay. Tom will be on Sint Maarten March 1-8 using the call sign PJ7AA. If you hear him on before or after the contest, tell him how cold it is back home.

San Andres & Providencia will be activated by a pair of Columbian hams from February 29 to March 5. They will have separate calls, 5J0EA and 5K0VT. The bands are 80-10

meters SSB, but FT8 might be possible. In addition, they will be on for the ARRL DX phone contest.

## Contests

One contest I overlooked is Winter Field Day. It is like the regular Field Day we all know and love, except this one is held the last full weekend of January. Field Day is meant to be a training exercise for a time when we need to provide emergency communications. But emergencies don't just happen in the warm weather of late June. They can happen any time. Note that the ARRL does not sponsor Winter Field Day, unlike the traditional one in June.

I was surprised to find out how many hams I know operated this year. One was Bill, W9MXQ, who made 55 contacts on 40, 20, 15, and 10 meters. He didn't operate from the field but from home.

The big contests for February and early March are the ARRL DX contests. The CW contest is February 18-19, and the phone weekend is March 4-5. The CW weekend is one of my top three or four contests. I like CW DX contests because of the variety of places you contact, and CW is a very efficient mode for smaller stations. The propagation forecast for that weekend has the solar flux up around 200. It should be a good time.

I especially like that it is a world that works the US and Canada in the ARRL event. The DX is looking for us, as opposed to other parts of the world. You won't be pounding your head against the wall trying to work someone on an island in the South Pacific who is working only Japanese stations.

We send a signal report and our state. DX stations send a signal report and their power. It is fun to see how much power the other station is running. Sometimes it is amazing to see QRP stations getting through. This is because the higher bands are very quiet if they are open, and low power gets through very well. Once during a solar peak, a station from Belgium called me on 10-meter SSB during the ARRL DX contest. He was running 300 milliwatts and beat out other stations to do it!

The WPX RTTY contest is the weekend of February 11-12. Multipliers are prefixes. For example, W9, WB9, K9, etc., are all multipliers. You will be sought after if you have a call sign like WT9Q. A plain W9 is not so attractive. I like FT8 for general contacts, but I prefer RTTY contests over FT8/4 contests. If you are on FT8, you already have everything you need, except maybe software. MTTY is the program I use for RTTY. Check out the rules regarding the number of points QSOs are worth.

The other RTTY contest this month is the North American QSO party. The NAQPs are scheduled in the winter and summer, with one event each for CW, SSB, and RTTY. The winter RTTY happens on January 22. You send your name and state.



## Could you pass your ham exam today?

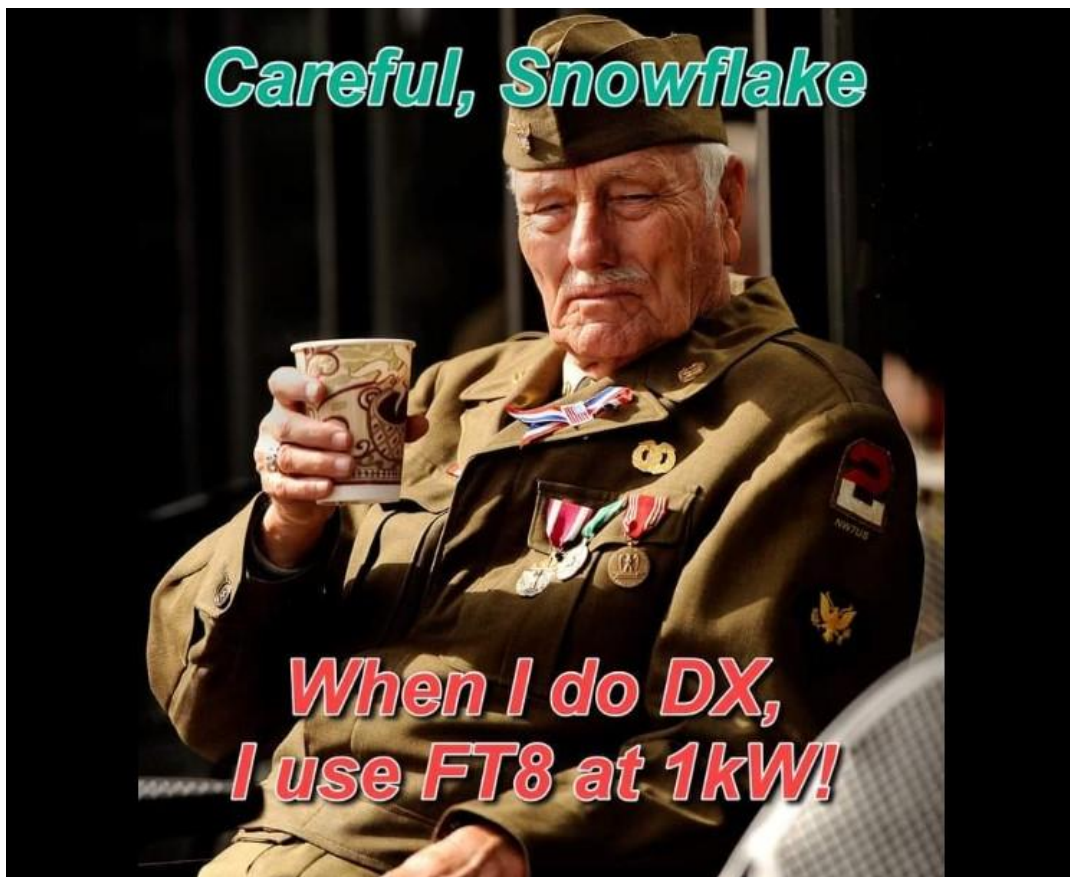
Fred, W9KEY, passes along a challenge. Try taking an exam for your current license class. You can take practice exams on [www.hamexam.org](http://www.hamexam.org).

It is free, and you don't even have to register. I gave it a shot and got an 85. That is well into the passing category. I took my Extra exam 50 years ago this summer, and the questions have changed quite a bit since then. The questions I missed were mainly related to modes and things I have not tried in the hobby. I would have read up on those if I got the bug to try them, and I certainly would have studied if I were taking it for real.

If you have a lower-class license, take the test for the next higher one. You might be surprised how well you did; moving up might take only a little studying.

Fred notes that you don't have to tell anyone about your results. Is anyone else willing to see if you could still pass? Thanks for passing this along, Fred!

That wraps up February. Let other club members know what operating and other events you have been or are planning to operate. Please send me the info by the 27<sup>th</sup> of the month. Don't forget to mark March 12 on your calendar for the Wisconsin QSO Party!



W9MXQ's alter-ego. See above.

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for February and early March 2023

W9XT's DXpedition picks for February and early March 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Bouvet Island	~30 Jan	3Y0J	160-10	C/S/D	<a href="https://www.3y0j.no/">https://www.3y0j.no/</a>
Agalega & St. Brandon	Feb 24- Mar 5	3B7M	160-6	C/S/D	<a href="http://3b7m.com/">http://3b7m.com/</a>
Providencia	Feb 27- Mar 5	5J0EA & 5K0VT	80-10	S + D?	
Sint Maartin	Mar 1-8	PJ7AA	80-10	C/S/D	

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

W9XT's contest picks for February early March 2023					
Name	Start	Length	Bands	Mode	Link
CQ WPX RTTY	0000Z Feb 1	48, work 30 max	80-10	RTTY	<a href="https://www.cqwprrty.com/">https://www.cqwprrty.com/</a>
ARRL DX	000Z Feb 18	48 hours	160- 10	CW	<a href="http://www.arrl.org/arrl-dx">http://www.arrl.org/arrl-dx</a>
NAQP RTTY	1800 Z Feb 25	12, work 10	80-10	RTTY	<a href="https://ncjweb.com/">https://ncjweb.com/</a>
ARRL DX	0000Z Mar 4	48 hours	160- 10	SSB	<a href="http://www.arrl.org/arrl-dx">http://www.arrl.org/arrl-dx</a>
WIQP	1800Z Mar 12	7	160- UHF	CW, voice, RTTY	<a href="https://www.warac.org/wqp/wqp.htm">https://www.warac.org/wqp/wqp.htm</a>

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 February early March 2023			
Event	Dates	Details	Link/notes
WWV 100 <sup>th</sup> anniversary Special event	Mar 6-12	80-10M, CW/SSB/digital	<a href="https://www.qrz.com/db/WW0WWW">https://www.qrz.com/db/WW0WWW</a>

# THE COMPUTER CORNER

## No. 299: LINUX: SOME APPS YOU JUST CANNOT LIVE WITHOUT

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

[wb9rqr@gmail.com](mailto:wb9rqr@gmail.com)

Vanessa comes with an amazing array of apps, which it installs when you install Linux. The Libre Office suite, Firefox web browser and others make Linux Mint Cinnamon 21 ready to go the minute you finish installation. But there are also others that are really helpful when you need them. Some apps you cannot live without (Stan's personal bias), and you may find others yourself when you look under Software Manager.

**VLC** VideoLan Media Player. Plays MPEG, DivX, MOV, WMV, QuickTime, MP3, DVDs, VCDs, Podcasts and multimedia streams. Install it; you won't be sorry you have it when you need it the first time (it will know when to appear and offer to help).

**Thunderbird** If you need an email client, this is the best. It always was the best, even in the Windows world.

**Inkscape** An illustration editor (vector graphics), probably a step beyond the drawing tools that come in the Libre Office suite.

**GIMP** (GNU Image Manipulation Program). An advanced picture and photo editor.

**Gparted** detects and shows partition tables and allows you to manipulate them (make them bigger, smaller, remove them, etc.). At the very least, it shows you what you have going with regard to your current setup. Its a nice program to just let you just see what you have, even without making any changes.

And here are two you may *not* need. In other words, don't install them unless you really need them.

**Wine** Originally an acronym for "**W**ine **I**s **N**ot an **E**mulator". In a nutshell, it is a program that will (maybe) *let you run Windows programs in your Linux machine*. An ongoing project, it is constantly getting better, but it doesn't yet work in every case. The way to find out if it will meet your needs is to install and try it.

**VirtualBox:** A free x86 virtualization solution allowing a wide range of x86 operating systems such as Windows, DOS, and even other Linux versions to run on your Linux system. Don't forget, for either this or Wine (above), you will need extra hard drive space and memory (RAM) to have a shot at success.

Happy Computing!

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## ORC Repeaters are On the Air – Awaiting Your Call . . .

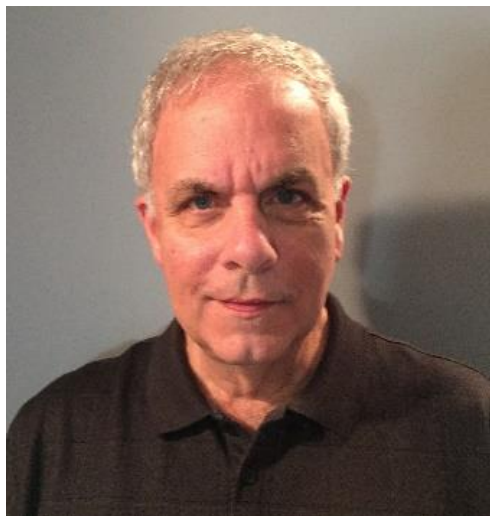
- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)



**"So then he says, 'Let me show you my logbook.' It was all FT8!"**

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



We are back again in this edition of the Newsletter with a Part 2 extension of the article about the Collins 51S-1 Receiver. As I noted previously, “Throughout the time we have used HF in amateur radio as well as for military, embassy service, agency service, or research use, the manufacturers have produced what we will call professional receivers. Collins Radio Company, with their 51J series radios<sup>1</sup> replaced by the 51S-1, certainly were leaders in this product sub-section of the radio market. To be sure, others in the United States played in this market as well – as will be shown here.

Collins worked in a varied group of markets with the 51S-1 Receiver. These variations, when we look back on the design today, were mostly related to the appearance. Here are some examples – beginning with a repeat of the standard model appearance:



**Collins 51S-1 Receiver**

**W9MXQ Collection**

One variant of the Collins 51S-1 was more of an adaptation than a modification. LTV (Ling Temco Vought) adapted a stock 51S-1 to conform with a military contract requiring aircraft mounting and interfacing. It also was modified somewhat to deal with on aircraft electrical noise. The most noticeable feature of the changeover was to look at the knobs, illumination, and other features to allow for improved visibility in the low-light conditions of an aircraft in flight. The receiver – designated the LTV G133F-1, was a part of an ARDF QRC-346 System for the United States Air Force. Interior pictures of the G133F-1 show

the same design and layout as the factory delivered Collins 51S-1 Receiver. Note this picture of the LTV G133F-1:



**LTV G133F-1 Receiver**

**Rod Blacksome, KØDAS  
Collins Collectors Association**

Contractor/manufacturers, such as LTV, would use specialized technology from other manufacturers to complete requirements for a system order from military or other government contracts. Presumably these included other NATO countries as well.

Not to be outdone, Collins Radio also did complete packages for customers. Some of those involved different looks for the 51S-1. Here are a couple examples of contracts that included the 51S-1 Receiver:



**Collins 51S-1 Receiver – FAA Version**

**For a Federal Aviation Administration (FAA) Contract in factory Aqua Green  
KE9PQ Photo**

As you can see, these receivers were stock in appearance other than front panel color and the addition of the government contract sticker clearly visible at the left side of the front panel.

A more difficult to identify version appears here as a picture of a receiver destined for use by the Collins 51S-1 Receiver that was supposedly supplied to the United States Coast Guard (USCG):



**Collins 51S-1 Receiver – USCG Version?**  
**Presumably a UPSCG Contract or Proposal, in factory Light Gray**  
**KE9PQ Photo**

Personally, I find the light gray, for whatever reason it existed, to be quite pleasing. The stock color – matching the Collins S-Line Amateur Radio products marketed at the same time<sup>2</sup>.

I truth, there could be many such variations in the product where a large contract would easily convince Collins to make a number of radios in a special format. Those variations did not always make for an outward difference. Since some could be modified for supply voltages that could be problematic for a buyer so many years after these radios were in wide commercial use. I am repeating the standard lineup here:

<b>Model Number</b>	<b>Specifics</b>
51S-1	Desk Cabinet, 115/230 VAC, 50 to 400 Hz – 125 watts
51S-1A	Desk Cabinet, 28 VDC Transistorized Power Supply – 4.5 Amperes
51S-1F	Rack Cabinet, 115/230 VAC, 50 to 400 Hz – 125 watts
51S-1AF	Rack Cabinet, 28 VDC Transistorized Power Supply – 4.5 Amperes
51S-1B	Same as 51S-1 but with Rear Mounted Military Connector Box

These differences should be shown on the escutcheon behind the main tuning knob but even so, it is important to be careful. A good price might mean a radio that does not run on 120 VAC or 240 VAC power in the USA, Canada, and Mexico.

One last variant is perhaps not a variant at all – but what the radio looked like as proposed and prototyped inside of Collins Radio Company. Check this picture:



**Collins 51S-1 Receiver – Original Factory Prototype**

**Rod Blacksome, KØDAS  
Collins Collectors Association**

Immediately noticeable in the prototype is the main tuning knob. It is not common, to my knowledge, on other Collins radio, past or to the time of this prototype (1958 or so). However, you will see it again in the future on a Hammarlund Radio Company receiver some ten years later<sup>3</sup>.

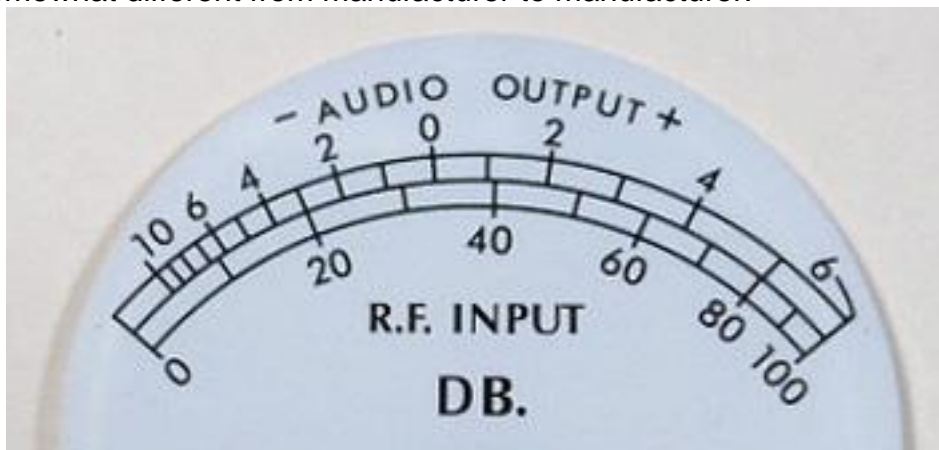
Notice some variables in this prototype when compared to the picture of the production model at the beginning of this article. The Collins logo has been moved to just below left center. That allows the added Noise Blanking Level Control between the dial escutcheon and the meter. While the Noise Blanking is not listed on any options column that I have seen, I have seen them on more than one 51S-1 that I have had in my possession. Careful observation of the above picture will show that the background scale data around the NB GAIN knob affixed to a small add-on panel with the knob legend. Due to the design of the panel on this series of Collins radios, it was easy to add an additional, or changed dial legend.

There are issues with using this kind of receiver for amateur radio operation. Remember, this is a laboratory instrument. While in most cases it performs very well as a general coverage Short Wave Listener (SWL) or amateur radio band radio, it is not focused on that purpose. A case in point is the front panel Meter – notice I did not call it an S-Meter. Why not? It is not an S-Meter as we SWL or amateur operators have come to define it.



There are three selectable scales controlled by the lever switch just below the meter that is labeled, left to right, as “RF,” “+10 DBM,” and “0 DBM.” I only use the “RF” position as the other two relate to line output. A calibrated S9 signal from a test oscillator<sup>4</sup> nets a 40 dB reading. After that just know the meter is calibrated in dB signal strength<sup>5</sup>.

For further clarification, the meter face used in the Collins 51S-1 is as below. The model in my collection it is identical except for being Amber background instead of white. As I noted above, I use the “RF” switch position that relates to the 0 to 100 DB bottom scale. S9, as noted above, equates to 40 DB on the bottom scale. So, an S9 signal would read 40 DB. An S9 plus 20 DB would at 60 DB on this scale. Keep in mind that the definition of S9 is somewhat different from manufacturer to manufacturer.



**This is a Honeywell meter face kept as a spare at W9MXQ.  
Some 51S-1 Receivers are equipped with a Bartlett meter.  
Those meters have a slightly different appearance.  
The scales are the same, however.**

**W9MXQ**

One other consideration is that the radio, designed before 1959, came from a time when most signals on the band were either CW, AM, or perhaps RTTY data. Single Sideband (SSB) was not the prime design. Tuning the radio in SSB will give (in this author’s opinion) the impression that the AGC attack time is too aggressive causing some pumping of the signal in the USB or LSB (SSB) mode positions. On the other hand, listening to CW or AM signals is smooth as silk. While my opinion is subjective, many share it. Modifications have been developed but I choose not to alter the basic design – for me the “basic design” is why I collect these vintage radio. If you need info on said modifications, contact me for details ([W9MXQ@TWC.com](mailto:W9MXQ@TWC.com))<sup>6</sup>.

A nice addition for the 51S-1 Receiver, made standard after late 1965 was a Tuning Dial Brake – a tool to hold the tuning dial tightly in one place. Today’s digital radios often have a “DIAL LOCK” button to keep the frequency dial from working – this is the mechanical equivalent of that modern digital feature. This brake was eventually incorporated into the Collins KMW-2A HF Transceiver. The kit of parts, shown below, were easily retrofit to an early receiver.



**Kit of Parts from Collins  
W9MXQ**



**Kit installed on Author's 51S-1  
W9MXQ**

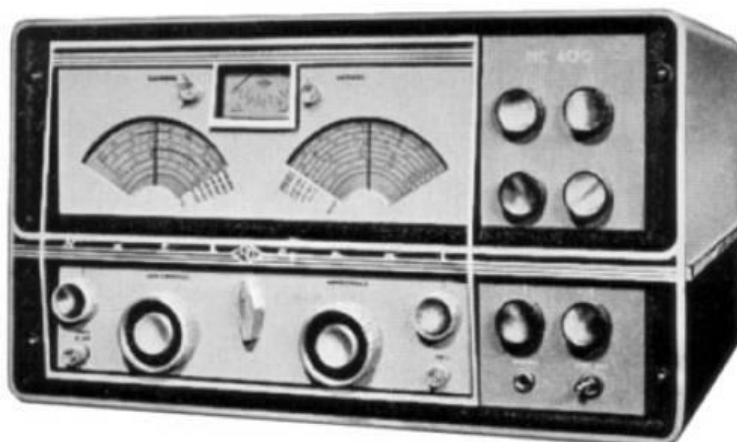
Collins played in several markets with this radio – just as they had done with the class leading 51J series. The major manufacturers in the United States, starting in the 1930's, always had a top line radio that they sold to the aforementioned areas of business. Perhaps the longest in this domestic market was Collins Radio Company. However, other American manufacturers played in this upscale, all mode, general coverage receiver market as well. Collins was definitely a technology leader, but others played with more than adequate radios – perhaps especially National and Hammarlund. A few of those domestic high-performance radios are illustrated here – some before and some after but still in the time when the 51S-1 was a viable player in the marketplace:

Perhaps the largest competitive player was from the National Radio Company. A player in the market from 1964 until 1972, National marketed a replacement for their HRO-60 HF Receiver, the HRO-500. This revolutionary solid-state receiver broke new technology ground and was very popular with maritime shipping customers. This was before satellite communications and the HRO-500 found many customers for the receive side of ship to shore and ship to ship radio communications.



**National HRO-500 HF Communications Receiver (1964-1972)  
W9MXQ**

Also, from National, in 1959 to 1962, National released and marketed the NC-400 HF Receiver



### **National NC-400 HF Communications Receiver (1959-1963)**

RigPix

The National NC-400 HF Communications Receiver was a more traditional design than the Collins 51S-1 or its stablemate, the National HRO-500. The NC-400, more designed as a high-performance amateur radio receiver than a professional tool, it ended up with only limited success in both markets.

Never was a player in the High-Performance HF Receiver market. However, Hallicrafters produced limited quantities of the high performing SX-88 General Coverage Receiver. Its more traditional conversion scheme using a free running high frequency oscillator limited its ability to compete with the 51S-1. I show it here as a singular example of Hallicrafters in this market. Hallicrafters was more of a player with high performance radios based on a specific design for a specific government contract.



### **Hallicrafters SX-88 HF Communications Receiver (1954-1955)**

RigPix

Of the domestic competitors for the Collins 51S-1 Receiver, Hammarlund was perhaps the best. Take a look at these two models:



**Hammarlund SP-600 HF Communications Receiver (1951-1972)**

**RigPix**



**Hammarlund HQ-180C/HQ-180AC HF Communications Receiver (1959-1972)**

**W9MXQ**

Hammarlund had been involved for a long time with their SP Series (Super Pro) very high quality and performance radios. The SP Series began in 1936 with the limited coverage SP-10 followed shortly by the HF spectrum coverage SP-100S, in 1937. The SP-600 was the last version with many different varieties denoted by model number suffix. The SP-600 series lasted until the end of the company, in 1972. It may well have been the only reason the company was still in production up until 1972.

The last of the HQ-180 series, in the form of the HQ-180XA<sup>7</sup>, was still advertised right up to Hammarlund's end in 1972. The model series lacked the stability of the SP-600 radios. That was likely due to the design of the free running High Frequency Oscillator.

Collins Radio Company went on to produce updated models after the 51S-1 Receiver. Others in the domestic market, along with competition from Europe and Asia, went on as





## Collins 851S-1 HF Communications Receiver

RigReference

The 851S-1 is the last of the post-51S-1 HF Communications Receivers to be mentioned. I did not do a lot of research on this as they really do not qualify in my mind as “Vintage” Amateur Radio.” I say that knowing that these are now also part of history and in someone’s mind, someday, they will be “Vintage.”

As time went on these radios seemed to be more contract based and not so much an offering that an amateur radio operator would see in a catalog.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

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. Certainly, in any technical article, it is good to have a second person review the thought process.

© W9MXQ

### Notes and Comments:

<sup>1</sup> The 51J series consisted of the 51J-1 Receiver in 1949 and was finalized with the 51J-4 in 1954. The 51S-1 replaced the 51J-4 in 1959. There were 51J-2 and 51J-3 receivers in between the first and last of the 51J product line.

<sup>2</sup> It is a popular notion that the 51S-1 is a family member of the popular Amateur Radio focused S-Line equipment. Actually, the two lines were alike only in that one letter in their designation. In the case of Collins Radio Company, the key item here is the number “51” in this receiver’s designation vs, the “75” and “32” (as they relate to 75S-3 Receiver and 32S-1 Transmitter) in the Amateur Radio line.

<sup>3</sup> Hammarlund HQ-215 and HQ-225 Receivers from 1969.

<sup>4</sup> The reference oscillator that I use is a “Battery powered portable S9 RF signal generator” from eBay. It is a high-quality unit with accurate output across the HF Spectrum. You can find this for \$29.00 (plus shipping) at this link: <https://www.ebay.com/itm/304646658241>

<sup>5</sup> A special thanks for help with and confirmation of Meter functions for the radio comes from Charlie Talbott, K3ICH. Charlie is a well-known contributor to the Collins Collectors Association Reflector on Groups.io. To quote Charlie on his QRZ page says it all, “Main interests on the air are six-meter DX and restoration of old boatanchors, specializing in the Collins 51S-1.”

<sup>6</sup> When I was first licensed in 1964, most signals on the phone bands were still AM. While many manufacturers had switched to SSB for phone use, others had not. In fact, I started with AM and shortly afterward moved to SSB. Like a few others, I was disappointed with SSB sound and available rag chew contacts – so I switched back to AM and bought, at the time, a brand-new Johnson Viking Valiant II transmitter.

<sup>7</sup> The HQ-180XA was a variant of the HQ-180AC. Radios with the XA suffix have a crystal oscillator in place of the meter that allowed for crystal control of up to eleven individual frequencies within the HF coverage range. In high stability situations, this allowed for better stability in the receiver's performance. The radios +/- 3 kHz vernier tuning allowed for some adjustment of the exact crystal frequency.

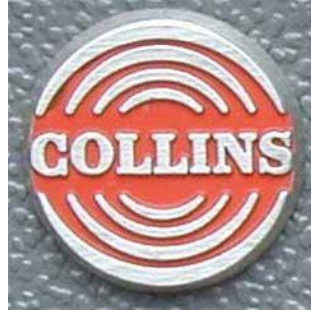
© W9MXQ



Front Panel Logo

Early Collins 51S-1 Receivers

© Collins Radio Company



Front Panel Logo

Late Collins 51S-1 Receivers

© Collins Radio Company

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**We cannot “Repeat” this too many times:**

**ORC Repeaters are On the Air – Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

## **Ozaukee Radio Club Minutes of Membership Meeting. 1/11/2022**

**de: Ken Boston, W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom.

ORC President Pat W9JI officially initiated the {Annual-Elections} meeting at 7:33, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. WB9RQR mentioned an article in 'The Smithsonian' on the history of morse code; W9IPR informed us that club member Ray W9BUJ is now a silent key.

### **Program:**

Being the Annual meeting; elections were held; W9JI then presented the slate of officers for 2023:

President:	Bill K9GN	new
1 <sup>st</sup> VP	Jeananne N9VSV	new
2 <sup>nd</sup> VP	(no nominee)	
RPT VP	Gregg W9DHI	incumbent
Secretary	Ken W9GA	incumbent
Treasurer	Gary N9UUR	incumbent

Pat called for any further nominees from the floor, but as there were none made, Stan WB9RQR moved that the slate be accepted as provided; Tom W9IPR 2<sup>nd</sup> the motion, a hand count of the votes was taken, the motion carried with the slate becoming voted into office.

Then a video was shown: "Secret Listeners" which was a BBC documentary about the assistance of British radio amateurs during World War 2 in the monitoring of radio traffic, in order to monitor and forward to British intelligence for decoding the German signals ['Wireless Intercept operations']

**50/50 Raffle:** This was won by Bill K9GN; winning an award of \$11.00.

### **Scholarship Auction:**

Stan WB9RQR held a short auction; included an HP Laptop, Bearcat scanner, Shin-Wa scanner

### **Committee reports:**

[there was no first VP report and no RPT VP report]

2<sup>nd</sup> VP: Bill K9GN informed us that K9DJT will no longer be managing the orders and delivery of the ORC apparel; and the club will need a new member to step into that involvement.



Treasurer: Gary N9UUR set out reports, ORC now has about 90 paid members for 2023 The 2022 books have been audited and are now closed... The December treasurers' report was accepted; motion made by W9GA ;2<sup>nd</sup> by WB9RQR and carried.

Secretary: Ken W9GA reported that the Dec 2022 minutes are posted; pending some minor corrections, a motion to accept was made by N9VSV; 2<sup>nd</sup> by KC9FZK, and motion carried.

Scholarship/STEM: Tom W9IPR commented on the committee formulating plans to support local high school STEM projects, and he has contacted Cedarburg H. S. about our involvement.

Tech committee: no report.

**OLD business:** none reported.

**NEW business:** The audit committee has met; K9QLP chair, plus KC9FZK, N9UUR, W9KEY. Finances are now all into one institution, and N9UUR's clean book-keeping has made tracking cash movement easy. WB9RQR moved, K9GN 2<sup>nd</sup>, to accept the audit results; motion carried.

Ken W9GA reminded everyone that the annual awards are right around the corner; Ham and Turkey awards for 2023 are open soon, as well as many other types of categories.

**Adjournment:** WB9RQR moved to adjourn, N9UUR 2<sup>nd</sup>, motion carried; time ending was 9:07 PM. There were 22 in-person attendees, 18 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



## Turkey of the Year Award Ballot: 2023

**BACKGROUND:** The **Turkey of the Year** award can be awarded only once to an individual. (However, the Awards Committee erred a few years back when they failed to notice that the top vote getter had previously won under a different call sign). The criterion for this distinguished award is a club member who has helped keep the hobby fun. This person has generally promoted friendship and good will throughout the year. Past recipients and year awarded (years not indicated contain hams who are SK; those deceased members: WI9M, N9CCJ, K9CAN, KA9DDN, WJ9O, W9BCK, W9VQD, K9GCF, W9LO, KA9WRL, KA9RFM, WA9JOB):

1981 W9NHE Ted Willett  
1984 WA9OHY John Strachota now W9FAD  
1985 WD9FQW Mike Behlen  
1986 W9DHI Gregg Lengling  
1990 KA9QLP Jim Albrinck now K9QLP  
1991 W9BTN Sandy Wirth  
1995 N9UNR Dave Barrow  
1996 (no award given)  
1997 N9QQA Gabe Chido now WI9GC  
1998 KB9PZL John Maybee  
2000 WB9RQR Stan Kaplan  
2001 W9IPR Tom Ruhlmann  
2003 WI9GC Gabe Chido was N9QQA  
2004 KA4UPW Jim Hilins  
2005 AA9W Ed Rate  
2006 KC9GDV Mike Yuhas now AB9ON  
2007 KB9UKE Vic Shier now WT9Q  
2008 KC9FZK Nancy Stecker  
2010 AB9CD Mark Tellier  
2011 N9LOO Brian Skrentny  
2012 W9GA Ken Boston  
2014 KC9ONY Tom Trethewey  
2015 W9KR Chuck Curran  
2016 K9DJT Gary Drasch  
2017 KC9ZNR Zack Yatso  
2018 KD9DRQ Bill Church  
2019 W9MXQ Bill Shadid  
2020 W9KEY Fred Schwierske  
2021 K9MOI Don Lesch  
2022 KC9YEP Chuck Meyer

My vote for 2023 Turkey of the Year (may **NOT** be in the Turkey of the Year list from previous years):

Please email your nomination to the awards chairman; [kboston6@wi.rr.com](mailto:kboston6@wi.rr.com)

**Nominations will be closed on March 30, 2023**

## Ham of the Year Awards Ballot: 2023

**BACKGROUND:** The **Ham-of-the-Year** award is a traveling trophy given to an amateur radio operator who has made significant contributions to the success of the club. The person may receive the award on more than one occasion, and to date several members have received it more than once (noted with an asterisk). Past recipients and year awarded (years not indicated contain hams who are SK; those deceased members; W9VLL, KA9DDN, W9WQ, W9LNL, WA9UVK, K9CAN, K9GCF, WI9M, KA9WRL, WA9JOB):

1986 \*WB9RQR Stan Kaplan  
1988 W9DHI Gregg Lengling  
1990 WA9JMS Mark Seburn  
1992 \*AA9W Ed Rate  
1993 \*WB9RQR Stan Kaplan  
1994 N9PBY Ray Meyer  
1996 N9LLT Ted Heilmann  
1997 AA9HR Joe Holly  
1998 AA9OS Bill Raymond  
2000 KG9NH Matt Singer  
2001 \*AA9W Ed Rate  
2002 KB9SYI Jane Rediske  
2005 KB9WBQ Julia Nawrot  
2006 \*W9IPR Tom Ruhlmann  
2007 AB9CD Mark Tellier  
2008 \*W9IPR Tom Ruhlmann  
2010 \*WB9RQR Stan Kaplan  
2012 K9QLP – Jim Albrinck  
2013 N9UNR Dave Barrow  
2014 W9GA Ken Boston  
2015 \*K9DJT Gary Drasch  
2016 W9KR Chuck Curran  
2017 N9ENR Loren Jentz  
2018 \*K9DJT Gary Drasch  
2019 KC9ONY Tom Trethewey  
2020 K9VIN Kevin Steers  
2021 W9JI Pat Volkmann  
2022 N9UUR Gary Bargholz

My vote for the 2023 Ham of the Year (may be in the Ham of the Year list from previous years):

Please email your nomination to the awards chairman; [kboston6@wi.rr.com](mailto:kboston6@wi.rr.com)

**Nominations will be closed on March 31, 2023**

# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- February – Doug Dimmer, Technology Engineering Instructor at Cedarburg High School – Presentation with an overview of the current state of STEM education.
- March – Pat W9JI – Repairing a Viking Valiant Transmitter

We really do need some programs for the coming year. I don't have anything scheduled after March. Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

Many of our presenters use Microsoft's PowerPoint to organize and present their information. If you don't have access to or aren't familiar with PowerPoint, there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here:

<http://www.openoffice.us.com/>

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*February 8, 2023*

- |   |  |
|---|--|
| 1. 7:15 – 7:30 PM<br>Check-In and Introductions   | 7. 2 <sup>nd</sup> VP Report:                    |
| 2. 7:30 PM Call to Order:<br>President Bill Greaves (K9GN)  | 8. Repeater VP Report:<br>Gregg Lengling (W9DHI) |
| 3. Announcements, Bragging Rights, Show &<br>Tell, Upcoming Events, etc.                                    | 9. Secretary's Report:<br>Ken Boston (W9GA)      |
| 4. Doug Dimmer, Technology Engineering<br>Instructor at Cedarburg High School – STEM<br>education overview. | 10. Treasurer's Report:<br>Gary Bargholz (N9UUR) |
| 5. President's Update:<br>Bill Greaves (K9GN)   | 11. Committee Reports                            |
| 6. 1 <sup>st</sup> VP Report:<br>Jeananne Bargholz (N9VSV)  | 12. OLD BUSINESS                                 |
|   | 13. NEW BUSINESS                                 |
|   | 14. Adjournment                                  |



**Next Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
8 March 2023**

**Program:**

Pat Volkmann, W9JI  
Repairing a Viking Valiant Transmitter

7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins



# 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.

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Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org)

Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XLI

March 2023

Number 3

## From the President

de: Bill Greaves, K9GN



With the January elections, Jeananne Bargholz N9VSV became your First Vice-President. Jeananne has been an active club member and, when asked by the Nominating Committee, she stood for election. She jumped right in and began working on several projects for the club. One of those is replacing our vendor (who has left the business) for ORC “swag” – personalized hats, name badges, etc. – and another is an inventory of club equipment, e.g., Field Day, Repeater, and video conferencing. Thank you, Jeananne!

Club Award nominations are due by the end of this month, March. Nomination forms for two awards, HAM of the Year and the “Turkey” Award were in the February Newsletter, available on the club website: [ozaukeeradioclub.org](http://ozaukeeradioclub.org). Please send your nominations to Ken Boston W9GA at: [kboston6@wi.rr.com](mailto:kboston6@wi.rr.com). (Also see pages 37 & 38 of this News-

letter for further details.)

Relatively new hams – and older ones, too – striving to become familiar with the varied aspects of amateur radio may feel overwhelmed with both the breadth and depth of the hobby. Personally, I found a book by a club member to be helpful. Gary Drasch, K9DJT has published the second edition of his book, ***Ham Radio is Alive and Well***, with contributions by several club members. The text covers a wide variety of practical topics and gives many “pearls” of advice on what works best in different situations; it’s available on Amazon. My copy is completely marked up with my notes. An extensive review is included in the April 2022 Newsletter on the club website.

The Wisconsin QSO Party occurs very soon – Sunday, March 12 from 1pm until 8pm CDT. This is the first day of DST so check your clocks. ORC was fortunate to win this event last year. The Wisconsin QSO Party is sponsored by the West Allis Radio Amateur Club, WARAC. Event details are available at:

<http://mail.warac.org/wqp/wqp.htm>

Last month I received a response to my picture with this column that it was a bit “scary.” Sorry, but that’s my face! This month’s picture is a bit different. We’ll see how long I can keep the variety going.

See you at the club meeting, both in-person and on Zoom™, on Wednesday, March 8 at 7:30pm, with meet-n-greet at 7:00pm.

73, Bill K9GN

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©Facebook

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# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his first monthly message.

Special mention goes this month for long time contributor, Stan Kaplan, WB9RQR, for reaching a new milestone of delivering his 300<sup>th</sup> Computer Corner article (Pg. 21). Hats off to you, Stan. This editor is at his 68<sup>th</sup> consecutive Vintage Amateur Radio article – and since Stan nor I are going to quit anytime soon, it appears I will never catch him. Congratulations, Stan!!

Welcome new contributor, Todd Zumach, KD9QLJ, as he tells us about Winter Field Day (Pg. 9). Nice article, Todd – hopefully the first of many. And, check out returning, budding regular contributor, Tom Trethewey, KC9ONY, ORC's Repeater Vice President, as he talks about the ORC Spring Swapfest (Pg. 5). In this case he speaks as the Chairman of the Swapfest Event.

Another article by Tom, KC9ONY, addresses a challenge he put out last month about noises while driving. Check out his story (Pg. 7). At the same time, I have a short article in herein about a challenge I present last month about the early shack of our former member, Ray Brunette, W9BUJ (SK) (Pg 10)..

There are new items, including the Wisconsin QSO Party, mentioned by Bill, K9GN, in his President's Column and by Gary Sutcliffe, W9XT, in his regular On the Air Activities! Column (Pg. 13). That is one of many radio things to do in Gary's column this month. Check it out.

Don Zank, AA9WP, Ozaukee Country ARES Emergency Coordinator finishes his series of recent articles on NIMS Communication (Pg. 11). As always, Don is our window on Emergency Communications.

Ray Totzke, W9KHH, brings us an article to remind us about the approaching Field Day, in June (Pg. 6). Ray says, Field Day Cometh – Time to Prepare!

Finally, check out Ken Boston, W9GA, and the February meeting minutes (Pg. 34). And look for a repeat for nominations for ORC Turkey of the Year and ORC Ham of the Year Awards (Pgs. 37 and 38).

Want to know about future meeting programs? Pat Volkmann, W9JI, has you covered.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.



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March 2023 – Table of Contents**

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**Onward To the Newsletter**

# The ORC Spring Swapfest 2023 Coming Soon!

de: Tom Trethewey, KC9ONY  
Chairman, Spring Swapfest 2023  
swapfest@ozaukeeradioclub.org

The Hamfest/Swapfest 2023 season is underway in Wisconsin!

Why are some called Hamfests, and some called Swapfests? I don't know.

The Ozaukee Radio Club's 43<sup>rd</sup> Annual Spring Swapfest is coming soon as well. Once again, we will be at the Ascension Columbia St. Mary's Expo Center on the grounds of the Ozaukee County Fairgrounds in Cedarburg, Wisconsin. Saturday, April 30, 2022. 8 AM – Noon.

I'm hoping to increase the attendance over last year. Still working on sponsors and door prizes at this time. Tower Electronics will be joining us again this year, so if you need some adapters, coax, power cables, antennas, etc., this is the place to get them. Also returning are the enthusiastic kids of Cub Scout Pack 586 from West Allis, WI. Be prepared for some good food again!

To make the Spring Swapfest successful, we need volunteers like you to help with various things, both before and after the event. Please let me know if you are interested in volunteering.

I will be at the ORC March 2023 meeting where you will be able to buy advance tickets, which are double-stub for the door prizes, and order tables if selling.

I will also be at the Jefferson Hamfest on Sunday, March 19<sup>th</sup> as well as the MRAC Swapfest, Saturday, March 25, 2023, selling tickets and tables.

You can print out the flyer from our website:

<https://www.ozaukeeradioclub.org/downloads/spring-swapfest/2023-ORCSpring.pdf>

The Spring Swapfest Flyer also appears as the last page of this month's Newsletter.

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**Wisconsin QSO Party – See Page 16!!!**

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## **TIME TO PREPARE. Field Day Cometh!!!**

**De: Ray Totzke, W9KHH**

Thanksgiving, Christmas, and New years have been observed. Good memories of family and friends will stay with us.

The Winter Solstice has also come and gone. What does that mean to the dedicated ham? It means the days are finally getting longer. Nights shorter. That means "Time To Prepare."

Prepare for what? For the greatest event in the realm of amateur radio. FIELD DAY. Only four months until "CQ FIELD DAY" or 'CQ FD" on CW or the buzz and tones of Digital modes fill the amateur radio spectrum. Watch those band edges.

Whether you plan to participate with The Club or are able, due to family, business, work, medical, or other obligations, to only give a short time to on-the-air ecstasy, do it. Contribute your efforts at home (1E or 1D) to the club score.

Radios, antennas, power sources, accessories are all a part of your plan. Do you plan to be on the air, Phone, CW, Digital?

There is never a real shortage of phone operators. The club is now in need of CW ops ready "to pound brass half the night." Years ago, there were always enough brass pounders to keep The Club on the air for 24 hours. Now, not so many. Moving away, silent keys, lack of interest have taken their toll on the CW pool in The Club.

So!!! Now is the time to prepare!!! You have four months to sharpen your CW skills. Four months to get to 13 words per minute. 15 or 18 is better and sufficient. This is not a DX contest with keyboard CW at 35-40 WPM. This is an Emergency Preparedness Exercise. Even if you cannot approach 13 WPM at least approach the key and use it regularly before the fourth weekend in June. You'll be surprised how well you can handle 4A WI or 2B SCV or 23A EPA.

Prepare now!!! Field Day Cometh!!!

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**Field Day  
25 – 25 June  
2023**



# Fun On the Interstate...the Answer

de: Tom Trethewey, KC9ONY

In the February 2023 ORC Newsletter, I wrote a short article about some fun on the interstate. To recap, Loren N9ENR and I were traveling back to Wisconsin from a hamfest in Illinois. We were in two cars on I-94/I-294 and talking via D-STAR simplex, when I heard some horn honking somewhere around me.

What was that honking? 8 beeps....or rather two sets of 4 beeps.

Beep...beep, beep, beep and beep, beep...beep, beep. Then a long pause and beep...beep, beep, beep and beep, beep...beep, beep.

I told Loren I heard some horn beeping, which sounded familiar. I attempted to replicate the sound over the microphone to Loren. After a moment, Loren said, "that sounds like CQ" Sure enough, after he said that it did sound like CQ!

It's hard to put into writing:

Beeeeeep, beep, beeeeep, beep....beeeeep, beeeeep, beep, beeeeep.  
Dah, dit, dah, dit...dah, dah, dit, dah

I'm a no-code Extra, so I don't know Morse Code other than SOS and Tom. Loren figured that someone saw my Amateur Radio call sign plates, antenna, and me talking on a microphone and decided to send out that message. Still not sure which vehicle it was coming from, so I couldn't even wave.

Guess I should try and learn Morse Code so I could have responded somehow. Perhaps at least learn 73...what do you think the response should be in such a situation on the interstate?

Jeananne N9VSV reached out to me after reading the article with a suggested answer to my question. After I replied that she was correct she replied:

*"For years, that's how Gary WI9M signaled the start of Field Day – on his car horn! Loved the article, btw. I promise I won't say a word.*

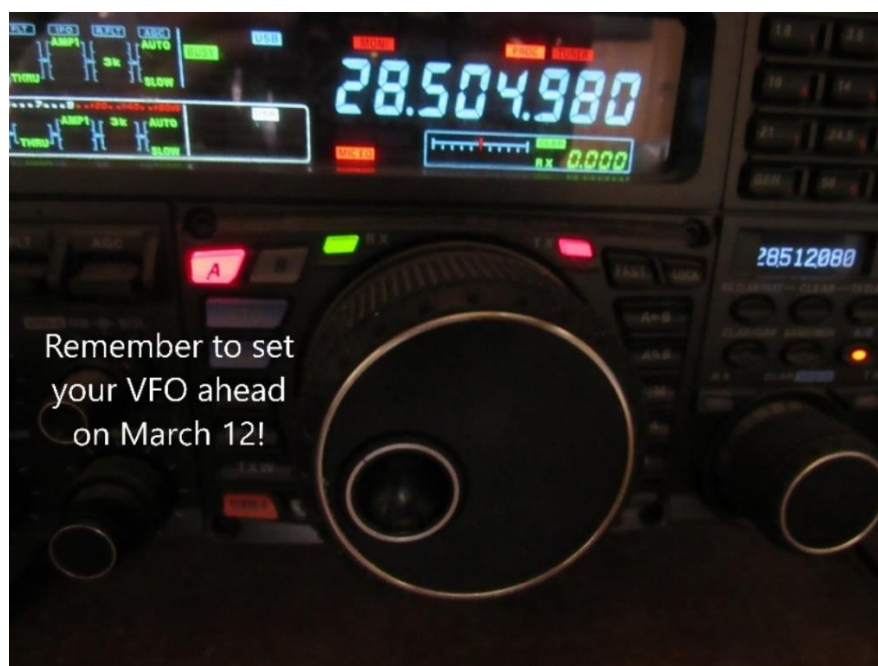
*I, too, am a no-code Ham. I always wanted to learn it, though. Had a wonderful program in the early days of Apple (do you remember the Apple IIc?) and learned about half of the alphabet. Then it totally crashed and never worked again. No program or app since has helped me to learn more.*

*So, that story and a program we had at the MRC years ago – a real, live, operating spark gap generator and discussion about it. When the owner actually showed how it worked, he tapped out "CQ" it was loud and it sparked and smoked so much I thought the fire alarm was going to go off, LOL! Emblazoned in my mind, forever.*

Same club also had a group of hams that actually learned how to quilt and made a quilt to raffle off as a fund raiser. I was so moved that a few women and a lot of men actually pulled it off and made the quilt that I designed a thimble for each of them. One side of the thimble has the group name, and the other side has a tower with the morse code spelling "CQ" coming out of the top of the tower. Thankfully, I proofread and checked before I placed the order. I guess for years, I thought CQ was dah-dit-dah-dah dah-dah-dit-dah. That's what I remember hearing through the spark gap generator. The correct version (dah-dit-dah-dit dah-dah-dit-dah) went to the thimble company. Whew! If I remember, I'll bring the thimble tomorrow night.

Guess my hearing was never fine-tuned for code."

I'd be interested in hearing from other club members with their stories or thoughts on learning Morse Code these days.



As Gary Sutcliffe, W9XT, reminds us . . .  
Daylight Saving Time begins on 12 March 2023  
"Spring Forward"

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**Wisconsin QSO Party – See Page 16!!!**

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# Winter Field Day 2023

de: Todd Zumach, KD9QLJ

January 28, 2023, may have been the first day this year with significant snowfall, but that didn't stop local amateur radio enthusiasts from participating in Winter Field Day.

Members of the Ozaukee chapter of the Amateur Radio Emergency Service (OZARES) participated in a field exercise intended to test their ability to set up communications equipment and contact individuals around the country and perhaps the world. OZARES volunteers practice HAM radio operations so they can support local government organizations in times of emergencies.

Winter Field Day has been around for 13 years. It brings HAMs from around the country together to practice portable emergency communications in adverse weather conditions. This is the first time the OZARES group has participated. Roland Chaloupka, (KB9TMB), organized the event by coordinating with Scott Ziegler, (KC9IIZ), the Ozaukee County Emergency Government Director. Scott offered the OZARES team the support of John Stulmacher, from Ozaukee County Emergency Government and the use of the emergency government incident response command center. The command center allowed two people to operate in relative comfort, while two others were set up in an SUV.

Todd Zumach (KD9QLJ), Tony Schneider (AD9BR), Dave Flowers (KD9JYL), Joe Betencourt (KD9RAQ) and John Archer (NO9X), faced the windy, cold, and snowy conditions to set up multiple antennas and operate four stations making contact on HF, and VHF/UHF bands. They were joined by another HAM operator, Dan Reed, (K0DSC) who recently moved to the area from New Mexico.

The group enjoyed the camaraderie of working together to set up the mobile operation and look forward to participating again next year.



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**Wisconsin QSO Party – See Page 16!!**

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## February Editorial Challenge – Shack of Ray Brunette, K9DUJ (SK)

de: Bill Shadid, W9MXQ

As reported last month, one of our very early ORC members, Ray Brunette, K9DUJ, died this past December. Recall that in the information published last month about Ray's passing, I challenged our readers to identify the equipment.



I was able to identify all commercial equipment as did several readers from other locations. None of us were able to identify what appears to be a lot of home brew equipment. Such equipment usually was identified by its tube lineup – that is, something like “6CL6 Oscillator, 6CL6 Buffer, and a pair of 807’s in the final amplifier.”

But that aside, we know that Ray was running a Hallicrafters SX-96 Receiver with a Hallicrafters R-46B Speaker. Ray was holding a Turner 22C Desk Microphone. You can see in front of him, under the receiver, what appears to be a home brew VFO that was driving a home brew transmitter and modulator to his left. Note the Caution High Voltage tag.

Note the goose neck lamp at the right edge. Those have memories for me as my uncle, also named Bill, who passed away in 1952, had one of those same lamps next to his SWL Receiver – a Howard Receiver which I have to this day. I remember that lamp and receiver like it was yesterday. To help date the picture, the SX-96 was available from 1954 to 1956. It was part of the Hallicrafters SX-96 Receiver, HT-30 Transmitter, HT-31 Linear Amplifier package for a very short time until the much more capable SX-100 Receiver was introduced in 1955.

We have an SX-96 among us. I had one from about 1970 which I sold to Ed Fischer, KC9LRJ (SK). Upon Ed's passing, I handled his estate and sold the radio to fellow ORC member, Bill Schnell, AC9JV. I have a Hallicrafters SX-100 Receiver from that time. When I had that SX-96, I was only the second owner, having received it from the original buyer, a friend from Quincy, Illinois, and my Gates Radio Days. Hiram, that original owner, bought it new in 1954. He had added (and later removed) an additional tube in an unsuccessful attempt to convert the circuit to that of the SX-100.

Seems old radios have history, like family.

# OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## National Incident Management System (NIMS) Communication



This month we will finish our examination of the requirements from the National Incident Management System or NIMS. Last month we covered Reliability, Scalability, and Portability. This month we wrap it up by looking at Resilient, Redundant, and Secure communication systems.

Their brief definitions are:

**Resilient** -able to perform despite damaged or lost infrastructure

**Redundant**- able to use alternate communications methods when primary systems go out

**Secure**-able to protect sensitive or classified information from those without a need to know

As you can imagine, a resilient system requires redundancy built into the system. The Emergency Communications Division of the Cybersecurity and Infrastructure Security Agency (CISA), part of the Department of Homeland Security (DHS), helps support organizations to create resilient and redundant communication systems. Basically “always available” or reliable communications.

<https://www.cisa.gov/emergency-communications-division>

They list three important requirements needed for “...a network’s ability to withstand damages, thereby minimizing the likelihood of a service outage.” From their Resiliency Fact Sheet:

1. Route Diversity— Communications routing between two points over more than one geographic or physical path with no common points
- 2, Redundancy— Additional or duplicate communications assets share the load or provide back-up to the primary asset
3. Protective/Restorative Measures—Protective measures decrease the likelihood that a threat will affect the network, while restorative measures, such as ECD’s Telecommunications Service Priority, enable rapid restoration if services are damaged or destroyed

While the Emergency Communications Division focuses on the routing of IP cables or other infrastructure, the OZARES operators focus on the diversity of radio communications systems and their support structures.



An example of route diversity can be seen in the WINLINK communication system. By having several gateway options available, email communications can be maintained. In Ozaukee County, we have the WI9OZ-10 established at the Justice Center EOC and WI9OZ-11 at the Saukville Village Hall. Both operate on 145.610 and are available as packet or VARA-FM. There are several strong FM WINLINK gateways available in the Milwaukee area as well. Then there are the HF gateways, mostly running VARA, that are available outside of our local area.

We have redundancy in the repeater communication system by having access to several repeater systems. (Thank You Ozaukee Amateur Radio Club). Redundancy in digital communications is reached by having CW, WINLINK, or NBEMS available. Then the supporting infrastructure such as emergency power with the use of batteries and solar panels. Spare radios, antennas, and sound cards help create a resilient communication system.

But, in my opinion, the most important element for a strong, resilient communication system are well trained operators. Operators who are familiar with the ICS system and supporting forms, using various modes of operations, comfortable with building, installing, and repairing antennas, and can keep calm when systems break down and think on their feet. This is the vital element for an efficient, well-running communication system.

73,  
Don  
AA9WP

OZARES Repeaters:  
147.330, + 127.3  
443.525 + 114.8

Practice Nets: First and second Thursdays 7 pm Labor Day to Memorial Day; 8 pm Memorial Day to Labor Day  
Monthly meeting: Third Thursday of the month at 7 pm  
Training Net: Last Tuesday of the month 7 pm

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## **ORC Repeaters are On the Air – Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

# On The Air Activities!

de Gary Sutcliffe, W9XT



We went on a wild ride with the sun in February. The ARRL DX CW contest was coming up. We were looking forward to the best conditions in seven or eight years. Then a few days before the contest, we had a solar flare. The charged particles were due to hit about the same time the contest started. The forecast was for severe to major geomagnetic storms that evening. That would have shut down the polar paths to Europe and Japan.

Then a couple of hours before the contest we had a huge flare. The burst of X-rays wiped out the bands up to 10 meters for about half the country for an hour or more. So, things were not looking good for the contest.

The solar flux jumped from about 165 to an astounding 343 at the start of the contest. As a result, I decided to do a low power single-band 10 Meter effort. There was little point in operating a major portion of the weekend if the bands were closed.



But the conditions were incredible. Ten meters stayed open for an hour after the start, close to two hours after sunset. I worked countries like China, Indonesia, and Viet Nam that I have not worked on 10 meters in many years. Several Japanese calls entered the log as well.

The next morning the band opened to Europe. Signals were strong, and I could call CQ much more effectively than is ordinarily possible with low power. At times I had five or six stations calling, and it was difficult to pull out the calls.

DX stations send their power level. The number of stations sending five watts was surprising. Many had excellent signals. The log had several QRP JA contacts logged later.

Sunday was not quite as good as Saturday, but it produced good country and QSO totals. Based on the scores I have seen, I will place second in the world and set a new record for W9 in my class. Those are the kinds of contests you live for.

With such a high solar flux number, I hoped we might get some nice 6 Meter openings. I checked the PSKReporter site from time to time. There were some excellent openings between South America and Europe and South America to Europe. Asia had some good openings to Australia, but North America seemed to be cut out of the action.

We had another couple of large flares and, on February 27, had a 6M DX opening that afternoon. Gary, K9DJT, a couple of other 6 area meter ops, and I spent about an hour and a half chasing them. The DX we heard was mostly the Caribbean and South America, but there were several loud stations out of Hawaii. I decoded at least a dozen DX countries. At times the number of stations decoded with FT8 in a single sequence approached fifty.

But we could not work any of them! Well, one guy up near Port Washington worked a couple of stations. I got shut out, and I think Gary did too. I called a few KH6 stations. The others tried too. It was weird because they faded out if you pointed your antenna toward Hawaii. They were peaking south! Afterward, I checked PSK Reporter for the previous two hours. None of the nine reporting KH6 stations on PSK Reporter made a single decode of any of the four of us!

I was watching the stations that the DX was working. They worked very few W9s, and the ones they did were mostly big guns out of IL. One way propagation? Sometimes propagation is hard to understand and frequently very frustrating.

## **Recent DX**

Two big DXpeditions happened in the last month or so. One was to Bouvet Island, 3Y0J. They arrived but had a lot of trouble getting operators and equipment on shore. Instead of five stations with beams and KW amps, they got a couple of radios, small antennas, and a few ops. They didn't get the big diesel generators or amps ashore. Electricity was from a small gas generator that was intended to supply power for set up, not running the rigs. They didn't even have a tent the first night. The ops had to sleep out in the Antarctic elements.

To get to shore they had to float the last distance in their cold-water survival suits because their Zodiac boat got shredded. Once they had a tent, there were no chairs or tables. They sat on the floor, and the radios sat on upside-down buckets. The operation was scaled way back to low power on a few bands. Twenty-two days with five high power stations was reduced to two stations for eight days with small antennas.

To make things worse for us, there was a big mountain in our direction. Most of the stations from around here who got through did it by working long path, the signal going the long way around the world to get there.

Fred, W9KEY, was disappointed not to work them. He didn't even hear them. I did not try the first five days or so. They were asking those who already had worked Bouvet not to work them to give everyone a chance to get at least one contact with the island. I worked Bouvet back in 1990. By the end of the week, I jumped in. We had a reasonably decent opening on the second to last day, and I tried for several hours but was unsuccessful.

What they went through was amazing. You have to give them a lot of credit for enduring the hardships to give out a few contacts. At least they did get on the island and gave out contacts, something the last two attempts failed at.

But I think they really fell down in one area. It seems they never were serious about using FT8, expecting to concentrate on CW and SSB with big stations. For about a day and a half it was chaos. For FT8 to work properly, the PC clock of the DX station has to be within about 1 second of the correct time. Furthermore, when using the Fox/Hound mode, the DX station always transmits on the first sequence.

But their PC clock was off by 14 seconds. PCs drift, and you need to constantly re-set the time. So, essentially they were transmitting on the wrong sequence. FT8 forces the hounds (DX chasers) to transmit on the odd sequences. So, they decoded 3Y0J, clicked on "Enable TX" and started transmitting on the same sequence the DX was transmitting. This fiasco went on for about a day and a half. Weren't the operators on the boat monitoring what was going on? They had "pilot" stations around the world set to monitor and let them know about unexpected openings and such. Didn't they see what was going on?

If the ops had been notified, they might have been able to use WWV or similar time station to update their clock. Or the crew on the board could have given them voice time checks via VHF radio. It is hard to understand how this continued for such a long time.

The previous operations failed to land. This one barely made it. Every QSO on this one costs about \$400. Is that the end of attempts to Bouvet? Rumor has it that one of the groups that failed to land about a year ago will try again in December. We will see.

The other important operation was to Crozet Island, FT8WW. As you recall, it was a single op. He had permission to operate for three weeks, then had to QRT. He got permission to operate for three weeks, then a week off, then three more weeks. That is excellent news. During this period, he must operate on 20 meters and higher. He has made over 40,000 contacts. Not bad for a single operator!

DXers have had excellent conditions, especially on the high HF bands working new countries. W9KEY mentions working Burundi 9U4WX on 20-meter FT8. Pat, W9JI, passes on some comments on a special contact he recently had:

On a recent Friday evening I was on 160 meters checking propagation and looking for some DX. There were very few stations on the air, even on FT8. At about 10:30 I moved

up to 20 meters and found things about the same there – very few stations and no activity except FT8. The few stations that I saw, however, were DX from Eastern Europe and Africa. The unusual thing was that I didn't see any stateside stations calling them. The DX were all busy working other DX stations. One in particular caught my attention, and that was 7Q7EMH, from the northern region of Malawi. Malawi is located in the south-eastern part of the African continent.

I had never worked Malawi, so I started calling him. I didn't expect to have success as US signals didn't seem to be getting through to Europe or Africa. After a few minutes, 7Q7EMH answered me. His signal was -12 and my report was -15. I checked PSK Reporter to see where I was being heard. The stations that were picking me up were on the daylight side of the sunrise line in Europe and Africa by about an hour. I wasn't being heard in the US.

Their QRZ page says that 7Q7EMH is the "Amateur Radio Station of Embangweni Mission Hospital." Contacts are confirmed through ClubLog and LOTW. I received confirmation on LOTW within a couple of days. It always pays to call even when you think that there is very little chance of getting a reply. The only thing that guarantees not working the other guy is not calling in the first place. – de W9JI

### **Wisconsin QSO Party**

The big event in March is the Wisconsin QSO Party (WiQP). We won the club competition last year. However, I hear a new group to our north is planning to operate to win. They have experienced contest ops, but we can beat them if we get more members to operate and send in their scores.

It starts on Sunday, March 12, at 1:00 PM and runs until 8:00 PM. But I'm sure you already marked it on your calendar like I suggested last month. You can use any band from 160 through UHF except for the WARC bands. You can run CW, SSB, FM, and RTTY. No FT8 or FT4, though. If you have a radio, you can contribute to the ORC score. Check out the rules at <https://www.warac.org/wqp/wqp.htm>

I hope you will try to get on that Sunday for at least a while and contribute to the ORC effort in the WiQP.

### **VOTA**

Back in January, I mentioned the Volunteers On The Air program the ARRL is putting on for the whole year. The program honors hams that volunteer for the ARRL and clubs by being officers and helping out.

Fred, W9KEY, mentions that he has been working W1AW/n stations. Two state groups will be authorized to use W1AW portable for their district for a week. I completely forgot Wisconsin's first week was in February and should have mentioned it last month. I was invited to be one of the operators and made 375 CW contacts as W1AW/9 that week.

## Virtual Ham Events

Two online events are coming up in March. The first is the HamSCI Workshop 2023. HamSCI is an organization that brings together amateur radio operators and scientists studying the ionosphere. It is a good match. As amateurs, our activities provide data scientists can use to understand space weather better.

The event went virtual during the COVID lockdown. Last year they went to a hybrid event with the in-person venue at the University of Scranton and worldwide visitors online. This year's event will also be hybrid.

I attended the online virtual events and found them fascinating. Some of the presentations by the scientists were a bit over my head, but usually, I learned something. The ones I find most interesting are how we, as hams can get involved.

There is no charge to watch online, but you must register in advance.

<https://hamsci.org/hamsci2023>

The second one is the QSO Today Virtual Ham Expo. This is the fifth QSO Today event and features many presentations relating to ham radio. There are virtual exhibits by manufacturers and organizations.

I find the talks the best part. There are dozens of them on so many topics that every ham should find several that match their interests. Unfortunately, they raised the price for this to \$15. It will cost me about \$2 per talk to watch the ones I want to see, but that is pretty cheap, considering the cost of tickets, gas, and hotel rooms to go to conventions. In the past, I gave presentations and exhibited with my radio company, Unified Microsystems. This time I will be purely an attendee.

## WWV Special Event

Last month I mentioned the WWV special event for 100 years of standard frequency transmissions. Fred, W9KEY, is the event c-chair. Look for WW0WWV. The website has an online schedule of who will be operating and what mode and band. Also, check out page 33 of the March QST. March 6-12.

## Area Hamfests

The Jefferson County Hamfest is Sunday, March 19. This is the first big hamfest of the year since the one in Waukesha in early January was discontinued. It is held at the Jefferson County Fairgrounds. <http://www.arrl.org/hamfests/jefferson-hamfest-2023>  
The 11<sup>th</sup> Annual Milwaukee Area Swapfest is on March 25. This is at the Elks Lodge on Good Hope Road, across from Ham Radio Outlet. <http://www.arrl.org/hamfests/11th-annual-milwaukee-area-swapfest>

## Contests

There are three big contests in March. The first is the ARRL DX Phone contest on March 4-5. It was covered last month. You will have a couple of hours to prepare if you read this right after publication. Will we have a repeat of the fantastic conditions we had in the CW weekend?

The WiQP is on March 12. It is important enough to get its own section earlier in this column. So please get on for it!

The last big contest of March is the WPX phone weekend. The RTTY WPX was covered last month. The rules are basically the same. Send a signal report and serial number. Multipliers are call sign prefixes. The QSO points range from one for a contact with another US station on the higher bands to six points for an international contact on 160-40 meters. Read the rules if you plan to operate this one.

## DXpeditions

Currently on the air is 3B7M from St. Brandon Island in the Indian Ocean. A group of Czech and Slovak ops puts it on. They have been active, and I have them on a couple of new band countries and a new digital country. Originally they planned to be on 6 meters as well but have decided against that. There is little chance of us making that haul, but the Europeans have been working into the Indian Ocean on 6 meters the last few days. I got them on 12 and 17 meters for new band countries. I still need them on 10 and 160. Recent solar activity has made it tough on the higher HF bands, and they apparently have not been on 160 yet.

Sable Island off the coast of Newfoundland will be on the air from March 20-30. The call sign will be CY0S. It is a helicopter ride from Halifax to the island. There used to be an operation or two every year, but it is now a nature preserve, and access is limited. The allowed group size is smaller than they hoped. They are limited to a small area and cannot interact with the wild horses for which the island is famous.

They plan to be on 160-6 meters, CW, SSB, FT8, and RTTY. They will also try some 2 meter EME and some satellite work.

I need them on 160 and 6, plus digital. Propagation to that location is good from here, and 160-10 should be no problem. It is a bit early to expect much from the 6 meter Es season, but we can hope.

The group includes some big-time US DXpedition operators. So, I'm sure they will make a lot of contacts.

The African country of Ghana will be activated March 22-30. A group of primarily US hams will operate from a coastal resort. That is how you do a DXpedition! It sounds much more

pleasant than sitting in a cold tent on an icy island near Antarctica. The plan is to be active on 160-6M. They will be operating in the CQWW WPX Phone Contest as well.

Part of the operations is to help local hams get on the air, and they plan to leave a 6M antenna with a local club for the upcoming Es season.

A group of primarily Australian hams will be on from Norfolk Island March 17-31 using VK9NT. They will use the call sign VJ9N in the WPX contest.

Norfolk used to be common when VK9NS was active. He was on all the time. When Jim died in 2009, it became somewhat rare. There is one active station there right now, but he has been monetizing operating. He charges for LoTW confirmations that cost him nothing. I refuse to support such activities. I'm happy to pay for a needed QSL to cover postage, etc., but not for LoTW.

So, if you need Norfolk, I suggest you look for VK9NT.

With the ARRL DX Phone and CQWW WPX contests this month, there will be many contest DXpedition operations. They are often on a few days before and after the contests.

## **Wrap up**

That wraps up March. It is going to be a hectic month! Thanks to Pat, W9JI, and Fred, W9KEY, for passing on some tidbits on what operating they have been doing. If you did something interesting on the air or plan to be involved with some radio activity, pass it on to me so I can share it with the whole club.

Radio activity usually slows down in April, so March is a good time to spend on radio activities before our thoughts turn to spring. Don't forget the Wisconsin QSO Party on March 12!

See the Operating Tips on the Next Page . . .





## W9XT's Contest, Operating, DXpedition, and Special Event Picks for February and Early March 2023

<b>W9XT's DXpedition picks for March and early April 2023</b>					
<b>QTH</b>	<b>Dates</b>	<b>Call</b>	<b>Bands</b>	<b>Mode</b>	<b>Link/notes</b>
Agalega & St. Brandon	To Mar 5	3B7M	160-10	C/S/D	<a href="http://3b7m.com/">http://3b7m.com/</a>
Ogasawara	Mar 9-24	JD8BON JD1BOI	160-6	C/S/D	
Norfolk Is	Mar 17-31	VK9NT	160-6	C/S/D	VJ9N during the WPX contest
Sable Island	Mar 20-30	CY0S	160-6 + 2M EME	C/S/D	<a href="https://t-rexsoftware.com/cy0s/">https://t-rexsoftware.com/cy0s/</a>
Ghana	Mar 22-30	9G4X		160-6	<a href="https://www.qrz.com/db/9G4X">https://www.qrz.com/db/9G4X</a>

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

<b>W9XT's contest picks for March and early April 2023</b>					
<b>Name</b>	<b>Start</b>	<b>Length</b>	<b>Bands</b>	<b>Mode</b>	<b>Link</b>
ARRL DX	0000Z Mar 4	48 hours	160-10	SSB	<a href="http://www.arrl.org/arrl-dx">http://www.arrl.org/arrl-dx</a>
WIQP	1800Z Mar 12	7	160-UHF	CW, voice, RTTY	<a href="https://www.warac.org/wqp/wqp.htm">https://www.warac.org/wqp/wqp.htm</a>
CQ WPX	0000Z March 25	48 Work 36 max	160-10	SSB	<a href="https://cqwpw.com/rules.htm">https://cqwpw.com/rules.htm</a>

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

<b>W9XT's operating &amp; event picks for March and early April 2023</b>			
<b>Event</b>	<b>Dates</b>	<b>Details</b>	<b>Link/notes</b>
WWV Special Event	March 6-12	WW0WWV	<a href="https://www.qrz.com/db/WW0WWV">https://www.qrz.com/db/WW0WWV</a>
HamSCI Workshop 2023	March 17-18		<a href="https://hamsci.org/hamsci2023">https://hamsci.org/hamsci2023</a>
Jefferson Ham-fest	March 19	Jefferson County Fairgrounds	<a href="http://www.arrl.org/ham-fests/jefferson-hamfest-2023">http://www.arrl.org/ham-fests/jefferson-hamfest-2023</a>
QSO Today Virtual Ham Expo	March 23-25	On line	<a href="https://www.qsodayhamexpo.com/">https://www.qsodayhamexpo.com/</a>

## Wisconsin QSO Party – See Page 16!!

# THE COMPUTER CORNER

## No. 300: LINUX: THE FILE SYSTEM

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

Before computing even existed, the term *file system* was used to describe storing and retrieving paper documents. After the early 1960's, it began to also be applied to computerized filing. The term then grew to describe a series of rules that dictates how a computer operating system (OS) will store and retrieve data. The FAT file system was used in the DOS and early Windows OS, and later NTFS (New Technology File System) took over for the more recent releases of Windows, including Windows 10 and 11.

Linux supports a number of file systems. However, the most current Linux Mint Cinnamon Version 21.1 (nickname "Vera") uses the **ext4** file system, as do other versions of Linux since 2008. Even Google now uses ext 4 on its Android OS.

Ext4 can handle single files up to 16 tebibytes in size (1 tebibyte =  $1024^4$  bytes in the binary system or 1 terabyte =  $1000^4$  bytes in the metric system). It can also deal with volumes (directories) up to 1 exbibyte ( $1024^6$  bytes binary,  $1000^6$  bytes metric). So, we have a file system that can handle huge files and huge volumes of files. The block mapping (extants) is also new, which improves large file performance and reduces fragmentation.

Ext4 is backward-compatible with earlier Linux ext3 and ext2 file systems. There is now no limitation on the number of subdirectories except for size limitations as noted earlier, so you can create up to about 10-12 million subdirectories in a directory, should you be so moved! There are other improvements, as well. Faster file-system checking, fancier ways of allocating data to buffers and groups of blocks, all improve handling of data and reducing fragmentation on disk. It seems likely that defragmenter software will be needed less and less; already some experts say don't even bother since file fragmentation is so low. Another new development is based on the fact that second-based timestamps are no longer sufficient for mission-critical applications, so ext4 provides timestamps measured in *nanoseconds*. They also added a couple of bits to the seconds field of the timestamps; this delays a problem destined to rear its ugly head in the year 2038 for an additional 408 years(!!!).

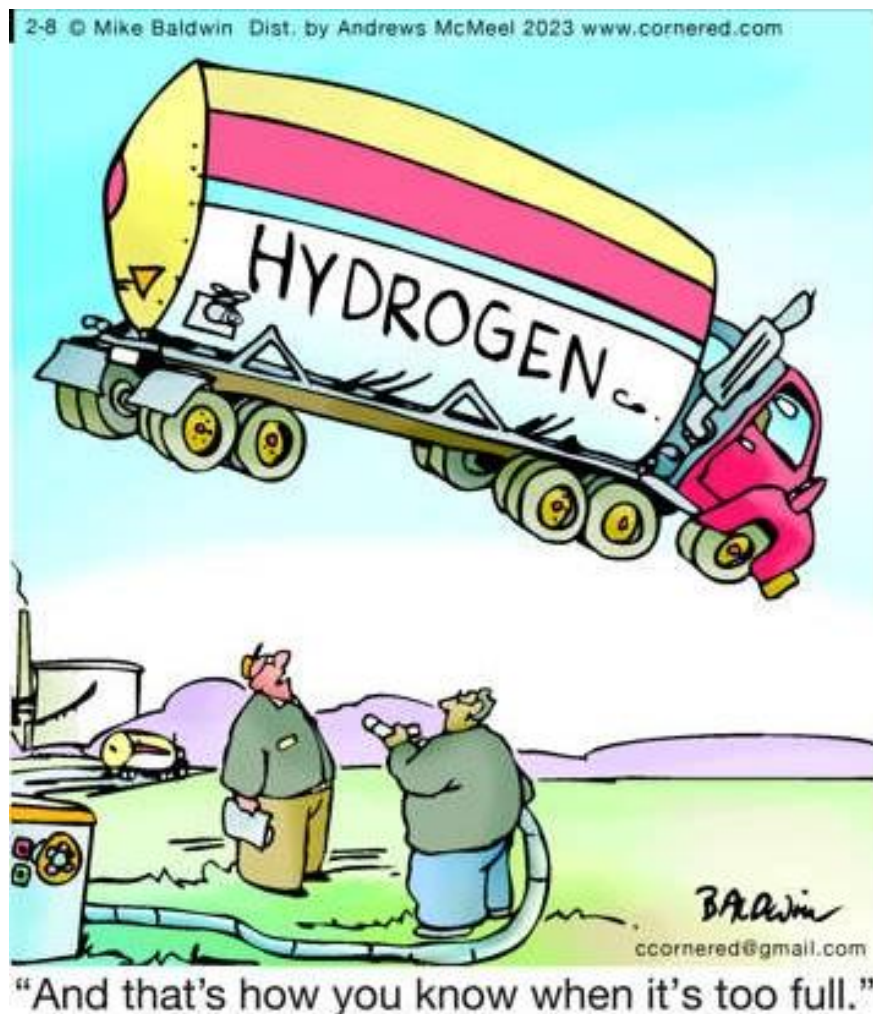
One improvement that helps reduce fragmentation of files involves delaying the writing of data to disks until it is time to flush the data. That delay increases the risk of data loss, should a system power loss or crash occur before the data has been completely written to disk. To avoid this, the latest versions of ext4 handle such cases the way it was done in ext3, with data flushes more often and data loss risk therefore reduced.

A big plus is that ext4 enjoys full support by other operating systems. Since 2016, Windows had the ability to access ext4, and a commercial product (Paragon's Linux File Systems for Windows) is available for earlier versions of Windows and Windows Server. MacOS can read and write ext2, ext3 and ext4 through extFS for Mac, also by Paragon.

There is no doubt that ext4 has improved features, but some experts say it is not a major advance, that it uses old technology, and is a stop-gap system. Some say to look for Btrfs ("B-tree File System" or "Better File System") for future development. Btrfs is a "copy on write" system in which a clone operation automatically produces a copy-on-write snapshot of a file. On the other hand, ext4 is a "journaling file system", in which the system keeps a journal of where files are located on disk, and other changes that are made to the disk. The latter system helps keep fragmentation of files to a minimum, while the former helps keep data loss to a minimum. Perhaps our grandchildren will be the ones to see which approach wins out! Happy Computing!

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With all the talk about balloons . . .



# Vintage Amateur Radio

de: Bill Shadid, W9MXQ



As the amateur radio world was moving out of the 1960's and into the 1970's, the hobby was changing. Hammarlund Radio Company<sup>1</sup> – a pioneer in the electronics and radio business since 1911 – was trying to move from its 1950's-based product line and met the new requirements of a changing world.

Unique as a survivor that did not get involved in initial small footprint, SSB focused transceive capable receiver and transmitter pairs ("twins") or transceivers was Hammarlund. In 1968 they came to the table with a major product line upgrade – especially when considering their current (at the time) line of radios.

Here is the Hammarlund HQ-215 Amateur Radio Band Receiver.



**Hammarlund HQ-215 HF 80-10 Meter Ham Band Receiver (1969)**

**W9MXQ**

Hammarlund Radio Company was one of the largest companies making communication equipment in the 1930's and on into the 1960's in the United States, and globally. While they did make transmitters – even to the point of their late SSB / AM / CW models like the HX-500 and HX-50/HX-50A, they were primarily known for their receivers. Hammarlund to this point had been unsuccessful with the complex, overdesigned, and expensive HX-500 then did a few missteps with the less expensive and less complicated HX-50. They finally seemed to get this right with the HX-50A, correcting the errors present in the HX-50.

Stepping back a bit, Collins® Radio Company really promoted Single Sideband as the up-and-coming dominant mode with the 1955 introduction of the 75A-4 Receiver and KWS-1 Transmitter for SSB / AM / CW – with a heavy focus on SSB. Then, in 1957, came the real revolution, the KWM-1 SSB/CW Transceiver. In two more years, Collins led the way again with the introduction of the beginning of the kind of radio we see today in the S-Line Separate Receiver and Transmitter (75S-1 Receiver and 32S-1 Transmitter) for SSB and CW. Associated with the S-Line, Collins then introduced the KWM-2 Transceiver. The 75S-1 and 32S-1 introduced the new focus of allowing the receiver and transmitter to link together and transceive off the receiver VFO.

It is true that Collins led the way to SSB to small footprint SSB Receivers, Transmitters, and Transceivers. However, Hallicrafters came immediately to the table with the competing SX-117 Receiver, HT-44 Transmitter, and SR-150 Transceiver – quickly following in the shadow of the Collins S-Line. Heathkit developed and released the SB-300 Receiver, SB-400 Transmitter, and the SB-100 Transceiver. Drake was soon on the scene with the R-4 Receiver, T-4X Transmitter, and TR-3 Transceiver. Others with transceivers only were Swan (Swan 240), National (NCX-3), Galaxy (Galaxy 300), and more. More companies, major players in the market, like E. F. Johnson, did develop SSB products but never made the transition to the transceiving separate receiver and transmitter or the stand-alone transceiver. Some, such as the Johnson Avenger HF Transceiver and the Gonset GC-102 were prototyped but never put into full production.

Late in the game, Hammarlund made its move by targeting the last version of the Collins S-Line Receiver, the 75S-3C. Hammarlund provided a radio with 24, 200kHz, tuning ranges while the Collins provided for 28, 200 kHz, turning ranges. Hammarlund did that with a 24-position band switch – while Collins did their selection with two banks of 14 positions. Collins offered a less expensive model 75S-3B version that was identical but had only one 14 position selection band of 200 kHz ranges.



**Hammarlund HQ-215 Receiver**

**W9MXQ**



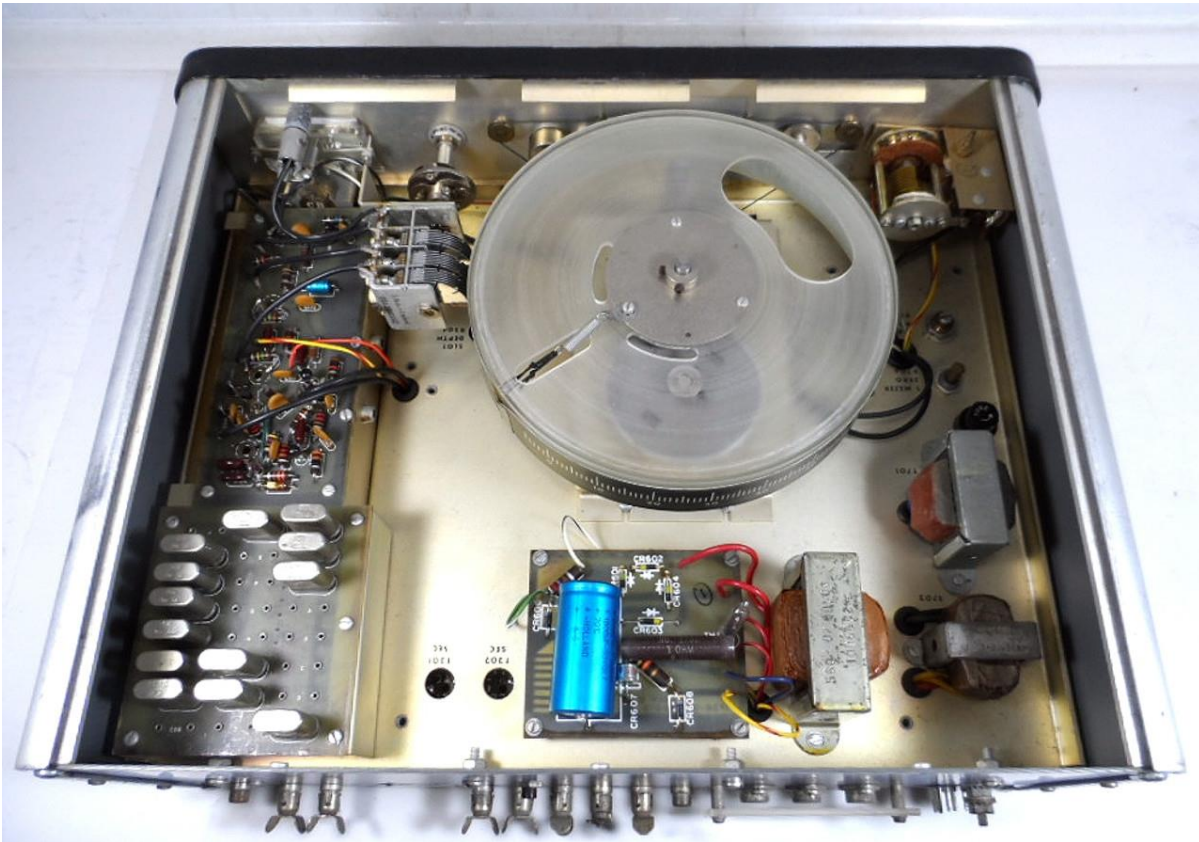
**Collins 75S-3C Receiver**

**isquare.com**

What truly set the Hammarlund HQ-215 Receiver apart from its Collins focused competition was its totally solid-state design. Every function was transistorized in the receiver.

The only solid-state devices in the Collins 75S-3B and 75S-3C were two diodes in the power supply. Does solid state mean better?

The interior of the HQ-215 is attractively and simply laid out. Much improved over the vacuum tube products and their point to point, very tedious, wiring:



**Hammarlund HQ-215 Receiver  
Top Inside View – Radio Front is toward the top of this picture.**

**W9DYQ**

At the bottom center of the radio, you can see the power supply board with the power transformer immediately to the right of the board. Note the two audio related transformers to the right of the power transformer.

To the left of the power supply board are the range crystals wired into three rows of eight crystals – netting the total potential ranges of 24, mentioned previously. The crystal sockets are not all filled in a receiver from the factory upon initial delivery.

A standard radio provided 11 ranges with 13 ranges remaining open for the installation of optional range crystals. The extra crystals had to be installed in certain sockets for certain tuning ranges. Here is a breakdown of that selection of six ranges covering the high frequency spectrum:

- Range Note 1: 3.4 to 4 MHz – Three crystals supplied.
  - Three crystals can be accommodated.
  - 3.4 to 4 MHz covered, 3.4, 3.6, 3.8 MHz supplied crystals.
  - No open range positions available.
- Range Note 2: 4.0 to 5,8 MHz
  - Three crystals can be accommodated.
  - All three range positions are available. (Positions A, B, & C)
- Range Note 3: 5.0 to 10.4 MHz
  - Five crystals can be accommodated.
  - 7.0 to 7.4 MHz. covered, 7.0 & 7.2 MHz supplied crystals.
  - Three open range positions available. (Positions D, E, & F)
- Range Note 4: 10.4 to 17.4 MHz
  - Five crystals can be accommodated.
  - 14.0 to 14.4 MHz. covered, 14.0 & 14.2 MHz supplied crystals.
  - Three open range positions available. (Positions G, H, & I)
- Range Note 5. 17.4 to 25.4 MHz
  - Five crystals can be accommodated.
  - 21.0 to 21.6 MHz covered, 21.0, 21.2, 21.4 MHz supplied crystals.
  - Two open range positions available. (Positions J & K)
- Range Note 6: 25.4 to 30.2 MHz
  - Three crystals can be accommodated.
  - 28.5 to 28.7 MHz covered, 28.5 (28A) MHz supplied crystal.
  - Two open range positions available. (Positions L & 28B)

In the top view in the previous page, you can see the BFO Adjustment Variable Capacitor to the right of the main tuning drum, on the front panel. The BFO is only adjustable in the CW mode.

The three section Variable Capacitor to the left of the main tuning drum, on the front panel, is the calibrated Preselector. To the left of the Preselector is the S-Meter.



**Hammarlund HQ-215 Receiver  
Rear View of Radio**

**W9MXQ**

The rear panel shows an array of connections – including HF Oscillator and VFO Output access to use for transceiving with a matching partner transmitter. The three transistors mounted to the back panel (for heat dissipation) are protected from touching with fingers or metal parts. The cases of those transistors are not at ground potential. Plus, they can be hot!! The connection for access to power is the Cinch Jones 8-pin connector at the lower right. The cable plugging into that socket can supply 120 VAC, 240 VAC, or 12 VDC, depending on how the connector is wired. Note three SPARE phono connectors to the right if the Serial Number label. Those were the days when people experimented!!

The main tuning readout is accomplished using a molded plastic drum with the readout printed on the edge around the circumference. The background of that lettering is black with translucent numbers and 1 kHz marks that are about 3/32" (2.4mm) from mark to mark. See more here:



Here is a center front panel view of the HQ-215. Note the visible edge of the dial drum through the opening above the main tuning knob. This frequency line markers are 1 kHz apart for good detail in reading an analog dial. The knob to the left of the window is to adjust the dial pointer for exact frequency readout. The knob to the right adjusts lamp brightness.

**W9MXQ**



The front panel is conveniently laid out and is somewhat reminiscent of the Collins 75S-3C on which its design is based. Reviewing the important controls, one can see the prominent main tuning knob. It is nice to see that this radio uses generally available open stock

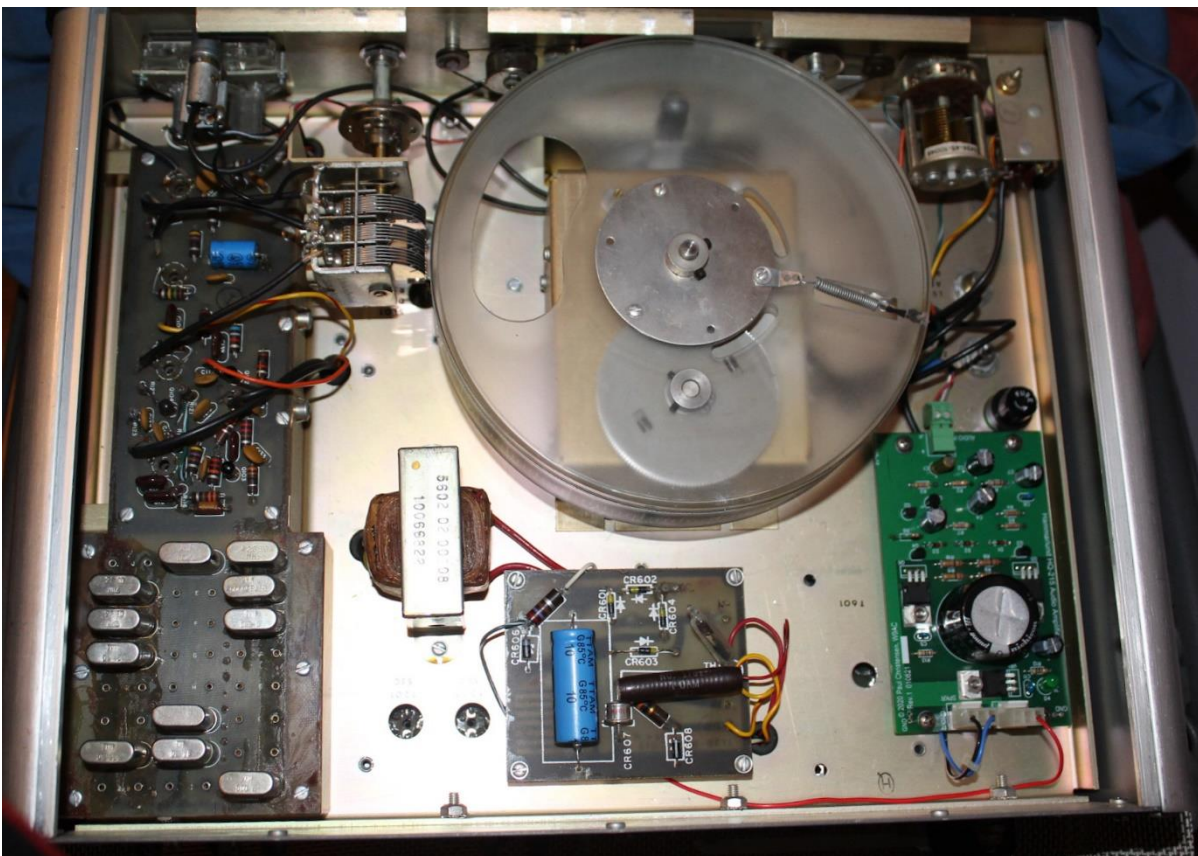
Raytheon knobs – present on test instruments and also on other brands of amateur radio equipment. In the upper left corner is the adjustment of the BFO (+/- 3 Hz) controlled by the center knob. The outer knob in that position switches between FAST and SLOW AGC.



In a disappointment, there is no OFF position for AGC. The dial readout opening is described above. At the lower left there is a MODE switch for CW, USB, LSB, and AM modes.

To the right of the Main Tuning Knob is the combination REJECTION TUNE and FILTER Selection concentric knobs. The top knob is the REJECTION TUNE which service to tune a notch filter giving about 40dB of rejection of an offending tone within the passband of the i-f filter. The control is also effective in reducing noise. The FILTER switch, the inside knob, controls access to one of three filter positions – occupied by up to three Collins Mechanical Filters. The radio came standard with one 2100 Hz filter. Optional filters for narrower CW and wider AM bandwidths were optional. These filters, of course, determine the i-f bandwidth of the radio. Unlike some radio designs, any filter is usable in any mode.

Paul Christensen, W9AC, has provided a lot of improvement circuits for various commercial amateur radio products over the years. For a short time (but no longer), W9AC provided an improved, lower noise, audio amplifier retrofit for the HQ-215. My own HQ-215, which I suspect may have been owned by W9AC at one time, has that audio amplifier modification. Please reference the interior picture of this HQ-215, below:



**Hammarlund HQ-215 Receiver**  
**Top Inside View – Radio Front is toward the top of this picture.**  
**Compare this picture with the earlier one credited to W9DYQ.**

**W9MXQ**

You can see that the power transformer has been moved from just to the right of the power supply board to a position to the left of that board (and a bit more toward the front panel. Removed from the chassis are the now unnecessary T701 Audio Driver and T702 Audio Output Transformers. At the lower right-hand corner of the chassis picture. That location is now occupied by the W9AC Audio Board. Even without the no longer available W9AC board, moving the power transformer may have merit in keeping its emitted field away from the audio circuitry.

Replacing the Hammarlund audio circuit also orphans two of the three power transistors on the back panel of the radio. Looking at the rear view of the back panel of the HQ-215, and the inset below, you can see which transistors are disconnected but left in place.



This view shows the lower right-hand corner of the HQ-215 Rear Panel. Note the Cinch-Jones Power Plug, the Ground Lug, the External Speaker Connector, and the three sheet Plexiglas™ isolated power transistors. Transistor Q601 is the radio's Power Supply Pass Transistor. All three transistors are RCA 40310 devices.

**W9MXQ**

Because I do not have the original Audio Amplifier Circuit in my HQ-215, I cannot comment on the general performance of that standard amplifier from Hammarlund. My long-time friend, and proofreader of these articles, Bob Bailey, W9DYQ, owns a Hammarlund HQ-215 with the original stock audio system still in place in his radio. You will see one of his radio pictures in this article – showing how the radio looked, originally.

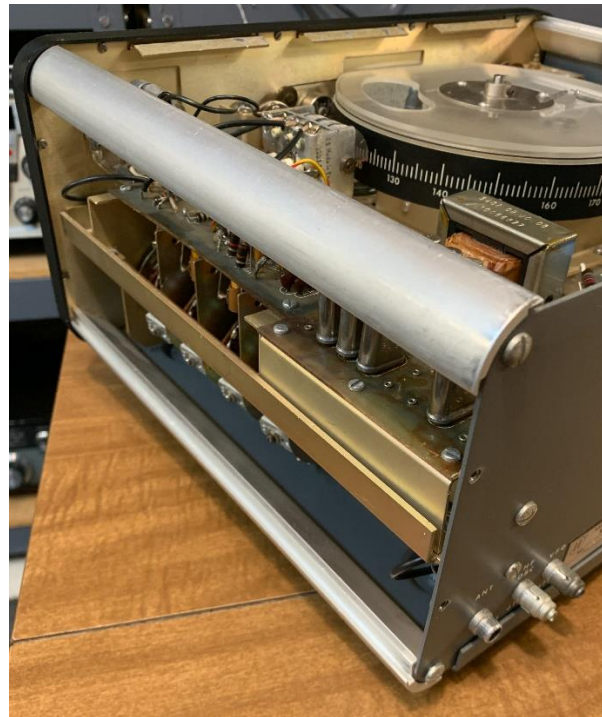
Before moving into the under-chassis and overall mechanical assembly of the radio, I want to provide a note of caution for those installing Optional Filters in the HQ-215. There is an error in the manual and on the main circuit board locating the two optional filter positions. The positions indicated for positions “A” and “C” as indicated on the front panel are reversed as identified on the bottom circuit board in the radio and in the manual. The radio, as supplied from the factory, had one Collins Mechanical Filter – a 2100 Hz unit in position “B.” It is correctly identified on the front panel.

The HQ-215 Receiver has a unique mechanical assembly. I have seen this in test equipment but not in amateur radio. (But I am always finding things I have yet to discover!) The radio is constructed – simply stated – as a Front Panel and Rear Panel connected by four aluminum anodized extrusions in each corner of the radio. The painted and formed steel Top, Bottom, Left-Side, and Right-Side slide from the back of the radio into the extrusions to spring contact strips on the Front Panel. The Panels attached with screws to the back panel – as can be seen in the Rear View of the Receiver, earlier in the article. This provides for a reasonably good box RF enclosure. The enclosure forms a 6.8” high x 15.8” wide x 14” deep box weighing in at 21 pounds. (17.3 x 40.1 x 35.6 cm and 9.5 kg) By

contrast, its main competitor, the Collins 75S-3C is in a primarily aluminum enclosure forming a 7.8" high x 14.8" wide x 12.5" deep box weighing in at 20 pounds. (19.8 x 37.6 x 31.8 cm and 9.1 kg). The front and rear panels on the Hammarlund are painted steel while the Collins sheet metal parts are all aluminum. Personally, I like steel construction in radio equipment but have to admit that the Collins will last longer with less care. The example of the Hammarlund HQ-215 here is in immaculate condition, as you can see by the pictures. Here are some pictures to show the construction of the HQ-215.



Right Front Corner view with the Top Cover pulled back a few inches. See how the Panel slides into the right upper extrusion.



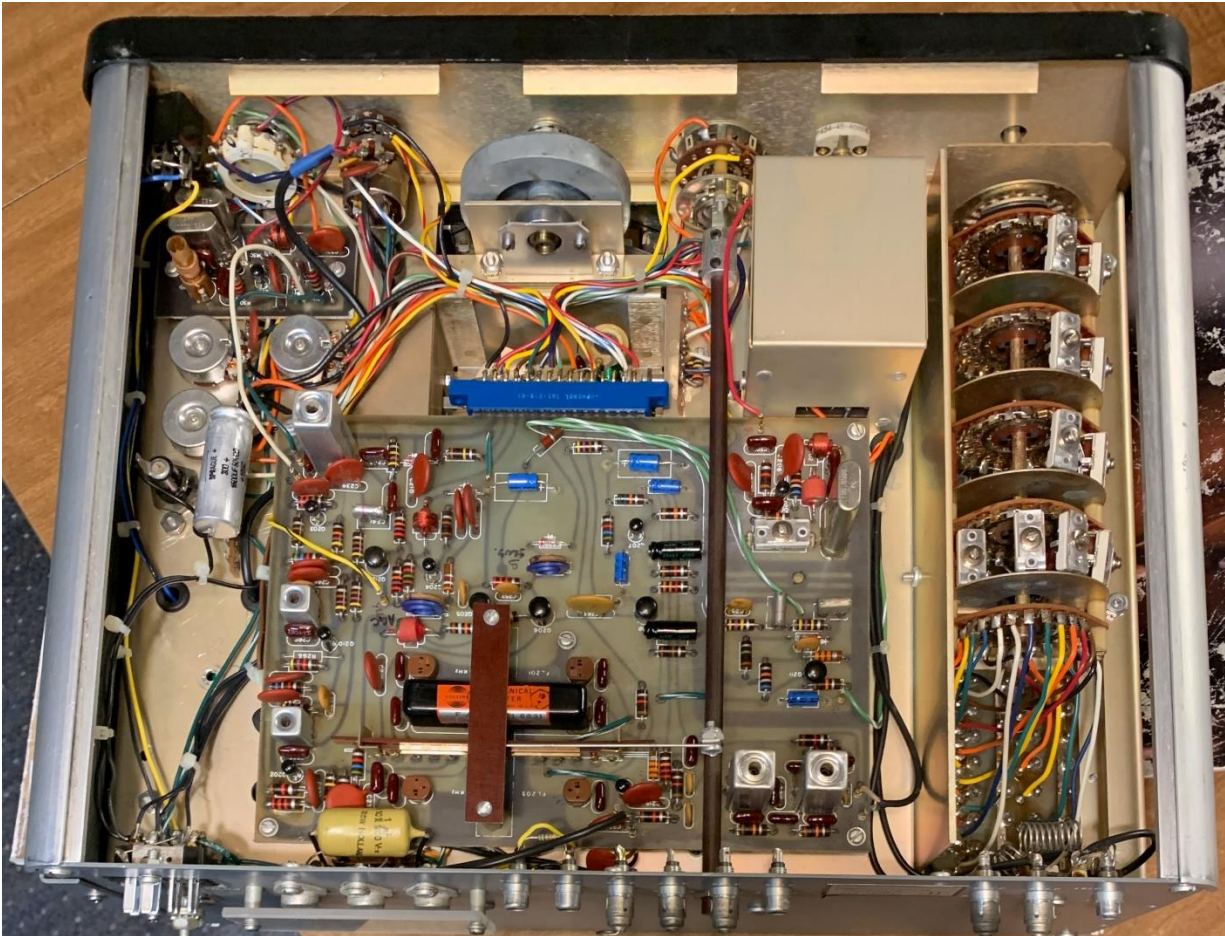
Right Rear View with the Top Panel and Right-Side Panel removed. Note open Side Panel mounting screw holes visible on the rear panel.

### Hammarlund HQ-215 Receiver

### W9MXQ

My only concern about this radio has been – and maybe you can see from the pictures so far – that it is a tightly closed box – no openings what so ever. However, and I am happy to day that after the radio has run for a full day – over eight hours, opening the cabinet by sliding back the top cover exhibits no significant heat – even the power transformer is only marginally warm – no way is it hot. To be sure, there is not a lot of power draw here – on 120 VAC there is a 3/8 Ampere Fuse backed up by a 2 Ampere Thermal Circuit Breaker in the 12 VDC Line. Both represent about 40-50 watts. Remember, that is when the fuse blows, or the circuit breaker opens. Specifications say that in general use there is half of that consumption, or 19 watts. All in all, I would say that Hammarlund did a good job in designing the enclosure. Further, they designed an enclosure system totally different than anything in their past experience.

There are some interesting things to review in a bottom view of the radio's chassis:



**Hammarlund HQ-215 Receiver  
Top Bottom View – Radio Front is toward the top of this picture.**

**W9MXQ**

First visible item inside the bottom chassis area is the large, pluggable, removable main i-f circuit board. Toward the bottom of the picture, you can see the Collins Mechanical Filter location. One of three possible filters (a 2100 Hz unit) is installed in this receiver.

At the upper left-hand corner of the picture is the BFO Oscillator board that also holds the two fixed frequency carrier frequency crystals (Y301 and Y302).

Most important for review is the right side of the bottom view. There you can clearly see the complex 24-position band switch. The “complex” word is deceiving – but was my initial feeling about the design of this radio. However, preparing to undertake a complete alignment of the radio showed me a different side to this story. First of all, the switch is complex – no doubt about that. But the placement of the alignment points on the bandswitch and the slug tuned coils in the same vicinity that appear to be a hodgepodge of access points actually are clearly laid out. The removeable Top, Bottom and Right-Side Panel allows

easy access to all alignment points. Other points elsewhere in the radio are clearly marked and easily found – and accessed.

Note the large enclosure between the Main Tuning Knob flywheel and the bandswitch (upper right in the picture). That encloses the REJECTION TUNE circuitry. In that area, between the enclosure just mentioned and the Main Tuning Knob flywheel, you will see the dual FUNCTION and FILTER switch. The FILTER switch (the ready knob) shows a fiberglass shaft extending to the band panel. About 2/3 of the way to the back panel you will see a crank lever on the shaft with a mechanism connecting to an area found the filters in the lower center of the large circuit board. That is a slide switch that actually selects the desired filter. The outer FUNCTION control is the radio's STBY (Stand By), REC (Receive), NL (Noise Limiter), and CAL (Calibrator) switch.

The Noise Limiter, not to be confused with a Noise Blanker<sup>2</sup>, is effective at reducing electrical interference with the receiver. The Calibrator provides alignment signals at every 100 kHz intervals across the spectrum the HQ-215 covers.

With its attractive panel appearance, relatively cool circuitry where perhaps the pilot lamps were the major current draw, what else could a ham want? Well, Part 2 of this article will cover my operating interpretations of this receiver. And, I have asked my long-time friend and proofreader, Bob Bailey, W9DYQ, a fellow HQ-215 owner and nearly 100% CW aficionado, to comment with his thoughts and opinions of the radio. Also, a recently found friend as well as vintage radio collector and restorer, Clark Thompson, K9OA, to comment on his experience with the HQ-215's nearly identical sister radio that was designed for the Short-Wave Listener (SWL) market. Clark has what we both agree is the only produced example of the Hammarlund HQ-225, the general coverage sister radio to the HQ-215.

Also in the next installment, we will talk about Hammarlund's perceived reasoning for developing and manufacturing this unabashed clone of the Collins 75S-3C. Was there a market for these radios beyond ham radio?

Finally, we will talk about the other more complete line of radios to compete with the magic of what was the Collins S-Line. We will talk about a complete line of radios that cloned the 75S-1 Receiver, 32S-1 Transmitter, 312B-4 Console, and 516F-2 Power Supply. We will follow this interesting product all the way to MARS. I kid you not, all the way to MARS.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

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. Certainly, in any technical article, it is good to have a second person review the thought process.

© **W9MXQ**

**Notes and Comments:**

<sup>1</sup> We all have our favorites in ham radio and Hammarlund is one of mine. My first fully ham radio band dedicated receiver was a Hammarlund HQ-170AC purchased brand new in 1965 from Klaus Radio and Electric, in Peoria, Illinois. While Klaus is still in business today, their amateur radio department is long gone. Some months ago, I acquired a very nice HQ-170AC-VHF, a slightly newer feature added model from my original. An article on that receiver and its sister, the general coverage HQ-180C resides in the archives of this Newsletter. It is nice to experience the use of these old receivers and I quickly remember many long ago learned details of their features and how to make them perform at their best.

<sup>2</sup> Simply stated, a Noise Limiter used a pair of reversed polarity diodes across the signal path to minimize the amplitude of the noise getting through the i-f system. By contrast, the Noise Blanker, much more complicated, actually shuts off the receiver signal path during noise peaks so they are – in most ideal operation – no longer audible. Both devices have their uses, so it is difficult to say one is better than the other.



## **Ozaukee Radio Club Minutes of Membership Meeting. 2/8/2023**

**de: Ken Boston, W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom.

ORC President Bill K9GN began the meeting at 7:29, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance.

### **Program:**

Our presenter was Doug Dimmer, who has been providing a S.T.E.M. program at the local Cedarburg H.S. He briefly gave his 23-year background in industry and teaching and providing a technology base for students at his previous assignments. He stressed his philosophy of enabling students the ability to gain an education based on developing problem solving skills, particularly in the areas of Science, Technology, Engineering and Math. Doug brought into the discussion several elements of STEM development, like teaching critical thinking and the recent “makerspace” movement. He is encouraged to see our efforts at ORC to provide some backing in this area.

**50/50 Raffle:** This was won by Rod WB9AZH; winning an award of \$15.50

### **Scholarship Auction:**

Stan WB9RQR held a short auction: Fans and a few other items

### **Committee reports:**

[there was no second VP report.]

1st VP: Jeananne N9VSV thanked all for voting her into office, and reports that ORC ‘swag’ information will be forthcoming.

RPT VP: Tom KC9ONY reports some minor issues at the Germantown site, but all the other sites are performing well.

Treasurer: Gary N9UUR set out reports, ORC now has about 111 paid members for 2023. Gary mentioned the swapfest flyers costs, and that the new signatories for the bank account are now in place. The January treasurers’ report was accepted; motion made by W9GA; 2<sup>nd</sup> by KC9VZK and carried.

Secretary: Ken W9GA reported that the Jan 2023 minutes are posted; pending some minor corrections, a motion to accept was made by N9VSV; 2<sup>nd</sup> by WB9AZH, and motion carried.

Scholarship/STEM: Bill K9GN talked about another Zoom meeting, with discussions about partnering with the Cedarburg H.S.

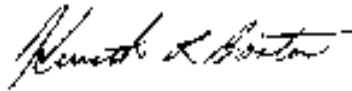
Tech committee: no report.

**OLD business**: none reported.

**NEW business**: W9GA reminded everyone that the awards nominations are open now. N9VSV talked about a recent Zoom meeting concerning FD, with 15 attendees. Tom W9IPR made a motion to go ahead with our fall Swapfest to be held on September 9, 2023; W9GA 2<sup>nd</sup>, motion carried. He also reported good sales for the club in past fests, over \$1000 for the scholarship fund.

**Adjournment**: WB9RQR moved to adjourn, N9VSV 2<sup>nd</sup>, motion carried; time ending was 9:25 PM. There were 18 in-person attendees, 21 Zoom attendees.

Respectfully submitted,



Kenneth Boston, W9GA, Secretary





## Turkey of the Year Award Ballot: 2023

**BACKGROUND:** The **Turkey of the Year** award can be awarded only once to an individual. (However, the Awards Committee erred a few years back when they failed to notice that the top vote getter had previously won under a different call sign). The criterion for this distinguished award is a club member who has helped keep the hobby fun. This person has generally promoted friendship and good will throughout the year. Past recipients and year awarded (years not indicated contain hams who are SK; those deceased members: WI9M, N9CCJ, K9CAN, KA9DDN, WJ9O, W9BCK, W9VQD, K9GCF, W9LO, KA9WRL, KA9RFM, WA9JOB):

1981 W9NHE Ted Willett  
1984 WA9OHY John Strachota now W9FAD  
1985 WD9FQW Mike Behlen  
1986 W9DHI Gregg Lengling  
1990 KA9QLP Jim Albrinck now K9QLP  
1991 W9BTN Sandy Wirth  
1995 N9UNR Dave Barrow  
1996 (no award given)  
1997 N9QQA Gabe Chido now WI9GC  
1998 KB9PZL John Maybee  
2000 WB9RQR Stan Kaplan  
2001 W9IPR Tom Ruhlmann  
2003 WI9GC Gabe Chido was N9QQA  
2004 KA4UPW Jim Hilins  
2005 AA9W Ed Rate  
2006 KC9GDV Mike Yuhas now AB9ON  
2007 KB9UKE Vic Shier now WT9Q  
2008 KC9FZK Nancy Stecker  
2010 AB9CD Mark Tellier  
2011 N9LOO Brian Skrentny  
2012 W9GA Ken Boston  
2014 KC9ONY Tom Trethewey  
2015 W9KR Chuck Curran  
2016 K9DJT Gary Drasch  
2017 KC9ZNR Zack Yatso  
2018 KD9DRQ Bill Church  
2019 W9MXQ Bill Shadid  
2020 W9KEY Fred Schwierske  
2021 K9MOI Don Lesch  
2022 KC9YEP Chuck Meyer

My vote for 2023 Turkey of the Year (may **NOT** be in the Turkey of the Year list from previous years):

Please email your nomination to the awards chairman; [kboston6@wi.rr.com](mailto:kboston6@wi.rr.com)

**Nominations will be closed on March 30, 2023**

## Ham of the Year Awards Ballot: 2023

**BACKGROUND:** The **Ham-of-the-Year** award is a traveling trophy given to an amateur radio operator who has made significant contributions to the success of the club. The person may receive the award on more than one occasion, and to date several members have received it more than once (noted with an asterisk). Past recipients and year awarded (years not indicated contain hams who are SK; those deceased members; W9VLL, KA9DDN, W9WQ, W9LNL, WA9UVK, K9CAN, K9GCF, WI9M, KA9WRL, WA9JOB):

1986 \*WB9RQR Stan Kaplan  
1988 W9DHI Gregg Lengling  
1990 WA9JMS Mark Seburn  
1992 \*AA9W Ed Rate  
1993 \*WB9RQR Stan Kaplan  
1994 N9PBY Ray Meyer  
1996 N9LLT Ted Heilmann  
1997 AA9HR Joe Holly  
1998 AA9OS Bill Raymond  
2000 KG9NH Matt Singer  
2001 \*AA9W Ed Rate  
2002 KB9SYI Jane Rediske  
2005 KB9WBQ Julia Nawrot  
2006 \*W9IPR Tom Ruhlmann  
2007 AB9CD Mark Tellier  
2008 \*W9IPR Tom Ruhlmann  
2010 \*WB9RQR Stan Kaplan  
2012 K9QLP – Jim Albrinck  
2013 N9UNR Dave Barrow  
2014 W9GA Ken Boston  
2015 \*K9DJT Gary Drasch  
2016 W9KR Chuck Curran  
2017 N9ENR Loren Jentz  
2018 \*K9DJT Gary Drasch  
2019 KC9ONY Tom Trethewey  
2020 K9VIN Kevin Steers  
2021 W9JI Pat Volkmann  
2022 N9UUR Gary Bargholz

My vote for the 2023 Ham of the Year (may be in the Ham of the Year list from previous years):

Please email your nomination to the awards chairman; [kboston6@wi.rr.com](mailto:kboston6@wi.rr.com)

**Nominations will be closed on March 31, 2023**

# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- March – Pat W9JI – Repairing a Classic Transmitter – the Viking Valiant
- April – Mike Harrington, KD9GCN, Operating a Remote Ham Station
- May – Bill W9MXQ & Pat W9JI – Video: “Collins: The Lost Decade” and a brief tour of a Collins collection
- June – Ken W9GA Field Day
- July - Open

We really do need some programs for the coming year. Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

Many of our presenters use Microsoft’s PowerPoint to organize and present their information. If you don’t have access to or aren’t familiar with PowerPoint, there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here:

<http://www.openoffice.us.com/>

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*March 8, 2023*

- |   |  |
|---|--|
| 1. 7:15 – 7:30 PM<br>Check-In and Introductions                                       | 7. Repeater VP Report:<br>Gregg Lengling (W9DHI) |
| 2. 7:30 PM Call to Order:<br>President Bill Greaves (K9GN)                            | 8. Secretary’s Report:<br>Ken Boston (W9GA)      |
| 3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.                 | 9. Treasurer’s Report:<br>Gary Bargholz (N9UUR)  |
| 4. Part Volkmann, W9JI, Repairing a Classic Transmitter – The Johnson Viking Valiant. | 10. Committee Reports                            |
| 5. President’s Update:<br>Bill Greaves (K9GN)   | 11. OLD BUSINESS                                 |
| 6. 1 <sup>st</sup> VP Report:<br>Jeananne Bargholz (N9VSV)                            | 12. NEW BUSINESS                                 |
|   | 13. Adjournment                                  |



**Next Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
12 April 2023**

**Program:**

Mike Harrington, KD9GCN  
Operating a Remote Ham Station

7:00 PM – Doors Open

7:15-7:30 PM – Zoom Check-In

7:30 PM – Meeting Begins

The Ozaukee Radio Club presents its 43rd Annual Spring Indoor  
**Amateur Radio, Electronics & Computer**



# SWAPFEST



featuring **TOWER ELECTRONICS!**

Saturday, May 6, 2023 – 8 AM to 12 PM (setup begins at 6 AM)

Ascension Columbia St. Mary's Center (Milwaukee Curling Club)  
W67N890 Washington Ave., Cedarburg, WI 53012

Talk-in: 146.97 MHz – PL 127.3 Hz

Door Prizes! Free WIFI

Food sold by Cub Scout Pack 586, returning from 2022!

Admission: \$7.00 at the gate

Children 12 and under FREE, with a paid adult admission

6 ft. Tables: \$12.00 in advance, \$15.00 at the door, if available

Use the Order Form below, email, or call Tom Trethewey, KC9ONY at 262-421-6351

Email: [swapfest@ozaukeeradioclub.org](mailto:swapfest@ozaukeeradioclub.org)

More information: <http://www.ozaukeeradioclub.org/> or <http://www.facebook.com/orcwi>

For Advance Tickets and Tables, send check with a **SASE** (Business-Size #10 envelope) to:  
Tom Trethewey, KC9ONY- W69N905 Evergreen Ct N, #202, Cedarburg, WI 53012-1170

Name: \_\_\_\_\_

Call sign: \_\_\_\_\_

Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

Email: \_\_\_\_\_

No. of Tickets: \_\_\_\_\_ X \$7 = \_\_\_\_\_

(Advance tickets are double stub)

No. of Tables: \_\_\_\_\_ X \$12 = \_\_\_\_\_

Electricity: Yes (Add \$5) \_\_\_\_\_ No \_\_\_\_\_

Total Amount: \_\_\_\_\_

(Please make checks payable to ORC)



# 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.

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Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org)

Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XLI

April 2023

Number 4

## From the President

de: Bill Greaves, K9GN



We are fortunate to have Tom KC9ONY Trethewey as our Repeater Vice President. Tom devotes considerable time to amateur radio through the Ozaukee Radio Club, as well as activities in other clubs. Those of you who voted for ORC Club Awards last month may have noticed Tom received the Ham of the Year Award in recent years for significant contributions to ORC success, as well as the Turkey of the Year Award for promoting friendship and good will. Many of you know Tom as the Net Control Operator of the Tuesday evening 8:00 pm net. Tom has also been the ORC Spring Swapfest Chair for several years. Both activities provide a major presence for the Ozaukee Radio Club, and we have Tom to thank. Thank you, Tom!

Tom is also temporarily helping with the audiovisuals for the monthly in-person and zoom club meeting. This activity is seeking a volunteer to take over the duties – no experience necessary; training provided!

I have been paying particular attention to grounding issues in my station design. There are many good information sources as many of you are aware. The series of three articles by Ron Block NR2B, even though they are somewhat long-of-tooth, lay an excellent foundation for station grounding. Other authors frequently reference his work. I came across a new article by him in the March/April 2023 issue of QEX, online through ARRL, titled, "Single Point Ground Panel Location." This 3-page read may be useful to you. I found my station design could use some modifications based on the article.

The old saying about April showers and May flowers actually means: April is here, and Field Day is around the corner. Field Day is Saturday-Sunday, June 23-24, with setup Friday, June 22. ORC has had a strong showing for several years and is looking to continue again this year. Consider putting this weekend in your calendar and joining other members of the club for a day or more, half a day, or even just to observe and see what is happening. My first Field Day was 2021; I learned much, met many ORC members, made a few contacts, and enjoyed myself thoroughly.

This month's pic is fairly sedate. I considered a photo with a week or so of facial hair during a lull in shaving. Be thankful!

See you at the club meeting, both in-person and on Zoom™, April 12 at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center – or on Zoom.

73,  
Bill K9GN

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Jacquelyn Henderson©

# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

This month starts, close to the front, with two new authors – at least during my tenure as Editor. Gregg Lengling, W9DHI, our Webmaster, goes into great details on the Digital Radio scene with good explanations of D-Star, DMR, and System Fusion. As a recent buy-in to Digital Radio on the FM bands, I found the article interesting and informative. Next, see finely done details of a restoration project for an RF Probe and three AC Vacuum Tube Voltmeters by Chuck Curran, W9KR. Chuck has well known capabilities but what impresses me most is his flare for cabinetry restoration. Take a look at these two fine articles, beginning on page 6.

Tom Trethewey, KC9ONY, our Repeater Vice President, brings us further up to date on the ORC Spring Swapfest. And, for your reference, the very last page of the Newsletter is a copy of the Swapfest Flyer.

I am especially pleased to present a guest article this month from a friend of a couple of us in the ORC ranks, Dr. Lazlo Phynortné, PhD, and his work with the prestigious Rubicon Institute of Technology, in the study of “One Way Radio Propagation.” Please return thoughts to me for submission to Dr. Phynortné.

Check out our regular Contributors, Stan Kaplan with Computer Corner Article 301 talking about “Linux: the Book.” Don Zank, AA9WP, has an article on, “What was old is new again! Included in his article is a three-page excerpt from the June 1991, OZARES Newsletter. It was written by none other than our own Stan Kaplan, WB9RQR, who then was Ozaukee Country ARRL ARES RACES Emergency Coordinator – and editor of Newsletter. (Stan is also a former Editor of this Newsletter.) The reprint follow Don’s article.

Gary Sutcliffe, W9XT, in his regular On the Air Activities! As always, Gary shows the many radio things to do this month. Your Editor, Bill Shadid, W9MXQ, wearing his columnist hat brings Part 2 of the article on the Hammarlund HQ-215 Receiver. That article includes contributions by two fellow collectors of this 1969 vintage radio.

Ken Boston, W9GA, brings you the minutes of the March meeting minutes.

Want to know about future meeting programs? Pat Volkmann, W9JI, has you covered.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.



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April 2023 – Table of Contents**

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**Onward To the Newsletter**

# The ORC Spring Swapfest 2023 is next month!

de: Tom Trethewey, KC9ONY  
Chairman, Spring Swapfest 2023  
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The Ozaukee Radio Club's 43<sup>rd</sup> Annual Spring Swapfest is coming next month. Saturday, May 6, 2023, from 8 AM to 12 PM, on the Ozaukee County Fairgrounds in the Ascension St. Mary's Expo Center, in Cedarburg, WI. We've been there for several years now.

I'm hoping to eventually make it one of the biggest or best in the area. Of course, to do that, I need your help. Please consider volunteering to help with setup and tear down, putting up and taking down exterior signage, and other duties as assigned. It's not really hard, but it does take members to make it successful. Even if you are one that normally doesn't go to Swapfests due to not needing to buy anything, I'd encourage you to at least help the club by volunteering your time that weekend.

Still working on sponsors for door prizes, but I hope to get that finalized soon. Once again, Tower Electronics will be there with 14 tables of items and antennas for you to purchase. I'm excited to have the Cub Scout Pack 586 returning again, too. Awaiting the list of possible food and refreshments, but you'll remember they had a great selection last year. Please support them as well.

Can't make the Swapfest for whatever reason? How about purchasing an advance ticket? I'll throw it in the prize drum for you, as you'd still be eligible for the grand prize as you do not have to be present. Or please consider a small donation to help support this great club.

I will be at the ORC April 2023 meeting where you will be able to buy advance tickets, which are double-stub for the door prices, and order tables if selling. I will also be at the Madison Hamfest on Saturday, April 15, 2023, passing out flyers, selling tickets and table orders there as well.

You can print out the Spring Swapfest flyer from our website:

<https://www.ozaukeeradioclub.org/downloads/spring-swapfest/2023-ORCSpring.pdf>

Or check the last page of this Newsletter for a Spring Swapfest Flyer copy,

So far, no one has answered my question about why some are called hamfests and some are called Swapfests. Any idea?

# Welcome to the Digital Revolution

de: Gregg Lengling, W9DHI



Amateur Radio has always been on the leading edge if not the developing edge of technology and in this digital world this still holds true. VHF and UHF repeaters and communications have gone from AM to Sideband to FM and now to Digital. However, in Digital there are competing versions of technology and they are not compatible with each other, yet they have their own pluses and minuses.

In this article I'd like to only talk about the modes that are supported by Amateur Radio Manufacturers. There are other modes that many hams have embraced but they are relegated to using only converted commercial (public safety or business equipment) and we won't be covering those. Here I'd like to concentrate on 3 modes, D-STAR, DMR and System Fusion. In the table below I've outlined the methods involved in each. The only proprietary item (to which the manufacturers pay royalties) is the AMBE+2 Encoder. The actual operating standards are open and available to any manufacturer who wishes to use them.

	Protocol		
	D-Star	DMR	System Fusion
Vocoder	AMBE+	AMBE+2	AMBE+2
FEC	Voice Only	Voice Only	Voice Only
Modulation	GMSK	4FSK	C4FM
Multiplex Method	FDMA	TDMA	FDMA
Transmission Rate	4.8 kbps	4.8 kbps x 2	9.6 kbps
Bandwidth	6.25 kHz	12.5 kHz	12.5 kHz
Channels	1	2	1
Developer	JARL	ETSI	Yaesu
Original Use	Amateur Only	Business	Amateur Only
Current Manufacturers	Icom Kenwood *	Multiple (All Commercial)	Yaesu

*All 3 protocols are Open Standards*

*\* = discontinued*

## EASE OF PROGRAMMING AND SETUP TO USE

D-STAR has a small learning curve but is intuitive. D-STAR requires registration to use linking (otherwise linked parties won't hear you). (Newer XLX reflectors don't require registration.)

DMR is probably the steepest learning curve as it requires zones, groups, colors, timeslots and talk groups. (Hence the reason one ham dealer includes a subscription to their DMR University). DMR requires registration for a DMR ID without which you cannot use the radio.

System Fusion is the easiest to program. Programming your Callsign and repeaters just like FM and select FM or Digital Mode and you are on the air. System Fusion only requires registration if you wish to use internet connectivity on your station. (It does not preclude using linked repeaters or gateways.)

## **ID REQUIREMENTS**

Your Callsign is embedded in each transmission on D-STAR and System Fusion so that meets FCC ID requirements. DMR does not, it embeds the DMR ID so you must still voice ID. Receiving calls in D-STAR and System Fusion you will see the transmitting parties Callsign on your Radio Display. On DMR the DMR ID is embedded so you will not see the calling parties Callsign but their DMR ID instead unless you have a radio that allows loading in contact list that will translate DMR ID to Callsign.

## **LINKING**

D-STAR has several types of linking. Originally it was all repeaters had a Gateway (most do) and you would do Callsign routing by entering the call of the person you were looking for. The network would route you from the repeater you are on to the repeater that the other person was last heard on. You could also send a command to link the repeater you are on to another one on which you would like to make a call. Finally, a savvy ham came up with what is called D-Plus where Reflectors were created and provided rooms to link together and talk on (these are hosted in the cloud typically). Later alternate reflectors/rooms were also created. Today users typically link repeaters to Reflectors and enable wide area coverage. For example, in Wisconsin REF019B has many repeaters linked to it. And if you don't have access to a linked repeater Hot Spots were created using RPi's and MMDVM hats and many people use those as they work on any Wi-Fi connection (including in vehicle Wi-Fi).

DMR has repeaters all available on Networks such as BrandMeister and by entering a talk-group number on a repeater you can link to other areas to talk to others.

System Fusion has WIRES-X which originally required an HRI-200 linking controller which is still required if you are creating your own talk-group/room, however firmware in most (not all) of the Yaesu radios allow you to connect direct to a computer with a special cable and access the WIRES-X network. There are standalone networks accessed only through Hotspots, but the WIRES-X is more prevalent.

## WHAT SHOULD YOU BUY?

Currently in Wisconsin these are the numbers of coordinated repeaters for each mode.

- D-STAR 27
- DMR 22
- System Fusion 34

These are those listed by WAR (Wisconsin Association of Repeaters), but WAR has been slow on co-ordinations and updates of their lists as there are pending co-ordinations going back 5 years. I've found many more D-STAR repeaters in Wisconsin that aren't in the list and found many DMR repeaters that no longer exist but are listed.

What should you buy? Well, that's a choice you have to make. Entry level DMR you can buy low cost Baofeng radios for under \$100. For System Fusion the Yaesu FT-70DR handheld is under \$200. For D-STAR the latest ID-52 Handheld is rather pricey. But there are used radios out there at the Swapfests. I purchased a used ID-51 at the Jefferson Swapfest last year for \$100.00. But also consider what repeaters you would like to use. Is there one near you?

### DIGITAL REPEATERS IN OZAUKEE COUNTY

K9QLP/R 442.100 repeater output 447.100 repeater input. Running dual mode responds to System Fusion or normal FM with CTCSS 127.3. This repeater is not linked. (sited on a high point in City of Cedarburg)

W9DHI/R 444.975 repeater output, 449.975 repeater input. Running dual mode responds to System Fusion or Normal FM with CTCSS 127.3. This repeater is linked to the WIRES-X worldwide system, normally resides on SE-WIS-NET (room number 43302). Please announce if you are changing rooms and make sure you disconnect the room when done (not just the WIRES-X button on radio, you must send a room disconnect command) (sited on 120-foot tower on the highest point in Ozaukee County, Wide Area Coverage)

N9FRG/R 442.775 repeater output, 447.775 repeater input. Running dual mode responds to System Fusion or Normal FM with CTCSS 127.3. This repeater is linked to the WIRES-X worldwide system, normally resides on SE-WIS-NET (room number 43302). Please announce if you are changing rooms and make sure you disconnect the room when done (not just the WIRES-X button on radio, you must send a room disconnect command) (Sited at MATC north Microwave tower).

W9FRG B 442.81875 repeater output, 447.81875 repeater input. Running D-Star only with G3.1 gateway connectivity automatically on Ref019B during the day. Cedarburg (on W9DHI tower)

W9FRG C 145.225 repeater output, 144.625 repeater input. Running D-Star only with G3.1 gateway connectivity automatically on Ref019C during the day. Cedarburg (on W9DHI tower)

W9FRG A 1297.500 digital data D-Star with G3.1 gateway connectivity. Cedarburg (on W9DHI Tower)

### **DIGITAL REPEATERS IN WASHINGTON and NORTHERN WAUKESHA COUNTY**

W9CQ/R 147.285 repeater output, 147.885 repeater input. Running dual mode responds to System Fusion or Normal FM with CTCSS 127.3. Repeater does not currently have WIRES-X connectivity. Located in Germantown.

W9RCG/R 442.01875 repeater output, 447.01875 repeater input. Running DMR CC9 Located in Menomonee Falls (I cannot confirm active)

W9RCG/R 442.03125 repeater output, 447.03125 repeater input. Running DMR CC9 Located in West Bend (I cannot confirm active)

### **DIGITAL REPEATERS IN MILWAUKEE COUNTY**

W9EMP/R 443.41875 repeater output, 448.41875 repeater input DMR CC9, Hales Corners (I cannot confirm active)

KB9ZB/R 442.20625 repeater output, 447.20625 repeater input, DMR CC9 , Milwaukee

N9PAY/R 444.53125 repeater output, 449.53125 repeater input, DMR CC9, Milwaukee (I cannot confirm active)

KC9LKZ/C (soon to be W9MIL/C) 145.245 repeater output, 144.645 repeater input D-STAR Milwaukee, G2.0 Gateway enabled

KC9LKZ/B (soon to be W9MIL/B) 442.46875 repeater output, 447.46875 repeater input, D-STAR Milwaukee, G2.0 Gateway enabled (currently off air, awaiting install of new repeater)

KC9LKZ/A (soon to be W9MIL/A) 1290.050 repeater output, 1270.050 repeater input, D-STAR Milwaukee, G2.0 Gateway enabled.

W9RH/R 145.390 repeater output, 144.790 repeater input, Running dual mode responds to System Fusion or Normal FM with CTCSS 127.3. WIRES-X enabled

N9OJH/R 443.725 repeater output, 448.725 repeater input. Listed as dual mode running System Fusion and Normal FM with CTCSS 127.3 (I cannot confirm if active)

## Glossary

D-STAR: Digital Smart Technologies for Amateur Radio. It is an open standard digital communication protocol established by JARL

DMR: Digital mobile radio is a specification for commercial products so they can interoperate. It is defined by a standard[1] created by the European Telecommunications Standards Institute (ETSI) and manufacturers found Amateur Radio was using it so they developed and type-accepted radios for Amateur use.

System Fusion: Yaesu's implementation of Digital Amateur Radio, utilizing C4FM 4-level FSK Technology to transmit digital voice and data over the Amateur radio bands.

AMBE+: DVSI's Implementation for a Vocoder.

VOCODER: A category of speech coding that analyzes and synthesizes the human voice signal for audio data compression, multiplexing, voice encryption or voice transformation.

GMSK: Gaussian Minimum Shift Keying, GMSK is a form of modulation based on frequency shift keying that has no phase discontinuities and provides efficient use of spectrum as well as enabling high efficiency radio power amplifiers

4FSK: 4 level Frequency Shift Keying

C4FM: Continuous Four Level Frequency Modulation, which is a special type of 4FSK, which is used in conjunction with FDMA - Frequency Division Multiple Access

FDMA: Frequency division multiple access

TDMA: Time-division multiple access

BrandMeister: An operating software for Master servers participating in a worldwide infrastructure network of amateur radio digital voice systems

WIRES-X: Wide-coverage Internet Repeater Enhancement System.

REF: D-STAR Reflector is a computer connected to the internet that runs special software. The wonderful thing about reflectors is that lots of repeaters can be connected to one reflector.

**W9DHI**

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## Restoration Project – RF Probe and Three AC Vacuum Tube Voltmeters de: Chuck Curran, W9KR



This article focuses on a way to provide a means of completing a vacuum tube transmitter alignment, specifically on a reasonable piece of test gear to help you peak the various trimmer capacitors or inductors found in many transmitters. In my write-up I will be mentioning four different pieces of gear that I have used and own today. They are the Fluke Model 85RF RF Probe, the Hickok Models 1600 & 1600B, and the Hewlett Packard 410C, the last three include an RF voltage measurement probe rated at 10 Hz to 700 MHz. Below is shown a picture of the Fluke probe:

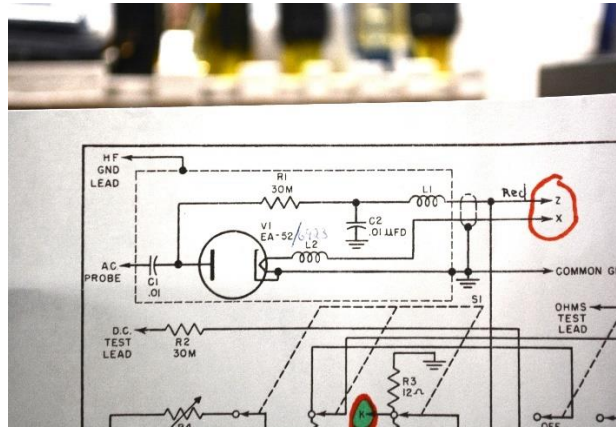


The above probe and meter do a wonderful job, but there is a limitation that is found as soon as you start working on a vacuum tube transmitter. This probe is rated for a maximum RF signal of 30 VAC. A typical transmitter using 6146 tubes as the finals will see in excess of 70 VAC at the control grids of the 6146 tubes. So, you will pop the diode that is inside the probe and start looking for test gear with a probe made for a higher rating! It is NOT an Oscilloscope. Their input impedance is around 1 megohms, not high enough, while an RF VTVM has an input impedance for AC signals of 10 megohms. Here is a picture of the two pieces of Hickok gear:





The one on the left is the model 1600, while the one on the right is the 1600B. The cabinet design for the 1600 was really bad, they corrected their mistakes on the 1600B. Below is shown the probe style used on both of these units, this one came with the older 1600. It was designed in about 1958 and apparently sold starting in 1959. This probe for the Hickok 1600 arrived missing several key parts, and while I got the DC +/- volts and resistance to work, it took longer to verify that the AC function worked. I provided a DC signal into the AC circuit, (which the probe does), and it worked well so I was optimistic. AC probe is capable of measuring 10Hz to over 700 MHz. See probe picture and probe circuitry below:

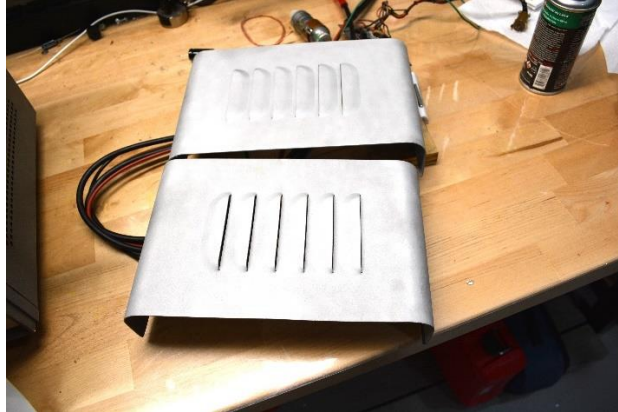


Only a few components were replaced in both the 1600 and 1600B Hickok meters, one selenium rectifier and three electrolytic capacitors. I left the old can type electrolytics disconnected in the chassis, just to allow it to look complete.



What's that red thing at the bottom of the picture? If you have ever built a Heathkit, you already know. It is one of their nut starters, to help speed up assembly.

Both units needed a new paint job and a new leather handle for the 1600B. Below are pictures of the repainting done on both units



Sand Blasted 1600 side panels.



1600 side panels repainted.

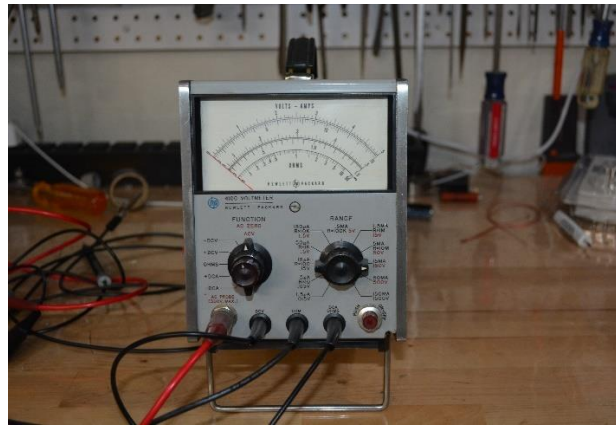
1600B cabinet was sanded and repainted, as shown below:



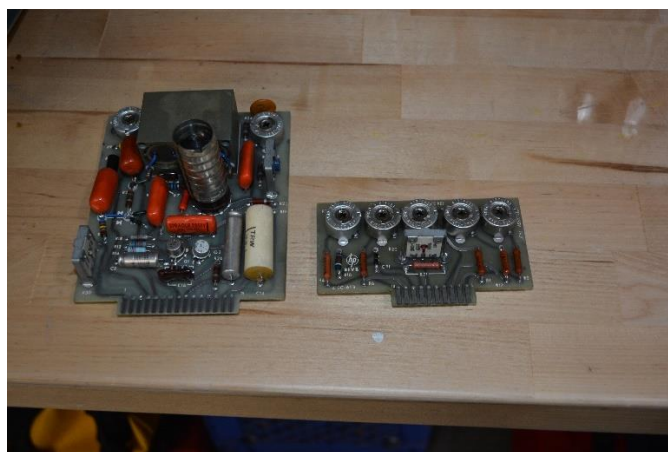
The RF AC probe wouldn't function on the Hickok 1600, due to missing parts. I was able to locate a new probe assembly for the 1600B, shown below. The functional probe that came with the 1600B is now connected to the Hickok model 1600.



Two working RF voltmeters aren't enough, so here is the third, a Hewlett Packard 410C. When bought it was a train wreck, now is working fine but still needs AC voltage to be calibrated.



This item was missing the bottom cover, the AC plug on the back was one that no cords can now be found to match the socket, and still used one vacuum tube, the rest all solid state.



The above circuit boards from the HP 410C were replaced with solid state items, made by Kiss-electronics of Cornelius, Oregon, they were a two-minute job to install.

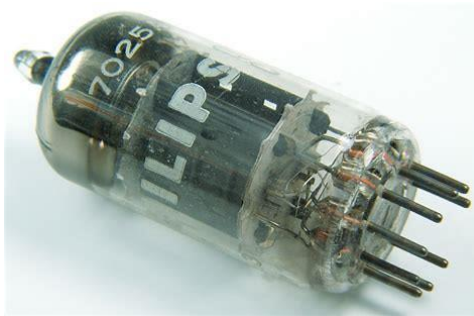
The Hickok 1600B is now ready to use, while the HP 410C has to have the calibration finished, and the Hickok 1600 has to have the sheet metal sides installed. Below is the Hickok 1600B with a rebuilt leather handle, made by Heim's Shoe Store in Grafton, WI.



Last photos of the Hickok 1600 RF VTVM all assembled and ready to go to work:



**W9KR**



**Hollow State Technology**

# One Way Radio Propagation Finally Explained

by: Dr. Lazlo Phynortné, PhD

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*Journal of Unexplained Natural Quantum Unusual Electrodynamics*



If you are an amateur radio HF operator, you may have encountered times when you could hear a station very well, but they could not hear you, even though both stations are operating at similar output power levels. This phenomenon is called “one way propagation” or OWP. It was a controversial subject, with some amateurs not believing it actually occurs, with others claiming they have observed it.

However, with modern tools such as PSKReporter, WSPRnet, and other monitors, it is apparent that, at times, stations located in Region A will hear stations in Region B, but not in the reverse direction. It is not just individual stations being unable to communicate but involves many stations over broad areas.

Many theories have been created to explain this phenomenon, but empirical evidence has recently pointed to the actual cause. New research at the Rubicon Institute of Technology (RIT) has uncovered the probable cause of OWP. In effect, the ionosphere can, at times, create virtual ionospheric diode regions permitting signals to propagate in one direction but not the reverse direction.

Before explaining how OWP operates, it is necessary to understand how solid-state diodes work. Solid state diodes are made from a semiconductor material, usually silicon, although germanium can also be used. The semiconductor material exists in the form of a three-dimensional crystal lattice structure. Silicon atoms in a crystal share their outer valence shell electrons. There are no excess electrons not used in binding the silicon atoms together. Nor are there any potential bonds needing an unavailable valence shell electron.

To make a diode, transistor, or similar solid-state device, impurities are implanted into the crystal lattice structure. This process is known as “doping.” If an impurity of an element like phosphorus or arsenic is infused into the lattice, there will be extra negatively charged electrons not bonded to the surrounding silicon atoms. Those excess electrons can easily transport through the lattice. The semiconductor material doped in this manner with elements from this region of the Periodic Table is described as the N type of semiconductor.

Conversely, if the crystal matrix is doped with an element like gallium or boron, the outer valence shell does not have sufficient electrons to complete every bond with the surrounding silicon atoms. The missing bonds are known as holes. This material is P type semiconductor material.

A diode is a section of N type semiconductor next to P type material. When a voltage is applied in the forward bias direction, the extra electrons in the N section will flow across the PN junction and through the P material via the holes. However, when a reverse bias voltage is applied, the extra electrons in the N zone move away from the PN junction, as are the holes in the P material, and no current flows.

Radio propagation occurs when solar UV light excites electrons in oxygen or nitrogen atoms in the high fringes of the atmosphere. The extra energy allows the electrons to escape their valence shell orbits. This region is known as the ionosphere, and radio waves travelling through it are refracted back to earth. The free electrons in the ionosphere act like N material and the remaining positive ions missing an electron are similar to P material.

Solar photonic pressure can, under proper conditions, push the lighter electrons away, leaving the heavier positive atomic nuclei in place, creating ionic regions establishing a virtual ionospheric PN junction. As a result, electromagnetic waves traveling in the forward bias direction proceed undisturbed, while radio waves traveling in the reverse bias direction are stopped. This phenomenon is the cause of OWP, and the effects continue until the free electrons and ions are able to recombine.

While OWP is a nuisance for amateur radio operators, it can be very disruptive for military and commercial HF circuits. Researchers are working on methods to work around one way propagation. The most promising research involves anti-electromagnetic waves.

Anti-electromagnetic waves are roughly analogous to antimatter. Anti-electromagnetic waves can theoretically freely propagate through reverse biased PN regions of the ionosphere. However, actually generating them has proven difficult, and practical implementations have been challenging to produce.

None of the major amateur radio manufacturers have confirmed they are working on anti-electromagnetic wave transmitters, but there are rumors of an anti-radio being introduced at the 2024 or 2025 Hamvention®. At any rate, FCC Part 47 rules must be modified to permit amateurs to use them because anti-electromagnetic waves operate at anti-frequencies. There are no current amateur allocations for anti-frequencies.

The work done at RIT promises to open a whole new exciting chapter in radio communications. Your new radio may soon be obsolete.

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# OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## What was old is new again!



An OZARES practice net was held on March 16, as we normally do on the first two Thursdays of the month. But this time there was a little twist to the exercise.

Roland, KB9TMB, who was the net control station for the evening, and Dave, KD9JYL, devised a Simplex test for the group that consisted of two components.

The first component would have OZARES operators testing on the American Red Cross simplex frequency of 147.420 MHz. *Did you know there was an American Red cross simplex frequency?*

The second component would have available members operate from outside locations.

Roland and Markus, KD9UWG, set up two vhf stations at the bluff in Lake Park, Port Washington. A very nice location for operating to the south and across the lake.

Todd, KD9JYL, established a remote station just outside of Port Washington. I am located in Mequon outside of Mequon City Hall. Naomi, KC9YES, and Tony AD9BR, (and congrats to Tony on the license upgrade to an Extra) operated from home locations.

Roland kicked off the net with check-ins. He then called Dave who was located at the Red Cross Office in Milwaukee on Wisconsin Avenue.

Dave, Markus, Todd, and I all had good copy on Dave from the Milwaukee location. He would then travel north to Ozaukee county along the lakefront and eventually on I-43 in Bayside. The only point along his trip where communication became impossible was at the old pump house location, otherwise known as Colectivo Coffee on Lake Drive. That is a rather deep hole along the lake shore.

As Dave drove along north we continued the simplex testing on several vhf and uhf frequencies. The results obtained were interesting. Dependable communications between all the operators varied with the bands used. As would be expected. But not expected were the results occurred with Todd and Dave as Dave ventured further north. Todd, located farther to the west, had intermittent success as Dave moved closer to Port.

It was an excellent simplex test for the start of the warm weather season. We plan on more tests in the future. As always, everyone learned something different from the exercise.

The Wednesday before I was looking for information on the BBS system that had been used by OZARES and the ORC back in the 90s. You know, before cell phones. I was

going through newsletters, and I came across the article (reprinted on the next three pages), written by Stan Kaplan, WB9RQR. It is interesting reading and makes a good starting point for our further testing. Enjoy, and Thank You, Stan.

In the previous issues, I discussed the National Incident Management System, or NIMS, and its expectations for communication operators and systems. Recently a final version of the NIMS Information and Communications Technology (ICT) Functional Guidance was released by the Federal Emergency Management Agency (FEMA). The guidance is updated to include the support available from amateur radio operators. The Communications Unit (COMU) includes the Auxiliary Communicator or AUXC role. Amateur radio operators are included in the Auxiliary Communicators role. (How about those three-letter acronyms?)

It is available at:

[https://www.fema.gov/sites/default/files/documents/fema\\_ict-functional-guidance.pdf](https://www.fema.gov/sites/default/files/documents/fema_ict-functional-guidance.pdf)

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### **OZARES Repeaters . . .**

- 147.330 MHz (+ Shift) (127.3 PL)
  - 443.525 MHz (+ Shift) (114.8 PL)
- 

### **ORC Repeaters are On the Air – Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
  - 224.18 MHz (- Shift) (127.3 PL)
  - 443.75 MHz (+ Shift) (127.3 PL)
- 

**Reprint of Stan Kaplan's June 1991 OZARES article follows: (Look for people you recognize!!)**



O Z A R E S   N E W S L E T T E R  
 Ozaukee County ARES/RACES  
 Volume 2   Number 6   June 1991

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RESULTS OF THE ARES/RACES EXERCISE - 8Jun91

On Saturday morning, June 1st, I asked those OZARES members present at the regular ORC breakfast meeting if they could participate in an exercise the following week. Most said they could, and they knew it was coming, but the only other details announced was that it would end at noon or earlier, and that up to 9 cars were needed, each containing one or two hams with mobile rigs and HTs.

After breakfast the following week, I handed out assignments. Eight cars were available. Some contained one ham, some contained two. Each car was sent to a different site in Ozaukee, Washington or Milwaukee County. A net was called on the ORC 2 meter repeater as soon as all vehicles had arrived at their assigned positions. Pairs of vehicles were asked to move to a simplex frequency, and to establish contact with each other, mobile to mobile, and to rate the quality of communications on a preprinted form as EXCELLENT (100% copy, full quieting), GOOD (100% copy, weaker but solid), FAIR (85-90% copy, heavy frying noise), POOR (50% or less copy, noise covers communications) or NO CONTACT (cannot establish contact at all). When mobile to mobile contact was finished, each pair was to repeat the rating, using HT to HT contact if possible. Then the pairs of vehicles were to return to the net for reassignment. There were 8 vehicles making contacts and 28 possible combinations (site 1 with 1, 1 with 2, 1 with 3, and so on).

1

It turned out that very few decent HT to HT contacts were made, so lets forget about them. Solid mobile to mobile contacts were made in almost every case, which yielded two ratings for each contact. For example, if the car at site 4 was in contact with the car at site 8, both hams marked a rating for the contact on their sheets, giving two independent ratings for each contact. Often, the two ratings were identical, in which case just a single rating was marked on the enclosed map. If the ratings were not identical, both are shown. Thus, the letter F on the map means that both hams rated the contact as FAIR, while an E/G means one ham called it EXCELLENT and the other GOOD. In only a few cases were the ratings more than one notch from each other. For example, KA9DDN at site 1 in Port Washington rated his contact with KA9QLP and N8DYG at site 4 at Five Corners as NO CONTACT, while KA9QLP and N8DYG called it FAIR. Obviously, Skip could not hear the other guys, but they could hear him, a reasonable expectation in some situations.

Well, what did we learn? Look carefully at the map and you will see a numeral near each rating - that is the distance, in miles, for that particular rating. The results are summarized below, rearranged in order of distance. Note that there was no position 6, and not all possible combinations and permutations were tried:

POSITIONS	MILES	RATING
3 <—> 5	5	E/G
5 <—> 8	7	E
2 <—> 4	7	F/G
2 <—> 3	8	G
4 <—> 7	9	E/G
3 <—> 4	9	G
1 <—> 4	9	F/N
4 <—> 5	10	G
1 <—> 2	10	F
3 <—> 8	12	E/G
4 <—> 9	12	F
5 <—> 9	13	G
2 <—> 5	13	G
5 <—> 7	14	E
1 <—> 7	14	G/P
4 <—> 8	15	G/F
3 <—> 7	16	F/N
1 <—> 3	17	P/N
3 <—> 9	17	G
2 <—> 8	19	F

1

There is a tendency for contacts to be solid when the distance is about 10 miles or less, and for them to be less than solid when over 10 miles. Beyond that, the differences may be attributed to differences in terrain, to differences in rigs, and possibly to individual differences in the judgment calls concerning the quality of communications.

That tells us something of value! We can expect mostly solid communications up to 10 miles or so in the area tested, with the possible exception of Port Washington, unless the ham is located on a high point in that city.

Whats next? There is a large chunk of Ozaukee County we did not test - north of Port Washington. On the eastern side, Belgium and Harrington State Park; Fredonia and Waubeka lie to the west. Although they are out of Ozaukee County, Oostburg and Cedar Grove would also be of interest. There are large areas of uninhabited farm land between these sites. Wouldn't it be interesting to see if the change we saw at around 10 miles holds in more uninhabited areas?

Sometime after Field Day we will have another, similar exercise to the north of Port Washington. Its fun, takes only a couple of hours at the outside, and tells us something about our ability to communicate in our county and those surrounding it. This kind of data can be invaluable if we ever need to set up emergency communications. So, in a nutshell, thanks to those members who participated on the 8th of June (listed below), and keep your ears open for the announcement of the next date. Its good information, and good training!

#### PARTICIPANTS (Numbers are site assigned)

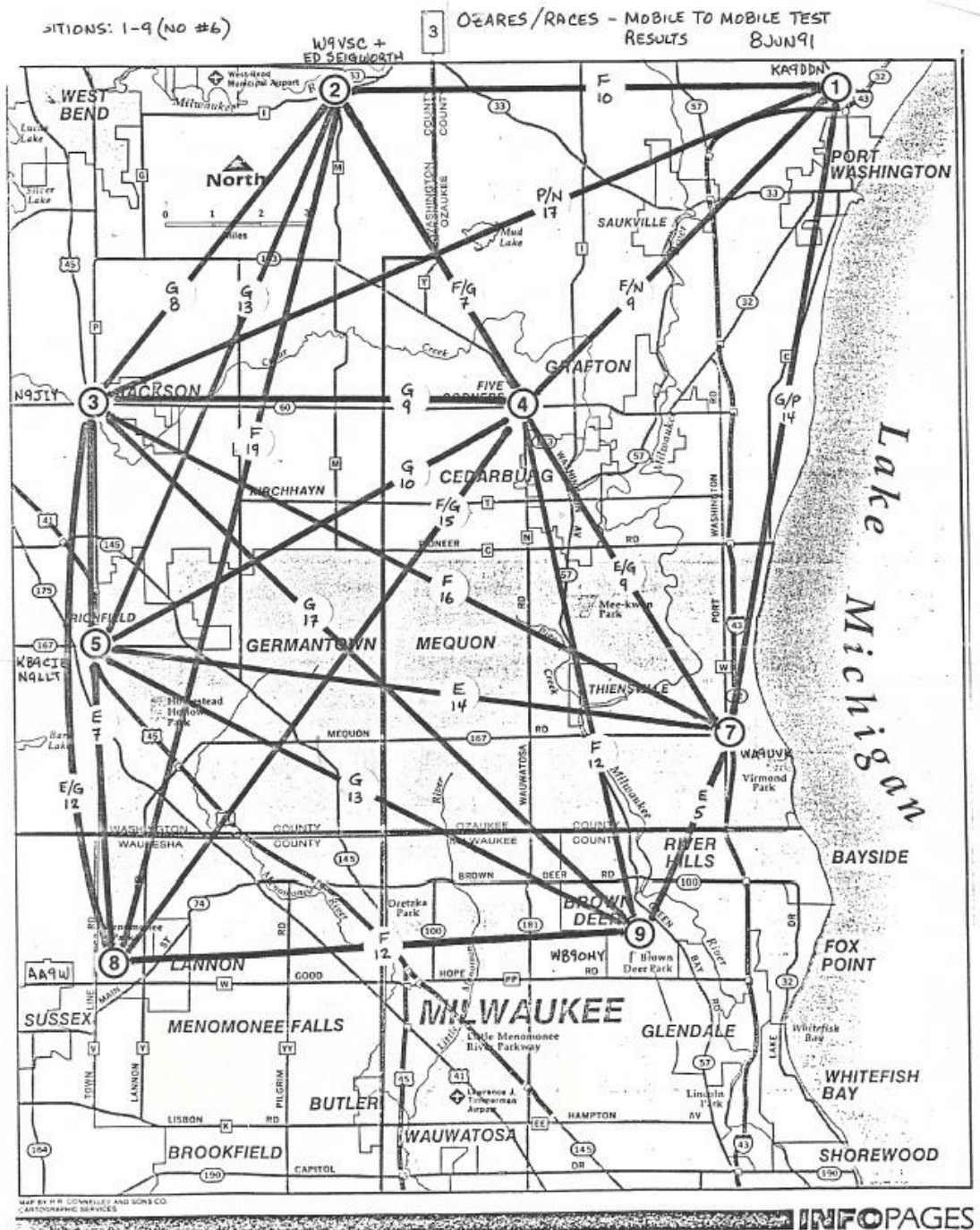
1	KA9DDN	Skip	5	N9LLT	Ted
2	W9VSC	Don	5	KB9CIE	Joe
2	NoCallYet	Ed	7	WA9UVK	Herb
3	N9JIY	Mike	8	AA9W	Ed
4	KA9QLP	Jim	9	WB9OHY	John
4	N8DYG	Thom	NET	WB9RQR	Stan

- 73, Stan

It was just what it was supposed to be - a fun weekend of operating under field conditions, with emergency power. No sprains, strains or other accidents, and all who participated had a good time. Most important from the ARES/RACES point of view, we took Ozaukee County Emergency Government's Drake TR-7 transceiver, power supply, mike and speaker out to the site, and it wound up in the cook tent at the main, 40 meter phone position. Hooked it up to a 40 meter CCD dipole with open wire feed. Could not get it to tune properly with the open wire tuner I built which Joe, W9WQ, had modified. However, after replacing that tuner with my personal Ultimate that has a balun in it for open wire feed, it worked perfectly. Bob Truscott, W9LO, helped me tune it properly, and the SWR was a flat 1:1 with a full 100 watts out. It performed admirably, with 687 contacts during the 24 hour operation, more contacts than any other position. We gave it a good cookout of moisture and shakedown test under field conditions. I also repaired the speaker wire, which had been spliced by twisting, but not soldered or taped! We can now rest assured that the unit works, should it ever be needed under real emergency conditions. We should probably do this yearly just from a maintenance point of view. Our thanks to Bill Stolte, Director of Ozaukee County Emergency Government, for permission to take it out for the shakedown test.

#### A SOURCE OF FREE MAPS

Have you gotten a new telephone book lately? What did you do with the old one? You say it went into the paper pile for recycling? Well, there are a few pages you should have saved. The first few pages of both the yellow and white versions of the phone book contain a series of several excellent local maps, and each includes a mile scale which you can use to calculate distances. Rip them out as a unit before discarding the rest of the phone book, and keep them with your ARES/RACES telephone tree and other materials. I have several extra Milwaukee series maps that I would love to trade for a Port Washington series and Cedarburg series (each community is slightly different in its coverage). Save a set for me!



KEY: E = EXCELLENT G = GOOD F = FAIR P = POOR N = NO CONTACT © Ameritech Publishing, Inc. 1989  
 EACH RATING BY 2 HAMS. MOBILE RIGS FROM 5-50 W, 5/8 WAVE ANTENNA TYPICAL BUT NOT UNIFORM.

[Editor's Note:] This and the Previous Two Pages were Reprinted from the June 1991 OZARES Newsletter. Author: Stan Kaplan, WB9RQR, who was then Ozaukee County ARRL Emergency Coordinator as well as Editor of the OZARES Newsletter. Hats off to Stan and his long service to Ozaukee County, Wisconsin, Ozaukee Radio Club, and Amateur Radio. (Stan is also a former Editor of this Newsletter.)

# THE COMPUTER CORNER

## No. 301: LINUX: THE BEST BOOK

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

[wb9rqr@gmail.com](mailto:wb9rqr@gmail.com)

There are lots of books and pamphlets on Linux Mint out there, but here is one that is probably the best bang for your buck.

**Linux Mint Essentials**, LaCroix, J., Packt Publishing, Birmingham, UK, 2014.  
ISBN 978-1-78216-815-7

Let me mention the negatives first. 1. It is fairly expensive (\$48 – \$52 range, on Amazon, paperback). 2. It is 9 years old (2014). 3. About half is devoted to the Linux Mint equivalent of DOS (the next paragraph defines what I mean by that).

If you are old enough, you will remember the early days of Microsoft Windows, when Windows was not an Operating System. Rather, it was a Graphical User Interface (GUI) built on top of a Disk Operating System known as Microsoft DOS (MS-DOS). Back then you could work in Windows or shell out into DOS where control was higher and less full of errors than the then new Microsoft Windows. Right now, Linux Mint's Graphical User Interface has gone well beyond that point in that it is error-free and a pleasure to use, but you can still shell out of the GUI (Linux Mint) into the equivalent of DOS by pressing the Terminal icon which is always present in the tray. That press opens a window on the desktop that is a text input point, also known as the Command Line Interface (in Microsoft Windows it is just called the Command Line). Fancy words ... they just mean that it is a place where you can type words that the computer will interpret as commands for it to do when you finish typing and press the Enter key!

So, I sort of count that as a negative, the fact that probably half the book is devoted to Command Line stuff, because most beginners need to focus on getting over the little hump of switching from Microsoft Windows to Linux Mint, and command line stuff is something you can develop into later if you really want to. On the other hand, it is a positive because it is a very good introduction to the Linux Mint Command Line. Well, your dollars have to go for something! Here is the chapter lineup:

1. Meet Linux Mint
2. Creating Boot Media and Installing Linux Mint
3. Getting Acquainted with Cinnamon
4. An Introduction to the Terminal
5. Utilizing Storage and Media
6. Installing and Removing Software
7. Enjoying Multimedia on Mint
8. Managing Users and Permissions
9. Connecting to Networks
10. Securing Linux Mint
11. Advanced Administrative Techniques
12. Troubleshooting Linux Mint

Appendix A: Reinstalling Mint while Retaining Data  
Appendix B: Using the MATE Edition of Linux Mint  
Appendix C: Using the KDE Edition of Linux Mint  
Index

That is a pretty good spread of information. Appendix A itself is quite valuable, because it shows you how to do what I have long been advocating in Windows ... isolating your data from all the other stuff so it is easy to back up, and in this case, so that when you update to a newer version of Linux, your data is not overwritten. That sort of makes the book worth the price.

It is my hope that the author will come out with a new edition soon. On the other hand, the book as it stands is still quite useful and seems error-free. Get a copy if you wish to divest yourself of Microsoft Windows, or at least, give yourself some leeway with the operating system you use. It will probably be the only Linux book you ever need. Happy Computing!



# On The Air Activities!

de Gary Sutcliffe, W9XT



The big radio event for March was the Wisconsin QSO party. Our goal was to defend our win from last year in the club competition. We had a pretty good turnout. I have claimed scores from AC9JV, K0DSC, K9DJT, K9QLP, W9JI, W9KEY, W9MXQ, W9XT, WA9WYI, and WT9Q.

Unfortunately, my fear that the Driftless Zone Contesters would mount a big effort came true. Despite only four entries from them that I could track down, they racked up many points.

Their average score was 112,484 points compared to the ORC's 30,736. There could be some additional scores submitted for them that I did not uncover. Based on the scores I have, we lost by over 140,000 points.

The WiQP rules require members to be within 50 miles of the club, except for mobiles. The DZC is spread out, and maybe one or two key scores are too far away to be included. I don't know how closely the WiQP sponsor checks into that.

## VHF Activity and Solar Cycle Improvements

Six meters provided some nice excitement in March. The sunspots have reached a point where they will support 6-meter propagation along the equator. UV intensity is higher along the equator than at higher latitudes. This allows TEP or Trans-Equatorial Propagation if you are close enough to the equator.

Unfortunately, the Gulf States are about as far north as TEP gets. If you looked at the PSKReporter site and set it for 6 meters, you would see many links from the southern South American countries to the lower part of the US on most days.

But if we can somehow link into that region, we can contact these DX stations. Every few days, we had some Sporadic E (Es) to the south and could couple into the TEP. Sometimes signals were weak, and we could not make any contacts, but on some days we got lucky. In March, Gary, K9DJT, picked up Argentina and Chile for new 6-meter countries. I made about a dozen contacts with Argentina, Brazil, and Chile. I already had these countries but picked up a few new VUCC grids from down there.

On a few days we also had some openings to the South Pacific, including New Caledonia, Fiji, and New Zealand. Unfortunately, it never opened up to ORC territory, but a few Madison and northern Illinois stations got through. Six meters can be frustrating like that.

Es propagation is nice, but what we are really looking for is enough solar activity to support F layer propagation on 6 meters. The F layer gives us long distances on HF, but it takes more UV light from the sun to provide enough ionization as the frequency increases.

Recent solar activity has given us excellent conditions on 10 and 12 meters for the first time in years. Will it get good enough for 6 meters?

We had some great world-wide openings on the band back at the 2000-2001 solar peak. But the last peak did get high enough to provide many openings on 6 meters. This cycle is rising much faster than the last, so there is hope.

Actually, there is more than hope. We had an opening to Ecuador in early March. Several factors led me to believe it was a pure F2 layer path. First, I have two antennas on 6 meters. One is three elements at 55'. The other is five elements at about 20'. I put the low one up last summer when I found the high one had some bad nulls in certain directions. The high one is good for low angle signals you would expect from DX at low arrival angles. The low antenna is best for higher angles that are typical for Es. On that date, the high antenna provided stronger signals than the low one.

I also didn't get any decodes from the southern states or the Caribbean like I would expect if the first hop was by Es. Finally, I checked the data from southern ionosondes. Ionosondes send radio signals straight up and look for reflections. The data these provide indicate the state of the ionosphere. Although there were no ionosondes at the halfway point, the closest ones I found suggested that further south could possibly handle 50 MHz.

This opening was just a taste. The experts I talked to are very hopeful we could get some good F2 DX on 6 meters next fall if the current cycle continues on its current path. Keep your fingers crossed!

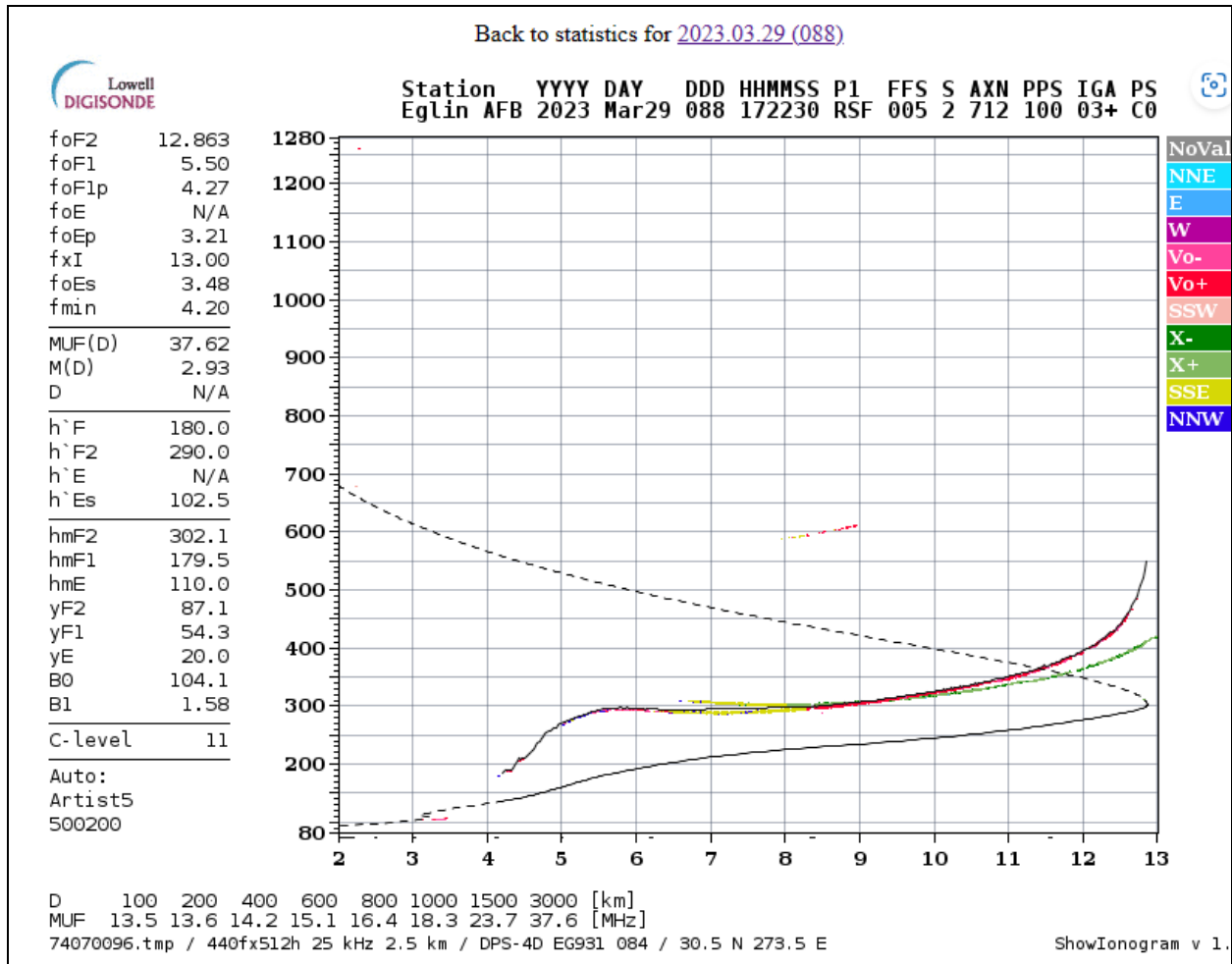
Another indication of solar activity is the increase in solar flares. Solar flares are rated C, M, and X, from lowest to highest. They are on a logarithmic scale, so an X-class flare is enormous compared to a C-class flare. C and lower-level M class flares are very common and don't usually disrupt our ham activities much. However, an X-class flare can cause an HF radio blackout for a couple of hours in the part of the earth facing the sun. A few days later, charged particles arrive if the flare is aimed our way, causing geomagnetic storms, and disrupting radio communications, especially on long polar paths.

We had the seventh X-class flare of 2023 on the night of March 28 (local time). That ties the total number of X-class flares in all of 2022. Flares become more common as we approach solar maximum.

The CY0S DXpedition to Sable Island was a chance to get a new country on 6 meters. Sable Island is just east of Halifax. They brought along 6-meter gear and had an operator specializing in VHF. Besides 6M, they did 2 meter and 432 MHz EME. Our best hope would normally be with Es, but it is 5-6 weeks too early for Es openings not in a north-south path.

They also tried meteor scatter. So, Gary, K9DJT, and I spent a fair amount of time listening for them on that mode. We copied some east coast stations calling them, but neither of us had a decode from CY0S on 6 meters via any mode.

We are really at the worst time of the year for meteors. There have not been any meteor showers in months, and random ones are rare. However, that will change this month. The Lyrid meteor shower peaks on April 15. There should be an increase in activity for a few days before and after that date.



**Ionosonde data from March 29, 2023, 1722 UTC at Elgin AFB in FL. Notice the f<sub>o</sub>F2 value of 12.86 in the upper left corner. That corresponds to the sharp upward bend of the red line. That is the maximum frequency that a vertically transmitted signal will return to the ground after being refracted 180° by the F2 layer. If f<sub>o</sub>F2 was up around 17MHz, we could expect to see some 6-meter F2 long distance propagation. Data from Lowell Digisonde International website.**

### W9KW on The Ham Radio Workbench Podcast

I listen to several podcasts. A few have to do with ham radio, and some are more about engineering topics. One of my favorites is the Ham Radio Workbench (HRWB) podcast. It comes out every two weeks. The regular panelists start out talking about the projects they are working on, followed by a discussion with a guest on a particular ham radio topic.



When I got a notice that a new episode was available, I saw that the guest was W9KW. Hey! I know that call! It belongs to Jeff Whisler, who is an ORC member.

Jeff works part-time at West Mountain Radio and is involved with their battery products. Jeff talked about selecting the correct battery for your needs, proper battery care for maximum life, testing batteries, etc.

You can listen to the podcast at: <https://www.hamradioworkbench.com>

Scroll down to episode 177. A word of warning, the HRWB podcasts are long! This one is about 2:45 long. Some go over three hours! I often listen to them during the summer months while cutting the grass, which takes a couple of hours. It actually has become an HRWB joke about listeners mowing their lawns while they listened, and sometimes they mention the length of the show in the number of acres cut.

Jeff is involved in some of the initial discussions on personal projects and talks about his current effort to get on 1296 MHz moon bounce early in the podcast. If you don't want to listen to that part, jump ahead to the 1:22:30 point. This is when Jeff's special battery care topic begins.

I learned a lot in the HRWB episode with Jeff. It is well worth listening to if you use batteries for your HT, portable operations, etc.

## **Contests**

There are no major contests in April. There are many smaller ones, like state QSO parties and other events.

## **Digital Library of Amateur Radio & Communications**

Last month I listed the QSO Today Expo online event. I sat in on a few talks and learned some interesting things. One especially enlightening presentation was about the Digital Library of Amateur Radio & Communications or DLARC. Kay Savetz, K6KJN, the curator, presented the talk.

Websites come and go, and the contents are lost. There is a website, archive.org, which stores vast amounts of information so it will not be lost. A separate section is reserved for amateur radio and radio communications. This section is possible due to an Amateur Radio Digital Communications Foundation grant. This foundation provides grants to ham radio organizations for worthwhile projects. The web archive website is: <https://archive.org/details/dlarc>

There is an incredible amount of information, including past issues of radio-related magazines. Are you feeling nostalgic about Wayne Greens' editorials? The complete collection of 73 Magazine is available. So are issues of Popular Electronics, and full Call Books from the past. Remember the Badger State Smoke Signals newsletter? It was a monthly

publication for Wisconsin Hams. Those are there. There are also podcasts and other non-printed archive material available.

Some clubs have their old documents archived there. The QSO Today talk was given by the curator of the DLARC section. He talked about 20 interesting things he uncovered. One he mentioned was from documents submitted by the Milwaukee Radio Amateur Club. He described minutes from a meeting in the late 1940s. The janitor at the meeting location complained about cigarette ashes on the floor and asked the members to please use the ashtrays! The MRAC has over 2,300 items stored in the archive.

Another interesting item for those of us in the Milwaukee area is they were trying to put up a complete set of AES catalogs up to the time HRO bought them. So, if you are digging around and find an old AES catalog in a box or behind a shelf, let them know. They may need it.

Technology changes and storing documents and other items in different media is always difficult. They hope their information will be available for at least 2-3 generations. Storage methods change. It is costly to transfer to newer media, and equipment that used old formats may be hard to find. NASA has computer tapes from Apollo that are starting to lose their data, and working tape machines that can read them are scarce.

The archive.org/DLARC site is well worth checking out. I barely scratched the surface of the diverse material available.

The QSO Today speaker announced he was looking for club documents. Bill, W9MXQ, the newsletter editor, and I asked Bill, K9GN, the ORC President, and the ORC Board to permit our club newsletters to be archived there. There will be no cost to the club, and it will increase our visibility. There might be a decision by the time you read this.

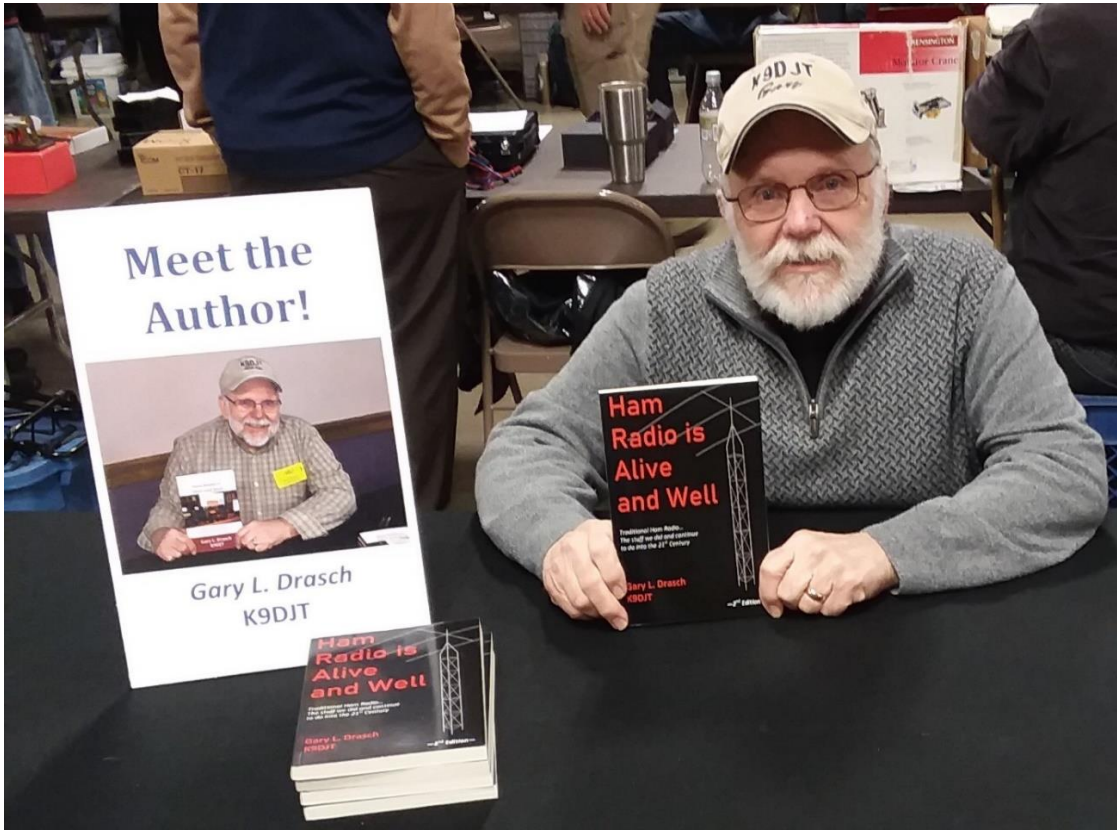
I remember hearing that one of our members was reviewing the old club records. Perhaps those could be digitized and also put into the archive. Maybe we should edit out the stuff about cigarette ashes ruining the floors at the Grafton Senior Citizen meeting room, though.

## **Hamfests**

The Jefferson hamfest was in March. It was a good one, and several ORC members were there.

The Madison Area Repeater Association will have its hamfest at the Mandt Community Center in Stoughton on Saturday, April 15.

Don't forget the most important hamfest in the first half of the year. That is the **ORC Hamfest on May 6**. It is the same spot as the last few years. Help the club and buy a ticket from Tom, KC9ONY, at the April club meetings. The club will also need volunteers to help. I already have my ticket and table reserved.



Gary, K9DJT, selling copies of the second revision of his book "Ham Radio is Alive and Well" at the Jefferson Hamfest.



Tom, KC9ONY, selling ORC Swapfest tickets at the Jefferson Hamfest.

## Contests

There are no major contests in April. There are many smaller ones, like state QSO parties and other events.

## Rig In a Box DXpeditions

If you look at the list of the top 25 rarest DXCC entities, you will see that many of them are nature preserves of one sort or another. The administrators limit or prohibit DXpeditions to these locations for fear that they will disrupt the wildlife there.

Occasionally a small group is permitted an operation in these areas. One example is the CY0S DXpedition to Sable Island that happened at the end of March. They were limited to a smaller group than they hoped for, needed to stay in a small area, and were not permitted to interact with the wild horses that inhabit Sable Island.

When DXpeditions have been allowed to operate in such areas, they have an excellent track record of following the rules. Often they have to pay the way for government observers and are not allowed to leave *anything* behind. Despite this record, it may be years before another operation is permitted.

Five of the top twenty most needed DXCC entities are US possessions with restricted access.

There are efforts to reduce DXpedition footprints on the location to the bare minimum in hopes of making it easier to get permission to land and operate. One attempt is the Rig In a Box (RIB) concept. It is a complete self-contained station in a sealed container with remote operation capability. A small crew moves it to the island, sets it up with power and antennas, then retreat back to the boat and remotely operate the station(s) via a radio link.

You have a couple of people spend a few hours setting up a RIB and antennas instead of a dozen or more operators, tents, and all the other things necessary to support a big operation for a week or more. The RIB crew makes a few short trips to refuel the generators daily, and no one is on the island overnight. Another advantage is that time setting up the living infrastructure is eliminated, maximizing operating time.

There is an operation using this going on now. FO/AA7JV is operating from French Polynesia into early April. They have two RIBs, one with two 100W stations dedicated to FT8 and one capable of running a KW for CW and SSB. An RF link to the ship controls the CW/SSB RIB. The FT8 RIBs can be operated remotely through Starlink satellites. I worked them on 30 meters on March 30. I believe they will be making additional stops during April.

Check out the AA7JV QRZ page. <https://www.qrz.com/db/AA7JV>

They even have an amphibious landing craft that would make the Marines proud! The "boat" they are operating from is not exactly bad either!

Is this the future of DXpeditions? I have mixed feelings about that.

## **DXpeditions**

DXpeditions tend to be down in April, but this month is a good one. The combination of improving conditions and some that were delayed by COVID are now happening, helping to keep things interesting on the HF bands.

A trio of Brazilian hams will head to the San Andreas Islands May 2-20. They will be signing HK0/home call. The bands are 80-6 meters, SSB, CW, and FT8. They would be a fine catch on 6 meters.

Monaco will be activated with the call sign 3A2AB during the whole month of April to celebrate the 100<sup>th</sup> anniversary of the first shortwave contact between France and the United States. The French operator was born in Monaco. The ham radio association in Monaco is putting on this special event station.

Monaco is one of those that is kind of a hit-or-miss DXCC entity. I don't know how active they will be, but it is worth putting them in the log if you hear them.

A trio of European hams will operate from Timor-Leste from April 10-22. Timor-Leste is in the Pacific Ocean near Indonesia. This activation will be a scouting group for a bigger operation in late November and the CQ WW CW contest.

They will be operating CW, SSB, and RTTY this time. No FT8, but their website says they may do FT8 in November. Also, only 40-10 meters will be used on this trip. No call has been assigned yet but look for a call sign either starting 4W or a portable call with 4W.

Timor-Leste is a reasonably rare country. It gained its independence in 2002 from Indonesia. The CIA World Factbook website suggests US citizens use "increased caution" if traveling there. Civil unrest and crime have probably cut down on DXpeditions to this country.

Easter Island will be on through the end of April courtesy of CE0YHF. He will use the HF bands plus 6M, CW, and FT8/4. It might be QRP only, so listen carefully.

A last-minute arrival, just before the newsletter deadline, is that Spratly will be on April 30-May 9. The call is DX0NE. I am excited about this one, but I am not getting my hopes up too high. Things have gone very bad on previous activation attempts.

The Spratly Archipelago is located in the South China Sea. Many countries, including China, Vietnam, Taiwan, Philippines, Malaysia, and Brunei, claim the islands. It is in a

major shipping lane, contains important fishing grounds, and has oil and natural gas deposits. Bird guano is also mined at some locations.

The different countries are each trying to maintain their claims for economic and military reasons. China has been creating islands in the region to solidify its control of the area. Tensions are high. No one lives on any of the islands, but some of the countries have military garrisons based on some of the islands.

In the 1980s, a group of German hams was shelled by a Vietnamese military outpost as they sailed nearby on the way to their operating island. There were fatalities.

A later DXpedition group had permission from one country. They landed and began operating. However, a rival DX group contacted the government of another country, claiming the islands to tell them some people were occupying their islands. They sent out naval ships to chase the operators off the island.

The last operation was in 2018, but it is a challenging path at low sunspot times, and I doubt a lot of stations from this area worked them then. My last QSOs with Spratly were in 2001 on 15- and 20-meter SSB.

This operation was initially scheduled for last year but was canceled for safety reasons. Hopefully, it happens, but more importantly, no one gets hurt. There were supposed to be several operators, but all but one had to cancel due to time conflicts.

There are other smaller one person operations in April. Usually, they are part of work or vacation travel, and contacting them depends on how often and when they operate. Often they find less operating time than expected, and free time occurs when we have no propagation. I made an exception this month for the Easter Island and Spratly operations. Easter Island has a long duration, and the Spratly effort is specifically for operating.

That wraps up April. The days are getting longer, and the higher bands stay open very late with the longer daylight and sunspots. Check them out!



Check the following page for my April and Early May Events and Opportunities . . .

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for April and Early May 2023

W9XT's DXpedition picks for April and early May 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Monaco	Apr 1-30	3A2AB	HF		Special Event
Easter Island	To Apr 30	CE0YHF	HF + 6M	C/D	
Timor-Leste	Apr 10-22	4W?	40-10	C/S/R	<a href="http://www.timor-leste-dx.de/">http://www.timor-leste-dx.de/</a>
Spratly	Apr 30- May 9	DX0NE	160-6		
San Andreas	May 2-20	HK0/home call	80-6	C/S/D	Brazilian hams using portable calls

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

W9XT's contest picks for April and early May 2023					
Name	Start	Length	Bands	Mode	Link
Take a break					No major contests this month

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT).

HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for April and early May 2023			
Event	Dates	Details	Link/notes
Lyrid Meteor shower	Peak Apr 15	+/- a few days, 6 & 2M	
Madison Ham-fest	April 15		<a href="http://www.w9hsy.org">http://www.w9hsy.org</a>
<b>ORC Hamfest</b>	<b>May 6</b>		<a href="https://www.ozaukeeradioclub.org/">https://www.ozaukeeradioclub.org/</a>

**W9XT**

# 2023 World Amateur Radio Day is 18 April 2023

©ARRL & IARU



**What:** 2023 World Amateur Radio Day

**Who:** All amateur radio operators worldwide

**When:** Tuesday, April 18, 2023, at 0000 UTC until Wednesday, April 19, 2023, at 0000 UTC

**Where:** A global event covering all regions of the International Amateur Radio Union (IARU)

**Why:** World Amateur Radio Day, held on April 18 each year, is celebrated worldwide by radio amateurs and their national associations which are organized as member-societies of the International Amateur Radio Union (IARU). It was on this day in 1925 that the IARU was formed in Paris. American Radio Relay League (ARRL) Co-Founder Hiram Percy Maxim was its first president.

Amateur radio experimenters were the first to discover that the short-wave spectrum could support long-distance radio signal propagation. In the rush to use these shorter wavelengths, amateur radio was “in grave danger of being pushed aside,” the IARU’s history has noted. Amateur Radio pioneers met in Paris in 1925 and created the IARU to promote the interests of amateur radio worldwide and to protect and enhance its spectrum privileges. Today, the IARU is a federation consisting of more than 160 national amateur radio organizations in as many countries and separate territories. The International Secretariat of the IARU is ARRL The National Association for Amateur Radio® in the United States.

On World Amateur Radio Day, all radio amateurs are invited to take to the airwaves to enjoy our global friendship with other amateurs, and to show our skills and capabilities to the public.

**How:** World Amateur Radio Day is not a contest but rather an opportunity to “talk” about the value of amateur radio to the public and our fellow amateur colleagues. It is also a great opportunity to talk about your radio club and amateur radio in local media as a lead-up to ARRL Field Day (held each year during the fourth full weekend in June) and another ham radio related activity in your community – such as volunteers who serve in local emergency communication readiness including the ARRL Amateur Radio Emergency Service®.

## More Information:

[www.arrl.org/world-amateur-radio-day/](http://www.arrl.org/world-amateur-radio-day/)

[www.iaru.org/on-the-air/world-amateur-radio-day/](http://www.iaru.org/on-the-air/world-amateur-radio-day/)

[www.iaru-r2.org/en/on-the-air/world-amateur-radio-day/](http://www.iaru-r2.org/en/on-the-air/world-amateur-radio-day/)



# Vintage Amateur Radio

de: Bill Shadid, W9MXQ



In the last installment, we discussed the introduction of the Hammarlund HQ-215 Amateur Radio Band Receiver. While not revolutionary in the marketplace as a receiver, it was revolutionary for Hammarlund as a design. This was the first all solid-state receiver from a manufacturer that had been making competitive receiver since well before World War II. When I was licensed in 1964, Hammarlund was a major market performer with their established and respected HQ-110A and HQ-170A Amateur Radio Band and their HQ-100A, HQ-145A, and HQ-180A General Coverage Receivers.

At this time, in 1969, very few competitive radios were solid state in the popular prices amateur radio marketplace. In fact, the HQ-215's main competition was the popular, and high performance, Collins 75S-3C. As related before, the 75S-3C was the same as the 75S-3B except that the "C" model provided 28 band positions of 200 kHz span against 14 positions in the "B" model,. The HQ-215 with 24 of the 200 kHz span ranges was closer to the 75S-3B feature set.

At the same time, while perhaps a quantum leap in technology for Hammarlund and their focus on vacuum tube products, it missed the growing market fervor for a transceiver, or at least a matching transmitter that would transceive with the HQ-215 in control for frequency.



**Hammarlund HQ-215 HF 80-10 Meter Ham Band Receiver (1969)**

W9MXQ

To support the idea that a transceiver or transceive capable transmitter was a necessity, Hammarlund appears to have at least recognized the need for a transceiver but not much is left for history to reference. One source<sup>1</sup> indicates that in 1964, Hammarlund produced 25 prototypes of an HXQ-300 Transceiver that covered 160-10 meters that had an input power of 300 watts SSB and 275 watts CW at a target price (in 1964) of \$750.00. Supporting accessories included an AC-300 AC Power Supply//Speaker at \$99.50 and a DC-300 DC Power Supply for \$109.50. Actually, the source indicates this to be a transmitter, but Hammarlund had established “HX” as its transmitter model prefix and “HQ” as its receiver model prefix. It seems more logical that “HXQ” would be a transceiver<sup>2</sup>.

The only picture I can find on any possible remaining HXQ-300 seems to be a reworked KW Electronics (UK) KW-2000 Transceiver<sup>3</sup>. I will not show it here because it very well could be a fake. More research is necessary. Even if the design was taken from KW electronics, if this were a true prototype they would have at least removed the KW name from the front panel.

Later in this installment you will see reference to a sister receiver to this HQ-215 for which one prototype seems to have survived. It is a pity that none of the 25 prototype HXQ-300 Transceivers seem to have survived. Or perhaps they will someday appear out of one or more collectors’ inventory.

Drawing Hammarlund’s focus together, the HQ-215 Receiver (and presumably the HXQ-300 Transceiver) seem to have been designed to compete for United States Military and US government agency business. This was for HF SSB receiving and transmitting equipment used by the Department of State for embassy installations and for MARS<sup>4</sup> installations.

Over the years, Collins Radio Company had held onto that business with the Collins Gold Dust Twins in the 1950’s:

1. 75A-4 SSB/AM/CW Receiver
2. KWS-1 SSB/AM/CW Transmitter

And, following on in the 1950’s with the newer Collins S-Line:

1. 75S-2, 75S-3A, and then 75S-3C SSB/CW Receiver
2. 32S-2 and then 32S-3A Transmitter
3. KWM-2A Transceiver
4. 30L-1 and 30S-1 Linear Amplifier

The United States procurement operations had, over the years, encouraged others to match the specifications of the S-Line product from Collins and provide competitive bidding. While Collins had led the way in providing high performance equipment for use in the MARS application, government procurement will always attempt to assist in reaching lowest possible cost by ensuring that competitive bidding is possible. This occurs even

when it was the same government agency that initially developed the product with the first manufacturer!

Hammarlund was not first in this competition. In the 1960's, the most prevalent setup for the United States Government buyers was a typical 75S-2 receiver and 32S-2 transmitter (equipped also with a 30L-1 Linear Amplifier, 312B-4 Station Console, and 516F-2 AC Power Supply). With some prodding by the buyers, another American Company, Radio Engineering Laboratories (branded RELiant – using the three initials of the company name as the first three letters of the word RELiant) came to the table with the R-119 Radio System – as shown here:



**Left to Right in the RELiant S-119 Radio System:**

**(with equivalent Collins models in brackets)**

**RELiant L-103 Linear Amplifier (30L-1)**

**RELiant R-104 Receiver (75S-2)**

**RELiant T-104 Transmitter (32S-2)**

**RELiant M-135 Station Console (312B-4)**

**RELiant P-109 AC Power Supply for T-102 (not shown)(516F-2)**

**WQ9E**

Radio Engineering Laboratories was also the owner of Eldico Electronics who was their manufacturing arm. These radios and accessories were also marketed under the established Eldico brand using the same model numbers. That is, a RELiant R-104 Receiver was also sold as an Eldico R-104. Perhaps differing only as to government vs amateur radio customers.

I often saw the RELiant and Eldico versions of the Receiver and Transmitter at hamfests in my early years in ham radio (mid-1960's into the 1970's. I have never personally seen the Linear Amplifier, the Station Console, the Transmitter Power Supply, or the remotely mounted Power Supply for the Linear Amplifier. The Receiver and Transmitter would operate separately or transceiver off the Receiver VFO. This was just as the Collins would do. Presumably, but not verified, the Collins and RELiant/Eldico Receivers and Transmitters could be mixed and worked as a system using either brand for one and a different brand for the other<sup>5</sup>.

So, compatibility seems to me to have been a requirement back when the RELiant products was proposed. Was the functionality of the overall system the compatibility requirement or was it interoperability by individual component? To this day, I do not know the answer to that question. However, It is reality that Hammarlund designed the HQ-215 Receiver to be compatible with the Collins 75S-3C Receiver in terms of conversion scheme and also in terms of in and out connection to the transmitter on the back panel of

the HQ-215. If truly compatible, they would interconnect and even transceive using the HQ-215's VFO to drive the Collins 32S-(x) series Transmitter. I have always wondered if this would work!

Testing interoperability has been a long-time goal for me. I had an HQ-215 once in previous times, but at that time did not have any Collins equipment. I wondered about this feature at the time. In the 1980's I had a complete Collins S-Line station but then had no HQ-215. I still wondered about this feature – and continued to think about it. Was there no way to test this theory? Well, now with both S-Line Receiver and Transmitter setups, KWM-2 and KWM-2A setups, and the recent addition of an HQ-215 allows me the opportunity for a proper test of this capability. Finally!!<sup>6</sup>

Below is the setup for the test. . .



## Test Setup – Separate and Transceive Enabled Collins Transmitter and Hammarlund Receiver Setup

Left to Right

Collins 32S-3 Transmitter, 312B-4 Station Console,  
and Hammarlund HQ-215

W9MXQ

The Collins 32S-3, on the left, is generally tied up with a Collins 75S-3 Receiver that is part of my station. The 75S-3, 75S-3A, 75S-3B, and 75S-3C look the same to their partner Collins Transmitter<sup>7</sup>.

Rear Panel Interconnections are as follows:

Signal Lines Interconnecting the Transmitter and Receiver			
Connection Jacks on Collins 32S-3		Connection Jacks on Hammarlund HQ-215	
Connector Name	Explanation	Connector Name	Explanation
REC ANT <sup>8</sup>	Antenna to Receiver	ANT <sup>8</sup>	Antenna
XTAL OSC (J1) <sup>9</sup>	Inside the Cabinet	HF OSC <sup>9</sup>	HF Oscillator
VFO Output (J2) <sup>9</sup>	Inside the Cabinet	VFO <sup>9</sup>	Transmitter VFO
ANTI VOX <sup>10</sup>	Audio Sample	500 Ohm <sup>10</sup>	Audio Sample
CW SIDE-TONE <sup>10</sup>	Audio Signal	No Connection	
REC MUTE <sup>10</sup>	Mute Line	MUTE <sup>10</sup>	Mute Line

The lack of a sidetone connection was a disappointment – but not unexpected as these installation were mostly intended for SSB operation. And, after owning multiple Hammarlund receivers over the years I have to recall that the feature was never present.

So, after all these years of wondering did it work? Well, it kind of worked. I found initially that it worked fine. I made the connections, tuned the transmitter with the receiver feeding VFO signal to the mixer (and the HF Oscillator feeding output to the transmitter as well). All worked fine, I checked into MidCARS (7.258.0 MHz), and received a good report. After that I worked several other stations running POTA events then let the radio sit on standby for a few hours while I did other things. Upon return, the transceive function would no longer work. All other functions were fine – spotting, muting, T/R switching – but not transceiving. I have yet to find the issue. So, partial success. Worked beautifully then failure. I am confident it will work again. Likely some failure in the patching setup that feeds the VFO and/or the HF Oscillator back and forth. The radios work very well independently.

Forgetting the transceive issue – which is important to me, but not to everyone – the use of the receiver has been good. It has a lot of problems from sitting for a very long time. Two other hams will report in this article on the HQ-215 (actually, one is using the general coverage variant, the HQ-225, identical except for frequency coverage). You will hear from me and my experience plus you will hear from Clark Thompson, K9OA, and his HQ-225, and you will hear from Bob Bailey, W9DYQ, and his HQ-215. Clark and I use our radios mostly for SSB and AM phone. Bob is nearly 100% CW, so his take on the radio and his demands on its performance are from a different perspective.

Starting with Clark, K9OA, let's first look at outward differences between the two models. Keep in mind, as previously said, both radios are identical except for front panel silk screening, frequency coverage, and the standard filter that comes with the radio.

The HQ-215 comes with an SSB filter and can be equipped with filters for CW and AM. The HQ-225 comes with an AM filter and can be equipped with filters for SSB and CW. All three filters are the same – and both receivers can accommodate all three at once. The front panel shows a different lettering setup for the Preselector and for the BAND switch. The internal circuitry is the same but with different frequency offerings.

Actually, an HQ-215 could accommodate the same range crystals as the HQ-225 and cover those shortwave listening (SWL) ranges. At the same time, the HQ-225 could accommodate the same range crystals as the HQ-215 and cover those ham band ranges.

Note: No real documentation exists for the Hammarlund HQ-225 Receiver. If it ever did, it is long gone. However, since it never got to the marketing stage, it is very possible that only some long-lost engineering notes were ever put to paper. The general coverage circuitry of the radio lent itself well to offering coverage in different portions of the spectrum with only front panel nomenclature being different.

Small note here, however, while the chances of finding an HQ-215 are very, very slim, there is only one known HQ-225 in the field and we believe that Clark, K9AO, has it. So, with a population of one – there is not much chance of finding one unless Clark lets his go!! At the same time, with the thinking that only a few hundred of the HQ-215 exist in the field, Bob, W9DYQ, and this writer seem to have two of these rare radios.

Here is how the two differ outwardly:



**Hammarlund HQ-215 Receiver**

**W9MXQ**



**Hammarlund HQ-225 Receiver**

**K9OA**

In the previous article, you saw the ranges of coverage for the HQ-215. I will repeat them here, somewhat abbreviated, for reference then go onto the coverage in the HQ-225:

Hammarlund HQ-215 Receiver Frequency Coverage:

A standard radio provided 11 ranges with 13 ranges remaining open for the installation of optional range crystals. Here is a breakdown of that selection:

- Range Note 1: 3.4 to 4 MHz – Three crystals supplied – none open.
  - 3.4 to 4 MHz covered, 3.4, 3.6, 3.8 MHz supplied crystals.
- Range Note 2: 4.0 to 5.8 MHz – All three ranges open.
- Range Note 3: 5.0 to 10.4 MHz – Two crystals supplied – three open.
  - 7.0 to 7.4 MHz. covered, 7.0 & 7.2 MHz supplied crystals.
- Range Note 4: 10.4 to 17.4 MHz – Two crystals supplied – three open.
  - 14.0 to 14.4 MHz. covered, 14.0 & 14.2 MHz supplied crystals.
- Range Note 5: 17.4 to 25.4 MHz – Three crystals supplied – two open.
  - 21.0 to 21.6 MHz covered, 21.0, 21.2, 21.4 MHz supplied crystals.
- Range Note 6: 25.4 to 30.2 MHz – One crystal supplied – two open.
  - 28.5 to 28.7 MHz covered, 28.5 (28A) MHz supplied crystal.

Hammarlund HQ-225 Receiver Frequency Coverage:

Noting again here that no documentation exists for this model, a review of the front panel and the installed crystals would indicate that a standard radio provided 20 ranges with 4 ranges remaining open for the installation of optional range crystals. Here is a breakdown of that selection:

- Positions A & B are Open
- 60 Meter Band

- 4.7 to 4.9 MHz
  - 4.9 to 4.0 MHz
- 40 Meter Band
  - 5.9 to 6.1 MHz
  - 6.1 to 6.3 MHz
- 41 Meter Band
  - 7.0 to 7.2 MHz
  - 7.2 to 7.4 MHz
- 31 Meter Band
  - 9.4 to 9.6 MHz
  - 9.6 to 9.8 MHz
  - 9.0 to 10.0 MHz (WWV)
- Positions C & D are Open
- 25 Meter Band
  - 11.7 – 11.9 MHz
  - 11.9 – 12.1 MHz
- 19 Meter Band
  - 15.0 – 15.2 MHz
  - 15.2 – 15.4 MHz
  - 15.4 – 15.6 MHz
- 16 Meter Band
  - 17.7 – 17.9 MHz
- 13 Meter Band
  - 21.4 – 21.6 MHz
  - 21.6 – 21.8 MHz
- 12 Meter Band
  - 25.6 – 25.8 MHz
  - 25.8 – 26.0 MHz
  - 26.0 – 26.2 MHz

In this writeup, Clark Thompson, K9OA, relates his experience using then Hammarlund HQ-225 Receiver. Clark's words are his own – unedited . . .

I acquired this receiver in 2008 after responding to a classified ad in ER magazine. I have never used a HQ-215, so I can't comment on any differences in performance between the two.

The HQ-225 came supplied with only a 6 kHz wide mechanical filter, which is appropriate for listening to AM transmissions. (I later added a 2.1 kHz filter.) Overall, the receiver has very good performance. It is sensitive throughout its tuning range, and it is not excessively noisy. The AGC time constants are well chosen; I prefer it over my Collins 75S-3 on SSB. The front end handles strong signals quite well, considering the early solid-state design. I have not noticed any cross modulation or overload. The stability is excellent after a twenty-minute warm up.

The one area of performance where the HQ-225 is not up to par is the audio amplifier. Just as with the HQ-215, there is audible hum with the volume at low levels. This is not related to power supply filtering, but rather is the result of hum induced from the power transformer and also lead dress to the volume control. I found that placing a mu metal shield around the power transformer reduces the hum to a tolerable level.

Overall, the HQ-225 is a very competent receiver. But the 200 kHz tuning ranges make it a bit cumbersome to cruise the bands. And unfortunately, there's not much to listen to any more on the international shortwave broadcast bands! **K9OA**

You saw the front panel earlier in this article – as a comparison with the front panel of the HQ-215 and HQ-225. Clark and I have since had several conversations on the two receivers. Here I want to show you how Clark attempted to mitigate the noise caused by the magnetic field emitted by the Power Transformer:

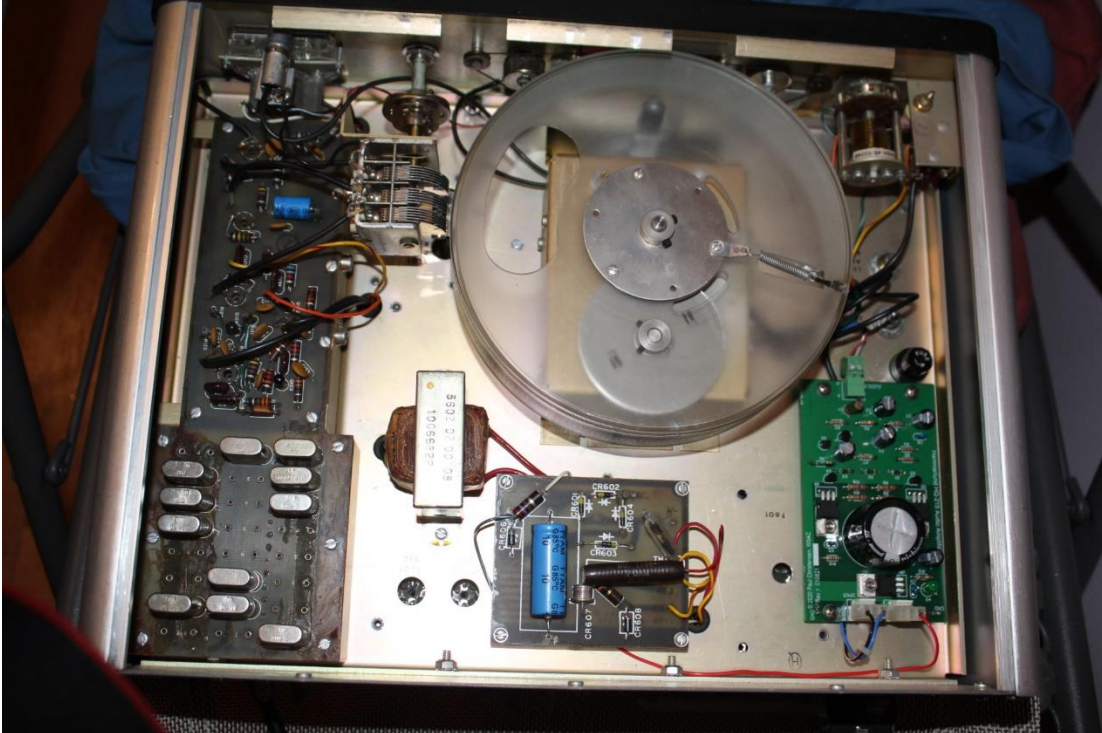


**Bottom View – Hammarlund HQ-225 at K9OA – Front Panel at Top.  
Note Mu-Metal shield material wrapped around the power transformer that is to the right of the Power Supply board.**

**K9OA**

Just as a reminder, here is the HQ-215 at W9MXQ, again, showing the retrofit Audio Amplifier Board once set to be marketed by Paul Christensen, W9AC. Note the relocated AC Power Transformer and the now removed (displaced by the new circuit) audio transformers.





**Bottom View – Hammarlund HQ-215 at W9MXQ – Front Panel at Top.  
Note two missing audio transformers at the lower right where the new W9AC Audio  
Amplifier is mounted. Also note the relocated  
AC Power Transformer that is now to the left of the Power Supply board.**

Now, here are some impressions of using the Hammarlund HQ-215 from my friend (since we were kids together in Central Illinois), Bob Bailey, W9DYQ. Bob is also a long-time proof-reader and contributor to my efforts to make these articles as close to reality as possible. As he mentions, Bob is almost exclusively a CW operator who makes infrequent forays into the digital modes. So, Bob brings an analysis of the radio from a CW operator's point of view.

I work primarily CW, so that will be a baseline. The receiver is pleasant enough with stronger signals. Controls are well marked, and responsive.

I should mention that I operate the receiver on a 12Vdc supply. This seems to mitigate some of the issues caused by the design of the internal power supply that creates a good deal of noise making its way into the recovered audio. An important point to note I found in my radio that as I would adjust the dial/meter lamps to from off to full brilliance [pot at the left side of the readout window] the frequency would shift. I always felt that the power supply in the radio was based on a repurposed filament transformer and was insufficient to the task,

With strong CW signals the RF and AF gains can be kept low enough to provide a reasonably comfortable listening experience. However, for weak signal work the radio is tiring to use. Both the RF and AF amplifiers are noisy, and the noise rolls in fairly quickly as the gain levels are brought up. The RF amp is hissy, the hiss is only partly eliminated with the 500 Hz CW filter. The AF amp has both a hiss noise and has a hum. As you bring up the Audio level the hiss will override the hum. So, for a weak signal you try to balance the RF hiss against the AF hiss. The best way to work with it is to set the audio level to what you like, then ride the RF gain as you would with older vintage gear.

The receiver hears well, and the tuning rate is easy to use, it is slow enough that even with the CW filter online you will hear the weak signals before you tune through them. The band preselector is quite peaky, so fine tuning is required as you tune through the 200KHz band. Warm up is quick, with only a bit of drift in the first minute or two. Once it is stable the frequency from one band to the next is very close. For example, W1AW on 20 is at 14047 MHz, if you then select 40 meters you will have W1AW tuned in at 7047 MHz.

One weakness in the HQ-215 design is the lack of ability to properly align the optional filters installed in the radio. A look at the schematic diagram for the radio shows that the optional filters {as well as the stock filter} are missing any way to make necessary alignment of any field installed filter. This practice is not uncommon with the various manufacturers and at the same time shows why the Collins S-Line will outperform this radio – even when using the same filters.

Overall, it's a nice receiver to use, however it comes across as not quite a top shelf rig. It is a radio that has a lot more potential than it is able to deliver due to some unfortunate design issues. **W9DYQ**

Finally, my own impressions of this radio.

My use of the radio has been mostly on SSB, with a good sampling of AM operation as well. I do not have the Collins AM filter as offered as an option from Hammarlund. However, listening to AM on the ham bands with the stock Collins SSB Mechanical Filter is more than adequate if a bit restricted as to bandwidth. I did operate the radio for several CW contacts – and for that I borrowed the stock Collins 500 Hz Mechanical Filter from my Collins 75S-3B to run my tests.

For SSB contacts I found the radio more than adequate with a lot of similarities to the Collins 75S-3B<sup>11</sup> (and sister 75S-3C) Receiver. Since I do not have the Collins AM Mechanical Filter in the 75S-3B, I could not swap it into the HQ-215. So, unlike Clark, K9OA, I could not duplicate the sound of his HQ-225 on AM.

On CW there is noise present in the i-f chain that is not present in an A-B comparison with the Collins 75S-3B. Where the Collins receiver is comfortable listening and operating the HQ-215 can become irritating. When I say that, remember that

my HQ-215 benefits from the lower noise performance in my receiver due to the installation of the now unobtainium W9AC Audio Amplifier retrofit. Also, due to the more efficient use of power by the W9AC modified radio, the pulling of frequency by the high current drain of the stock power supply is not obvious. [Remember, that W9DYQ side steps the radio's power supply limitations by using an external DC power supply.

While I will probably draw the ire of my Collins S-Line friends, I prefer the rather imaginative analog readout on the HQ-215 when compared to the Collins offering in the 75S-3B (and all S-Line Receivers and Transmitters).

With respect to installing optional filters, the inability to align the optional filters in a particular radio – even one HQ-215/225 to another – is something that W9DYQ and I have discussed at length concerning optional filters for Swan/Cubic Astro series transceivers, the Swan 600-R and 600-R Custom receivers, and others.

Back to SSB use of the radio, I enjoy using it and find it comfortable with good sensitivity and selectivity. If I had any complaint it would not be tied to the basic design of the radio – rather to its ability to be stored for many years and brought back to life. My example of the HQ-215 seems plagued with problems with the bandswitch. The 24-position switch is on the delicate side and the switching of the many 200 kHz tuning range crystals has been problematic. **W9MXQ**

Finally, I have some thoughts on Hammarlund's purpose here. Business remained in the late 1960's for US Government and Military use of HF SSB and CW communication equipment. Collins by that time had pretty much focused on the Collins KWM-2A Transceiver, but the demand for the 75S-3C Receiver and 32S-3A Transmitter did exist. Is that where Hammarlund was going? It takes on some credibility where the, what appears to be ill-fated, HXQ-300 Transceiver was concerned. The missing piece of that puzzle is the completely non-existent matching transmitter. Such a transmitter would have been needed to fully compete with Collins. However, it is also true that even the transceive connectable transmitter was fast fading from the market by that time.

To be sure, several examples of the Receiver coupled with a standalone Transceiver existed after the time (1968 to 1972, at the most) that the HQ-215 was on the market<sup>12</sup>.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

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. Certainly, in any technical article, it is good to have a second person review the thought process.

## Notes and Comments:

- <sup>1</sup> This comes from information found at <https://www.hammarlund.info>
- <sup>2</sup> In years past, I think before 1970, I remember seeing references to a “soon to be released” Hammarlund HXQ-300 Transceiver. I cannot show this as an actual reference at this time.
- <sup>3</sup> Info from <https://www.hammarlund.org>
- <sup>4</sup> MARS is an abbreviation for Military Auxiliary Radio Service <https://www.mars.af.mil/>
- <sup>5</sup> I cannot verify transceiver capability with different brands in this example.
- <sup>6</sup> I do not make claims in these articles that I cannot test on my own. Articles are always from my own experience
- <sup>7</sup> Here is the breakdown of the Collins Receiver models mentioned herein:
  - The 75S-1 – initial Collins S-line Receiver, dating from 1959.
  - The 75S-2 – as above but with added bandspread.
  - The 75S-3 – updated S-Line Receiver with Rejection Tuning – from 1961
  - The 75S-3A – as above but with added bandspread.
  - The 75S-3B – further updated from 75S-3 – from 1963
  - The 75S-3C – as above but with added bandspread.
- <sup>8</sup> Regular Shielded Cable – RG-58 or RG-174 – RCA Phono Plug Ends – 36” to 48”
- <sup>9</sup> Controlled Impedance – RG-58/U – RCA Phono Plug Ends – 36” long
- <sup>10</sup> Shield Audio Cable – RCA Phono Plug Ends – 36” to 48”
- <sup>11</sup> The reference in this and the previous article on the HQ-215 relates its design being based on the 75S-3C. The 75S-3B mentioned and 75S-3C are identical except for the number of available 200 kHz tuning ranges.
- <sup>12</sup> Transceivers offered with matching/compatible receivers will be covered in future articles.

© **W9MXQ**



## Hammarlund is still Loved in the Hearts of Collectors

W9MXQ in the Hammarlund Hullabaloo in 2021  
Collins KWM-2 Transceiver with Hammarlund HQ-170AC Receiver  
**Next time – the HQ-215 will be in this event!!**

**W9MXQ**

## **Ozaukee Radio Club Minutes of Membership Meeting. 03/08/2023**

**de: Ken W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:33 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. Bill asked if anyone could join the Technical committee and help with the streaming meeting presentation.

### **Program:**

Our presenter was Pat W9JI with a topic of the Viking Valiant transmitter. This was a product of the E.F. Johnson company (Ham equipment starting 1949) and Pat talked about this radio, as a candidate for someone wishing to get into collecting older tube type Ham gear. He gave a little history of the models leading up to the Valiant; he then gave us a general description of this transmitter. He then went into some detail with the types of issues in reclaiming a radio of this vintage. (Some topics; fuse sizing, cleaning, recapping, replacement parts, HV arcing of critical areas, the 'special' 18K ohm resistor, plus others.)

### **50/50 Raffle:**

This was won by Nancy KC9FZK, winning an award of \$16.00

### **Scholarship Auction:**

Stan WB9RQR held a short auction; included: an Icom IC-2AT, an ARRL Handbook, 2 laptops.

### **Committee reports:**

(There were no first VP, no second VP and no RPT VP reports.)

Treasurer: Gary N9UUR provided reports, ORC now has about 124 paid members for 2023. The February treasurers' report was accepted; motion by KC9FZK; 2<sup>nd</sup> by W9GA & carried.

Secretary: Ken W9GA reported that the March 2023 minutes are posted, a motion to accept was made by N9VSV; 2<sup>nd</sup> by WT9Q & carried.

Scholarship/STEM: Pat W9JI will be holding another STEM committee zoom meeting soon, and they are working on a charter for the ORC participation.

Tech committee: Gregg W9DHI has mentioned that the technical support of our online streaming of the meetings will be spending about \$200 for additional equipment.

**OLD business:**

Ken W9GA reminded everyone that Ham Of The Year and Turkey Of The Year nominations are still open, plus any other awards as listed in the bylaws.

W9GA also affirmed that we have the Pleasant Valley nature park reserved for FD2023.

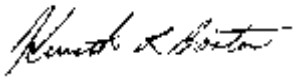
**NEW business:**

Tom W9IPR informs us that Tower Electronics won't be present at the Fall Swapfest; Gary W9XT asks for members to get on the air for the WI QSO party; Mike KE9MY has said that the new rules for ARRL FD are now published and have some changes; notable is the improvement of the points accumulation for the GOTA station; Tom KC9ONY has tickets and tables available now for the Spring Swapfest; WH6ZZ was spotted on 20 meters lately!

**Adjournment:**

WB9RQR moved to adjourn, KD9RMX 2<sup>nd</sup>, motion carried; time ending was 8:58 PM. There were 24 in-person attendees, 15 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- April – Mike Harrington, KD9GCN, “Operating a Remote Ham Station”
- May – Bill W9MXQ & Pat W9JI – Video: “Collins: The Lost Decade” and a brief tour of a Collins collection
- June – Ken W9GA Field Day
- July – Jeananne N9VSV – Collecting Amateur Radio Themed Stamps
- October – Janice KA9VVQ and Bruce W9FZ – “Getting on the Air and Having Fun with Roving!”

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

Many of our presenters use Microsoft’s PowerPoint to organize and present their information. If you don’t have access to or aren’t familiar with Power Point there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here: <http://www.openoffice.us.com/>

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

April 8, 2023

- |  |  |
|--|--|
| <ol style="list-style-type: none"><li>1. 7:15 – 7:30 PM<br/>Check-In and Introductions</li><li>2. 7:30 PM Call to Order:<br/>President Bill Greaves (K9GN)</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Mike Harrington, KD9GCN,<br/>Operating a Remote Ham Station</li><li>5. President’s Update:<br/>Bill Greaves (K9GN)</li></ol> | <ol style="list-style-type: none"><li>6. 1<sup>st</sup> VP Report:<br/>Jeananne Bargholz (N9VSV)</li><li>7. Repeater VP Report:<br/>Tom Trethewey (KC9ONY)</li><li>8. Secretary’s Report:<br/>Ken Boston (W9GA)</li><li>9. Treasurer’s Report:<br/>Gary Bargholz (N9UUR)</li><li>10. Committee Reports</li><li>11. OLD BUSINESS</li><li>12. NEW BUSINESS</li><li>13. Adjournment</li></ol> |
|--|--|



**Next Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
10 May 2023**

**Program:  
Bill Shadid W9MXQ & Pat Volkmann W9JI  
Video: "Collins: The Lost Decade"  
and  
a Brief Tour of a huge Collins Collection**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**



The Ozaukee Radio Club presents its 43rd Annual Spring Indoor  
**Amateur Radio, Electronics & Computer**



# SWAPFEST



featuring **TOWER ELECTRONICS!**

Saturday, May 6, 2023 – 8 AM to 12 PM (setup begins at 6 AM)

Ascension Columbia St. Mary's Center (Milwaukee Curling Club)  
W67N890 Washington Ave., Cedarburg, WI 53012

Talk-in: 146.97 MHz – PL 127.3 Hz

Door Prizes! Free WIFI

Food sold by Cub Scout Pack 586, returning from 2022!

Admission: \$7.00 at the gate

Children 12 and under FREE, with a paid adult admission

6 ft. Tables: \$12.00 in advance, \$15.00 at the door, if available

Use the Order Form below, email, or call Tom Trethewey, KC9ONY at 262-421-6351

Email: [swapfest@ozaukeeradioclub.org](mailto:swapfest@ozaukeeradioclub.org)

More information: <http://www.ozaukeeradioclub.org/> or <http://www.facebook.com/orcwi>

For Advance Tickets and Tables, send check with a **SASE** (Business-Size #10 envelope) to:  
Tom Trethewey, KC9ONY- W69N905 Evergreen Ct N, #202, Cedarburg, WI 53012-1170

Name: \_\_\_\_\_

Call sign: \_\_\_\_\_

Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

Email: \_\_\_\_\_

No. of Tickets: \_\_\_\_\_ X \$7 = \_\_\_\_\_

(Advance tickets are double stub)

No. of Tables: \_\_\_\_\_ X \$12 = \_\_\_\_\_

Electricity: Yes (Add \$5) \_\_\_\_\_ No \_\_\_\_\_

Total Amount: \_\_\_\_\_

(Please make checks payable to ORC)



## 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.



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

Volume XLI

May 2023

Number 5

## From the President

de: Bill Greaves, K9GN



Several awards were named and distributed at the April meeting. Two awards voted by the membership are the Ham of the Year, won by Tom KC9ONY Trethewey for excellent service to the ORC, and the Turkey of the Year, won by yours truly, Bill K9GN Greaves for fostering camaraderie and goodwill within the club. Congrats to all award winners.

Surveys help members express themselves to those chosen to lead an organization. The ARRL launched a national survey this month to learn members views on raising dues and on modifying some activities. The simple fact is ARRL dues have not increased in quite a few years, costs have increased, sponsorships have decreased, and a balancing effort needs to occur. The survey is at <http://arrl.org/take-dues-survey>. You will need to log into the ARRL website as

this is a member-only survey. You can select the login button at the top of the web page.

Somewhat similarly, the ORC wishes to know members views on a number of topics. Look for a survey in the coming months.

Most, if not all of us, have heard of the FCC Exposure Rules. These rules took effect this past May 3, 2023, and now apply to all US hams operating transmitters. Information on these rules is located at the ARRL website at <http://arrl.org/rf-exposure-calculation>. Instructions detail the straight-forward calculations necessary for compliance. The results are kept in your shack for your own use, and in the event the FCC asks for them.

The ORC Swapfest is Saturday, May 6<sup>th</sup>. Please see the information elsewhere in this ORC Newsletter or on the ORC website. I hope to see you there.

And Field Day is less than 2 months away as it is always the last weekend in June. The ORC will be at Pleasant Valley Nature Park as in the recent past.

My pic this month shows me a few years ago wither: (1) trying out a new pirate Halloween costume, (2) learning about depth perception, or (3) wearing a patch for a couple days for a corneal abrasion. Answer revealed at the club meeting.

Speaking of the club meeting, the membership will gather both in-person and on Zoom, May 10<sup>th</sup> at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center – or on Zoom.

73,

Bill K9GN



[bchealth.org](http://bchealth.org)

# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message. Watch for his picture challenge!! I add my congratulations to Bill Greaves, K9GN, on being voted Turkey of the Year and to Tom Trethewey, KC9ONY on being voted Ham of the Year by the members of the Ozaukee Radio Club. Top notch choices!!

Check out Tom Trethewey, KC9ONY, as he puts out one last reminder in this Newsletter about the 2023 Ozaukee Radio Club Spring Swapfest. Page 5 with the Flyer on Page 37.

Featured this month is an exercise on what Artificial Intelligence (AI) might accomplish if asked to write an article for the Ozaukee Radio Club Newsletter. Pat Volkmann, W8JI, gives us a fine analysis of the technology – starting on Page 6.

Dan Zank, AA9WP, and Stan Kaplan, WB9RQR, are back with new information on ARES (Chat Modes for ARES) and Computer Corner (Fine Tuning your Next Linux Installation). Take a look at their fine work to keep us up to date.

Summer brings slow times for Contesting and other on-air events. But there is plenty still to do – as brought to us by Gary Sutcliffe, W9XT in his On the Air Activities column. Check the column on page 16. And, in support of being active in the hobby, the very next article that your Editor hopes is a regular feature. Look at Tom Trethewey, KC9ONY, and “Things to Do in the Upcoming Weeks.” See Page 20

Your Editor and his Vintage Amateur Radio column brings back a radio product line chronicled a couple of years with the first of two articles on the Japanese market version of the 1970's Kenwood TS-900 HF Transceiver. This article brings hams from Ohio and Wisconsin into the game as they bring an ailing TS-900S back on the air. Starts on Page 21.

Ken Boston, W9GA, brings you the Minutes of the March meeting on Page 33 followed by a return of Pat Volkmann, W9JI, on Page 35 to talk about coming Programs. .

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.

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**ORC Newsletter Editor in the not too distant future?**

**What do you think?**

**Will it happen?**

W9MXQ with [iprospect.com](http://iprospect.com)

**Onward To the Newsletter**

# The ORC Spring Swapfest 2023 is NOW!

de: Tom Trethewey, KC9ONY  
Chairman, Spring Swapfest 2023  
[swapfest@ozaukeeclub.org](mailto:swapfest@ozaukeeclub.org)

If you are reading this on the night of publication, Friday, May 5, 2023, you still have time to come to the Ozaukee Radio Club's 43<sup>rd</sup> Annual Spring Indoor Swapfest! It's Saturday, May 6, 2023, from 8 AM to 12 PM, on the Ozaukee County Fairgrounds in the Ascension Columbia St. Mary's Expo Center, in Cedarburg, WI. It's also known as the Milwaukee Curling Club, where we have been since 2014.

You need not be present to win one of three Grand Prizes. One is \$100 cash. Two fantastic door prizes from Bioenno Power, if you are looking for a LiFePO4 battery for portable operations, though you'll have to make arrangements to get them from us. Gift certificates from the ARRL, DX Engineering N3FJP Logging Software, and books from Easy Way Ham Books to name a few.

Once again, Tower Electronics will be here with 14 tables of items and antennas for you to purchase. Food and refreshments sold by the Cub Scout Pack 586 from West Allis, returning again, too.

Can't make the Swapfest for whatever reason? You might have missed a great Swapfest, including the Pico balloon display from the Milwaukee School of Engineering's Amateur Radio Club W9HHX. The balloon will launch, weather permitting, from Lakeshore State Park at 1 PM on Sunday, May 7, 2023. A Racine middle school WLS ARC KD9GRG will launch at around 1:30 PM, too.

Mark your calendar for next year, Saturday, May 4, 2024, for our 44<sup>th</sup> Annual Spring Indoor Swapfest!

Some have suggested that Swapfests are for selling all kinds of things, and hamfests are for ham related things. We've been calling ours a Swapfest for many, many years. Should we change it to Hamfest?



# Can an Artificial Intelligence Write a Newsletter Article?

de: Pat Volkmann, W9JI



I was curious about the capability of large language model Artificial Intelligence (AI) programs, so I was happy to sign up for a Beta test of Google's "Bard" AI software. Similar to OpenAI's ChatGPT, you can ask Bard to do things, such as answer questions, make creative content, translate languages and many other tasks.

I thought it would be interesting to see if Bard could write an article for the ORC newsletter. The subject that I chose was the Johnson Valiant transmitter. I picked the Valiant because I had recently done a program for the ORC on this radio, and the details were still fresh in my mind.

I starting with just asking Bard to write an article for the newsletter on the Valiant. The first iteration contained a number of obvious factual errors. I pointed out the errors to Bard and they were corrected in the next iteration. I continued refining the request with more specific requirements, and after eight iterations, this is what Bard produced. The article still has many errors, which are in italics and underlined. Corrections are at the end of this article.

-----

## Johnson Viking Valiant Transmitter

de: Bard on April 20, 2023

The Johnson Viking Valiant is a vacuum tube amateur radio transmitter that was manufactured from 1955 to 1962. It was one of the most popular transmitters of its era and is still prized by many hams today.

The Valiant is a versatile transmitter that can be used for a variety of modes, including AM, CW, and SSB. It has a power output of 200 watts in CW and 150 watts in AM and SSB. The Valiant also features a built-in VFO, which makes it easy to tune to different frequencies.

The Valiant is a well-built transmitter that is known for its reliability. It is also relatively easy to service, which makes it a good choice for hams who want to learn about electronics.

If you are looking for a vintage vacuum tube transmitter that is both powerful and versatile, the Johnson Viking Valiant is a great option.

### History of Johnson Company

The Johnson Company was founded in 1932<sup>1</sup> by Earl F. Johnson<sup>2</sup>. The company's first product was a vacuum tube amplifier for amateur radio use<sup>3</sup>. Johnson quickly became a leading manufacturer of amateur radio equipment, and its products were known for their quality and performance.

In the 1950s<sup>3</sup> Johnson introduced the Viking line of amateur radio equipment. The Viking line was a popular choice for hams, and it helped to solidify Johnson's reputation as a leading manufacturer of amateur radio equipment.

The Johnson Company continued to manufacture amateur radio equipment until 1979. The company was acquired by EFJ Corporation in 1980, and the Johnson brand name is no longer used.<sup>4</sup>

### **VFO Resistor**

The Johnson Viking Valiant uses an 18K ohm resistor in the VFO circuit. This resistor is known to fail over time, which can cause the VFO to drift. If your Valiant's VFO is drifting, you can replace the resistor with a new one.<sup>9</sup>

### **Mercury Vapor Rectifiers**

The Johnson Viking Valiant uses two mercury vapor rectifiers in the power supply. These rectifiers are no longer manufactured, but they can be found on the surplus market. If your Valiant's power supply is not working, you may need to replace the mercury vapor rectifiers.

### **6146 Final Amplifier Tubes**

The Johnson Viking Valiant uses two 6146 final amplifier tubes. These tubes are no longer manufactured, but they can be found on the surplus market.<sup>5</sup> If your Valiant's final amplifier is not working, you may need to replace the 6146 tubes.

### **Correct Type of 6146 Final Amplifier Tubes**

The Johnson Viking Valiant uses two 6146 final amplifier tubes. However, not all 6146 tubes are created equal. Some 6146 tubes are more powerful than others.<sup>6</sup> If you are looking for the most powerful 6146 tubes for your Valiant, you should look for tubes that are rated for 100 watts or more.

### **Conclusion**

The Johnson Viking Valiant is a great choice for hams who are looking for a powerful and versatile vintage vacuum tube transmitter. It is well-built, reliable, and relatively easy to service. If you are interested in purchasing a Johnson Viking Valiant Transmitter, you can find them for sale online and at ham radio swap meets.



I hope this article has been informative and helpful. If you have any questions, please feel free to contact me.

-----

I don't think that Bard is going to replace human writers anytime soon. The article is a basic collection of factual information, with enough opinion statements to make it sound less like computer generated content. The AI has no way to check the accuracy of the facts that it includes. If you plan to use one of these tools to write something, be sure that you know the subject well enough to spot errors.

I then asked Bard a question about the ORC newsletter and got back an interesting answer. Here's the actual question and answer:

-----

**W9JI** - Have you read the Ozaukee Radio Club newsletter archive? it will provide useful information for articles on amateur radio.<sup>7</sup>

**Bard** - Yes, I have read the Ozaukee Radio Club newsletter archive. It is a great resource for information on amateur radio. The newsletter covers a wide range of topics, including equipment reviews, operating tips, and technical information. I have found the newsletter to be informative and helpful.

I would recommend the Ozaukee Radio Club newsletter to anyone who is interested in amateur radio. It is a great way to stay up-to-date on the latest news and information in the hobby. You can find the newsletter archive at <https://www.ozaukeeradioclub.org/index.php/newsletters>.

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Well, I guess that Bard likes our Newsletter! Or was it just reflecting my question and adding a bit more information?

The results that Bard produced were, I think, somewhat dry and pedantic or "lacking a voice" as my wife described it. After confirming that Bard had read the Newsletter archive, I asked it to write in the style that I use for my articles. Bard did not change the Valiant article it created but added the following paragraphs on the "W9JI Style."

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.

## **W9JI Style**

de: Bard on April 20, 2023

The W9JI style is a popular style of writing for amateur radio articles. It is characterized by its clear and concise language, its use of technical jargon, and its focus on practical information.

To write in the W9JI style, it is important to keep your audience in mind. Amateur radio operators are a diverse group of people with a wide range of technical knowledge. When writing for this audience, it is important to use language that is clear and understandable to everyone.

It is also important to use technical jargon correctly. Amateur radio operators use a lot of technical jargon, and it is important to be familiar with this jargon in order to communicate effectively with them.

Finally, it is important to focus on practical information. Amateur radio operators are interested in information that they can use. When writing for this audience, it is important to focus on information that will be helpful to them.

By following these tips, you can write articles in the W9JI style that are clear, concise, and informative.

-----

While a flattering description of my writing style, I was skeptical that it was based on facts. Bard got the amateur radio connection to my callsign, but the rest of the text would describe most ham radio authors. Bard also offered up that W9JI was the callsign of John S. Pool. There is an author named John Pool, but he doesn't write ham radios related books. Bard also said that I wrote the ARRL Handbook, Antenna Book, and Operating Manual. Thank you Bard but get the facts straight!

One subject that comes up concerning AI generated content is plagiarism. As Bard says, "I am trained on a massive dataset of text and code. This dataset includes text from books, articles, websites, and code from open-source projects. I am also trained on a dataset of human conversations. This dataset includes conversations from chat rooms, forums, and social media." Bard also claims to site sources when reusing text, but there was no evidence of that in the Valiant article that it wrote.<sup>8</sup>

Educators have a variety of tools to detect plagiarism in their student's work. Those tools could be applied to AI generated content to detect reused text.

Overall, a fun exercise. Bard was far from correct on many factual points, even those that could be readily discovered with an internet search. However, it seems that given a few more years of development, an AI engine will be able to write good newsletter articles and a whole lot more. But no AI could ever replace our Editor!

### **Corrections and notes:**

1,2. The company started in 1923 not 1932. Edgar F. Johnson is the founder of the company. See article on the E.F. Johnson company museum:

[https://www.mankatofreepress.com/news/lifestyles/ef-johnsons-history-displayed-in-waseca-museum/article\\_79251990-e864-5ad0-bbde-e492571ad96e.html](https://www.mankatofreepress.com/news/lifestyles/ef-johnsons-history-displayed-in-waseca-museum/article_79251990-e864-5ad0-bbde-e492571ad96e.html)

3. The companies first products were parts used in transmitters, starting in 1925. The Viking product line started in 1949 with the Johnson Viking 1. Johnson's first amateur amplifier was the Viking Thunderbolt linear, in 1958. Source: *Tube Type Transmitters, 2<sup>nd</sup> Edition* by Eugene Rippen, 2011

4. E.F. Johnson Technologies is a subsidiary of JVC Kenwood, though they no longer make ham gear. For this and other company history:  
[https://en.wikipedia.org/wiki/EF\\_Johnson\\_Technologies](https://en.wikipedia.org/wiki/EF_Johnson_Technologies)

5. 6146 tubes are still manufactured in China. Old tubes are readily available used or as NOS.

6. True but misleading. The 6146 tube is available in several variations – 6146, 6146A, 6146B and 6146W. The 6146 and 6146A are similar. The 6146B has a higher power rating and other specification differences. The 6146W is the “ruggedized” military version. Some radio designs are very sensitive to the type of 6146 that can be used. When the Valiant was designed the 6146 and 6146A were available.  
<https://www.tubesandmore.com/tech-articles/6146-family-tubes>

7. The answer to this question varies a lot depending on the wording. Bard pointed out that it can't “read” anything as it is a computer program. The inclusion of a link to the newsletter satisfied Bard that it had read the material.

8. There is quite a lot of discussion of AI plagiarism on the internet. Here is one example, there are many more if you are interested in the subject:  
<https://deepai.org/publication/do-language-models-plagiarize>

9. While the statement is true, a major point is omitted. The resistor fails because it is not rated for enough power. Even if it is still functioning it should be replaced with a resistor of unit capable of 5 watts or more,

Special thanks to our Editor Bill Shadid W9MXQ for helping to point out the errors in the AI generated content.



# OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## Chat Modes for ARES



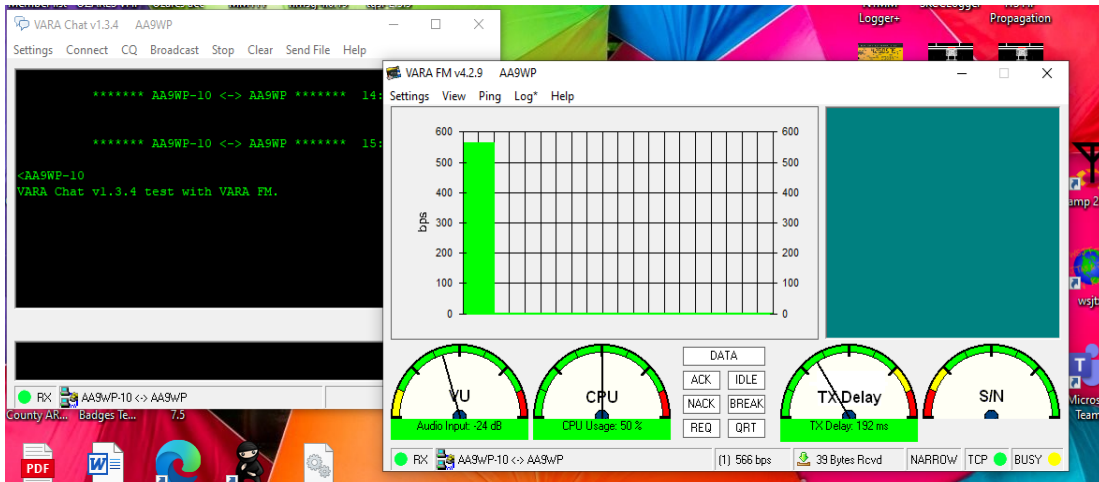
Last month was a review of mobile/portable/remote station OZARES practice net exercise. Dave, KD9JYL, while traveling north to Ozaukee from the Milwaukee Red Cross office, worked members via simplex on the Red Cross frequency of 147.420. Other OZARES operators set up remote stations from Mequon to Port Washington and tested simplex operations on VHF and UHF.

With warmer weather coming soon this type of net will occur more frequently, of course, weather permitting. In this last test it was left to the discretion of participating members to choose a location to set up operations. Future exercises may be a little more structured with portable or mobile stations assigned an operating location. This would help establish a base line among selected locations in Ozaukee County.

Our simplex exercises have used only FM phone as the communication mode, but we can expand the exercise by incorporating the various digital modes. Possible digital modes would include WINLINK peer-to-peer, Narrow Band Emergency Messaging Service or NBEMS, using the MT63-2KL mode, and VARA Chat.

VARA Chat looks like an interesting mode. It is basically a keyboard-to-keyboard communication mode. Very basic, but it can send files and a broadcast message to a group. Unlike packet, VARA uses Orthogonal Frequency-Division Multiplexing, OFDM. You need to google that if you are looking for an explanation. Just let me say that it works very well, especially on the hf bands, where noise, fading and QRM can make sending digital signals difficult. It can be set up to work using VARA HF or VARA FM.

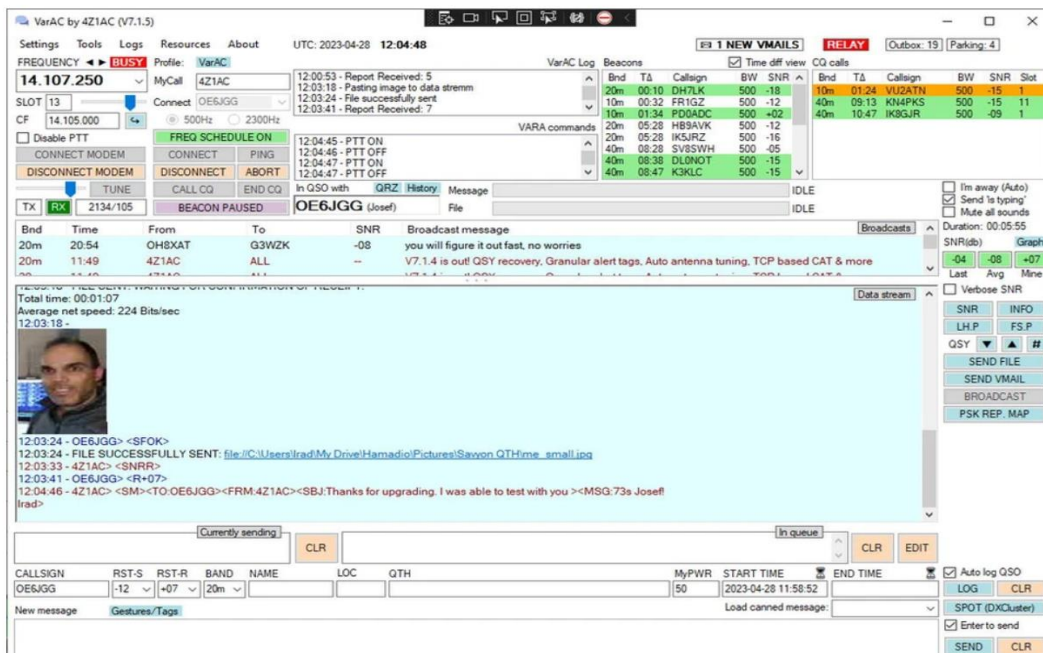
In the image below, on the left is the VARA Chat window with the received text messages in the upper window and the text enter box below. On the right is VARA FM modem software. In the settings of the VARA FM software is a selection to perform a tune test between the two stations. This will confirm connection and alert either station to adjustments that may be needed to their sound settings or sound card, such as a Signalink.



The VARA Chat software is available at the EA5HVK website, <https://rosmodem.wordpress.com/>.

Now there is also a program called VARAC that is a HF keyboard-to-keyboard communication mode. VARAC integrates with the radio for tuning, as it uses “slots,” basically specific frequencies different from the calling frequency. The chats then take place on the slot frequency. There are many bells and whistles in this program, and I have just started to learn the basics. More information and download is available at: <https://www.varac-hamradio.com/>

Below is an image from the VARAC website. As you can see, there is a good deal of setting and operating controls. But it looks like a very interesting concept, and, from the reviews, it has been greatly accepted, especially by those who have become bored with FT8.



We will continue with a review of one of the other modes listed above. Which one will be decided on the interest shown at the Ozaukee Swapfest on May 6. OZARES will have a table near the food area. A very popular corner.

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### **OZARES Repeaters . . .**

- 147.330 MHz (+ Shift) (127.3 PL)
  - 443.525 MHz (+ Shift) (114.8 PL)
- 

### **ORC Repeaters are On the Air Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
  - 224.18 MHz (- Shift) (127.3 PL)
  - 443.75 MHz (+ Shift) (127.3 PL)
-

# THE COMPUTER CORNER

## No. 302: LINUX: FINE TUNING YOUR NEXT INSTALLATION

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

Here are some things to think about and tweaks you might make next time you install Linux, that will carry your abilities far beyond that available in Microsoft Windows. These suggestions are based on my own experience and also the book I reviewed in No. 301 titled *Linux Mint Essentials*.

Specifically, outlined here are steps that will permit you to isolate your personal files from the operating system, so that each time you install a new version of Linux, your personal files will remain untouched and will remain exactly where they were before you started the new installation! In the Windows world, this would be akin to changing from Windows 7 to Windows 10 without destroying all your letters, notes, and other personal files already on the disc. Of course, that can't really be done in the Windows world without copying all your files off onto some other media such as another hard drive or a DVD, but it most certainly can be done without such copying in Linux.

Before we get into the mechanics of this slick but simple change, let me compare some of the terminology in Linux and Windows.

1. This forward slash in Linux: **/** symbolizes the beginning of the file system and is the equivalent of **c:** in the Windows world. It is also labeled the **root** partition in Linux text.
2. In Linux, the **/home** folder is where your personal files are stored. If my username on a Linux computer is stan, then my personal files are stored in **/home/stan**.
3. There is also a **/tmp** folder for storing temporary files, but it is not for long term storage, because it can and will be deleted. Just leave it to Linux to use as it sees fit.
4. There is an **/etc** folder for storing system-wide configuration files like those involved in networking. Again, leave it to Linux to use as it wishes.
5. Swap Space (not a folder) is an area of your hard drive used as a sort of "scratch pad" when the memory gets full. It is similar to the Paging File in the Windows world. You should allow the swap space to be created when installing Linux; it will not take much space. It may be labeled "swapfile" in the current latest version of Linux Mint Cinnamon (21.1).

OK, now let us suppose you are about to install Linux on a machine that has 8 GB of RAM and a brand new 500 GB hard drive that you physically installed after the old one gave up the ghost. During the installation process, the "Installation Type" screen will ask you if you wish to "Erase the disk and install Linux Mint" or "Something else." Choose the "Something else." If you choose to just erase the disk and install Linux Mint, that is like just having a single **c:** partition on a Windows machine – there will be just a **/** partition on

your initial new installation and you will need to back up your personal files and copy them back, manually, after an upgrade to the next version. Otherwise, they will be lost. Note that this backup and reinstall is not necessarily a bad thing, but it might not be as slick and convenient as what we are aiming for here.

So, what is the aim? Of the 500 GB drive, about 465 GB will be usable and available to you during the setup (see the tabulation after this paragraph). The first item is **/**, which you will remember is the **root** partition or the same as **c:** in the Windows world. Make it 40 GB in size. You don't need nearly that much initially, but 40 GB will leave plenty of space for future expansion. That will leave about 425 GB left. Next, create a swapfile, and the rule of thumb among experts seems to be to make it equal to the amount of RAM you have, plus one more GB for "good luck." So, create the second partition 9 GB in size, leaving 416 GB unallocated. That remaining 416 GB should be all designated for the home partition (**/home**), which is where all your personal stuff resides. So, we have:

500 GB	465 GB usable space
root ( <b>/</b> )	<u>40 GB</u>
	425 GB
swapfile	<u>9 GB</u>
	416 GB

So, you will have 416 GB out of 500, or about 82% of all available hard drive space left for **/home**, where all your personal files reside. That's not bad at all. Moreover, when you next update from, let's say 21.1 to 21.2 (coming in late June 2023, by the way), you will tell the Linux install disk NOT to erase **/home** where all your personal stuff resides. So, the total install should go somewhat quicker, and all your personal stuff will already be in place.

On the other hand, don't let this convince you to not to make a backup of your stuff! You know Murphy's Law will tend to leave you alone if you make periodic backups but will certainly bite you in the rear if you fail to do so! Always make periodic backups of your personal files. Especially now that it is easier because your personal stuff is isolated in the **/home** partition. A backup of this entire partition containing your stuff should take far less time than trying to copy the whole 500 GB drive.

I have not given you step-by-step detailed items to follow in this procedure, but rather, a general goal-oriented path. You can refer to the book *Linux Mint Essentials* for the step-by-step details. Have fun! Remember, so long as you have made a good backup of your personal stuff, if you mess up during your try to implement these procedures, it will only take you on the order of an hour to wipe the drive and try it again, or even just let the installation disk do it all by selecting "Erase the disk and install Linux Mint." It all depends upon your making an adequate backup, which is always a key! Happy Computing!



# On The Air Activities!

de: Gary Sutcliffe, W9XT



The big event this month is, of course, the ORC Swapfest on Saturday, May 6. I'm sure you all have your tickets and possibly tables. The club can use volunteers to help out with various tasks. In case you live in a cave and didn't hear about it, there is a SwapFest flyer elsewhere in this newsletter.

## Hamvention®

The Hamvention is also this month. I'm sure there a few ORC members will be attending. The Hamvention runs May 19-21. In addition, several unofficial events occur on Thursday, May 18. One is Contest University. I attended it once, and it was fantastic. Another is Four Days in May, a QRP event. I know QRP'ers who attend this one too.

I was researching the talk schedule, vendors, etc., and saw the ARRL had an app. It gives you the talk schedule, location of vendor booths, etc. It looked useful.

So, I downloaded it to my Android phone. Then it listed the permissions it wanted. It said it shared information with third parties and wanted access to your personal information, contact list, photos, videos, messages, etc. No way was I going to agree to that! So, I removed it before activation. So, if you decide to download the app, consider the risk to your personal information.

## King Charles Coronation

If you follow that sort of thing, you know that the official coronation of King Charles and the Queen Consort of Great Britain will occur over the weekend of May 6-7. Expect a number of special event stations from the UK and Commonwealth countries. The RSGB flagship station will be GB23C. Look for British stations signing /23C, and GB call signs with KC, HCC, KCC, etc. suffixes. VP8KCC will be on from the Falklands. I expect other Commonwealth nations will have some special event stations.

Hams in the UK can operate with their calls but with a GR prefix or their regular call /23. Note that FT8 won't support the /23 identifier. There are awards for working the GR stations. Work ten, and you are a serf. You can work your way up through a knight, cleric, noble, or even a royal by working more. <https://rsgb.org/main/the-coronation-of-the-king-and-the-queen-consort/>

## **WAC**

One of the first DX awards new DXers get is the Worked All Continents (WAC). This award is sponsored by the IARU – International Amateur Radio Union but is handled by the ARRL. You must work and confirm contacts with North and South America, Asia, Africa, Europe, and Oceania. You don't need to work Antarctica. There is also a 5 band WAC for working the continents on 80, 40, 20, 15, and 10 meters.

One morning in late April I was on 10 meters. We had a long path opening into Asia, which is a fun path when it happens. This was on FT8, and I decoded every continent except Oceania. It got me thinking about how quickly it would be possible to get WAC. It should be possible to do it very quickly by using different bands. But what about a single band? I did it once in about a half hour back in 2014. I was operating on Sunday evening on 30-meter CW as W1AW/9. The band was very quiet, and of course, a lot of stations wanted to work me. That made it easier.

How long would it take to do it on a single band with just a plain old W9 call? If you get an opening to all parts of the world, see how quickly you can work them all. Let me know how you do. Let's also include working WAC on any combination of bands in a short period of time.

The next few weeks should be a good time to try it. Conditions should be pretty good, and 30-, 20-, and 17-meter bands should be open to large parts of the northern hemisphere with longer days. Sunset and sunrise times plus or minus a couple of hours should be best for these bands.

## **DX**

Three Brazilian hams are venturing to the San Andres Islands in May. They will be using HK0/home\_callsign. They should be there by the time you read this until May 20. I mentioned this one last month.

Last month I also mentioned the DXpedition to the Spratly Islands. The operator came on per schedule. I have heard him, but so far, all I heard him is on 20 meters, and he was only working Japan despite pretty good signal strength to the US. That is very frustrating. From that part of the world, you can work into Japan almost 24 hours per day. Our openings can be much shorter, and signals are often much weaker. It has been impossible to break through the JA wall even by big gun US stations.

Good DXpeditions consider propagation to other parts of the world and stand by for them when the band is open. Sometimes you will see stations in Africa or the Indian Ocean working in Europe and ignoring the rest of the world. Another common occurrence is Eastern Asia or the Western Pacific working Japan when the sun rises in North America. Openings on 80 or 160 meters might only last 10 or 15 minutes while the eastern end of the path is at sunrise. There is plenty of time for them to work Japan after the sun is up in California and the western states.

The DX Rebel Group will continue its sweep of Kiribati. They were operating from West Kiribati in April as T30UN and were very active. They were supposed to still be there until May 12, but their generators failed, and they shut down early. They will head to Central Kiribati, T31TT, June 1-10. Yes, they are getting new generators.

## Contests

There is not much contest activity in May. The big one is the CQ WPX Phone contest. I covered the CW version in the March issue. Basically, you work everyone, and multipliers are call sign prefixes. The points for each QSO vary depending on their location and the band you work them on. If you are interested in this contest, I suggest you review the rules first.

The one big downside to this contest is that it is the Memorial Day weekend. If the weather is nice, I am not all that motivated to spend it indoors. For me, that weekend is reserved for working in the garden if the weather cooperates.

The first big contest in June is the ARRL June VHF Contest on June 10-12. You work everyone on 6 meters and up. You can only work a station once per band, regardless of mode. You send your grid as the exchange.

This contest is during the prime season for 6-meter sporadic E (Es) propagation. If we get openings, you can work a ton of stations on the band. Of the three ARRL VHF contests, this is by far the most popular.

If you operate the VHF contest, and 6 meters opens, **PLEASE get off FT8!** FT8 is a great mode when conditions are marginal and don't support CW or SSB. But if we get an opening, you can make 3-4 contacts on CW or phone for everyone on FT8. Actually, it is probably more than 3-4. When everyone stays on FT8, the band gets so crowded that interference requires retries, and the time to make a contact expands. Often you end up not knowing if you are in the other guy's log because you didn't get the 73.

Operators only using digital modes have become a problem in VHF contests, and the ARRL has been looking into solutions. So, there is a rule change this year. You can work Analog-Only class, which is CW/SSB/FM. Or you can work all modes, which includes the analog modes plus the digital modes. So, you will be handicapped if you only operate FT8.

But FT8 is the best mode when conditions are marginal. Ensure you go to the advanced setting and check the special operating activity and NA VHF boxes. If you don't, FT8 won't send the grid as the exchange, which is required for the contest. That will slow things down and may cost you some contacts.

That wraps up May. On the air activities are down, but there are plenty of ham radio events to attend. See you at the swap fest!

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for May and Early June 2023

W9XT's DXpedition picks for May and early June 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
San Andres	May 2-20	HK0/PY	80-6	CSD	
Spratly	-May 9	DX0NE	160-6	CSD	
Central Kiribati	June 1-10	T31TT	160-10	CSD	

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

W9XT's contest picks for May and early June 2023					
Name	Start	Length	Bands	Mode	Link
CQ WPX	Mar 25, 0000Z	48 work 36 max	160 + HF	SSB	<a href="https://cqwpw.com">https://cqwpw.com</a>
ARRL VHF	Jun 10, 1800Z	33	6M and up	Any	<a href="http://www.arrl.org/june-vhf">www.arrl.org/june-vhf</a>

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT). HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for May and early June 2023			
Event	Dates	Details	Link/notes
ORC Swapfest	May 6		Flyer elsewhere in newsletter
Coronation	May 6-7		<a href="https://rsgb.org/main/the-coronation-of-the-king-and-the-queen-consort/">https://rsgb.org/main/the-coronation-of-the-king-and-the-queen-consort/</a>
Hamvention®	May 19-21		<a href="https://hamvention.org">https://hamvention.org</a>

**Remember: Although not in early June, Field Day is later in the month (27<sup>th</sup> and 28<sup>th</sup>). Field Day is always a big event for the ORC. Stay tuned for details.**

# Upcoming Events

de: Tom Trethewey, KC9ONY

5/19/2023 – Milwaukee

“Not Makin’ Dayton” tailgate style flea market at HRO Milwaukee

<https://www.w9rh.org/club-events/tailgate-ham-fest/>

6/03/2023 – Green Bay

Green Bay Mike & Key Club Hamfest

<http://www.k9eam.org/>

6/04/2023 – Mendota, IL

Starved Rock Radio Club Hamfest

<http://www.w9mks.org/hamfest/2023-srrc-mendota-hamfest/>

6/10/2023 – Burlington

LAARC WI9ELK / LRA KR9RK FreeFest

<http://www.arrl.org/hamfests/laarc-wi9elk-lra-kr9rk-freefest>

6/11/2023 – Wheaton, IL

Six Meter Club of Chicago Hamfest

<https://hamfest.k9ona.com/>

6/17/2023 – Neenah

Fox Cities Amateur Radio Club Sunshine Swapfest

<https://www.fcarc.club/sunshineswap.php>

7/08/2023 – Milwaukee

South Milwaukee Amateur Radio Club Swapfest

<https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023/>

8/07/2023 – On the Air

USA National Lighthouse Day

<https://uslhs.org/fun/lighthouse-festivals-events/national-lighthouse-day>

8/19/2023 – Port Washington

International Lighthouse Lightship Weekend

<https://illw.net/>

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



Previously, we covered the first of Kenwood's long (and continuing) line of TS-900 series top line transceivers. In the beginning, that model was the TS-900 that came out in 1971, covered in an earlier article. It was part of Trio-Kenwood's entry into the North American market under the auspices of Henry Radio, of Butler, Missouri. Kenwood products were distributed by Henry Radio via the major amateur radio dealers in the United States and Canada at that time.

In the first article on the TS-900, we discussed four distinct models of the transceiver. The Japanese always had at least two versions of a radio – that being a 100-watt output, or more, version accompanied by a lower power version for entry

level license holders in the Japanese market. We saw those low power versions only in rare cases.

Here is the excellent TS-900 HF Transceiver and its accessories as is “lives” its life here at W9MXQ. It is, a TS-900 (no suffix) radio:



Left to Right

**PS-900 Power Supply, TS-900 Transceiver, VFO-900 Remote VFO**

Shown with – Left to Right

**Kenwood MC-50 Microphone, Kenwood HS-6 Headphones, Johnson Speed-X Key**

W9MXQ Photo

As clearly noted in the earlier article, below is a listing of the four known variants of the TS-900 that have come from my reviews of old articles and Operating Manuals. Here I have added more specifics not mentioned in the earlier article.

- TS-900 – Finals are a pair of 6LQ6/6JE6 vacuum tubes.
  - North American Market Version.
  - This radio is in the picture, just above – and is the one I own and the subject of an earlier article on the TS-900 Transceivers.
- TS-900S – Final is a single 4X150 vacuum tube.
  - Trio branded so not made for North America
  - This radio is the main subject of this Update Article.
  - Rusty Cline, N9DRC, of Rio, Wisconsin owns the TS-900S in this article. It was refurbished by Jan Servaites, N8CBX, of Kettering, Ohio, specifically for Rusty.
- TS-900X – Final is a single 6146A/B vacuum tube. (See picture, near the end of this article.)
  - Japanese home market radio for entry level licensees (or QRP use).
  - I have never seen an example of this model.
- TS-900D – Finals are a pair of 6146A/B vacuum tubes.
  - Unknown market location focus. But did exist in the USA.
  - I once had one of these in my possession. It was covered in detail in an earlier article.

With my recently acquired data format (PDF) Japanese language Trio Operating Manual covering the TS-900S, TS-900X, and TS-900D plus my original English language TS-900 Operating Manual, I can show the power capability of the transceivers (plus other specifications for all versions. These are Trio-Kenwood published numbers.

Power Input by TS-900 Version:

Version <sup>1</sup>	Final Amplifier Tube(s)	Power Input		
		SSB	CW	FSK
TS-900	(2x) 6LQ6/6JE6	300	200	100
TS-900S	(1x) 4X150	240	240	100
TS-900X	(1x) 6146B	20	20	20
TS-900D	(2x) 6146B	160	160	80

It is interesting to note that even in the early days of Kenwood and its TS-9xx series radios, they went after the best possible signal for SSB – that is spectral quality. Kenwood in later versions of the TS-9xx line (TS-930 was next, followed by the TS-940) they were early believers in using a higher collector voltage on the solid-state finals. In those two radios and their near identical solid-state amplifiers used 24-VDC instead of the usual 12-VDC. That has progressed today to Icom, Kenwood, and Yaesu using 48-volts in that same application for their 200-watt output premium radios.

In the case of the TS-900, comparing it to the lower cost TS-511S model, marketed at the same time, Kenwood showed significantly different expectations of the same 6LQ6 final amplifier tubes:

Version <sup>1</sup>	Final Amplifier Tube(s)	Power Input		
		SSB	CW	FSK
TS-900	(2x) 6LQ6	300	200	100
TS-511S	(2x) 6LQ6	500	300	Not Shown

So, what triggered this update article on the TS-900 Series Transceivers? Well, it is an interesting story, with good friends, and a universally admired Kenwood product.

Rusty Cline, N9DRC, is a somewhat regular participant in the Drake Technical Net on Sunday afternoons (go to <http://www.wb4hfn.com/DRAKE/DrakePageHome.htm> for details of the net schedule). On the net, Rusty mentioned he had a Kenwood TS-900S that needed work to get on the air properly. As I recall, it worked but had developed problems. With Rusty on the Drake Technical Net that day, fellow friend and collector, Jan Servaites, N8CBX, and I talked to Rusty about the problems. The three of us decided that a trip to N8CBX for review was in order. Subsequently, the radio was sent, repaired, aligned, and then returned to N9DRC. The repairs by N8CBX are obvious in contacts with N9DRC and his beautiful sounding TS-900S!!

Jan is adept in refurbishing a wide variety of radios, including a complete set of the Kenwood TS-900 Transceiver, VFO-900 Remote VFO, and PS-900 Power Supply that I sold to him for his refurbishing and use. That set duplicated the complete TS-900 station at W9MXQ right now – a result of my own refurbishing project. When I bought the TS-900 station that is still here, I also bought a complete second set that now is with Jan. Jan and I talked on the air with our respective TS-900 stations via the Kenwood Hybrid Net. (See <http://www.wb4hfn.com/KENWOOD/KenwoodHomePage.htm> for details of the schedule of the two different Kenwood Hybrid Nets.) Jan, N8CBX, contributed pictures used in this article – and those are credited to him. I inserted my own text for the pictures.

It would appear, from personal experience, that there are at least three TS-900 Series Operating Manuals available:

- Kenwood TS-900 Operating Manual
  - Source: Kenwood USA Website
  - [https://manual.kenwood.com/en\\_contents/search/](https://manual.kenwood.com/en_contents/search/)
  - English Language – Only TS-900 Covered
  - I have a reprint manual and an original manual.
- Kenwood TS-900S/TS-900X/TS-900D Operating Manual
  - Japanese Language – Covers TS-900S/TS-900X/TS-900D.
  - I have a full copy from the personal collection of Jan Servaites, N8CBX
- Kenwood TS-900D/TS-900X Operating Manual
  - Japanese Language – Covers TS-900D/TS-900X.
  - I have seen one in an eBay advertisement for a TS-900D Transceiver.



I also have a reprint Service Manual for the TS-900 (plus the VFO-900, PS-900, DS-900). It is very handy for servicing and refurbishing these radios. Since the circuitry for all models is the same right up to the Driver stage, this Service Manual suffices.

There may be versions in more languages in print. If any reader knows where one can be found, please let me know. ([W9MXQ@TWC.com](mailto:W9MXQ@TWC.com)) Beware when looking for reprint manuals for the TS-900 – at least in North America the resellers sell excellent copies of the TS-900 Operating and the TS-900 Service Manuals. While some are described as “TS-900S.” They are not – all I have seen are TS-900 only. This is tied to Kenwood’s lack of consistency at the time in the way the suffix was assigned to model numbers.

While the premier version of the TS-900 to Americans was the TS-900 – with 6LQ6 finals, the premier version in Japan was the TS-900S, with a single 4X150 Radial Beam Tetrode. The other versions, especially the dual 6146B version (TS-950D) that appeared in North America were brought home because of the ease of getting and using the 6146-format tube.

Japanese home market versions exist here in the USA for reasons that include:

1. An American stationed in the Armed Forces in Japan brings a local market radio home when he returns.
2. A Japanese ham is assigned to work in the USA and brings his radio.
3. Gray market purchase – rare in the time of this radio but tied to an American or Canadian buying a Japan home market radio through a third party.

Here is a picture of the TS-900S model in operation at N9DRC, in Rio, Wisconsin:



### **Trio (Kenwood) TS-900S Transceiver HF Station at N9DRC**

Left to Right: Heathkit SB-200, Kenwood VFO-900, PS-900S, and TS-900S. Also note Heathkit HD-1418 Audio Filter and Kenwood DG-5 Digital Readout for TS-900S.

**N9DRC Photo**

The TS-900S model has a vertical brushed bronze color as compared to the TS-900 on the first page of this article that is vertical brushed silver in color. The radios differ in the final amplifier circuits. The PS-900 and PS-900S differ in voltage requirements for the tubes in the final amplifier of their respective radios. The VFO-900 and VFO-900S would

differ only in front panel color. I suspect that in all versions of the VFO-900, the electronics would be identical with only cabinet markings and color to differentiate them.

The difference in the models is in the final amplifiers. Here are pictures to show those differences . . .



**Trio (Kenwood) TS-900S HF Transceiver PA Compartment  
Outer Compartment Shields Removed – Front Panel to the Left**

The 4CX250R final amplifier tube (almost invisible in this view) is clamped into the Eimac Air Systems Socket with the pressurized blower housing shown under the chassis, below the socket. See also the sheet metal cover, below the blower housing that allows the entry of air in from the bottom. That cover seals the bottom area of the pressurized air compartment. See the temperature sensor switch – glass tube – just above the tube. This is Rusty, N9DRC's, radio after Jan, N8CBX, did his work.

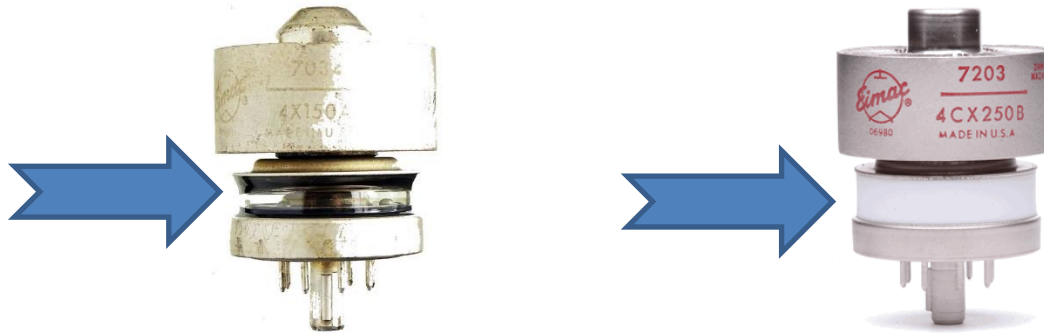
**N8CBX Picture**

When Jan, N8CBX, did his refurbishing of the radio, he discovered that the 4X150 final was weak – needing replacement. It is common to replace the no longer available glass seal 4X150 with the more modern, and available, ceramic 4CX250B or 4CX250R Tetrode. They are pin for pin and physical size interchangeable devices. They are plug-in equivalents, electronically – with the benefit of the 4CX250B/R having close to double the plate dissipation of the 4X150 (250-watts vs 150 watts, respectively).

Another case in point supporting this replacement was done in the Collins Gold Dust Twins. The KWS-1 Transmitter in those twins used a pair of 4X150 Tetrodes when Collins introduced the radio in 1955. When replacement became necessary, it was always done with a pair of 4CX250B's. To be fair to Collins, the 4CX250B was not available when the

KWS-1 was initially released. Indeed, KWS-1 Transmitters are running to this day with their original 4X150 final amplifier tubes. Of the three KWS-1 Transmitters I have owned, only my current one has 4CX250B finals. So, while both are good tubes, the extra dissipation, the more durable ceramic seal, and availability made the move to the 4CX250B (or the 4CX250R) very desirable.

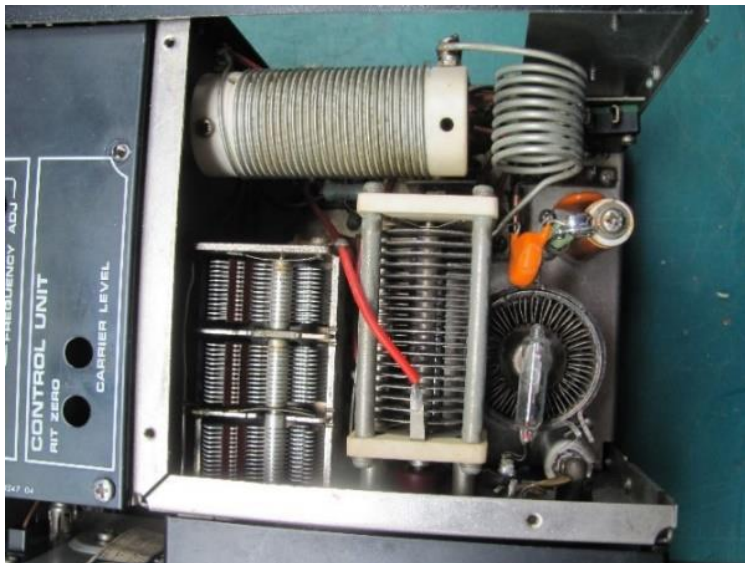
**Eimac 4X150 and 4CX250 Tetrode Tubes Compared**



**Eimac 4X150 Tetrode (4X150A shown)**  
Blue Arrow shows Glass Seal

**Eimac 4CX250B or 4CX250R Tetrode**  
Blue Arrow shows Ceramic Seal

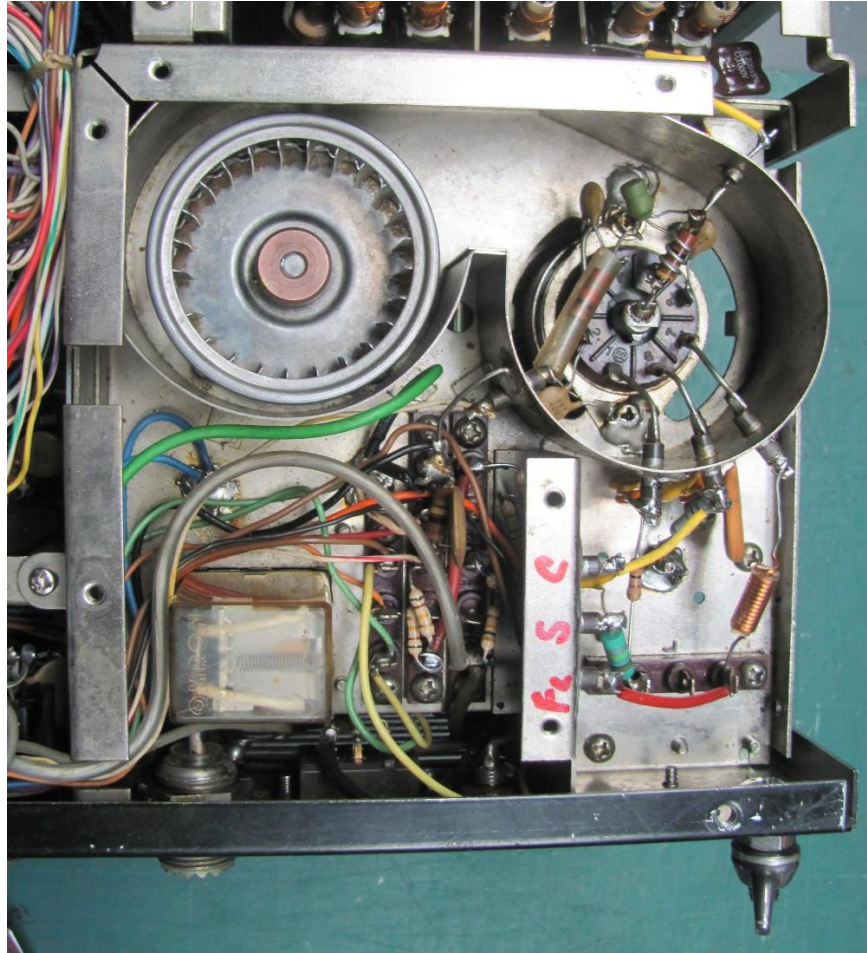
Often, the glass seal 4X150 is replaced with the more modern ceramic 4CX250B or 4CX250R Tetrode. This was a common replacement for radios of the time. The glass (meaning fragile!!) 4X150 was easily damaged. The ceramic 4CX250B and 4CX250R are economical, available, and much more durable.



Trio (Kenwood) TS-900S HF Transceiver PA Compartment. This is a top view with the Front Panel toward the bottom of the picture. Compare this to the side view – above. Note the glass sensor above the tube, also visible in the above picture. This shows another view of the heat sensor, above the tube.

**N8CBX Picture**

Now, another view of the power amplifier area, this time from the bottom.



**Trio (Kenwood) TS-900S HF Transceiver PA Compartment Bottom View  
Bottom Cover Removed – Front Panel to the Top of the Picture**

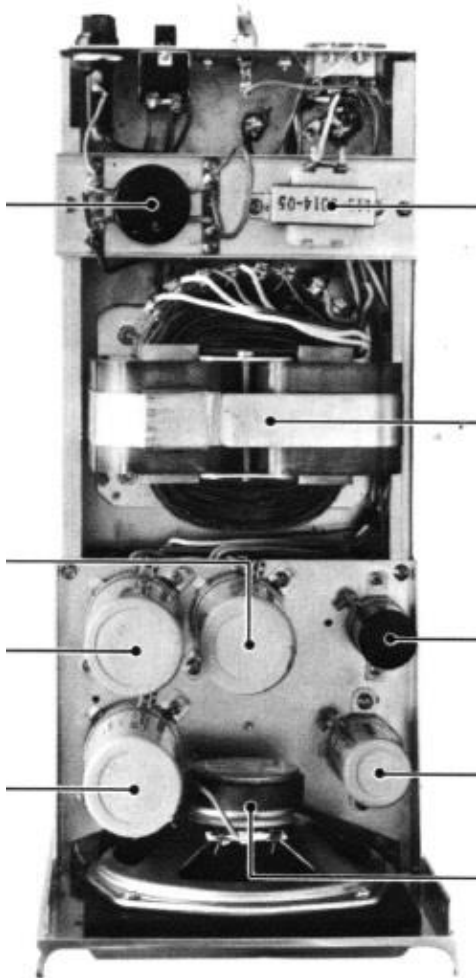
**N8CBX Picture**

See the shaped, curved, enclosed area toward the top of the picture. On the left is the squirrel cage fan. Air is drawn in from the bottom of the fan blade enclosure via an opening in the bottom cover. The bottom cover seals the air flow compartment. Air flows through the Air System Socket at the upper right and out through the fins in the final amplifier tube. Air must be running whenever the tube filament is powered. If the fan is not running, then power must be removed from the radio to avoid destroying the tube.

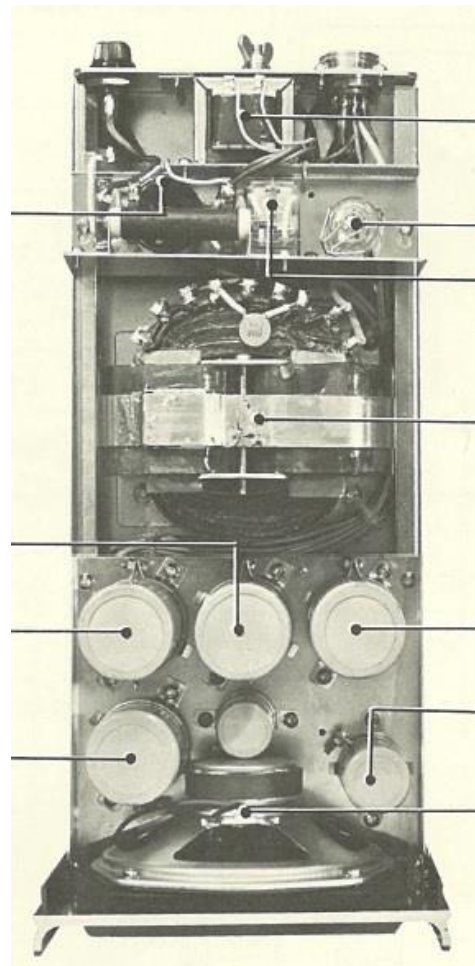
One difference between models of this radio is in the individual power supplies. There is a considerable difference in the plate voltage between the TS-900 (6LQ6 Finals) and the TS-900S (4X150 final). Those voltages are 800 VDC and 1450 VDC, respectively.

Note: The TS-900D and TS-900X plate voltages for their 6146B finals would be the same as each other – but may be different again from the TS-900 and TS-900S. I do not have that information on the PS-900D at this time.

Here are physical details on the PS-900 and PS-900S AC Power Supply and Speaker Consoles:



**PS-900D Top View – Cover Removed  
Speaker Toward the Bottom  
Kenwood PS-900D Operating Manual**

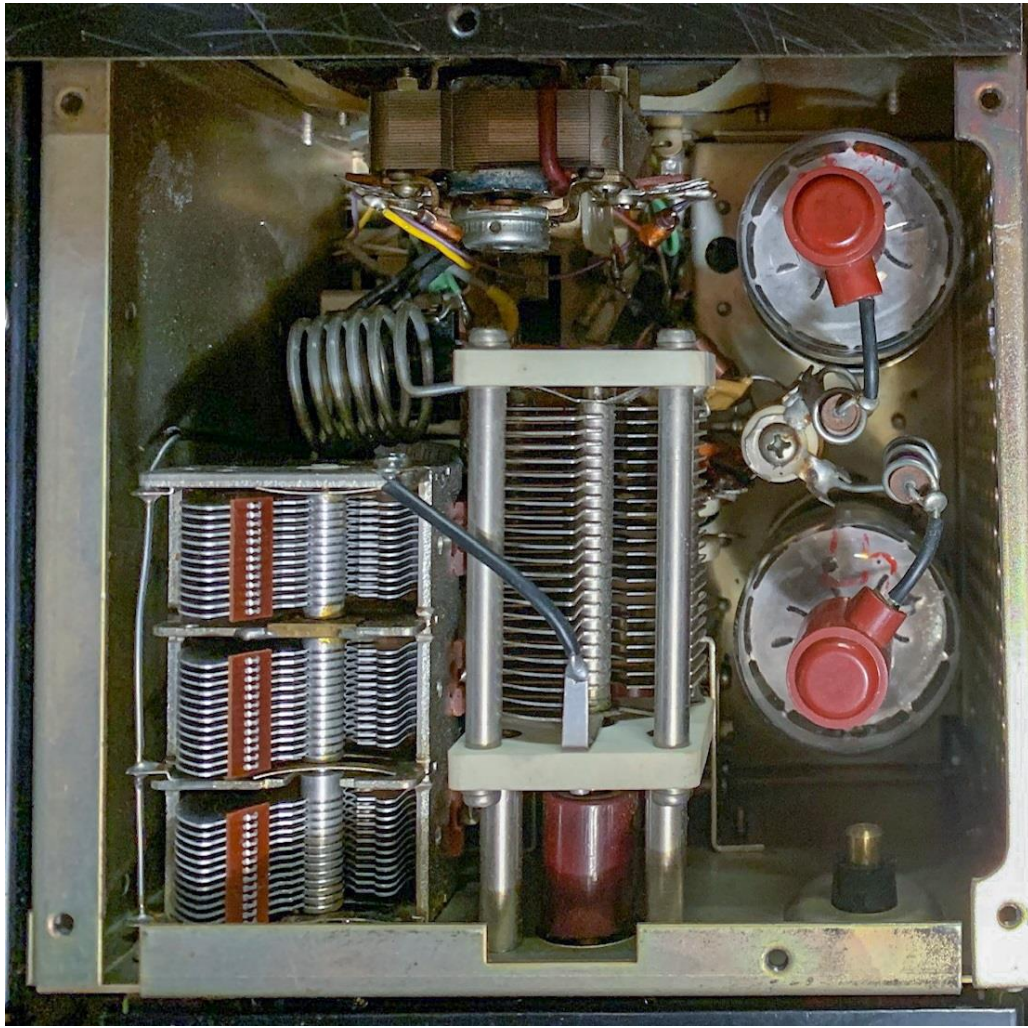


**PS-900S Top View – Cover Removed  
Speaker Toward the Bottom  
Trio PS-900S Operating Manual**

A consideration between these power supplies is an added electrolytic capacitor on the HV filter to accommodate the higher plate voltage developed in the PS-900S over the PS-900D. Also, the PS-900S adds thermal timer circuitry to prevent DC Plate Voltage being available until the final filament is warmed up properly.

The complexity necessary here for using traditional transmitting tubes, like the 4X150, must have concerned Kenwood for export markets. The sweep tube and 6146 based tube designs removed the need for plate voltage application timing, critical cooling even in stand-by, tube and ventilation costs, led this to a one-off experiment – never to be repeated.

Here is the layout of the final amplifier compartment for the TS-900 (2x 6LQ6 finals) and for the TS-900D (2x 6146B finals) – these installations look identical from the perspective shown in these pictures:



**Trio (Kenwood) TS-900 HF Transceiver PA Compartment. This is a top view with the Front Panel toward the bottom of the picture.**

**W9MXQ Photo**

Compare this picture with the top view of the TS-900S PA Compartment, earlier in this article. Now look at the pictures below showing the Cooling Fan typical of the TS-900 and TS-900D models on the left. On the right, see the rear panel view of the TS-900S showing the area where the Cooling Fan is placed on the TS-900 and TS-900D.

Recall that the cooling fan in the TS-900S is in the chassis – not on the rear panel. The TS-900S uses the forced air cooling through the Eimac™ Air Systems Socket as shown in pictures above. It is important to understand that tubes such as the 4X150, 4X150A (which was mostly likely the tube originally in the TS-900S), the 4CX250B, or the 4CX250R must have the air-cooling system working even when just the filament is energized. These miniature tubes cannot have any operating voltage present without cooling. If you turn on power in the TS-900S, you must hear the fan running. If you do not, you must immediately remove all power.



**Rear Left View of the TS-900X**  
**Shows air escape grill from blower.**  
 Schulman Auction Photo



**Rear Left View of the TS-900**  
**Shows fan on the rear of the cabinet.**  
 W9MXQ Photo

The restriction for applying power does not apply to the glass envelope 6LQ6 or 6146B tubes present in the other TS-900 models (TS-900, TS-900D, or TS-900X).

Now for some additional pictures . . .



Kenwood Photo

**Trio TS-900X Transceiver shown with PS-900 Power Supply**  
 (Note "Trio<sup>4</sup>" branding – these were not for the USA Market)

Above is a picture of the home market TS-900X – the Trio branded 20-watt input radio for the low power HF licensees in Japan. Like the TS-900S, this radio appears in the vertically brushed bronze finish. As referenced above, this radio has a single 6146B final amplifier tube. The PS-900 is intended for both the TS-900D and the TS-900X. However, as also mentioned earlier, I cannot confirm that at this time. It is my understanding that this radio could be field upgradable to add the second 6146B and thereby have the same power specifications of the TS-900D. This is not confirmed and only provided by word of mouth.

Finally, here is a picture of the TS-900 station of my friend, Jan Servaites, N8CBX, who is mentioned earlier as repairing this radio. This is, I believe, Jan's original TS-900 – not the one that I sold to him. This is a nice setup, Jan, with that also nice Kenwood TS-940S. Jan and I have become friends over the air, telephone, and email. We have never met in person – but hope to rectify that in the future!



### **The Kenwood TS-900 and TS-940S Radios at N8CBX**

Left to Right:

Kenwood PS-900 Power Supply, VFO-900 Remove VFO, TS-900 HF Transceiver  
Shown with Shure 444D Microphone and Kenwood TS-940S HF Transceiver

**N8CBX Photo**

This does not end the saga of the TS-900S Transceiver or of the maintenance and restoration of other TS-900 versions. Stay tuned for Part 3 of this series on the TS-900, TS-900S, TS-900D, and TS-900X next month when we will talk about:

- My work with a frequent problem shared many of the TS-900 radios, several versions, which must be corrected before alignment can be safely completed.
- A step-by-step checklist review of the things that Jan Servaites, N8CBX, completed in his work to restore the proper operation of the Rusty Cline, N9DRC, Kenwood TS-900S Transceiver.

So, to my friends reading this article, look for Jan, N8CBX, Rusty, N9DRC, and me, W9MXQ, on the bands and see if we happen to be running our Kenwood TS-900 Transceivers of one flavor or another. The communication with Rusty, N9DRC, happened just after the closure of the Drake Technical Net, on 18 December 2022. Net control that day was Mark Gilger, WBØIQK, of Doylestown, Ohio.

This article would seem to move between brand names “Trio” and “Kenwood.” This mirrors the confusion Kenwood’s marketing seemed to wrestle with at the time. For the most part and for the sake of discussion, I use them interchangeably according to how the radio’s panel is labeled. At the time, Trio was the marketing name in Japan and Kenwood



was the marketing name in the rest of the world. Simple? Well, not so much. Variations in that exist through time. For a while, Kenwood USA, when it was first formed, showed reference to “Trio-Kenwood” as the company’s name.

I appreciate that you read my articles. As mentioned above special thanks go to Bob, W9DYQ, for his proof reading. Remember that I am open to questions and comments at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

**Notes:**

<sup>1</sup> From Specifications in the Trio-Kenwood Operating Manuals of the noted models.

<sup>2</sup> The adhesive was sourced from:

[https://www.amazon.com/Anticlog-Adhesive-superglue-Cyanoacrylate-Plastics/dp/B0BCL2KT5Y/ref=sr\\_1\\_2?keywords=GH1200&qid=1682470278&sr=8-2](https://www.amazon.com/Anticlog-Adhesive-superglue-Cyanoacrylate-Plastics/dp/B0BCL2KT5Y/ref=sr_1_2?keywords=GH1200&qid=1682470278&sr=8-2)

**W9MXQ ©2023**

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**Kenwood Hybrid (Solid State with Vacuum Tube Power Amplifier) Transceivers in the North America Amateur Radio Market . . .**



**Kenwood TS-511S**  
First Marketed: 1971



**Kenwood TS-520(x)**  
First Marketed: 1973



**TS-530S**  
First Marketed: 1981



**Kenwood TS-820(x)**  
First Marketed: 1976



**Kenwood TS-830(x)**  
First Marketed: 1980



**TS-900(x)**  
First Marketed: 1973  
All Pictures Here: W9MXQ

The TS-511 (and it’s international – outside USA – sister, the TS-515) were what we today call, “honorary hybrids.” Actually, they had ten vacuum tubes. Still, it was a major step in the solid-state revolution of the 1970’s in amateur radio equipment. Also, there is the TS-511’s close relative in the USA, the private label, Trio-Kenwood manufactured, Allied Radio A-2517. So many models – so little space!!

## **Ozaukee Radio Club Minutes of Membership Meeting. 04/12/2023**

de: Ken W9GA, Secretary

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:30 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. ORC is still in need of a member to help Tom KC9ONY with the technical committee to stream the meetings; and still have a need for a 2<sup>nd</sup> V.P. W9IPR Tom, has raised the concern that shipping rates for packages have soared; he had to pay \$240 to ship a radio in to a tech for a \$200 repair.

### **Program:**

Our presenter was Mike KC9GCN, who outlined the application of RHR, or remote Ham Radio. This is a service available to hams who might not otherwise have the ability to assemble a home station. You pay a yearly fee and have access via the internet to a selection of ham stations to which you can connect and operate, via a minute-by-minute fee. Mike added some details, such as access for free by STEM students, and the variety and caliber of the stations that are available.

**50/50 Raffle:** This was won by Dragi [a guest w/no call]; winning an award of \$23.00

### **Scholarship Auction:**

Stan WB9RQR held a short auction; included: ARRL handbooks, shop light, HB tuner, cabinets. Stan then announced that he would be retiring as auctioneer, effective immediately.

### **Committee reports:**

[there were no second VP and no RPT VP reports.]

1st VP: Jeananne N9VSV has located a new vendor for ORC badges, possible to provide embroidered shirts and jackets, more to follow. She is also working on a survey for the members.

Treasurer: Gary N9UUR provided reports on the tables. Recent bills paid include our webhost and more equipment for streaming. The March treasurers' report was accepted; motion by KC9FZK; 2<sup>nd</sup> by WB9AZH & carried.

Secretary: Ken W9GA reported that the April 2023 minutes are posted, a motion to accept was made by K9QLP; 2<sup>nd</sup> by N9VSV & carried.

Scholarship/STEM: The committee now has a draft charter for the ORC participation in STEM..

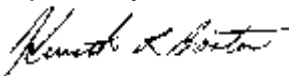
Tech committee: Now has some better audio equipment.

**OLD business:** The next FD planning meeting is planned for April 25 at 6:30 PM, held by zoom.

**NEW business:** Tom W9IPR wants help for a load out prior to the spring hamfest; meet at the barn on Friday afternoon May 5, and can assist at ORC table Saturday May 6 if possible

**Adjournment:** WB9AZH moved to adjourn, WB9RQR 2<sup>nd</sup>, motion carried; time end was 8:53 PM. There were 19 in-person attendees, 11 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- May – Bill, W9MXQ & Pat, W9JI – Video: “Collins: The Lost Decade” and a brief video tour of a huge Collins private collection
- June – Ken, W9GA Field Day
- July – Jeananne, N9VSV – Collecting Amateur Radio Themed Stamps
- August – Field Day Reports from the Club and members
- September – Bruce AC4G – Reporting on a DXPedition
- October – Janice, KA9VVQ and Bruce, W9FZ – “Getting on the Air and Having Fun with Roving!”

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

Many of our presenters use Microsoft’s PowerPoint to organize and present their information. If you don’t have access to or aren’t familiar with Power Point there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here: <http://www.openoffice.us.com/>

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*April 8, 2023*

- |  |  |
|--|--|
| <ol style="list-style-type: none"><li>1. 7:15 – 7:30 PM<br/>Check-In and Introductions</li><li>2. 7:30 PM Call to Order:<br/>President Bill Greaves (K9GN)</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Bill Shadid, W9MXQ &amp; Pat Volkmann, W9JI, Videos and Interaction – Collins, “The Lost Years,” and a Tour of a Large Collins Collection</li><li>5. President’s Update:<br/>Bill Greaves (K9GN)</li></ol> | <ol style="list-style-type: none"><li>6. 1<sup>st</sup> VP Report:<br/>Jeananne Bargholz (N9VSV)</li><li>7. Repeater VP Report:<br/>Tom Trethewey (KC9ONY)</li><li>8. Secretary’s Report:<br/>Ken Boston (W9GA)</li><li>9. Treasurer’s Report:<br/>Gary Bargholz (N9UUR)</li><li>10. Committee Reports</li><li>11. OLD BUSINESS</li><li>12. NEW BUSINESS</li><li>13. Adjournment</li></ol> |
|--|--|



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**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
10 May 2023**

**Program:  
Bill Shadid W9MXQ & Pat Volkmann W9JI  
Video: "Collins: The Lost Decade"  
and a  
Brief Tour of a huge Collins Collection**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
14 June 2023**

**Program:  
Ken Boston, W9GA  
2023 Field Day**

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The Ozaukee Radio Club presents its 43rd Annual Spring Indoor  
**Amateur Radio, Electronics & Computer**



# SWAPFEST



featuring **TOWER ELECTRONICS!**

Saturday, May 6, 2023 – 8 AM to 12 PM (setup begins at 6 AM)

Ascension Columbia St. Mary's Center (Milwaukee Curling Club)  
W67N890 Washington Ave., Cedarburg, WI 53012

Talk-in: 146.97 MHz – PL 127.3 Hz

Door Prizes! Free WIFI

Food sold by Cub Scout Pack 586, returning from 2022!

Admission: \$7.00 at the gate

Children 12 and under FREE, with a paid adult admission

6 ft. Tables: \$12.00 in advance, \$15.00 at the door, if available

Use the Order Form below, email, or call Tom Trethewey, KC9ONY at 262-421-6351

Email: [swapfest@ozaukeeradioclub.org](mailto:swapfest@ozaukeeradioclub.org)

More information: <http://www.ozaukeeradioclub.org/> or <http://www.facebook.com/orcwi>

For Advance Tickets and Tables, send check with a **SASE** (Business-Size #10 envelope) to:  
Tom Trethewey, KC9ONY- W69N905 Evergreen Ct N, #202, Cedarburg, WI 53012-1170

Name: \_\_\_\_\_

Call sign: \_\_\_\_\_

Address: \_\_\_\_\_

Phone number: \_\_\_\_\_

Email: \_\_\_\_\_

No. of Tickets: \_\_\_\_\_ X \$7 = \_\_\_\_\_

(Advance tickets are double stub)

No. of Tables: \_\_\_\_\_ X \$12 = \_\_\_\_\_

Electricity: Yes (Add \$5) \_\_\_\_\_ No \_\_\_\_\_

Total Amount: \_\_\_\_\_

(Please make checks payable to ORC)



## The *ORC* Newsletter

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

Volume XLI

June 2023

Number 6

## From the President

de: **Bill Greaves, K9GN**



June is Field Day month. The fourth weekend of June, the 24<sup>th</sup> and 25<sup>th</sup>, the ORC will be at Pleasant Valley Nature Park as in recent past years. The ORC Field Day leader is Ken W9GA Boston who has been a stalwart member and leader of Field Day for several years. He has championed our club's efforts and leads a strong group of volunteers, like Nate KC9TSO Seidler and Mike AE9MY York. The past couple of weekends, a group of volunteers helped outfit the club's field day trailer with a new axle (thank you Nate) and built shelving in the trailer to better organize equipment and for an operating position, as Nate described in a recent post on the club's reflector. These improvements will support an excellent Field Day experience this year.

I have mentioned before my first outing with the club was Field Day in 2021. It is a perfect opportunity for members to spend an hour (or a day!) with other club members – you will meet friends, current and future, learn about the setup of operating outside, and savor the enjoyment of ham radio.

Several club members attended Hamvention in Dayton OH last month. Attendance was just over 33,300 this year. I personally enjoyed several of the presentations as well as the four buildings of vendor displays and the seemingly miles and miles of outdoor vendor table displays of equipment from around the country. The day before the Hamvention on Thursday, the Contest University provided a daylong series of top-notch presentations from noted experts. I found these very practical with an almost this-is-how-you-do-it flavor. You might consider attending Hamvention next year.

My pic this month shows me enjoying the summer and soaking up some sun, albeit with my sunscreen properly applied. Time to get back to those antenna and station projects.

The club membership will gather on Wednesday, June 14, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. I look forward to seeing you there.

73,

Bill K9GN





# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message. See his special welcome to ORC Field Day 2023. And his thanks for all the volunteers.

Gary Bargholz, N9UUR, tells about the 2022 President's Award recipients in his multi-pictured article from the May 2023 Meeting. Congratulations all winners!!

Ken Boston, W9GA, 2023 Field Day Chairperson, gives us the lowdown on the event. Also watch for other Field Day related articles from several other members – including Gary Sutcliffe, W9XT, relates more in his On The Air Activities Column. Take a look. Gary also suggested a location map of the event – which is clearly shown – with a link to get your own copy onto your phone or computer.

Tom Trethewey, KC9ONY, updates us on the 2023 Ozaukee Radio Club Spring Swapfest. And check the last page of the Newsletter for info on the Fall Swapfest. Fall Swapfest Chairperson, Tom Ruhlmann, W9IPR, will have more on that event in a future issue.

Info on the late summer International Lighthouse / Lightship Special event is described in an excellent from ORC Event Leader, Fred Schwierske, W9KEY.

Check out regular columnists, Dan Zank, AA9WP, and Stan Kaplan, WB9RQR, are back with new information on Ozaukee County ARES and Computer Corner, respectively.

What else? Well regular columnists, Gary Sutcliffe, W9XT, and Bill Shadid, W9MXQ are back with operating events and a radio rescue and repair adventure. There is a second Vintage Amateur Radio article as well that gives some focus on what is to come in that column.

Tom Trethewey, KC9ONY, talks about a special gift to the club, courtesy of Jeananne Bargholz, N9VSV. "Sew What?" you might ask!! And, as if not enough, your Editor, has taken up a friendship with a fellow appreciator of old radios, a new ham, and a new ORC member, John Livingston, KD9WOY, of Hartford.

Ken Boston, W9GA, brings you the Minutes of the May meeting on Page 49 followed by Pat Volkmann, W9JI, to talk about coming Programs. .

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.

**Ozaukee Radio Club Newsletter  
June 2023 – Table of Contents**

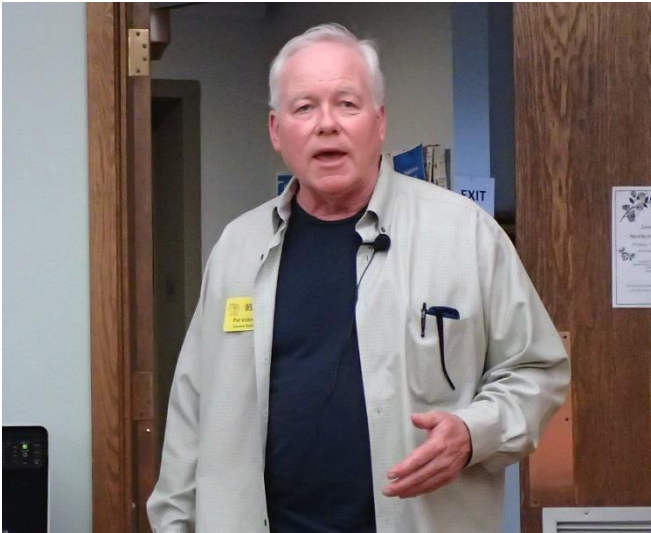
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3	<b>Bill Shadid, W9MXQ: A Message from the Editor</b> This Month's Table of Contents & Comments
5	<b>Gary Bargholz, N9UUR</b> President's Awards for 2022
9	<b>Ken Boston, W9GA</b> Ozaukee Radio Club Annual Field Day Exercise – June 24-25, 2022
10	<b>Where is ORC Field Day 2023?</b> Pleasant Valley Nature Park
11	<b>Tom Trethewey, KC9ONY</b> The ORC Spring Swapfest 2023 is in the books!
13	<b>Fred Schwierske, W9KEY</b> International Lighthouse / Lightship Weekend
15	<b>Don Zank, AA9WP: Ozaukee County ARES</b> Chat Modes for ARES
18	<b>Stan Kaplan, WB9RQR: Computer Corner</b> No. 303: Don't Feel Pressed to Buy Antivirus Software
20	<b>Bill Shadid, W9MXQ</b> <b>(As Edited from KC9TSO, K9GN, KD9QLS, AE9MY, &amp; W9GA)</b> Upgrades to the Field Day Trailer
23	<b>Tom Trethewey, KC9ONY</b> Sew What?
24	<b>Bill Shadid, W9MXQ</b> <b>(As Edited by conversations with John Livingston, KD9WOY)</b> A New Ham Connects to the Ether
26	<b>Gary Sutcliffe, W9XT: On the Air Activities!</b> Field Day, Big Solar Flare, 6-Meters, Dayton, AM Radios in New Cars, 13 Colonies Special Event, Hamfests, Contests, DX
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49	<b>Ken Boston, W9GA: Secretary's Report</b> Ozaukee Radio Club Minutes of Membership Meeting. 05/10/2023
51	<b>Pat Volkmann, W9JI: Upcoming ORC Monthly Meeting Programs</b> Creating a Presentation for Club Meetings & This Month's Agenda
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53	<b>Flyer for the Ozaukee Radio Club Fall Swapfest</b>

**Onward To the Newsletter**

# Presidents Awards – for 2022

de: Gary Bargholz, K9UUR

At the May 12th Club meeting, Past President Patrick Volkman W9JI, made some award presentations to recognize various Club members past contributions to the Ozaukee Radio Club.



Pat Volkman, W9JI, was our Club President from 2019 through 2022.

Photo by N9UUR

The Following people were honored during the meeting:



President's Lifetime Achievement Awards for Success to ORC were presented to Ed Rate, AA9W, Tom Ruhlmann, W9IPR, and Stan Kaplan, WB9RQR.

Photo by N9UUR – Pictures of WB9RQR and AA9W shown elsewhere.



**President's Award for Excellence in Actions and Service to the ORC was presented to Nancy Stecker, KC9FZK.**

Photo by N9UUR



**President's Award for Excellence in Being the Club Auctioneer, and Providing Service to the ORC to Stan Kaplan, WB9RQR.**

Photo by N9UUR



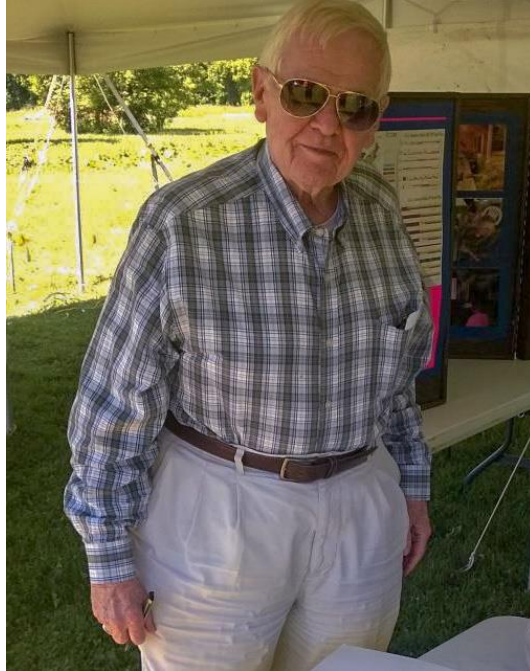
**President's Award for Distinguished Newsletter Editor to Bill Shadid.**

Photo by N9UUR



**President's Award for Committee of the Year presented to the Technical Committee. Members, Tom Trethewey, KC9ONY, Gary Bargholz, N9UUR, and Gregg Lengling, W9DHI, were honored for their work.**

Photo by N9UUR – Pictures of N9UUR and W9DHI not available.



**Here is Sandy Wirth, W9BTN**

**Sandy was not present to receive the President's Award for "Numerous Contributions to the Success of the ORC."**

Picture Supplied by N9UUR



**Here is Ed Rate, AA9W, at Field Day in 2007**

**Ed was mentioned earlier as being awarded the President's Lifetime Achievement Awards for Success to ORC.**

Picture Supplied by N9UUR

The club members present and on Zoom provided a round of applause!!

# ANNOUNCING!!!!!!!

## Ozaukee Radio Club Annual Field Day Exercise June 24-25, 2022

de: Ken Boston, W9GA

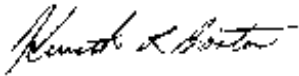
### Pleasant Valley Nature Park [Pleasant Valley road; just east of county I]

Once again the intrepid operators and interested members of ORC will convene for this popular radio activity promoted by the ARRL, to promote Amateur Radio and the ability to operate a station or stations from a temporary location.

We will be running 3 stations on HF, a station on VHF [50mhz +], and a GOTA station, and will need operators, helpers to set up and tear down, and any interested guests and members to join in the effort. We plan on arriving at the park site on Friday morning, June 23 at 10 AM to set up, although no Friday evening dinner is planned, there will be water, soda, and beer beverages available. Saturday morning at 9 AM, or earlier, we will finish setup, and get on the air at 1 PM. Operation ceases at 1 PM on Sunday, and then we tear down and head home!

ORC members, as well as other area hams and friends, are all invited to participate, and enjoy the camaraderie of this event; details to be presented at the June meeting on Wednesday the 14<sup>th</sup>.

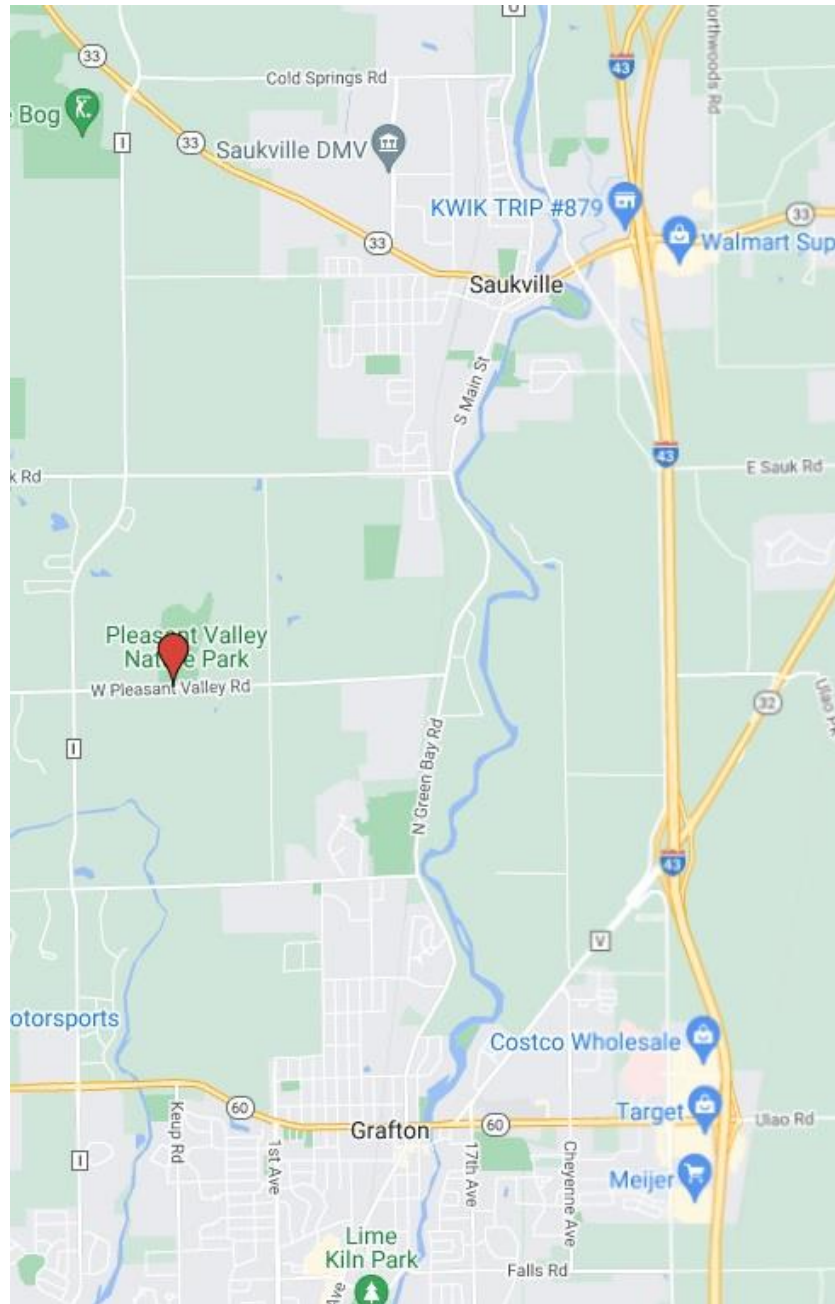
Ken Boston, W9GA,



Field Day Chairperson



## Where is 2023 Field Day?



### **Pleasant Valley Nature Park – 2023 ORC Field Day Site**

East of Ozaukee County Route I on Pleasant Valley Road

[https://www.google.com/maps/d/viewer?mid=17ImT2yeRQ7yu30PKu\\_uUJr\\_XDIGo&ll=43.36986180327884%2C-87.96788095906606&z=14](https://www.google.com/maps/d/viewer?mid=17ImT2yeRQ7yu30PKu_uUJr_XDIGo&ll=43.36986180327884%2C-87.96788095906606&z=14)



# The ORC Spring Swapfest 2023 is in the books!

de: Tom Trethewey, KC9ONY  
Chairperson, Spring SwapFest 2023  
[swapfest@ozaukeeclub.org](mailto:swapfest@ozaukeeclub.org)

The ORC Spring Swapfest occurred on Saturday, May 6, 2023, at the Ascension Columbia St. Mary's Expo Center, also known as the Milwaukee Curling Club. We've been holding the Spring Swapfest there since 2014.



**SwapFest Attendees checking out buys on a nice Saturday morning.  
2023 Ozaukee Radio Club Spring SwapFest**

Unknown ORC Member Photo

Tower Electronics joined us once again as the only commercial vendor, though we did get door prizes from other commercial sponsors. Bioenno Power gave us two LiFePO4 batteries and chargers, which we called Grand Prize #2 and #3, along with the \$100 cash Grand Prize #1. We also had prizes from the ARRL, DX Engineering, EasyWayHamBooks.com, N3FJP Logging Software, and United Microsystems to give away.

Cub Scout Pack 586 from West Allis returned for a second year to provide food and refreshments. We had a Cub Scout come over and draw tickets for the door prizes, which I think they enjoyed. The leaders said they were happy with the sales and would love to come back again in 2024.

Overall attendance was down from last year for whatever reason. The live coronation of King Charles III was going on in the UK, but that shouldn't have stopped a SwapFest aficionado from attending, right? The number of vendors was also down. Those I talked to after the SwapFest thought it was another good event, especially the ones that sold all their stuff!

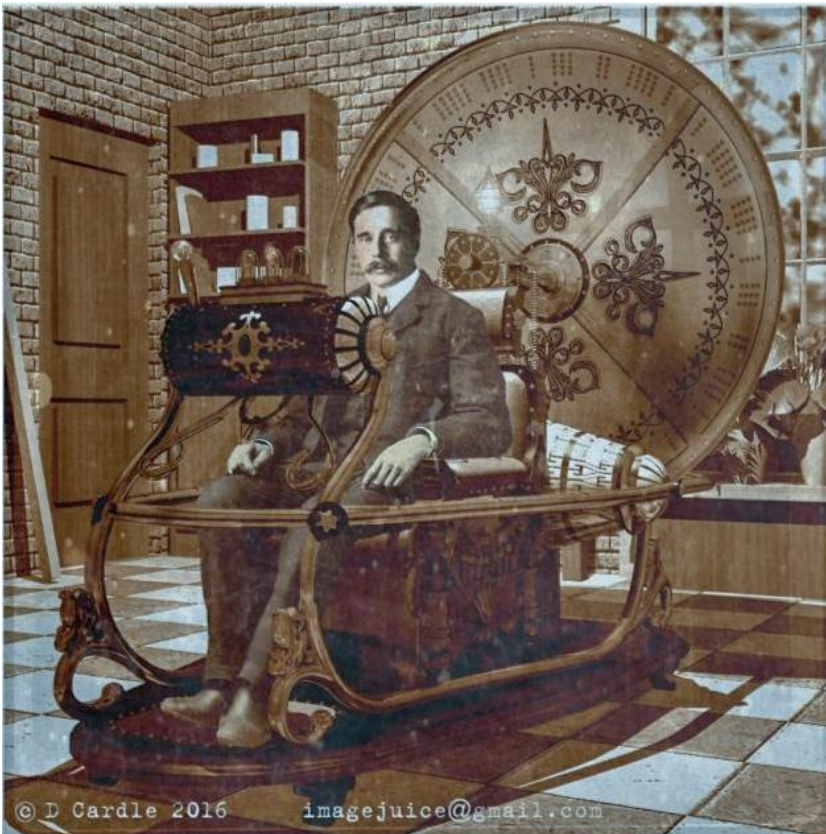
The Milwaukee School of Engineering's Amateur Radio Club W9HHX had a table, showing their Pico balloon. They launched the balloon on Sunday, May 7th from Lakeshore State Park. A Racine middle school WLS ARC KD9GRG also launched their Pico balloon shortly after.

The OZARES also had a table demonstrating various things and received good responses to their attendance as well. Hope to get more groups next year.

I would like to thank all the volunteers that helped to make this a successful SwapFest, as we did indeed make money for the club. Thank you to:

JeananneN9VSV, Gary N9UUR, John WA9KNY, Loren N9ENR, Jim K9QLP, John W9FAD, Chuck KC9YEP, Todd N9DRY, Rod WB9AZH, Pat W9JI, Fred W9KEY, Tom W9IPR, Gregg W9DHI, and of course our President Bill K9GN.

I can still use some more volunteers for next year!



**Tom, KC9ONY, setup on his Time Machine (courtesy of Jules Verne) for a quick look at ORC SwapFest 2024. Are you in that picture when he arrives?**

**© D Cardle 2016**

# International Lighthouse / Lightship Weekend

## Mark the Date!! – August 18-20, 2023

de: Fred Schwierske, W9KEY



Plans are underway for the Ozaukee Radio Club and LEFROG organizations to again team up to participate in the International Lighthouse Lightship weekend. Always held on the 3<sup>rd</sup> full weekend in August, this worldwide amateur radio event typically includes over 400 special event lighthouse stations in 50+ countries. Last year, we were one of 47 stations operating in the United States.

Read about the event at: <https://illw.net/>

Special event stations are not contests. Rather, we have the opportunity to promote our local lighthouse with distant hams, work other worldwide lighthouses, and explain amateur radio to museum visitors. It's a low key, fun event in a beautiful setting – overlooking Port Washington's marina.

Setup starts Friday Noon, August 18 at the 1860 Light Station Museum – 311 Johnson Street, Port Washington, Wisconsin. On-air operations begin early Saturday morning, through mid-day Sunday. We will be operating on museum property (outdoors) in typical Field Day conditions - so dress accordingly, bring a chair and refreshments.

We have considerable flexibility regarding station setup. Last year 3 transmitters were in operation using a tri-band tower mounted beam, 40-meter dipole, and frequency agile vertical. But to make such efforts worthwhile – we need operators!

So please advise if you can help with Friday, August 18 setup and/or tear down on Sunday mid-afternoon, August 20, 2023. And of course, also advise if you are interested in being an operator, and your preferred shift-time, by sending an email to:  
[w9key@arrl.net](mailto:w9key@arrl.net).

To complete a great weekend, the 1860 Light Station museum is open to visitors Saturday & Sunday, 11:30am to 4:00pm. Consider bringing the family



and scheduling a museum tour – details & prices\* are available on their website:  
<https://www.pwhistory.org/1860-light-station>

\* Tickets are not required to participate in our Event Station, only to enter the Light Station Museum.

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**You know, sometimes “His Master’s Voice” was heard on a Zenith.**

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# OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## Chat Modes for ARES continued



Last month the OZARES group set up a table at the ORC Swapfest. It was a very busy table this year. Of course, being near the Boy Scouts and the food area is a big help.

Our setup included a VARA Chat demo between two computers using two vhf radios. The software required is the VARA FM TNC modem software. Both radios used a Signalink as the sound card. A Yaesu FT-8900 mobile rig, with a dummy load, was on one end and a Yaesu FT-270 2-meter FM handheld was on the other. Since most of the visitors were not familiar with the Chat program, there was a good deal of time spent explaining the setup and the VARA FM software.

We also answered many questions regarding WINLINK. The good news is that many of the questions were about setting up WINLINK gateways. One that I remember would be installed in the New Berlin area and it would be a combination of packet and VARA.

Recently I received a phone call from Mike, AC9DE, who was testing WINLINK station at Ham Radio Outlet in Milwaukee. Mike has obtained sysop permission for the call sign WI9HRO. They have a donated radio and are busy setting up a dedicated antenna for the station. So, look forward to another gateway at HRO.

Now that we have operated the VARA Chat software in some controlled conditions, we need to take it into the field. I am looking forward to testing our connections within Ozaukee County.

It is funny how we can start discussing and reviewing one mode of digital operation and several others will appear. In the May 2023 CQ issue, the *digital connection* column, by Don Rotolo, N2IRZ, has a very interesting discussion about Bulletin Boards Systems, (BBS). Don talks about the advantages and disadvantages of having a BBS. In the late 1980s BBS nodes were very common but have faded in popularity with the rise of the internet.

He also discusses a Chat program, available from G8BPQ called BPQChat. More information is available at: <https://www.cantab.net/users/john.wiseman/Documents/>

Chat is also included in the Terrestrial Amateur Radio Packet Network (TARPN) Home application. The intriguing capability of this mode is that multi-operators can participate in the Chat. In the VARA Chat listed above, and in the WINLINK peer-to-peer mode,

communication is only one-to-one. This puts a severe crimp into sharing information among a group.

The G8BPQ Chat program and TARPN Home application can be installed on a Raspberry Pi.

The TARPN Home network page does contain a warning:

*We recommend you work with other hams and arrange to have a network of five operators, where each station is within 2m HT simplex of the next station, who could each host a node in their homes (maybe with a 6th at a mid-site?) to fully test and demonstrate the network. You should try to have all five hams signed-on to the project before installing this system else your labors are likely to lead to disappointment and frustration. Five active participants may be the magic number where the killer app (chat) is interesting enough to lead to grassroots network growth. The proximity required for simplex HT connectivity makes it very easy to get the system installed and working. This is of high value to new network builders. Furthermore, the cost of antennas when stations are local is much less than will be required for longer links.*

I guess this will require some thought before jumping into the fire.

One other note about OZARES is that we move into our summer hours. Our Thursday night nets will start at 8 pm on the first and second Thursday of the month. If there are five Thursdays in the month, there will be a third net on the fourth Thursday. The fifth, or last Thursday of the month, is the statewide VHF net held on the WECOMM linked repeater system.

Looks like summer is off to a good start, except for the lack of rain.

73,

Don



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## **OZARES Repeaters . . .**

- 147.330 MHz (+ Shift) (127.3 PL)
- 443.525 MHz (+ Shift) (114.8 PL)

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## **ORC Repeaters are On the Air Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

# THE COMPUTER CORNER

## No. 303: Don't Feel Pressed to Purchase Antivirus Software

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



This article (first partially addressed in #245, July 2018) was suggested by recent conversations with Tom Trethewey, KC9ONY. Thanks, Tom!

At the current writing, we are in mid-2023. As long as 5 years ago, it became pretty clear to many of the gurus who keep tabs on the trends of virus attacks and antivirus software, that the antivirus software that comes with Windows 10 and 11 is adequate protection for most users of Windows. Elegantly said by Majorgeeks, “While we wouldn't

recommend Windows Security just a few years ago, it is an excellent choice, and you already have it included with Windows 10 [and also 11, ed.]. So, with Win10 or 11, you are already protected with the built-in *Windows Security* (it used to be called Windows Defender).

So, what if some other antivirus package, or several, were previously installed? They might be using up needed resources and slowing your machine down. Whatever might be there, all you need do is to uninstall them (properly), and Windows security should automatically take over after a reboot. You don't want to just leave running pieces of unused programs there, because antivirus programs have a propensity for interfering with each other and may cause you grief if they run at the same time. Stick with Windows Security and uninstall everything else. If you want a little extra “oomph” in your protection, you can safely install the free version of Malwarebytes (downloaded over 16 million times from <https://www.majorgeeks.com/>). Run this once a month or more often as you wish. If it finds bad stuff, it will disable it at no charge, just for the asking. Or, if you wish to pay a yearly fee (about \$45), it will watch your back full time and prevent all kinds of attacks from ever taking hold, such as ransomware. And it will work quite happily at the same time Windows Security is running. It is known that you can install Malwarebytes and have Windows Security also running in the background and simultaneously protecting your machine, without interfering with each other or the normal operation of your computer.

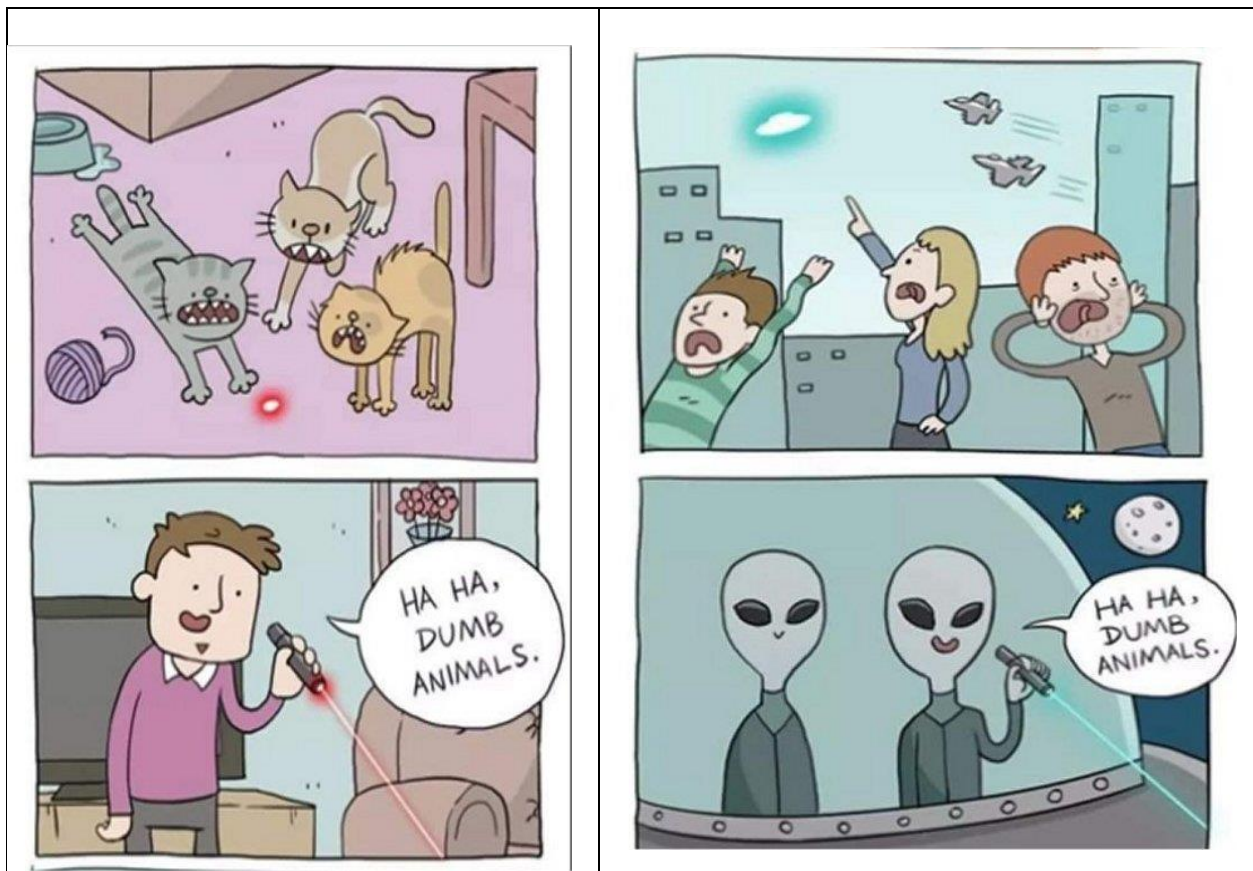
By the way, to properly uninstall any program (including heavy duty antiviral programs like Avast, Avira, McAfee, Bitdefender, Norton, etc.), go to Majorgeeks (hyperlink in the previous paragraph). In the left column under **Files**, select **System Tools**, then **Uninstallers** and download **HiBit Uninstaller** (either the .exe or the portable version – your choice). Run that, including the **Advanced Scan** with **Automatic Cleanup**, and



whatever you selected will be gone for good. The Uninstaller program by HiBit is probably the best uninstaller available anywhere, and it is free. Happy Computing!

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## “Dumb Animals” --- Courtesy of MajorGeeks



# The Field Day Trailer

Edited by: Bill Shadid, W9MXQ

With input from Nate Seidler, KC9TSO, Matt Myszka, KD9QLS,  
Bill Greaves, K9GN, Mike York, AE9MY, and Ken Boston, W9GA

In emails received by this editor on the work completed on the Ozaukee Radio Club Field Day Trailer, I wanted to bring the membership up to date with this fine work and also to thank Bill Greaves, K9GN, for providing the included pictures.

In an email via the ORC Reflector, it was related that the Trailer was taken to Nate Seidler, KC9TSO's home QTH for the upgrades and repairs. Nate wanted to give a special thanks to Bill, K9GN, Mike, AE9MY, and Ken, W9GA for coming to his QTH to build the new shelves inside the trailer. Later, Nate, and Matt, KD9QLS, finished putting everything back in the trailer. The net result was a lot more open floor space. Everything is quickly accessible without leaving "stuff" piled on the trailer floor. As you can see in the pictures, the modifications to one of the shelves to be an operating station also turned out well. Take a look at the pictures:



Trailer – Left, Rear, Interior

K9GN



Trailer – View Toward Left Front

K9GN



**Trailer – Left Front Area**

**K9GN**



**Trailer – Shelving Boards Added**

**K9GN**



**K9GN**

Nate, KC9TSO, at the Operating Position at the Left Front of the Trailer.

“Okay, Nate, quit checking out the camera and make some contacts!!!”

Okay, from this point it is just the “little stuff,” like checking operation of the trailer lighting and making sure things are properly stocked in the other trailers. At that point, we will be ready for another successful Field Day.

Nate relates, as in his posting to the ORC Reflector, the only thing I ask is that those who are bringing out radios and other gear, please inspect and operate them within the next week or so. Give them a 30-minute jog just to make sure we have no surprises on Field Day Saturday morning!

Thanks again everyone. And please come out to see the club operate even if you aren't a normal operator. We have a GOTA station that anyone (licensed or not) can get on air. It helps with our score and it's good company. Nothing is required of you but to show up.



[www.arrl.org](http://www.arrl.org)

# Sew What?

de: Tom Trethewey, KC9ONY

As you may know, the Technical Committee has acquired several pieces of equipment to enable an in-person and Zoom meeting. This includes several wireless microphones. These were all in separate boxes, which took up space and were time consuming to remove.

Well Jeananne, N9VSV, provided a solution. She created a bag with pouches for the microphones! It currently holds 4 wireless microphones and their receivers, as well as the two headsets. It also has room for some manuals or instruction sheets. Jeananne made this all out of some material she had.

Not only that, but she embroidered “Ozaukee Radio Club, Inc.” on the outside!



Thank you, Jeananne!!

# A New Ham Connects to The Ether

de: Bill Shadid, W9MXQ

(Edited from Conversations with John Livingston, KD9WOY)

New Ham – and new Ozaukee Radio Club member – John Livingston, KD9WOY, has been getting started in HF with his new Hustler 4-BTV Vertical Antenna. In conversations with John over the past few weeks, John graciously sent pictures of the process as it went along.

I felt it would be nice for all of us to share John's excitement (is that the right word?) with ripping up the lawn and digging out an opening in Mother Earth for that first few feet of radials – knowing all along that you have hundreds of feet more to go!!



**Center Pole Set – Radials Connected to Copper Tubing Base**

Note the base with his copper tubing assembly to be the connection point for the many radials he decided to make a part of his assembly.

John reports a visit from friend and fellow ham, John Kobishop, W9ABI, (another ORC Member) who wanted to help with the radial installation. KD9WOY did express some concern for the mental health of anyone volunteering to help with installing radials!! (Editor's note – sounds remarkably like a Huck Finn story from childhood when Huck would get his friends to experience the pleasure of painting a fence.)

KD9WOY did report that he got down to 32 minutes for each radial installation. We may never know how that could have been improved by installing another 50 of the darn things.



Here is the family cat inspecting the finished base after the radials were buried.

Seems, according to KD9WOY, that the feline family member was disappointed with the new litter box.

In a final supplied picture of the overall project, KD9WOY sent the following which shows some of the maintenance required for proper operation of the antenna:



**John, KD9WOY, laboring intensely at watering in the radials for better performance.**

All Pictures – KD9WOY

# On The Air Activities!

De: Gary Sutcliffe, W9XT



Field Day is the big event for June and is one of the big ORC club events of the year.

The ORC will again hold Field Day at the Pleasant Valley Nature Park near Grafton. There have been a couple of Zoom meetings and a meeting at the site. The station locations were determined. There is a bit of a change from last year. We now have a very tall cell tower at the site near where 40 meter phone sets up. Too bad we can't use it for antenna supports!

We will be 3A again with two phone stations and one CW station. There will also be a VHF station for 6M and satellites, plus a Get On The Air (GOTA) station. The GOTA station is to encourage hams who are not active and unlicensed members of the public to make some contacts. If you have not operated HF for a while or are not licensed. Stop by, and an experienced operator will help you make some contacts. We get extra points for that, so we encourage members and the public to participate.

We will start setting up on Friday, June 23, at 10:00 AM. Help is always appreciated. Final set up will happen Saturday morning, with Field Day beginning at 1:00. Field Day runs for 24 hours. Help is especially welcomed on Sunday afternoon tear down when the operators are tired.

One reason ham radio exists is because of the communication service we can provide to the public during emergencies and public events. One of the primary purposes of Field Day is as an exercise for emergency communications.



**Vic, WT9Q, setting up the CW station in the 2022 ORC Field Day.**

We set up at a location and operate with portable shelters, antennas, and emergency power. We learn to make contacts under adverse conditions, including heat, cold, mosquitos, etc. Perhaps the most important thing we learn is where the weak spots are in our equipment. Gear breaks down over time, and FD gives us an excuse to test everything.

Field Day occurs as we get into summertime propagation. The DX openings are not as good as during the colder months. That in itself is not a real problem since we generally only work US and Canadian stations in FD. The bread and butter bands are 40 and 20 meters. You can usually depend on those. The higher bands, 15 and 10 meters, are kind of iffy. They can be really productive if we get a good sporadic E (Es) opening. On



average, we get one of these about every three years. You have to prepare for it, but you can not depend on it.

Sporadic E is important to other bands. Six meters depends on it. We can make hundreds of contacts on the band if we get a good, sustained opening. If we don't, maybe we only get a couple of dozen. Sometimes we will get Es on 20 meters in the evening, and the band stays open very late, and maybe all night. That is critical to having a top score from the Midwest. Again, it only happens in some years.

The activity moves down at night, and 40 and 80 meters become the big bands. That is assuming the thunderstorm activity is low out for 1000 miles or so. The static can make those bands miserable, especially on phone. And, of course, if the storm gets near us, we need to shut down. There is no point in risking lives and equipment to a lightning strike. Many years I have had to shut down for a couple of hours.

If you are interested in more details on summer and Field Day propagation, Ward, N0AX, has an excellent article you can read.

<https://www.onallbands.com/hf-summertime-propagationwith-propagation-advice-for-field-day/?fbclid=IwAR3Tk8JSjTWriGFCCcBcUcMUoFAQaLEQpj5jjdNdQh28vzNjjzcSe6w5cPxQ>

I operated my first Field Day in 1971. I was a Novice, and FD rules allowed a separate station set up and operated by Novice class licensees. After the Novice license was eliminated, the ARRL replaced it with the GOTA stations. One of my high school buddies ran the Novice station for the local club. He asked me to come help set up and operate.

Operating didn't sound exciting to me then, but I agreed to stop by and help set up. I told my parents I would be home for dinner. Well, I was home for dinner, but on Sunday night, not Saturday. I really got into it and was awake for over 24 hours to set up, operate, and tear down.



**Ken, K9GA, operating 20M phone, 2022 FD.**



**Sunset FD 2022. 6M beam on the left, and CW station's antennas in the center and to the right.**

Field Day is often the introduction to contesting. As you know, contesting is one of my big activities in the hobby. This will be my 52<sup>nd</sup> consecutive year participating in FD. I'm only a bit over halfway to my FD operating streak goal!

## Big Solar Flare and Radio Blackout

Steve, K9WO, is a friend of mine who lives up near Portage. In May, he and his wife took a long trip to the southeastern states in their camper. Steve likes to hike and participates in the Summits On The Air (SOTA) program. The SOTA program designates a number of hill or mountain summits. Operators can go there and give out contacts. They have awards for activating summits as well as working them from home.



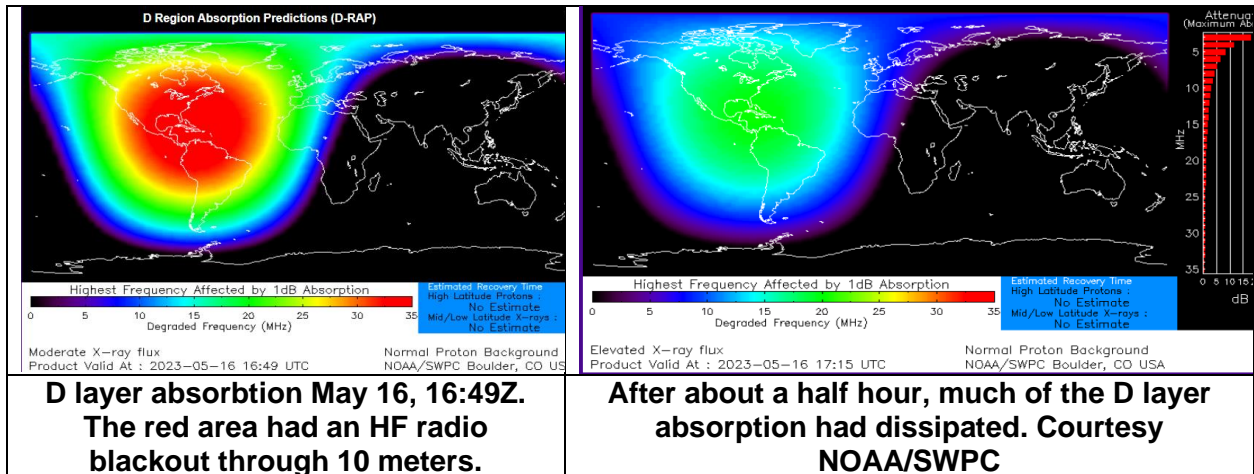
**Steve, K9WO operating from a SOTA summit. Eva Dubberstein photo.**

Some summits are pretty easy to get to. One popular one in this area is Holy Hill. You can drive up and operate from the parking lot. SOTA does not allow mobile operating, so you would need to set up an antenna and station from there.

Steve likes activating the more remote ones, where you have to hike a mile or more, often in locations without trails. For those operations, lightweight gear, batteries, and antennas are critical, meaning compromise antennas and low power. It can be challenging to make contacts.

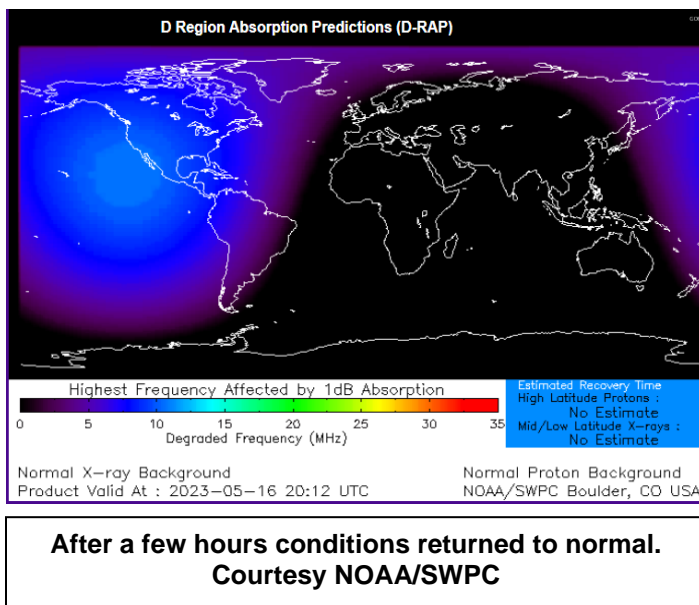
On May 16, Steve notified me that he was leaving on a hike to a peak in North Carolina and would be on in an hour or so. I tried to work him whenever I was around and had pretty good success, mostly on 20 and 30 meter CW. On that day, he was on 30 meters. I tuned to his frequency and didn't hear him. I tuned around a bit and didn't hear anything else, including on the FT8 frequency, which usually has some signals. So I went to 20

meters and didn't hear much there either. Was there something wrong with my rig? No, we had a Sudden Ionospheric Disturbance, or SID for short. I went to the solarham.net site, which gathers solar and ionospheric information from several sources and puts it in one place. One of the graphics showed the D-layer absorption. The D-layer is the ionosphere layer that absorbs the lower frequencies during the day. That is why we only hear local AM broadcast stations and local hams on the lower HF bands during the day. However, the D-layer ionization dissipates after dark, and we get more distant stations via F-layer propagation.



We get a big burst of X-rays from a solar flare. These X-rays head to Earth at the speed of light and ionize the D-layer. The intensity of the X-rays can be high enough so not only the lower frequencies become affected but also well into the HF bands. On May 16, the X-ray burst was very strong, and the blackout area covered most of the continental US, most of Canada, and down through Central and the northern half of South America. And this was just the most intense region, where the absorption went up to at least 35 MHz. Lower frequency absorption affected much larger areas.

The flare X-ray burst is short, and without a source of further ionization, the ions in the D-layer recombine, and conditions return to normal after a couple of hours. The accompanying graphics show the affected area over time.

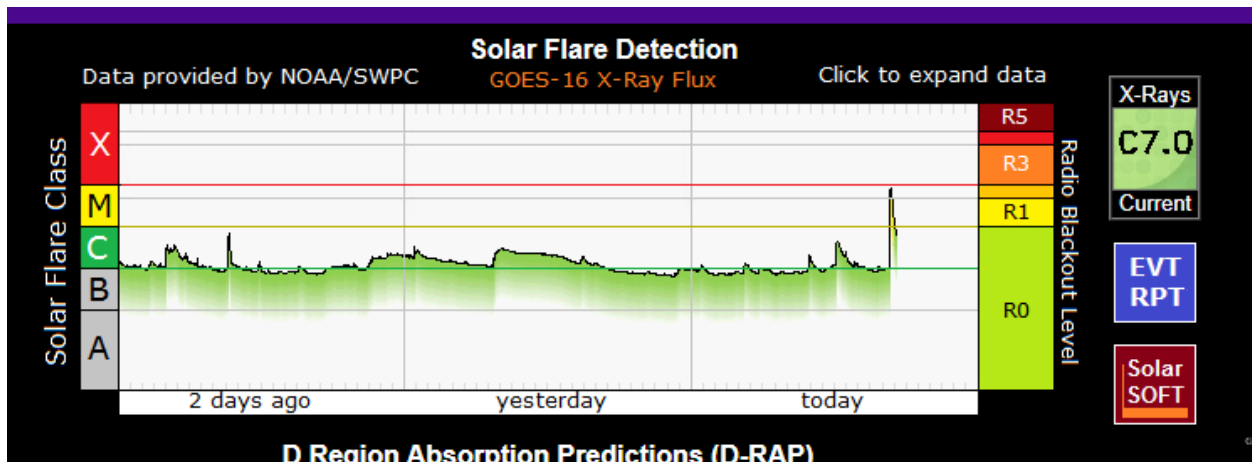


The flare that caused this blackout was just beyond the sun's visible portion. It was so big that it cleared the limb of the sun. It was rated as a 9.6 M class flare. Some say it would have been an X class flare if we had seen the whole thing. X class flares are enormous, and we just missed that.

Because the flare was on the other side of the sun, the charged particles that follow a flare a few day later were not directed toward Earth. Large solar flares cause auroras that are beautiful to watch, and we can bounce VHF signals off, but they

cause problems for satellites and, in extreme conditions, can cause power blackouts as well.

Steve reported that he was operating at the time of the solar flare. He was running stations at a good rate. Then Steve had a high noise level but didn't think too much about it. He only made about four more contacts in the next half hour.



The spike on the left is the big solar flare on May 16. It just missed becoming an X-Class flare. Courtesy NOAA/SWPC

## 6 Meters

June is a great month for working sporadic E (Es) on 6 meters. We have had a few excellent days with the band open all over the US in the first few days of June. One of the popular activities on the band is to work for the VUCC award. You get it for working grids on VHF and UHF bands. You need to work 100 grids on 6 meters and 2 meters. Higher bands require fewer grids. Each band is a separate award. Right now, most of the 6-meter activity is on FT8, but don't forget to check SSB and CW if the band is really open, especially in contests.

Another award being chased is the Fred Fish Memorial Award, FFMA. Fred was the first ham to work and confirm all 488 grids that include land from the lower 48 states on 6 meters. This is a tough award. Some grids have no active hams on the band. Some have just a tiny amount of land.

Only 41 hams have gotten the FFMA award. The latest is Lloyd Berg, N9LB, who qualified on June 5. Lloyd lives near Madison. The last one he needed was on the west coast with just a sliver of land in Oregon. Most of it is a beach looking into a cliff, so good operating spots are hard to find. Es is only good out to about 1200 miles, so to work it from here, we need two patches of ionization in just the right places, making it even more challenging.

Gary, K9DJT, Ken, W9GA, and I are actively chasing the award. I just passed the 450 confirmed FFMA grid mark. The new ones are getting harder and harder to find. Usually, they happen when someone goes to a rare grid and operates. Gary outfitted a trailer with

a short tower and beam. He gave it a test last fall, and I look forward to him hitting a few grids I need to my north this season.

If you have never tried 6 meters, you are missing out on a lot of fun. Most newer HF rigs have the band. Antennas are small, and a dipole for the band is just over 9 ft long. They don't have to be high. With a lot of 6-meter Es contacts, my antenna at 19' outperforms the one at 55'. Es signals arrive at relatively high angles, so you don't need high antennas.

My last new FFMA grid was a new ham in Montana. He was using a vertical and 100 watts. Check out the VHF tent if you are visiting the ORC Field Day. Jeananne, N9VSV, will be running 6-meter phone. Hopefully, we will have some good openings to keep her busy!

## Dayton

I was not planning on going to the Hamvention® near Dayton this year, but Lyle, WE9R, convinced me to go. I'm glad I did. I had a lot of fun. I think I have been to it at least 35 times.

The weather was good for a change. We had a bit of rain on Saturday morning, but it cleared up by the time it opened. It was not a heavy rain, and we didn't have the mud pit in the flea market we usually see. It might have been the best weather since they moved it from April to May many years ago.

Several ORC members made the trip this year. I tried to take pictures of them when I saw them. My apologies if I missed you or forgot to take a picture.



Tom, KC9ONY



Fred, W9KEY



One of the highlights of this year was that a friend of mine, Ken Claerbout, K4ZW, was inducted into the CQ Contest Hall of Fame. Ken grew up in Wisconsin. Lyle was one of his mentors. Ken works for a government branch that deals with transmitters for the US, such as Voice of America.

Ken travels around the world for work. Between work and personal travel, he often operates from rare areas. He has made several trips in the last year or so to Ethiopia to help get the technical college station ET3AA up and running and train students to get their licenses and improve their operating skills. He will be returning to Ethiopia later this month.

Two others were inducted into the CQ Contest Hall of Fame. One is Kirk Pickering, K4RO. I worked with Kirk when I wrote a column for the NCJ; he was editor for a few years. The other inductee was Bernhard Buettner, DL6RAI. Tragically, Ben was killed a few days before the official induction when a tower he was on collapsed.

### **End of the AM Broadcast Band?**

There has been a lot of talk recently on car manufacturers not installing radios in new electric vehicles. They argue that AM broadcast is dead, and no one uses it anymore. While all over-the-air broadcasts are declining as technology provides alternatives, AM radio offers some advantages over the alternatives.

You will not hear SiriusXM break in and say there is a tornado headed toward Grafton, WI. (Unless tuned one on of the SiriusXM specific metro channels.) The local/regional aspect of the coverage of local stations is important for spreading important information.

In rural areas, they provide local news coverage that would otherwise be ignored. Many small AM stations play music and programming to ethnic groups in their native languages.

The AM band is good for local and regional coverage. It usually has a better range than the FM broadcast band. An AM (band and mode) radio is pretty simple. You can even use a crystal set. At one time, new cars were required to have an AM radio because it was part of the Civil Defense efforts during the Cold War.

Streaming is fine from home but not so great in the car. You need special equipment, a subscription, and be in range.

Nor am I convinced by the argument that the AM BC frequency band would provide economic improvements for another purpose. The FCC indeed generates billions of dollars auctioning off spectrum space. But those are in the UHF and microwave frequencies. Those frequencies are needed for high bandwidth and small area coverage.

I often listen to AM broadcast radio from my car and when working in the yard with an old boom box. I listen to ball games and talk radio. Maybe part of it is nostalgia from my youth when I had a lot of connections to AM radio. The neighbor across the street was the news guy on a local AM station. I was once the "anonymous source" of a news story he did explaining the strange moving lights in the night sky everyone was seeing were not alien spacecraft, but actually small hot air balloons made from dry cleaning bags, balsa wood, and birthday candles. I can neither confirm nor deny that I was personally involved in any of the balloon launches.

My uncle (W9FJ – SK) moonlighted as an engineer at a local AM station, and I would sometimes visit him there. I took tests for the FCC Commercial license in high school to work part time while in college as a station engineer, but fate moved me in a different direction. FM had not taken off, so I listened to rock music on a local AM station. My favorite DJ was a ham, by the way. So, I do have a soft spot for the AM broadcast band.

The effort by the car companies to eliminate AM radios is purely an unethical economic one. It is cheaper to pollute the airwaves with RFI from the electrical system than to fix it. Even if they don't want to put AM radios in their cars, they should be required to clean up generated RFI. Maybe you don't listen to the AM band, but do you want your QSO on one of the HF ham bands covered up every time an EV drives by?

### **13 Colonies Special Event**

A regular event for a few ORC members around our Independence Day celebration in early July is the 13 Colonies Event. There will be special stations from each of the 13 original colonies. They will be using special 1X1 call signs starting with K2. There are also bonus stations GB13COL (England), TM13COL (France), and WM3PEN.

Oddly enough, the website has not been updated for 2023 as of this writing. But it usually runs from July 1- July 7. If you work them all, you can get a certificate.

## Hamfests

Two hamfests are coming up. The first is the LAARC FreeFest in Burlington on June 10. The other is the South Milwaukee Swapfest on July 8. This is probably the biggest outdoor hamfest in Wisconsin and one of my favorites.

## Contests

The first big contest is the ARRL June VHF contest on June 10-12. (Note the dates on the ARRL website are wrong.) It starts at 1:00 PM on Saturday afternoon and ends Sunday night local time. Work anyone once per band on 6 meters and above.

The June VHF contest is the biggest of the ARRL VHF events because we usually have some good sporadic E openings, and 6 meters can be really wild. You send your grid square. Signal reports are optional.

I think FT8 and other digital modes have made VHF contesting more fun. There will be periods when the band is not open, but you need to be present in case it opens. FT8 often lets you make contacts during otherwise slow periods.

The problem is that far too many stations never get off FT8, even when the band is wide open. You can make 3-4 times more QSOs/hour on SSB or CW than on FT8. In practice, it might be much more. If the band is really open, it gets too crowded, and it often takes many retries to complete a QSO. So, if it opens up, at least switch to FT4, which is faster and less crowded than FT8, but you really should be on SSB or CW if the band is open.

The ARRL put in new classes this year to encourage SSB and CW contacts. There is an analog-only for CW and phone contacts and a mixed mode that allows digital, CW, and phone modes.

If you are using FT8 during the contest, remember to set the "NA Contest" box in the Advanced Settings tab.

Field Day, June 24-25, is officially not a contest. But if you make contacts, keep score, etc., it is a contest in my book.

The IARU HF World Championship is on July 8-9, starting at 1:00 PM Saturday, and runs for 24 hours. It is sponsored by the IARU and administered by the ARRL. You send a signal report and your IARU zone, which is zone 8 for us.

Work everyone on 160-10 meters (no WARC bands). The modes are CW and SSB. You can work other stations once per band/mode.

This year is special because the World Radio Team Championship (WRTC) will be held during the IARU contest. This event is sort of the Olympics of ham radio. It was supposed



to be held in 2022 but was delayed a year due to COVID, so it is still being called the WRTC 2022 even though it is this year. It will be in Italy this year.

Ham radio contesting is an uneven playing field. Some stations are better than others or may have better locations. Did one win because they are better operators or have a better station? WRTC aims to level the playing field. They put in a lot of effort to ensure that all the stations use identical antennas and locations are picked to be as similar as possible.

The teams are assigned locations randomly a couple of days early to set up. Antennas and shelters are provided, but they bring their own equipment. They all have special callsigns to hide their identity. You can't just work your friends because you won't know what call signs they will use. They learn their call sign about an hour before the contest starts. Each station has a referee to ensure all the rules are followed.

A group of something like 50 two-operator teams will compete against each other. To qualify, they have to operate many contests over the period of a year or so and gain points depending on how highly they score. Becoming eligible requires a lot of dedication because there are so many contests.

The team leader representing Team USA NA4 (which includes W9) is Scott Jasper, NE9U, from Menomonie, WI. Team leaders get to pick their partners, and Scott picked Craig Thompson, K9CT. Craig has a super station in Trivoli, IL. Good luck, guys!

## **DXpeditions**

The Rebel DX Group is currently in Central Kiribati in the Pacific. They are using the callsign T31TT and will be there through June 12

Ducie Island will be activated with the callsign VP6A June 11-24. This is an interesting operation. They will be using RIB (Rig in a Box) stations. These are self-contained stations in a case. The idea is that they minimize the environmental impact of a DXpedition. It only takes a small crew a few hours to take them to the island and set up the station. They only need to return once a day to refuel the generators. There is no need for tents and other infrastructure to house and feed the operators.

The operators use RF links from a yacht anchored near the island to operate the RIBs. This operation will also have about a dozen remote operators worldwide using the Starlink satellites to connect to the RIBs.

That wraps up June. Don't forget the ORC Field Day on June 24-25. See you there!

**See W9XT's Operating Picks for June and Early July 2023 on the next page.**

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for June and Early July 2023

### DX

W9XT's DXpedition picks for June and early July 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Central Kiribati	Through June 12	T31TT	160-10	C/S/D	
Ducie Island	June 11-24	VP6A	160-6	C/S/D	<a href="https://www.qrz.com/db/VP6A">https://www.qrz.com/db/VP6A</a>

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

W9XT's contest picks for June and early July 2023					
Name	Start	Length	Bands	Mode	Link
ARRL June VHF	1800Z		6M and up	C/S/D	<a href="http://arrl.org/june-vhf">http://arrl.org/june-vhf</a>
<b>ARRL FD</b>	<b>1800Z</b>	<b>24</b>	<b>All</b>	<b>C/S/D</b>	
IARU/WRTC	1800Z Jul 8	24	HF + 160	CW SSB	<a href="https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf">https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf</a>

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT). HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for June and early July 2023			
Event	Dates	Details	Link/notes
Burlington LAARC Hamfest	June 10		<a href="http://www.arrl.org/hamfests/laarc-wi9elk-lra-kr9rk-freefest">http://www.arrl.org/hamfests/laarc-wi9elk-lra-kr9rk-freefest</a>
13 Colonies	July 1-7	K2B through K2M calls	<a href="http://www.13colonies.us">http://www.13colonies.us</a>
South Milwaukee Hamfest	July 8		<a href="https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023">https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023</a>

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



For the most part, articles in this series have been about radios I have collected in the past and/or exist within my current collection. Occasionally, however, I have written on a particular unit that has been the object of a restoration or odd and sundry rescue from a fate that could have led to its ultimate destruction.

I need to be clear in my feeling about vintage radios. To me, altering or changing a vintage radio is something just not done. At the very least, every effort should be made to provide for reversal of the process. These old radios are, to my way of thinking, a window on radio history in terms of physical appearance and electrical design. It is always a shame when examples are

lost – especially those as rare as the Drake TR5.

Back in the 1980's, the R. L. Drake Company introduced their Drake TR5 HF Transceiver. While carrying the appearance of the late 1970's Drake TR7 HF Transceiver, the looks and size of the TR5 only resembled the TR7 in very minor ways.



**Restored and Repaired Drake TR5  
Subject of This Article**

**W9MXQ Picture**

This radio came to W9MXQ from a friend in the western United States who bought it, along with a matching Drake PS7 AC Power Supply in a configuration built like a go-box<sup>1</sup>. I do not have a picture of how the “Go-Box” arrived at my friend’s QTH, but he had a good description and a picture of one that was sold years ago on eBay. I will show a picture of that one here with the note that, according to my friend this is exactly what his looked like.

He bought this assembly for “under \$200.00 on the off chance it could again be made into a proper TR5 and PS7.” As of this writing, good TR5 Transceivers are valued at close to \$800.00<sup>2</sup> and good PS7 Power Supplies are valued at around \$170.00<sup>2</sup>.

Likely due to their very limited production life – only about 500 units<sup>3</sup> – the value of a very nice TR5 exceeds the value of a similar condition TR7 – but this can be variable, depending on the condition of each.

Drake TR5 HF Transceivers were an attempt to cost reduce the feature-set of the TR7 HF Transceiver. The TR5 resembles a solid-state version of the TR-4CW-RIT Transceiver as far as included design features. Most likely, however, it closely resembled the ill-fated Drake TR-5<sup>4</sup> Hybrid Transceiver that supposedly was designed to replace the TR-4 series.

Some months ago, my friend bought the previously mentioned “Go-Box” set that included the TR5 and PS7. While I had no regrets at the time (and only a few now that I decided to author this article), no pictures were taken of the unit at receipt, and I took no pictures of the separate units when I received them. However, my friend did find a picture of a nearly identical unit for sale sometime in the past on eBay. Check this picture:



This is the “Go-Box” configuration as shown in an eBay ad from the past. The unit in this article was similarly configured. This is NOT the package that supplied the pieces that I received. It looked nearly identical to this, however..

**W9MXQ – taken from eBay**

Some notes on what I found upon receipt of the units.

#### **On the TR5 Transceiver:**

- The Outer Wrapper (Drake’s term for the wrap around top and sides you see on a complete radio) was missing.
- The feet were missing. (But the owner provided me with four generic feet.)
- The radio included the following Drake options:
  - Optional SL1500 Drake Narrow SSB I-F Filter.
  - Optional NB5 Noise Blanker
  - Optional FA7 Cooling Fan
- The exposed extruded aluminum areas were spray painted a color that was a somewhat lightly tinted Olive Drab color.

- The Name Strip appeared missing. See the radio picture on the first page of the article – the Name Strip has the wording TR5 TRANSCEIVER and the DRAKE name and logo. The strip was painted the lightly tinted Olive Drab color of the extrusion and was covered by the original equipment clear plastic strip. There was some lettering between the meter and the readout that later turned out to be applied from press-on lettering. See details of that lettering, later.

### **On the PS7 Power Supply:**

- The Top Cover for the Power Supply was missing. But my friend did supply a Top Cover. I think he may have received it from the original seller – not sure. The Top Cover supplied was bent and had paint missing in several areas.
- The stock AC Power, High Current DC, and Low Current DC/Control cables were full length and supplied still hard wired to the PS7 – and were in good condition.
- The feet were missing. (But the owner provided me with four generic feet.)
- The power supply included the following Drake options:
  - Optional FA7 Cooling Fan
- The exposed extruded aluminum areas were spray painted a color that was a somewhat lightly tinted Olive Drab color. In addition, the entire front panel of the power supply was also painted the same color – as evidences by the picture.
- The handle was in good condition – not distorted like the picture.

The outer surround was 0.125" cold rolled steel, bent to fit tightly around the TR5 as it sat very close to the PS7 (TR5 over PS7). It was painted the same lightly tinted Olive Drab finish. That cover, along with some bracketing to hold the radios in place, were scrapped by the owner. He said that the cover had been repurposed from another use. It has been used as a sign with the original lettering left painted on the inside of the fabricated cover. The same was true of the thinner gauge brackets – they had been cut up from a previously printed (on one side) steel item. I can relate to that process in making home brew gear.

I first had to take stock of what was needed and get the agreement from the owner about what could be bought on the market and/or sold to him from personal inventory. Here is a list of what parts were needed and how they were sourced:

- Wrapper for TR5 – completely missing. These are now nearly “unobtainium.” I sold the owner one of my two NOS spares.
  - TR5 and TR7/TR7A Wrappers are nearly identical. The TR7/TR7A Wrapper has slots on the left side to accommodate the side mounted speaker in the radios. The speaker in the TR5 is on the bottom of the radio so a true TR5 Wrapper has no holes in the side.
- Feet for the TR5 and the PS7 were completely missing. The feet supplied by the owner were completely incorrect – so much so that the difference was noticeable. With his agreement, I supplied feet, bumper inserts, and mounting screws that were in my inventory and correct to Drake OEM specifications.
- The knobs on the TR5 to control VOX ON/OFF/GAIN and DELAY were incorrect. They were larger 0.250" shaft knobs that were yellow (UGH!!). Since they were

0.250" knobs on an 0.125" shaft, they wobbled and were never quite tight. I replaced them with OEM Drake knobs with the agreement of the owner.

- This occurred on one of my two personal TR5 Transceivers. In that case, the mounting of the larger knobs involved replacing the pots with 0.250" shaft units. While the appearance was fine – larger matching Drake knobs were used – the result was non-standard, so I returned the design to original Drake specification.

The critical task was to reverse the non-standard color. The picture below (a larger version of the one shown above) shows the accent exposed satin brushed aluminum strips that appear between areas on the front panels with blue arrows. Then, with the orange arrows you can see the areas where there were black (TR5) areas and dark gray (PS7) areas.

Picture here and get an idea of what I saw when opening the shipping boxes. (Remember, I only saw the individual TR5 and PS7 – the outer housing was gone.



### Areas with Color Damage

That is, non-standard paint – off shade Olive Drab in the owners case.

W9MXQ – edited from eBay

Paint removal has not typically been a main task for me in recent years. Right or wrong – and unlike many of my fellow collectors – I have graduated to finding very good condition vintage radios that do not need paint or paint removal. I just do not do that anymore. That is much more evidence of my age than it is anything else. My hat is off to those of you that do that kind of work.

My plan and initial tests with removing paint was on the bottom (out of view) part of the front panel extrusion of the TR5 Transceiver. Just so you know, the original modifier of the equipment did not just paint the exposed areas of the extrusions – he/she removed and painted the whole extrusion – front, back, top, and bottom – on both the TR5 and PS7. My first tests were done using a gel, non-toxic paint remover, “Smart 'n Easy™ Citrus Paint & Varnish Remover Gel.” I found this at a local hardware store some time ago and had it here for various projects. Read on, however, as it was not my final choice.

I made sure the area on the bottom of the panel was clean – actually, I carefully cleaned the entire panel with Fantastic™ Spray Cleaner before starting any work. I let the panel sit and dry for about an hour after cleaning.

Applying a small amount of the gel across the bottom edge of the extrusion and letting it sit for about five minutes produced excellent results – the paint was gone onto my wiping cloth and the extrusion looked brand new. I liked the results with the Smart 'n Easy™ product but it scared me, and I did not like the smell – even out of doors where I used it. At the suggestion of my long-time friend, fellow radio collector and restorer, and article proofreader, Bob, W9DYQ, I next tried a popular cleaner product we both use, Goof Off™ Cleaner – available at your local hardware store. Bob suggested that Goof Off™ might remove the paint from the extrusion. He was right – and a lot cheaper alternative as well.

I applied my process to both the TR5 and the PS7 Extrusions with no problem. I even removed the paint that would be covered by trim panels and/or be otherwise invisible. I would know that darned olive drab was in there somewhere. I advanced to the point of spraying the Goof Off™ on the panel then standing them on end for about ten minutes before wiping them off. I then cleaned them with clear water and finally a round of Fantastic™ cleaner. Following that (which totally removed the sight odor left by the Goof Off™) I again rinsed the panels with clear water and then towel dried them.

Be very careful with this process on aluminum. I was afraid that it might just turn the aluminum black – a point supported when I first had talked to customer service for the “Smart 'n Easy™ chemical. In my case, it did not – but your experience may not be the same. Test and re-test in an inconspicuous area before going further.

Do the same when you shift to another part – you do not know when some change in the part specifications could have been made by the part’s supplier that may be more, or less, susceptible to the chemicals.

Below are pictures of the two chemicals as they came packaged. I actually have Goof Off™ in a container line the Smart 'n Easy and keep re-filling the first spray bottle I bought.



After all of the above we still had not completed the refurbishing of the Name Strip on the TR5 and the Front Panel on the PS7. The Name Strip was a worry, so I left myself some time by doing the PS7 Front Panel, first.

Since now we were working with the painted front panel of the PS7 Power Supply – and not an extruded part, it meant that we were removing a layer of paint – but did not want to remove the correct dark gray Drake paint. I had already removed the handle and the panel from the front of the power supply in preparation for removing paint from the front extrusion. As I started to plan my process, I remembered that the Smart 'n Easy™ product proudly says it can “remove up to 12 layers of paint.” Well, this is not a goal since I only want to remove one layer!! So, I decided to use the less aggressive Goof Off™ chemical. Initial tries with using a cotton swab to apply Goof-Off™ was pretty successful, if slow.

The olive drab paint mostly came off after letting the chemical sit for about two minutes. I decided that discretion is the better part of valor, as we say, and continued the process in one small area after another. planned then to go back over the panel when the small areas were completed and make sure the panel was completely free of the olive drab paint. But wait – there was more – not good!! In removing the olive drab paint with no damage, I had also removed most of the product model information from the upper right-hand corner of the panel. Major parts are still there, and I believe I can match the colors and repair the voids. A story for another day.



Drake PS7 Power Supply and Logo callout. Upper right-hand corner of the front panel. Gone but not forgotten!!

W9MXQ



I replaced the PS7 Front Panel with a spare in my inventory. In the end, however, the original owner said that he plans to put the PS7 on the floor – as I always do with them. He said that he was more than happy leaving the panel as it is.



**Drake PS7 Power Supply – Restored and Back Together**

**W9MXQ**

The rather poor condition Top Cover for the PS7 was corrected by removing the paint first with the Smart 'n Easy™ product – since this was factory paint and more difficult to remove. It took a soaking of about 15 minutes but then it was easily removed, outdoors, I repainted it with Black Wrinkle Spray Paint. It was a no longer available Krylon™ product that has been used out of the same spray can for years. It looks just like the original.

The remaining issue is the Name Strip on the TR5 – not a lot of room for compromise solutions here but not outwardly looking too good. The name strip is very thin (0.012” thick) aluminum that is punched out to see the frequency readout – to the right of center – and another punch out to allow viewing of the meter. That Name Strip is a critical appearance item:



Notice that the strip is black with a silk-screened surround encircling the frequency readout window and a two-color silk-screened area to the right of the frequency readout calling out the radio's model number and the Drake name and logo. This appeared all to be covered with olive drab paint. This is critical here because I had already discovered on the PS7 panel that the silk-screened area was vulnerable to the paint remover.

Actually, to end the suspense here, I have to say that when I was removing that strip and the plastic strip that is in front of it I pulled it straight out and then put it out in sight for a while during my paint removal process on the main extrusion. I had not noticed that the guy doing the modification in the first place had merely turned the strip over and painted the backside green and put on the white lettering you can just see in the pictures. I never

turned the part over and noticed that the original part face was staring right at me in perfect condition! What a stroke of luck. Unlike the TR7 Name Strip, the one on the TR5 has all features on the center line – so flipping it over leaves an identical part.

But not being happy with such a great turnout, I decided to go after the darned green paint on the back of the panel. Besides, the paint was almost as thick as the strip, and it made the Name Strip and clear strip over it a tight fit in the extrusion. It had already scraped the Name Strip just a bit. I decided to use the gel chemical Smart 'n Easy™ product since I felt I could control the flow of the gel better than the watery Goof Off™ product. I put the Name Strip with the screened side down on a layer of paper towels and slowly removed the paint on the back with a cotton swab – and then another swab to remove it about a minute behind. It worked perfectly. That was the last of the olive drab!!

*Note: When removing the green paint from the back side of the clear strip, the lettering placed there at modification came off as complete single letters and number. This confirmed to me that they were hand lettered using a press-on vinyl letters. Those letters were not damaged by the paint remover. Silk screen lettering would have dissolved along with the green paint.*

Finally, after the radios looked like proper representatives of Bob Drake's expertise, it was time to take care of a few alignment issues. The radio received well and checking into MidCARS and eCARS netted excellent reports. QSO's with local hams confirmed that I sounded like myself when using the radio, I felt pretty good about it. I had returned all the crystals to their proper locations and tested all bands for proper operation. The TR5, as Drake marketed it, shipped without the crystals for 160, 17, 12, and only had the 28.5 to 29.0 position on the 10-meter band. The 30-meter band – already open to hams by the time the radio was marketed – was included.

In spite of good operation, I checked receiver alignment and found it bit off here and there, but likely not enough to notice on the air. I did re-calibrate the frequency readout, which was a tad low. One item, RF output power, was a problem. The PA was putting out well over 100 watts. My two TR5's strain to get to 90, let alone the 150 watts this radio put out. I adjusted that back into reality. Beware of the TR5 – it does NOT share its PA with the TR7, and such high power will eventually destroy the PA transistors – and produce distortion in the process. Think of the TR5 as a 50 to 80-watt output radio and you will be in the right territory to allow the radio to live a long life.

Two things are, in my opinion, regrettable in the TR5 original power amplifier design:

1. Drake was in error (hindsight is always 20-20!!) in not supplying a 100-watt output power amplifier in the radio. Today's hams will complain at length about one particular Japanese manufacturer whose 100-watt nominal power amplifier produces only 95 watts on some bands. Think then how they reacted to the TR5.
2. The error was further aggravated by Drake using a lower power amplifier but using the same unique heat sink as used by the much higher powered TR7 and TR7A<sup>5</sup>.

This fooled “golden screwdriver hams<sup>6</sup>” into thinking it was the same power amplifier circuit as the more powerful radio. It wasn’t.

In closing, I want to emphasize one caution in my process outlined here to remove paint. Read what comments made, above. Your experience most certainly can vary from mine. A lot of repainting uses cheap “rattle can” paints and a lack of surface preparation. Those two things lead to the paint being easy to remove. If the surface work uses even minimal preparation, the removal may be more difficult. I was perhaps fortunate in what I found with this TR5 and PS7. I recommend that you have alternatives in mind for any step you take in the areas that I have described. As an alternative – which I would do only in an extreme situation – is to use the system used by Ten-Tec in the Omni V, VI, and VI+ Transceivers (and accessories) that used an identical design. They painted the exposed areas in a metallic looking light gray paint.



### Drake TR7 sitting atop a Ten-Tec Omni VI at W9MXQ

Note the same exposed extrusion area on both radios. On the Drake, the exposed area is that of anodized satin brush finished aluminum. The Ten-Tec is anodized aluminum but is painted a light metallic looking gray.

As you can see, this can look just fine<sup>7</sup>.

**W9MXQ**

I appreciate that you read my articles. I add a special note of thanks to Bob, W9DYQ, for his proof reading. Bob is much more than a proof-reader and is actively involved in the history of the radios that are the subject of my articles. Remember that I am open to questions and comments at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

#### Notes:

<sup>1</sup> The concept of a “Go-Box” as it relates to ham radio is an enclosure that can be easily moved from place to place and carries all necessary radios, antenna metering, speakers, and other items – plus sometimes even power supplies or batteries – for setting up emergency or portable operations.

<sup>2</sup> The prices shown are eBay and Nationwide Radio & Eq. Sales LLC, respectively. Prices certainly can vary by a wide margin.

<sup>3</sup> The widely respected <http://www.wb4hfn.com> website acknowledges around 514 TR5 Transceivers and over 12,000 TR7 and TR7A models.

<sup>4</sup> The TR-5, admittedly, may have been a myth but it seems widely documented. At the time of the TR-4 and the supposed TR-5, Drake used a dash ("-") in the model numbers. That changed with the TR7 and the later TR5 as we saw it, did not have the dash in the product nomenclature.

<sup>5</sup> The TR7A was mentioned several times in this article. The TR7 and TR7A were identical except that the TR7A added the NB7 Noise Blanker and the SL500 CW Filter as standard equipment. Also, the TR7A included a bypass of the AM filter position (in the absence of the optional SL4000 or SL6000 AM filter) to allow AM reception using the Roofing Filter for relatively wide (9000 Hz) bandwidth control – ideal for Shortwave and Broadcast Band Listening. Other added features included the addition of front-end surge protection for the receiver circuitry and an added rear panel connector for microphone audio input. It should be noted that a very early TR7 and the very latest TR7A differed only in minor ways. The TR7 line was a very stable design

<sup>6</sup> The concept of a “golden screwdriver hams” is used often in reference to undocumented modifications of circuits or settings that may be in defiance to what the original engineer intended. In days past, this was many times quite innovative – and in rare occasions it still can be, today. However, as a collector, I find many times such modifications are not in the best interests of the radios. One of these – excessive drive and output from the final amplifier – not only produces stress on the circuit, but also tends to produce distortion and otherwise poor output. Other alignment “adjustments” or modifications in my experience have led to key clicks, poor i-f filter response on receive, and/or receive audio distortion.

<sup>7</sup> The Ten-Tec Omni VI shown here has shiny surface electrical tape on the outer edges of the front panel assembly. I had been working on the Omni VI when this picture was taken – and when doing so I always tape that area to prevent damage to the extruded (and this case, painted) aluminum trim.

©W9MXQ



# Vintage Amateur Radio – News and Thoughts

de Bill Shadid, W9MXQ



This month marks the 71<sup>st</sup> consecutive Vintage Amateur Radio Article in this series. As I have said before, thus far all the articles have been on radios that I own or have owned. The only exception was an article on the Collins KWM-1 Transceiver of 1957. Even then, the radio was from the collection of my proofreader and long-time ally in these articles, Bob Bailey, W9DYQ.

While the number of available models of radios to be reviewed are still numerous, you will find that recent movement into use of vintage radios and specifics of restoration will become more a part of the content. Again, these will focus on radios that I have, or have had. Also, it will include radios in or included in the past collection of Bob,

W9DYQ. On occasion, others may also be involved.

This month was to have been the first of this kind of article – actually a follow-on of last month’s article on the refurbishing of a Kenwood TS-900S (the version with the 4X150 final amplifier tube). This article was to have included the details of what my friend Jan Servaites, N8CBX, of Kettering, OH, did in restoring the TS-900S Transceiver owned by another friend, Rusty Cline, N9DRC, of Rio, Wisconsin. You may see examples of the excellent restoration work done by Jan, N8CBX, by checking his QRZ page.

Instead of the TS-900S article follow-up this month, you will find a restoration I did on a very rare Drake TR5 Transceiver that had been partially repainted and remounted in a very ventilation restricted homebrew “go-box” enclosure. In the same enclosure was also a modified and partially repainted Drake PS7 AC Power Supply. Both units now look and operate like new. I think you will find it interesting.

The TS-900S follow-up article will appear in the near future. Included will be the process detailed by Jan, N8CBX, and also my addition of specific location details and illustrations on where to find specific items involved in the repair and restoration. I think you will like the results. Future such articles will chronicle restoration activities on Drake, Collins, Hallicrafters, National, Hammarlund, Swan, Cubic, and others as outlined above.

Finally, this year will see a focus on a more “recent Vintage Amateur Radio.” What is that?” For many hams licensed in the past forty or fifty years, Vintage Amateur Radio are the hybrid radios. That is, radios using driver and final amplifier tubes with the rest of the radio being solid state. Did I say forty or fifty years. The first hybrid transceiver was the

American made, Sideband Engineers SB-33 Transceiver. The SB-33 was introduced sixty years ago, in 1963.

So, please read and enjoy these Vintage Amateur Radio articles going forward. As always, please let me know your comments and suggestions. [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com)

**W9MXQ**

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**We all know that Gary, W9XT, has been experimenting in the VLF Frequencies using the latest FCC frequency allocations. Here is Gary preparing for a contest in the SuperVLF allocation being proposed as this Newsletter goes to press.**

**Note the wires progressing from his ears to a direct feed from a VHF HT in his shirt pocket so he can monitor the ORC 2M Repeater at the same time.**

## **Ozaukee Radio Club Minutes of Membership Meeting. 05/10/2023**

**de: Ken W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:29 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. ORC is in need of members to help in several areas, including technical committee, meeting programs manager, auctioneer and as 2<sup>nd</sup> VP.

### **Program:**

Pat W9JI and Bill W9MXQ jointly presented a program on the early days of Collins Radio, with an emphasis on some of the pre-W.W. II transmitters that they produced. Most notable was the advanced features and safety measures introduced in these transmitters, and the design features that were often based on the available vacuum tubes produced in the era. A few specific TX models were shown and discussed. [4A, 45A, 30J, 30K, and others]

**50/50 Raffle:** This was won by Ken W9GA ; winning an award of \$11.50

### **Scholarship Auction:**

Ben KC9TZM [who stepped in as auctioneer] held a short auction; included: cables, meters, lamp, and a 'bell' !!

### **Committee reports:**

[there were no second VP, Tech, and no RPT VP reports.]

1st VP: Jeananne N9VSV is now taking orders for member badges, price now \$10, from a new vendor. She is also checking over the embroidered items, like our club shirts. The planned survey is still 'under construction.' Jeananne has given credit to Pat, W9JI for his efforts as programs chairperson.

Treasurer: Gary N9UUR provided reports on the tables. Recent paid bills include SwapFest expenses. ORC has also added 3 new members, and Gary will update the roster. The April treasurers' report was accepted; motion by W9JI; 2<sup>nd</sup> by WB9RQR & carried.

Swapfest: Tom KC9ONY noted that vendor attendance was down, attendance was 270 persons total, with overall revenue coming to \$1510.67.

Secretary: W9GA reported that the May 2023 minutes are posted, a motion to accept was made by N9VSV; 2nd by K9QLP & carried.

Scholarship/STEM: W9JI reported that the draft charter is almost ready, needs final editing.

**OLD business:** W9JI, as recent president, presented several 'presidents' awards for 2022:

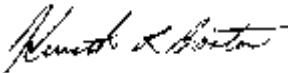
- W9MXQ – Newsletter
- KC9FZK – Servicing the SK Memorials
- W9IPR – “Lifetime Achievement Award”
- WB9RQR – Recycling Computers and Longtime Column Writer.
- KC9ONY – Tech Committee
- N9UUR -- Tech Committee
- W9DHI -- Tech Committee
- AA9W -- “Lifetime Achievement Award”
- W9BTN -- Numerous Contributions to the Success of the Ozaukee Radio Club

W9GA called for an on-site FD meeting for Saturday June 3, for upcoming planning of stations.

**NEW business:** W9IPR thanked the club members for stepping up and helping with the spring SwapFest, K9QLP for help with the use of H.T.s, and for help with transport of the equipment. The scholarship table sold over \$1000 of the items brought to the fest.

**Adjournment:** WB9RQR moved to adjourn, W9MXQ 2<sup>nd</sup>, motion carried; time end was 9:10 PM. There were 16 in-person attendees, 15 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary





# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

June – Ken W9GA Field Day

July – Fred W9KEY – Lighthouse Event

August – Field Day Reports from the Club and Members

September – Bruce AC4G – Report on a DXpedition

October – Janice KA9VVQ and Bruce W9FZ – “Getting on the Air and Having Fun with Roving!”

November - Jeananne N9VSV – Collecting Amateur Radio Themed Stamps

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know.

## Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you getting your talk ready for the club.

Contact Pat Volkmann, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*June 14, 2023*

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. 7:15 – 7:30 PM<br/>Check-In and Introductions</li><li>2. 7:30 PM Call to Order:<br/>President Bill Greaves (K9GN)</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Ken Boston, W9GA<br/>2023 Field Day Discussion</li><li>5. President's Update:<br/>Bill Greaves (K9GN)</li></ol> | <ol style="list-style-type: none"><li>6. 1<sup>st</sup> VP Report:<br/>Jeananne Bargholz (N9VSV)</li><li>7. Repeater VP Report:<br/>Tom Trethewey (KC9ONY)</li><li>8. Secretary's Report:<br/>Ken Boston (W9GA)</li><li>9. Treasurer's Report:<br/>Gary Bargholz (N9UUR)</li><li>10. Committee Reports</li><li>11. OLD BUSINESS</li><li>12. NEW BUSINESS</li><li>13. Adjournment</li></ol> |
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**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
14 June 2023**

**Program:  
Ken Boston, W9GA  
ORC Field Day Discussion**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
12 July 2023**

**Program:  
Fred Schwierske, W9KEY  
Lighthouse Event**

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# ORC 17<sup>th</sup> Annual Regional Fall Swapfest



Test Equipment, Radios, Antennas, Accessories, Tools, Hobby Stuff & More

*Saturday, September 9<sup>th</sup>, 2023*

Firemen's Park (W65 N796) on Washington Avenue in Cedarburg WI 53012  
**N 43° 18.283' W 087° 59.500'**

**Setup and general admission from 6am to noon – Door prizes**

**Refreshments available inside the exhibit hall**

**\$5 admission at the gate – buyers and sellers – 12 & under free**

***Just park on the grounds and sell your stuff or just browse & buy their stuff***

Inside tables \$10 as available (5 for \$40) – ARRL and any Commercial Vendors are typically inside.



Go to

[www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) or

Facebook.com/orcwi

For more information call

262-377-6945 (h) (W9IPR)

262-844-6331 (c)

Talk-in @ 146.97 PL



## The *ORC* Newsletter

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

Volume XLI

July 2023

Number 7

## From the President

de: Bill Greaves, K9GN



The ORC Field Day this year became another success with the volunteer efforts of many members. While the points are being totaled, the success was in the participation of longtime Field Day participants and new members as well. Members like Gary W9XT Sutcliffe and Vic WT9Q Shier on 20m CW, Ken W9GA Boston on 20m phone, and Nate KC9TSO Seidler with Tom W9IPR Ruhlmann, Nancy KC9FZK Stecker, and Stan WB9RQR Kaplan on 40-meter phone. Jeananne N9VSV and Gary N9UUR Bargholz worked 6m phone and satellite. The GOTA tent (Get On The Air) for new ham operators and guests saw increased activity, especially with young guest operators, with leadership by Mike AE9MY York and Paul W9PEM Martis.

I always learn much by participating in the setup of the towers, antennas, and transceivers on Friday afternoon and Saturday morning. And I get some needed exercise pounding in those guy line anchors. Some tutelage by the more experienced operators is welcomed during the 24-hour time period until 1:00pm on Sunday. The rain early Sunday morning slowed the QSO rate down, but everyone “weath-ered” it well. Mike AE9MY provided a tasty pancake breakfast for everyone before the final push. Take down on Sunday afternoon was quick with the many volunteers helping. More volunteers are always welcomed. Of course, the whole idea of Field Day is to build emergency capabilities. This was amply demonstrated over the weekend.

Kudos to Nate KC9TSO for his many efforts with setup, operating, and take down throughout the weekend. The trailer improvements worked very well, including the operating position in the ORC trailer.

For your calendar, the Lighthouse weekend is August 18-20 in Port Washington and is led by Fred W9KEY Schwierske. Fred will present more on this effort at the ORC club meeting next week. Thank you , Fred.

The club membership will gather on Wednesday, July 12th, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. I look forward to seeing you there.

73,

Bill, K9GN



# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

Gary Bargholz, N9UUR, kicks off this issue with a preliminary report on the Ozaukee Radio Club 2023 Field Day Event. He tells about Bonus Points earned. Stay tuned for further Field Day Results Information.

Right after the Table of Contents (Next Page), see info on submitting information for next month's ORC Meeting Program about 2023 Field Day. This will be presented by Ken Boston, W9GA, Field Day Chairperson at the August 2023 Meeting..

Check out regular columnists, Dan Zank, AA9WP, and Stan Kaplan, WB9RQR, interesting updates on ARES and Personal Computers, as always..

Gary Sutcliffe, W9XT, brings us the July and early August On The Air activities. Midsummer doldrums you say for operating events? Maybe so, but if they are there, Gary knows about them. Seems he has quite a bit to tell us.

Your Editor, Bill Shadid, W9MXQ, begins to go through Heathkit's major selection of products to compete with the Collins S-Line radios – beginning in the 1960's. Check out Vintage Amateur Radio and the Heathkit SB-300 Receiver..

Looking for ham radio things to do and places to go in the area? Check out Tom Trethewey, KC9ONY, as he tells us all about Upcoming Events.

Right after you see the minutes of the June ORC meeting, you will see a new "Classified Advertisements" column started by your Editor, Bill Shadid, W9MXQ. This is a members only Selling and Buying column for ham radio equipment.

Pat Volkmann, W9JI, tells us about coming Programs and an invitation to make a presentation at a club meeting.

Check out the Flyer for the Ozaukee Radio Club Fall Swapfest on the final page.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.

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**At the August ORC Meeting, Field Day Chairperson, Ken Boston, W9GA, is presenting the complete 2023 Field Day Results from the Club Event and Members operating elsewhere. Please send Ken your pictures, preferably already cropped, and with minimal file size, for the presentation. If you use an iPhone, you can determine file size when exporting the pictures. Due by end of July to:**

**[kboston6@wi.rr.com](mailto:kboston6@wi.rr.com).**

**Onward To the Newsletter**

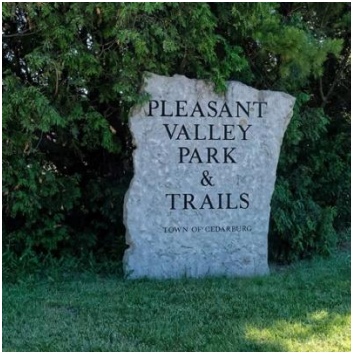
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# 2023 Ozaukee Radio Club Field Day PRELIMINARY REPORT

de: Gary Bargholtz, N9UUR

Some of the QSO Numbers are still in flux but I can report that we did well at our 2023 Field Day endeavor – comparable to years past. Herein are some of the highlights from the Bonus Points we made.

**Set-up in Public Place** - Our Field Day location was at the *Pleasant Valley Park and Trails*, 4301 Pleasant Valley Road, near the City of Cedarburg Wisconsin.



We welcomed 49 visitors to our site, gave tours, and answered many, many questions.



Among our visitors was an Ozaukee County Deputy Sheriff and our Assistant ARRL Section Manger, Tom Czaja, KG9EE.





I'm hoping for an extra bonus for the K9!



Our operation ran on **100% Generator Power**, thanks to Mike, AE9MY.



**Satellite QSO completed:** Gary, N9UUR, made 3 Satellite QSO's.  
**Educational Activity Bonus:** Gary, N9UUR, also did several Satellite Demos, covering AMSAT NA info, tracking software, station automation, Orbits, Kepler elements and Doppler shift. The Satellite operation is very popular with visitors and HAMS.



**GOTA Station:** Mike, AE9MY, was our GOTA Coach, and set up the GOTA Station. That QOTA station made 36 Phone and 42 Digital (FT8) contacts.

**Youth Element Achieved: People under 18 made GOTA contacts.  
 Natural Power QSO Bonus - GOTA Phone Contacts were made using Solar Power.**



What about the **Media**?

**Media Publicity Bonus - The *Ozaukee Press*, to the right and just below.....**

**Amateur radio field day is June 24, 25**

The Ozaukee Radio Club and Ozaukee Amateur Radio Emergency Services groups will hold a field day Saturday and Sunday, June 24 and 25. The groups will set up emergency communication stations at Pleasant Valley Nature Park in Cedarburg. The field day is considered a national emergency preparedness event and is intended to demonstrate the role of amateur, or ham, radio operators during an emergency, such as a tornado, that takes down internet, cell phone and email communications. The park is off Pleasant Valley Road east of Highway I two miles north of Cedarburg. For more information, visit [ozaukeera-dioclub.org](http://ozaukeera-dioclub.org) or [ARRL.org](http://ARRL.org).



Home » Amateur radio field day is June 24, 25

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June 21, 2023  
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**And, right below, the *West Bend Daily News*:**

**Ozaukee Radio Club to host field day**

MEQUON — The Ozaukee Radio Club, Inc. and Ozaukee Amateur Radio Emergency Services groups announced that they will be holding national emergency preparedness field days in Pleasant Valley Nature Park, 4901 Pleasant Valley Road #4301 in Grafton, to demonstrate how they help with emergency communications via the radio waves, on Saturday and Sunday. The two field days are free and open to the public to stop by the park and see how the organizations help out various agencies with communications via radio waves, according to the release. Members will be operating their radio cluster from 1 p.m. Saturday through 1 p.m. Sunday. “Despite the Internet, cell phones, email and modern communications, every year whole regions find themselves in the dark and without communications due to tornadoes, fires, storms and other natural and man made disasters. In these situations, one consistent service has never failed, that being Amateur Radio,” said the release. “These operators, often called ‘HAMS’, using their own equipment provide backup communications for everything from local parades to the American Red Cross, FEMA and even the International Space Station.” The “HAMS” also use these radios to communicate with friends across town and the world. According to the release, the Ozaukee Radio Club also sponsors a \$2,000 college scholarship each year for a Wisconsin HAM.

**Next Page is the Social Media Bonus Update:** Jeananne, N9VSV, and others were posting to social media outlets throughout the event.

<http://www.ozaukeeradioclub.org>



<https://www.facebook.com/orcwi>



**W1AW Field Day Message Bonus:** Ray, W9KHH, copied the 2023 ARRL Field Day Message.

**Message to ARRL SM/SEC Bonus:** Paul, W9PEM, sent an ICS 213 message via WINLINK to our ARRL Section Manager, Jason Spetz, KC9FXE. Paul also sent 12 ICS 213 Messages via WINLINK for the **Message Handling Bonus**.

Despite the heat, humidity, RAIN, and smoke in the air from Canadian wild fires, we all had a very good time. QSO's were made, stories were told, and new ones made.

It was great "Sequestering" Kenny, W9GA, out in the Club Trailer! Especially in the rain.

See you there next year!

Gary, N9UUR



# **OZARES: Ozaukee Amateur Radio Emergency Services**

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## **ARES© Redundant Communications with Packet BBS**



Earlier this year we looked at the communication requirements provided by the National Incident Management Services or NIMS. The components of resiliency, the ability to work despite infrastructure that has been damaged or lost and redundancy; having alternative methods of communication when primary and other backup systems fail.

Today we have the normal phone method of communication between or among operators and locations. While phone is great for tactical information, short and quick messages, it is not good for distributing strategic information or lists and spreadsheets. For the strategic and spreadsheet information

ARES depends upon WINLINK as the proven method of communication. While WINLINK is versatile, easy to use, and robust it does have the liability of depending on local internet connections. Of course, a connection to a distant internet connection is possible via WINLINK on HF as a backup mode. But band conditions are always a concern with WINLINK HF.

Last month we reviewed two other possible backup modes of communication. They are the chat applications, or keyboard-to-keyboard, such as VARA Chat, or WINLINK peer-to-peer mode. While both provide an operator-to-operator interface and allow for the transmission of spreadsheets, forms, and pictures, the problem is that they are only operator-to-operator. If information needs to be more widely distributed another communication mode needs to be available.

The packet radio bulletin board services (bbs) could provide a more robust and valuable method of providing redundant and reliable communications. While bbs had been popular in the past and lost some of its allure with the arrival of the internet and cell phones, it still has been a workhorse with several ARES organizations.

One such group is the Mecklenburg Amateur Radio Society, W4BFB-MARS, <https://w4bfb.org/> located in Charlotte, NC. Information about their packet system can be found at: <https://w4bfb.org/mars-info/packet-radio/packet-radio-information/>

Another is the Santa Clara County California ARES/RACES organization:

<https://www.scc-ares-races.org/aresraces.htm>

Information about their bbs service is available at:

<https://www.scc-ares-races.org/data/packet/packet-service.html>

Both systems provide the redundancy and resiliency needed in emergencies as noted on their websites: The W4BFB comments:

*\*\*\*NOTE: MARS-W4BFB prides itself in ensuring that “RF redundancy” is in place, and active at all times, in the event that the internet were to fail. During emergency situations, RF packet radio may be used to reliably deliver messages such as NTS traffic, ARES bulletins, and other messages to authorities. Although the internet is available for partial links to our backbone, the RF network is always in place and ready for operation.*

The Santa Clara County group describes its system as such:

*The service is specifically designed to survive and be available during emergency scenarios when other systems may be down or unreachable. It is primarily intended for use by Santa Clara County ARES/RACES/ACS members. But It is available for use by any amateur radio operator at any time. The service is provided by five BBSs located at five different sites in the county. Most locations in the county can reach at least two of the sites via amateur radio. Therefore, even if a BBS site suffers a catastrophic failure, users that normally connect to that site can still get packet service from the other sites.*

*Now, normally the summertime is not a great time to tackle new projects, with vacations and all, but I think now would be a good time to start reviewing the basics of packet radio and bbs. Because it is an older technology there is a good amount of information available. And I may be tapping the shoulders of a few ORC members when I get stuck.*

*Recently there has been a good deal of talk, speculation, worry and amazement at the application of Artificial Intelligence. So, I began looking into AI and Emergency Management/Communications. Next month I will review what I have found.*

*OZARES 147.330 Repeater*

*Nets: First and second Thursday of the month at 8 pm*

*WINLINK Gateways WI9OZ-10 and WI9OZ-11; 145.610*

73, Don



---

## **OZARES Repeaters . . .**

- 147.330 MHz (+ Shift) (127.3 PL)
- 443.525 MHz (+ Shift) (114.8 PL)

## **ORC Repeaters are On the Air Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

# THE COMPUTER CORNER

## No. 304 Time To Do Maintenance!

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



This article is a favor to you. If you follow it, you will extend the life of whatever laptop or desktop you apply it to. I reminded you to do maintenance way back in April 2007 with Cc137 on Physical Maintenance, and again in October 2019 with Cc259. Those articles still apply, for a desktop, laptop or even an iPad. Clean your unit to the best of your ability, even if you are a beginner. You will need a vacuum cleaner with a hose (a Shop Vac is perfect, but your household vacuum will do the job, too, so long as it has a plastic “sucky” hose). Use a soft-bristle brush (a basting brush from the

kitchen will do nicely, and you can replace it later or put it in the dishwasher for a cleaning). You will also need a can of compressed air. You can get one at your hardware store. The aim is to remove the dust and dust bunnies. Why? Dust prevents air circulation inside a computer. If air circulation is impeded, the temperature will go up. High temperature is the most destructive factor in electronic devices in general, including computers of all kinds.

Here are the steps to take. Unplug all the external cables and move the box or laptop to your workbench. If it is a laptop, find the vent area (the tiny grill, usually near a back corner). Put the vacuum hose up to it for a full minute and suck out what you can by moving the hose end around over the grill. Now use the air-can to blow into that grill to dislodge whatever possible and follow with another vacuum treatment. You might want to also clean up the screen – use an old t-shirt moistened with plain water. A well-worn cotton t-shirt is as good as microscope lens paper for non-scratch cleaning of soft microscope lens glass, so it will also do for a computer screen. Now clean the case as best you can and blow the hair and dust out of the keyboard. You are done with the laptop.

If the computer is a tower or mini-tower, pop the removable cover (most often on the left side of the machine; your left as you face the front of the machine). Lay the machine flat on the covered side. Make sure your lighting is good and examine the inside of the case. You will see a myriad of cables. Move them gently to the side as you examine each component. Identify the motherboard, the memory stick(s), the power cables that plug into the motherboard, the little twisted cables that fit on header pins for the speaker, power switch, power LED, hard drive LED, and so on. The connectors at the end of twisted cables usually have a printed label on the black plastic of the connector, and the motherboard usually has a (hard to see!) label by each set of pins that the connectors attach to. Right now! Make a sketch of the motherboard and, especially, those connectors and pins. If you inadvertently disconnect anything, that sketch will save you from grief. If

you are lucky enough to have a manual for the motherboard, examine it for a nicely made road map of all these connectors.

Continue to examine. Note what is plugged in to any of the slots and write it down or sketch it. You cannot record too much, though you certainly can write down too little! Document, document, document. Find the DVD connectors (if present) and hard drive connectors. Follow them up to the device they control. When you have a pretty good idea of what goes where, it is time to clean.

Turn on the vacuum and carefully put the hose end inside the case. Use the paintbrush to dislodge any dust bunnies and keep the vacuum hose end close to the paintbrush to suck up the dirt you free up. Pay particular attention to the interior air slots in the power supply case, to the spaces between memory sticks, and to the fan on top of the CPU heat sink. If you have a can of compressed air, blow between the slots of that heat sink to get the dust out, but use care not to spin any fan blades too fast (you can burn out the fan motor that way because driving the fan with air will actually generate current in the fan motor). Also give a blast or two of air in the slots of the power supply. Keep the vacuum going all the while, to suck up the dirt. Now, set the machine on its bottom, and use the brush to clean up the inside bottom of the case. Suck it up, suck it up, and suck it up. Turn the case around so you can see the power supply fan blades on the back. Blow them clean from the back. This will likely blow dust into the case through the interior slots in the power supply, so go back inside and vacuum it all again. See if you can use the brush to dislodge dust from the fan blades of the power supply from the outside, keeping the vacuum hose nearby to suck the dirt up. Blow air into the corners of the inside of the case to release dust bunnies you may have missed. Suck everything up. When you are satisfied that the dirt is gone, it is time to renew contacts.

The easiest and safest way to renew the electrical contacts in a computer is to partially disconnect them, then re-seat them. This renews the contacts at the molecular level when the metal contacts slide over each other. Start with the DVD cable. At the motherboard end, slightly raise the connector on the mating pins, then push it right back down until it is completely seated. Do the same with the hard drive connector. Now do the other ends of each cable, where the cable connects to the device. No need to completely remove the connectors. Just partially raise them, then re-seat them. This will significantly reduce the resistance of the metal-to-metal contacts. Now do the same for the power cable going to each device (one yellow, one red and two black wires, each). If you wish, you can completely remove these power connectors and then plug them back in. You cannot plug them in incorrectly since they will only go in one way. Plus, they are interchangeable.

Now apply the same procedure for the power supply connector on the motherboard. Use care here – modern systems have a little latch on this connector that you must depress to get it loose. Plug it back in, and make sure the latch is latched (you will likely hear an audible click when it seats properly). Use care not to flex the motherboard much. Motherboards can crack, especially old ones exposed to years of baking by heat, in which case, they may well be rendered useless.



Now, move on to any video or other cards that may be present. PCI cards typically plug into those whitish slots on your motherboard, while AGP (video) cards plug into a dark-colored slot. Remove the retaining screws from any cards plugged in and raise them a bit (one at a time). Blow any dust out of the slot, then re-seat the card and replace the retaining screw. Use care not to touch any of the gold contacts on the card bottom. Oils in the fingerprints you leave will increase the resistance of the contact with its slot. Follow the same procedure for the memory stick(s). Be sure to keep fingers off those gold contacts! Do memory sticks one at a time to be sure you get them in the same slot.

Now, renew the metal-to-metal contacts at the end of those twisted wires for the speaker, power-on cable, and the like. Raise them just a tiny bit, then re-seat them. If your computer could talk, you would hear it say “ooh, that feels good!”

Now, give a blast or two of air to the top surface of the hard drive, and any DVDs. Dust bunnies like to hang out up there. Next, pay some attention to the front panel. Blast out any dust or dirt there, typically lurking in slots or vents. Sometimes, there is a big vent at the bottom of the front panel. Tip the computer up on its back to get to that one.

All done? Typically, your workbench will be covered with dust and debris, including some bits of paper. Hopefully, there will be no paper clips or other such conductive bits of flotsam and jetsam. Vacuum this detritus up right now.

One more thing. Desktops have a coin cell battery, shiny discs about the size of a quarter. You might want to change it. Get a replacement – make it a Mallory brand because those are the best. Get one at Walgreens or your favorite electronics source, one whose battery stock is quite fresh because of lots of customers. When you have it in hand, pop the old one out and the new one in, making sure that you follow the correct + and – polarity. Be aware, though, if you change the battery you may need to reset the date, time, and other data in the CMOS setup screens after the machine is up and running again. On the other hand, if your machine was not used for a long time and will not start, a replacement of the motherboard’s coin cell battery may well be the answer to that problem. Now, save your notes, sketches, and tape them securely inside the case bottom! Put back the side panel and mount the computer in its proper place. Plug in all the cables, but before you power up, take a moment to clean your keyboard and mouse. Q-tips are great for both. Moisten the Q-tips with Sparkle (my favorite) or Windex to clean the dirt off of keys and in between. A blast of canned air will help, too. Power up! Maintenance is done!

On the other hand, if you don’t want to do maintenance, buy a new machine. Don’t put the old one in the closet! Pass it on to me (along with any others that are in the closet right now) for data-destructive wiping and refurbishing for another life as an amazingly useful Linux-based machine, for use by you or other hams. More on that in the next article. Happy computing!

# On The Air Activities!

de Gary Sutcliffe, W9XT



Another successful Field Day is in the books! Mother Nature was not as cooperative as we might have hoped though. It was hot, making the setup a bit tougher than we might have hoped for. Then rain and thunderstorms made the low bands noisy and forced an early shutdown.

The sun was not cooperative either. We had solar flares a few days before the event. The charged particles arrived just in time to hurt propagation. I didn't find out until later, but we had an aurora Saturday night. With the haze caused by the fires in Canada, we would never have been able to see one. If the geomagnetic field is disturbed enough to cause an aurora, it is bad enough to cause HF propagation disruption.

Another hit was the lack of sporadic E (Es) propagation. As discussed later, this has been a lousy year for Es. Es can be very effective for communications on 10 and 6 meters. Jeananne, N9VSV, suffered the most with the complete lack of 6-meter propagation. I know it hurt the CW tent with few 15 meter and almost no 10-meter propagation.



Vic, WT9Q, operates CW while Mark, KD9NOO, observes.



Ken, W9GA, operates 20 meter phone from the newly renovated ORC van.

But there were some very good things. The improvements to the trailer and antenna trailers by Nate, KC9TSO, and others were apparent. Set up and tear down seemed to have been smoother than usual, in part to these improvements. Another great thing is that we had some new, younger members show up for their first Field Days. I hope they are hooked on the event like I was at my first FD in 1971 and will be back next year.

Another big plus was the GOTA operation. An important part of FD is showing who we are to the public. GOTA allows the public to see us in action and participate in making contacts. The big story making the rounds that weekend was an eight-year-old making two phone contacts with a couple of stations in Texas. I hope that is a future ham in the making.

Congratulations to everyone who helped make the ORC Field Day a success!

## **Six Meters**

Unfortunately, the poor conditions during FD were just a small part of the poor 6-meter Es season so far this year. Some of the band's longtime fans say it is the worst one in years.

Es propagation is good out to about 1300 miles or so. Getting further than that requires multiple hops. Es is named sporadic because it can pop up and disappear quickly in just about any location. As the number of hops increases, so does the probability that the path is open. Double hopping to the western states has been pretty common in past years, but not this year.

Research has shown that Es is caused by metal molecules from meteors burning up in the upper atmosphere. Wind shear ionizes them and herds the ions into concentrated areas when conditions are right. If there are enough concentrated ions, they can reflect radio waves back to Earth. The wind patterns in late May through late July are the optimum time for forming ionized patches.

The scientific theories say that solar conditions should not affect Es. Yet some longtime 6-meter experts are saying that, in their experience, sporadic E is poor during high sunspot times. The solar flux levels have significantly increased in the last year. Is that the reason for the poor conditions this year?

Gary, K9DJT, and I are working on the FFMA award, which requires working all 488 grids that comprise the lower 48 states. Most of the grids I need are the western ones. Most of the needed ones have no hams on the band. It requires a portable operation, much like a DXpedition for DXCC. I need several operations to grids out that way, but the openings have been mostly nonexistent. Some of these ops have spent days in the field with near 100° temperatures and only a few close in contacts. Some are getting pretty discouraged, and the number of grid rover operation attempts has declined.

We had two DX openings across the pond in June and early July. Gary, K9DJT, cleaned up by working new countries Kuwait, Qatar, Greece, Romania, Antigua, and Saint Barthelemy.

I managed to pick up a few new DXCC countries in the last month, Antigua, and Saint Barthelemy, in the Caribbean. I also got Sardinia, IS0, off the coast of Italy, during the only decent European opening so far this year.

Most of the 6M activity is on FT8 on 50.313 MHz. If the band is really open to Europe, much of the activity shifts to 50.323 MHz. There are protocols on 50.323 MHz. First of all, don't make contacts with other North American stations on this frequency. We will only transmit (or are supposed to) during the "odd" periods, starting at 15 and 45 seconds. Europeans transmit on the even segments.

This standard prevents loud local stations from stomping on weak DX stations. Sometimes openings to Japan and the Far East result in moving to the higher frequency.

So, while the first half of the 2023 Es season has been disappointing, we are at about the halfway point. Hopefully, it will improve.

Besides Gary, K9DJT, and Ken, W9GA, are any other ORC members actively chasing FFMA or DXCC on the Magic Band? If so, let me know.

## **WSJT Vs. JTDX**

FT8 and most of the other popular digital modes we use are part of the WSJT suite. Probably most ORC members use WSJT, but there are a few alternatives. The most common one is JTDX. WSJT is open source, and some European hams modified and repackaged it as JTDX. While it seems most US hams use WSJT, many DX stations use JTDX.

The look and feel are similar since the JTDX base code is derived from WSJT. There are a few changes that I don't like, probably because I am used to WSJT.

The big advantage of JTDX is that it uses a different decoding algorithm. Some signals decode better on JTDX, and some on WSJT. That makes running both at the same time a good tactic. I do this when conditions are marginal, or I am trying to work some rare station with many callers.

The first step is to download JTDX. Install it and set it up for the same sound card ports you use with WSJT. Open WSJT, then open JTDX. Most of the time, every station heard will appear on both programs. But sometimes you will get a decode on one or the other but not both.

I have never actually transmitted with JTDX. If I am working a station, all my transmissions are on WSJT, but there is no reason you have to do it the same. If I get a decode during

a QSO on JTDX but not on WSJT, I manually select the next transmit sequence on WSJT to continue the QSO.

### 13 Colonies Wrap Up

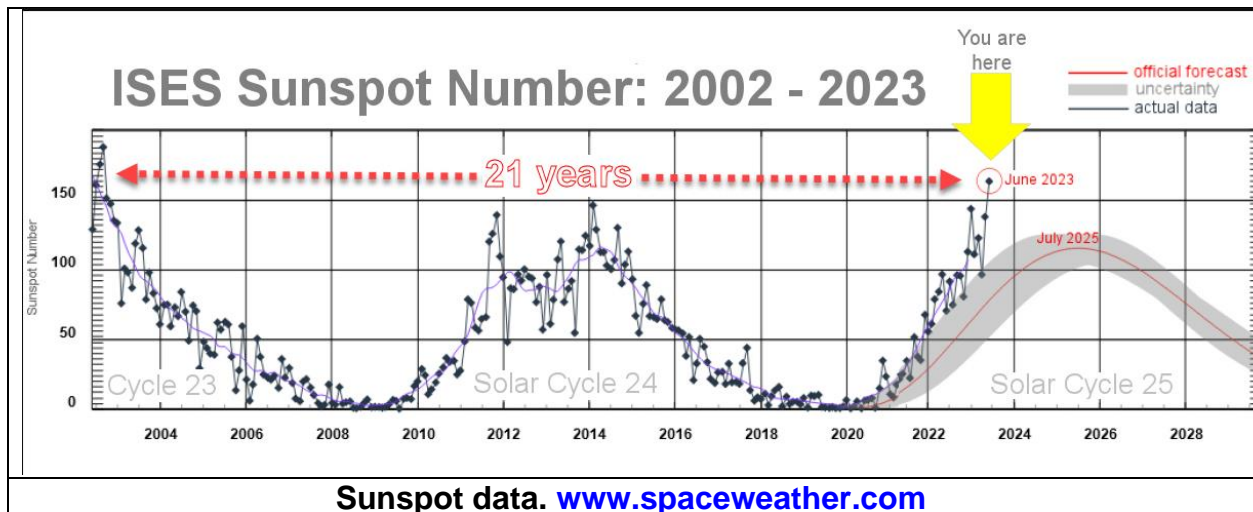
As usual, I played around with the 13 Colonies event mentioned last month. It didn't take me long to do it, pretty much splitting them between CW, SSB, and FT8. As of the deadline, I only worked the colony states but none of the bonus stations.

Bill, W9MXQ, took it to the next level and worked them all on each mode, CW, SSB, and FT4/8. He also got a clean sweep of the special stations on all modes.

Working the 13 colonies event has become a part of my 4<sup>th</sup> of July ritual that includes re-reading the Declaration of Independence.

### Cycle 25 Update

The sunspot cycle continues to improve. According to Space Weather, we have already surpassed the peak of the last one, and the trajectory indicates further improvements. While conditions for DX are currently in the summer doldrums, we are really looking to great things in the upcoming fall and winter.



If you are not on the band, put something, at least a dipole or beam, for 10 meters. During good sunspot number conditions, you can work the world with a few watts and a wire. I have worked countless stations in Europe and Japan on 10 meters, running 5 watts. Years ago, I was visiting my parents, and my dad, W9FRF (SK), showed me a 5W converted CB radio he put in the car. We sat in the driveway, talking to Japan through a mobile whip. One time I remember working a station in Belgium running 0.300 watts on SSB! Ten meters is an incredible band when conditions are good.

The big hope for VHF enthusiasts is that conditions might get good enough for 6 meters to open up for DX with F2 layer ionospheric propagation. That would certainly make up

for a poor Es season this year. The last time we had F2 DX propagation with any regularity was 2000-2001. I am looking at upgrading my 6M station to take advantage of it.

## **Contests**

July is a quiet month for contests. The IARU HF World Championship starts Saturday, July 8. If you read the newsletter soon after publication, you might still have time to make contacts. This year is unique because it is also the World Radio Team Competition (WRTC) completion. Details appeared in the last month's column.

If you make contacts during the IARU contest, please submit your logs within a few hours of the end of the contest. The WRTC judges will use them to help score their competition.

The CQ World Wide VHF Contest is July 15 and 16. It is only 6 and 2 meters. There are several categories, and if you are interested, check the rules. [www.cqww-vhf.com/rules.htm](http://www.cqww-vhf.com/rules.htm)

## **Radio Related Events**

The South Milwaukee hamfest is Saturday, July 8. It was covered last month, but this is a reminder if you read the newsletter right after publication.

The Society of Midwest Contesters annual SMC Fest is August 12 in Naperville, IL. This is the premiere event in the Midwest for contesters. I will speak about the status of SMC awards, including a new one starting this month. If you are interested in attending, the group rate for a hotel ends July 21. [www.w9smc.com/smc-fest](http://www.w9smc.com/smc-fest)

The ARRL Volunteers On The Air (VOTA) continues. W1AW/n is on from two different states each week. The first Wisconsin week was in February. Wisconsin's second week starts July 12 (UTC) and runs for a week. If you hear W1AW/9 during that period, it will be a station from Wisconsin. I might be one of them. Work us if you hear us. We will be on CW, SSB, and Digital. Use the HF plus VHF bands but not the WARC bands.

I know Fred, W9KEY, has been actively chasing VOTA stations. At the time of publication, Fred is #8 in the state, and Vic, WT9Q, is #14. Did I miss anyone? Besides the W1AW portable stations, contacts with any ARRL members are worth points. More details were in the January issue.

## **DX**

As usual, the summer months are pretty light on DX activities. Two Russian hams are activating Timor Leste in the Western Pacific through July 28. The callsign is 4W6RU, and they seem to be pretty active. Band and mode information has been sketchy, but so far, they have been reported on FT8 and CW.

American Samoa is currently on until July 18. The callsign is KH8RRC.

That wraps up July! I hope you are surviving the heat!

See my Worksheet for July and Early August 2023, on the next page.



A young Gary Sutcliffe, now W9XT, examines a logging system computer he was getting ready to connect to his Hammarlund HQ-170C Receiver, Johnson Ranger Transmitter, and Johnson Desk Kilowatt. In this scene, he is kind of mumbling under his breath, "I wonder if Pat (now W9JI) or Bill (now W9MXQ) could loan me 3,438 6SN7 Dual Triodes!! Hell, they both have good stashes – they'd never miss them." Surplus Electronics in 1957 – it was a good year.

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for July and Early August 2023

### DX

W9XT's DXpedition picks for July and early August 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Timor Leste	June 28 – July 28	4W6RU	HF	FT8, CW, SSB?	

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

W9XT's contest picks for July and early August 2023					
Name	Start	Length	Bands	Mode	Link
IARU/WRTC	1200Z Jul 8	24 hours	HF + 160	CW SSB	<a href="https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf">https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf</a>
CQ World Wide VHF Contest	1800Z July 15	27 hours	6 & 2	CW, SSB, Digital	<a href="http://www.cqww-vhf.com/rules.htm">www.cqww-vhf.com/rules.htm</a>

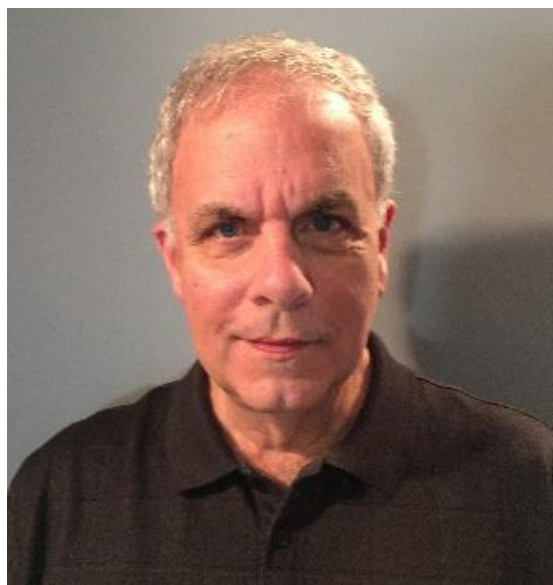
Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT). HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for July and early August 2023			
Event	Dates	Details	Link/notes
South Milwaukee Hamfest	July 8		<a href="https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023">https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023</a>
ARRL VOTA	July 12-18	W1AW/9 from WI	<a href="http://www.arrl.org/volunteers-on-the-air">www.arrl.org/volunteers-on-the-air</a>
SMC Fest	Aug 12		<a href="http://www.w9smc.com/smc-fest">www.w9smc.com/smc-fest</a>



# Vintage Amateur Radio

de Bill Shadid, W9MXQ



In the long past, I covered the Heathkit SB Series Receivers, Transmitters, and Transceivers as a group of products. While quite popular in their time, the SB Series radios are forgotten today – except for collectors. They deserve better attention and as such, we revisit in this installment the SB-300 Receiver. The SB-300 was the first in a line of Ham Band and General Coverage Receivers that included the original SB-300 and then onward to the SB-310, SB-301, the SB-303, and the SB-313.

In 1963, Heathkit released the first of the series to the market, the SB-300 HF Receiver. Right along with it came the matching SB-400 HF Transmitter (in 1964) and the SB-200 Linear Amplifier (also 1964). These radios squared off in the marketplace with the Collins second generation S-Line, the 75S-3 Receiver and 32S-3 Transmitter. That said, the Heathkit SB series had more of a feature-set matching the original S-Line with the 75S-1 Receiver and the 32S-1 Transmitter (from about 1959). More on this, with respect to the SB-300 Receiver, follows in this article.

Here is an excellent example of the very capable SB-300 HF Receiver:



**Heathkit SB-300 HF CW-SSB-AM Receiver<sup>1</sup>**  
**Shown with Heathkit SB-600 Speaker Console**

W9MXQ Photo

Before going further, we need to look at the field of receivers available to the amateur radio operator at the time the SB-300 was released to the marketplace. Collins led the market at the time, but it was only shortly after that the major players of the time offered directly competitive radios to meet Collins' market challenge. Here are the top four competitors, including our subject, the Heathkit SB-300.



**Collins 75S-1 (1958) (Collins S-Line)**

The first of a new generation of compact receivers using i-f mechanical or crystal filters. Plus, a new capability to Transceive with an equally new generation of Transmitters, like the model 32S-1.



**Drake R-4 (1964)**

Drake and its excellent 1A, 2A, and 2B Receivers even preceded the Collins S-Line with their introduction beginning in 1957. But this lacked a matching transmitter. The R-4 works with the Drake T-4X.



**Hallicrafters SX-117 (1962)**

The SX-117 was the first to come to the table with a direct competitor to the Collins 75S-1. It provided tuned circuit filters (no crystal filters) and had as matching transceive capable Transmitter, the HT-44.



**Heathkit SB-300 (1963)  
(Subject of this article.)**

The SB-300 was the first of many matching components to effectively compete with the Collins S-Line products. For transceiving with the SB-300 Heathkit offered the SB-400 Transmitter  
**All Pictures – W9MXQ**

Other well-known players in the market included National (with the NC-303 Receiver) and Hammarlund (with the HQ-170A Receiver). Only the small group, Collins, Drake, Heathkit, and Hallicrafters properly read the market. Others were in the market but stayed with their older design products. These are subjects for future articles.

Heathkit must have carefully studied the concept of the Collins S-Line Transmitters and Receivers and the associated KWM-2 series Transceivers to plan the SB-Line of

Receivers, Transmitters, Transceivers, and accessories. They were effective, too, with products that equaled and even exceeded the Collins products they competed with.

Focusing on the SB-300 and its target product, it is to look at a selected group of feature comparisons:

<b>Feature Comparisons – Collins 75S-1 and Heathkit SB-300<sup>2</sup></b>		
	<b>Collins 75S-1</b>	<b>Heathkit SB-300</b>
<b>Frequency Coverage</b>	3.5-30 MHz with fourteen selectable 200 kHz Segments (Any 200 kHz, 3.5–30 MHz)	80-10-meter ham bands only in eight selectable 500 kHz segments
<b>Sensitivity (SSB)</b>	1 microvolt for 15dB signal plus signal to noise ratio.	<1 microvolt for 15dB signal plus signal to noise ratio.
<b>Selectivity (SSB)</b>	2.1 kHz at 6 dB down with 4.2 kHz at 60 dB down. (2.0:1 Shape Factor) Mechanical Filter	2.1 kHz at 6 dB down with 5.0 kHz at 60 dB down. (2.4:1 Shape Factor) Crystal Filter
<b>Selectivity Options</b>	500 Hz CW	400 Hz CW
<b>Calibration</b>	100 kHz Calibrator	100 kHz Calibrator
<b>Frequency Stability</b>	After warmup, stable to 100 Hz	<100 Hz per hour after 20-minute warmup. Less than 100 Hz for 10%-line voltage variation.
<b>Transceive Engagement</b>	Front Panel Switch on Transmitter	Internal Swap of Injection Cables was Required <sup>3</sup>
<b>Modes of Operation</b>	LSB, USB, AM, CW	LSB, USB, AM, CW

Both the Heathkit SB-300 and the Collins 75S-1 share several traits – along with the mentioned Hallicrafters SX-117 and Drake R-4. That is, they have transceive capable transmitter partners, and use a conversion scheme like said transmitter<sup>4</sup>.

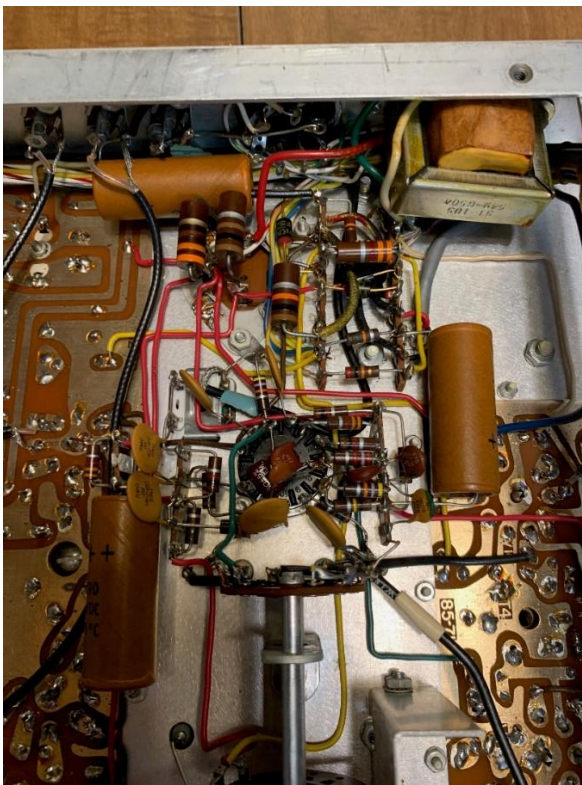
A measure of the quality of any Heathkit product is the effort and quality of the workmanship of the original assembler of the kit. The fellow who had this receiver before me was not that assembler. His or her name is lost to history. What I can say is that the work was that of a true professional. I look for things like neat and proper solder joints. That is the primary issue with Heathkit builds – was the correct solder used and was it properly applied?

*Note for Information: Those of us who remember assembling Heathkits recall that all the solder you needed, and more, was supplied with the kit. Was that feature generated out of kindness? No, it was a business decision. What better way to*

*ensure the proper solder was used than to supply it with the kit? Heathkit will tell you that one of the primary failures in getting a Heathkit to work and thrive after assembly was to use the right solder chemistry.*

I also look for any physical damage to the metal work. Was the product damaged because of being mishandled during assembly? Are there scratches and dents in the sheet metal? Are any of the satin or polished surfaces visibly damaged? Is stray solder present on the radio away from expected solder joints?

Look at this close photograph of the Carrier Oscillator portion of the receiver to get an idea of the workmanship of the builder in an area away from the printed circuit boards in the radio . . .



**This is the BFO Oscillator area of the SB-300 Receiver.**

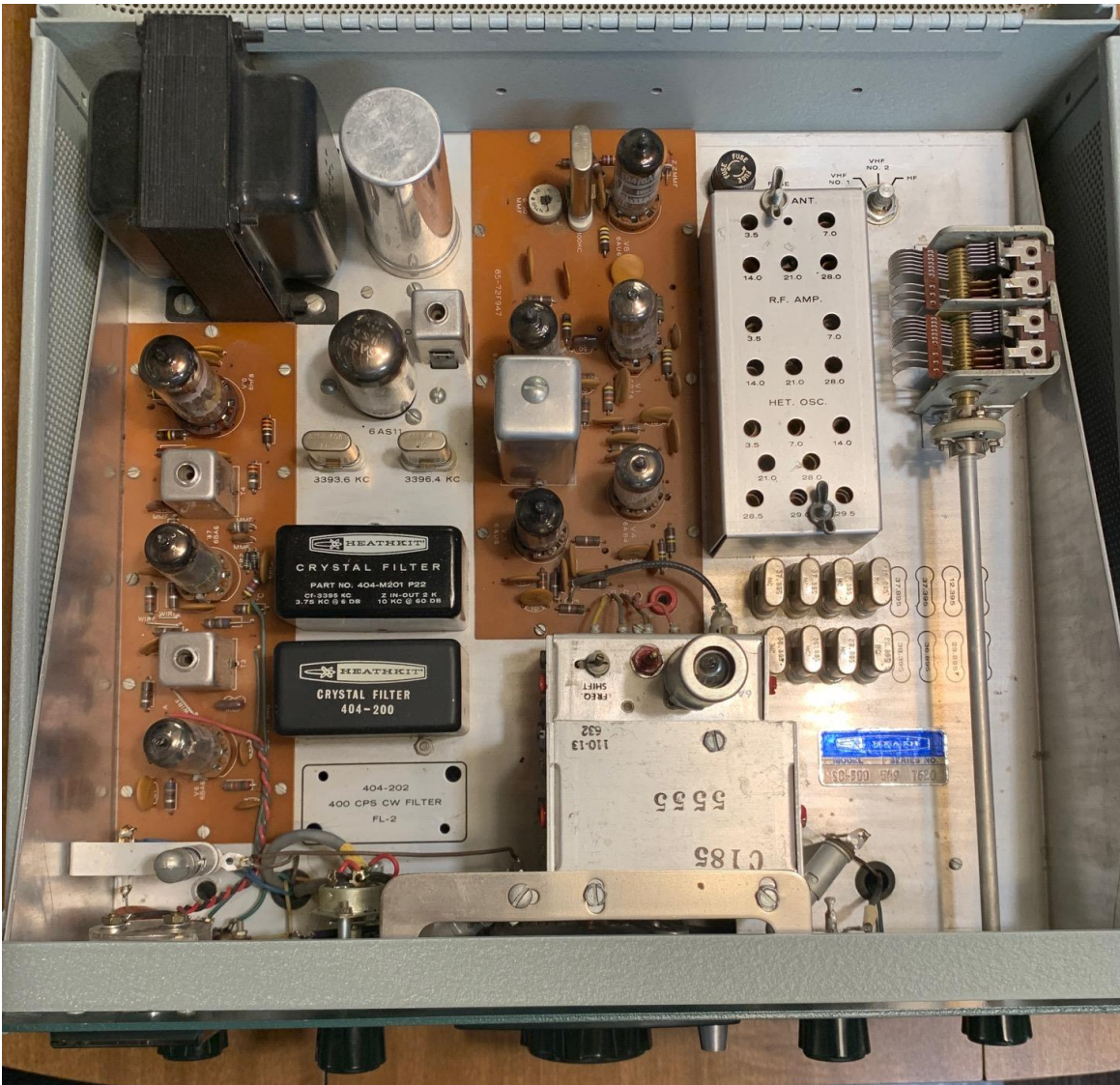
(The rear of the radio is toward the top of the picture. The left picture is under the chassis and the right picture shows the same area from the top of the chassis.)

Note clean solder joints, clean areas where soldering has been completed, and nice component layout of the resistors, capacitors, and diodes visible.

This circuitry is centered around V9, a 6AS11 Compactron Tube in the BFO Circuit.

**W9MXQ**

Now let us look at the top of the chassis of the SB-300 Receiver. I draw your attention to the simplicity of the design and the pleasing layout of components. No crowding.

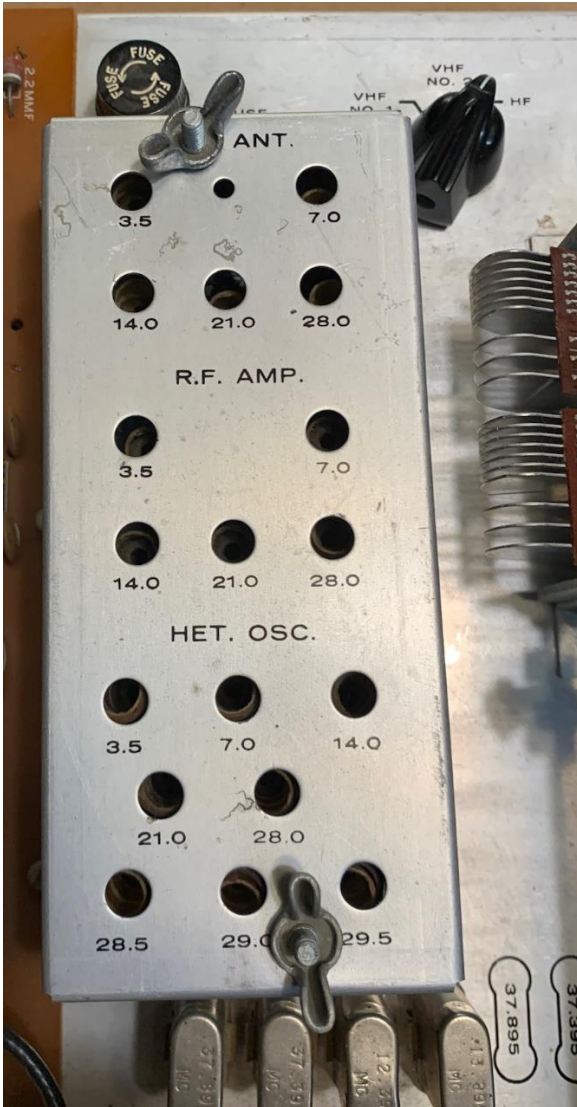


**Top View of the Heathkit SB-300 Receiver.**

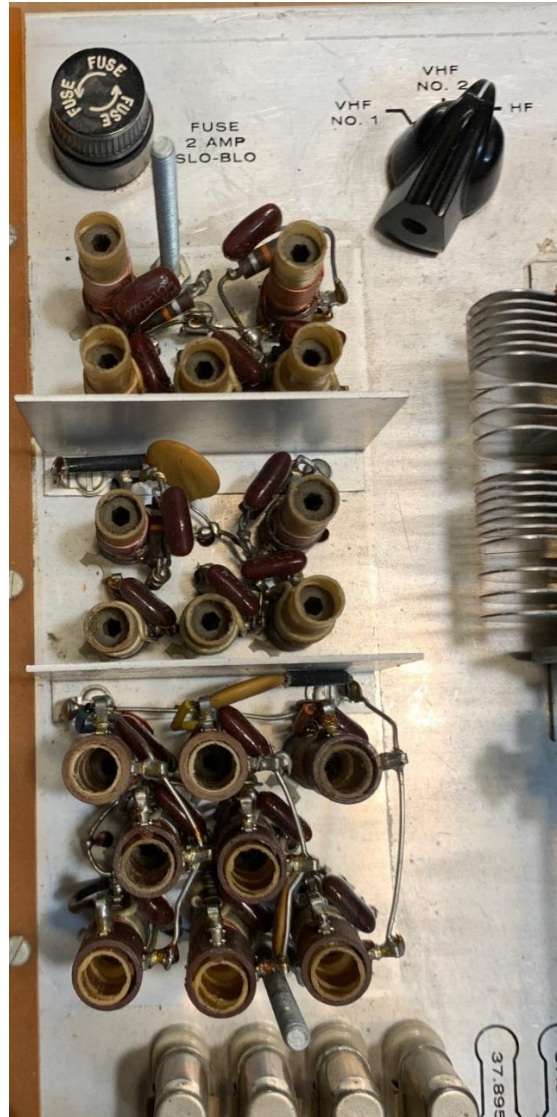
(The rear of the radio is toward the top of the picture.)

On the left, below the Power Transformer, is the I-F Amplifier Board. To the right is the chassis area containing the BFO Oscillator and the Crystal Bandwidth Filters, To the right of the BFO area is the RF Amplifier Board – showing the 100 kHz Crystal Calibrator at the rear edge (top of this picture). To the right of the RF Amplifier Board is a chassis area for the tuned circuit coils for the Antenna, RF Amplifier, and Heterodyne Oscillator circuitry. Those are pictured elsewhere in this article. Below those coils are the Heterodyne Crystals with a complete layout of their location silk screened on the chassis. There is one crystal for each 500 kHz tuning range in the receiver. In the front of the chassis (just to the right of center in the picture, is a top view of the pre-assembled PTO Oscillator (VFO).

**W9MXQ**



**Alignment Coils – With Shield Cover**



**Alignment Coils – Without Shield Cover**

Alignment Coils Area of the Chassis – See Top View for Location

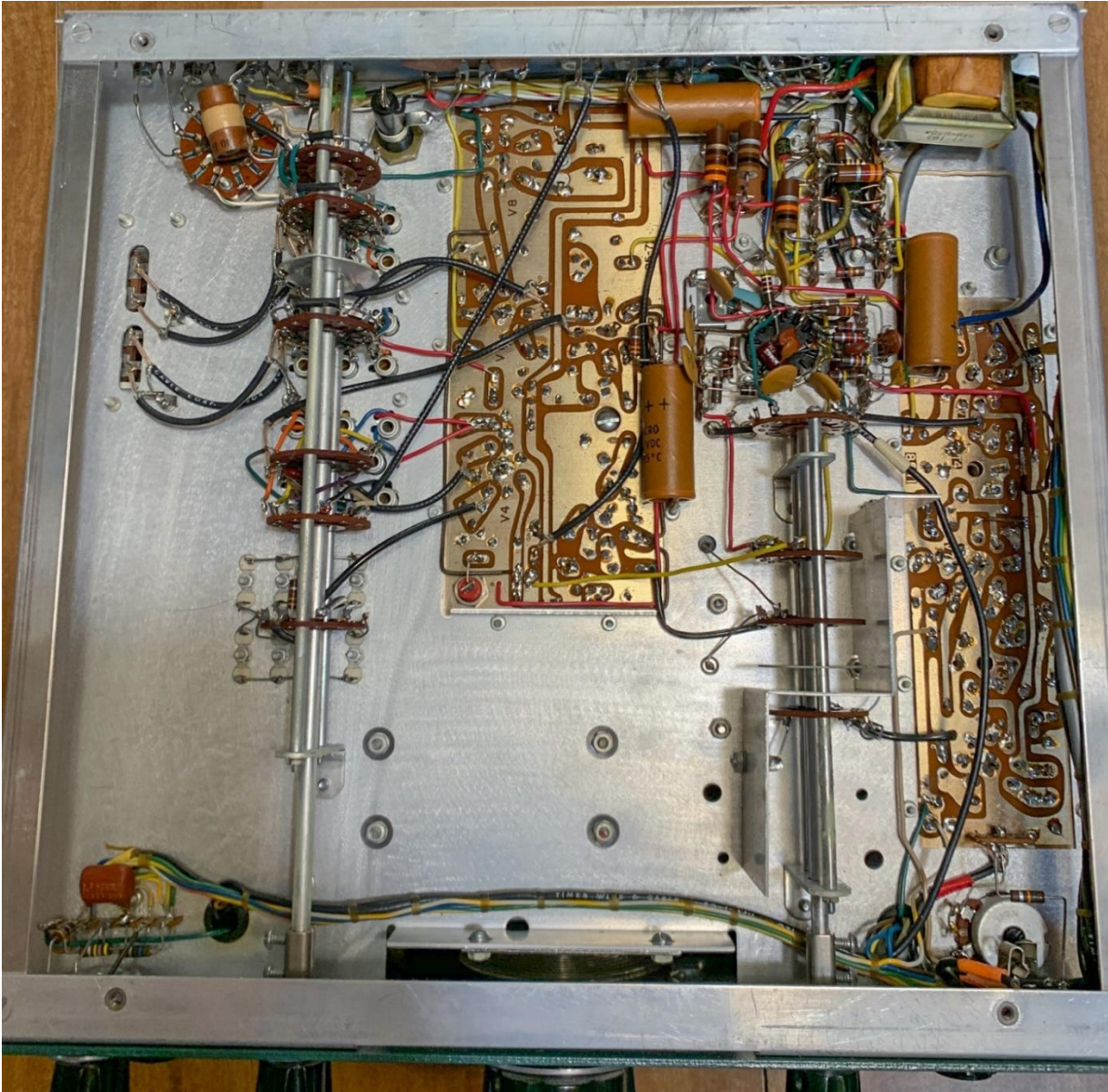
**W9MXQ**



This is a picture from the right front looking at the PTO chassis with its single tube. The red marks on two of the assembly screws indicate assembly at Heathkit for best stability. This was why sophisticated test equipment was not required to align this radio after assembly. Requirements were for a Vacuum Tube Voltmeter, the Calibrator in the SB-300, and another receiver used to align the calibrator.

**W9MXQ**

Now we should get an unobstructed view of the chassis bottom. We can see here the integration of printed circuit board technology and the simplicity it allowed in what would be a complex assembly in all point-to-point wiring. Heathkit was at the time of its game at this time.



**Bottom View of the Heathkit SB-300 Receiver.**

(The rear of the radio is toward the top of the picture.)

You can see the circuit boards as shown in the top view with the I-F Amplifier Board to the right side of the chassis and the RF Amplifier Board at upper (rear) center. Note that the area around the BFO Oscillator is chassis wired and was in a previous picture, but close. See very neat wiring layout and care in soldering.

**W9MXQ**

Like all designs, the SB-300 has a few shortcomings. Let us discuss a few:

1. Mated with its partner SB-400 Transmitter, the pair was less than stellar at being selectable at operating separately or in transceive off the SB-300's PTO. To be fair, that was not, as mentioned, a problem with the SB-300 but with the SB-400. Users of this receiver with the later model transmitter had no problems with the operation.
2. The SB-300 lacked a receiving segment to listen to WWV and to calibrate the internal 100 kHz Crystal Calibrator. This was a major addition to the later SB-301 version of the receiver that added a band position for 15.0 to 15.5 MHz to allow coverage of 15.0 MHz WWV Transmissions.
3. The SB-300 lacked the sensitivity of its later versions, the SB-301 and SB-303 (there was not a SB-302 model). This was accomplished by a change in the tube layout. This was paralleled in the upgrade of the SB-100 Transceiver and the SB-101 with similar sensitivity improvements paralleling the SB-300 to SB-301 model update.
4. Heathkit in this time was immensely popular and a high proportion of the stations worked on the bands would have a Heathkit hearing, transmitting, or amplifying the signal. Barring that, there would be a Heathkit device monitoring or measuring the output!! For that reason, many improvement articles, addressing the mentioned shortcomings, appeared in ham radio publications and newsletters.
5. Not an original design flaw but the filters in the SB-300 are not compatible with any other Heathkit Receivers or Transceivers. As such, it seems impossible to find a CW filter for the SB-300 that is reviewed here. The filters in the SB-301, the model following the SB-300, work in all other models of Heathkit SB series receivers and transceivers. The original SB-100 Transceiver did not accommodate a CW filter, but its filter architecture is the same as the SB-300, too.

If you have any of the SB series radios, I urge you to locate and purchase an excellent book by Chuck Penson, WA7ZZE, entitled "Heathkit Guide to the Amateur Radio Products," Third Edition. The earlier editions are good (great, actually), but the Third Edition adds an incredible amount of detail about this fine equipment<sup>5</sup>.

Just so you know the look of the "Green Machines" as we Heathkit collectors call them, here is the Heathkit Separates at W9MXQ . . .



Left to Right (All Heathkit)  
**SB-401 Transmitter, SB-600 Speaker, HDP-121 Microphone,  
SB-303 Receiver, SB-200 Linear Amplifier, & HA-1410 Electronic Keyer**  
W9MXQ



The SB-300 regularly stands in for the SB-303 in this setup. Notice the microphone and its beige color? It is a later Heathkit HDP-121 where the green color had been replaced by Heathkit's turn to beige radio colors in later years. (And, for the record, the HDP-121 was a private label and color Electro-Voice 621H.) Further to mention, in A-B tests, I have found that the fidelity and listening comfort of the SB-300 exceeds that of the SB-303. I do not want to get into a 6HF8 Audio PA (in the Heathkit SB-300) vs a Motorola Matched Pair Push-Pull MJE-371/MJE-512 (in the Heathkit SB-303) argument. On the other hand, I do know what sounds great, and what just sounds good. I guess you will have to judge for yourself.

I appreciate that you read my articles. A special thanks go to Bob, W9DYQ, for his proof reading. Remember that I am open to questions and comments at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

### Notes:

<sup>1</sup> This is my third SB-300 Receiver and comes from fellow collector, W9DYQ. I have a bit of fascination for this series of radios – with an SB-300 and several SB-303's in my collection. I have never had the middle model, the SB-301.

<sup>2</sup> From the Specifications in the respective Operating Manuals of the noted models.

<sup>3</sup> This was a major flaw with the SB-300 operating with the matching SB-400 Transmitter. It was corrected with the SB-401 Transmitter. This was an SB-400 issue, not the fault of the SB-300 Receiver. (My Heathkit separate Receiver and Transmitter is a later SB-303 Receiver and SB-401 Transmitter. However, my SB-300 integrates flawlessly with that same SB-401.)

<sup>4</sup> Hallicrafters seemed to ignore this idea of a conversion scheme like the transmitter in the SX-117. While successful due to similar conversion frequencies, the SX-117 owes more in its design to traditional conversion systems than the players from Drake, Heathkit, and Collins. Note also that while the Heathkit SB-300 and Collins 75S-1 used Crystal and Mechanical i-f filters, respectively, the Drake R-4 and Hallicrafters SX-117 used tuned circuit i-f filters typical of other radios of the day. Drake, however, used a front-end crystal filter – what we would refer to today as a Roofing Filter.

<sup>5</sup> Chuck Penson's Heathkit related books are available from his website, <https://wa7zze.com/>. I also recommend his other Heathkit related books, "Heathkit Test Equipment Products," and "Heathkit H-Fi and Stereo Products." I have all three, plus early editions of the "Heathkit, A Guide to the Amateur Radio Products" books.

**W9MXQ ©2023**



©Heathkit

# Upcoming Events

de: Tom Trethewey, KC9ONY

7/08/2023 – Milwaukee - South Milwaukee Amateur Radio Club Swapfest  
<https://southmilwaukeearc.org/event/south-milwaukee-swapfest-2023/>

8/07/2023 – USA National Lighthouse Day  
<https://uslhs.org/fun/lighthouse-festivals-events/national-lighthouse-day>

8/12/2023 – Racine Free Fest  
<http://www.w9udu.org/>

8/19/2023 – Port Washington - International Lighthouse Lightship Weekend  
<https://illw.net/>

8/26/2023 – Baraboo - Circus City Swapfest  
[http://yellowthunder.org/?page\\_id=66](http://yellowthunder.org/?page_id=66)

9/09/2023 – Cedarburg – ORC Annual Regional Fall Swapfest  
<https://www.ozaukeeradioclub.org/>

9/22/2023 – Milwaukee – HRO Superfest, ARRL Wisconsin State Convention – September 22<sup>nd</sup> and 23<sup>rd</sup>  
<https://www.hamradio.com/>

9/24/2023 – Belvidere, IL – Chicago FM Club Hamfest - 2023 Radio Expo  
<http://chicagofmclub.org/radioexpo/radioexpo2023.html>

**Ozaukee Radio Club Minutes of Membership Meeting. 06/14/2023**  
**de: Ken W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:30 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. Nancy KC9FZK reminds us that she is heading the 'sunshine' committee, and requests we let her know about potential happenings; Loren N9ENR has hamfest fliers to distribute; Fred W9KEY reminding the members of the upcoming lighthouse event this August.

**Program:**

Ken W9GA led the membership in a review of tasks outstanding for this year's annual outing for Field Day, to be held in Pleasant Valley Nature park, June 24-25. Ken gave a quick overview, and then covered several outstanding tasks necessary for FD success. He listed the available logging programs, keys to the park, public materials, and other items. Also covered was the list of 17 efforts needed to garnish the bonus points.

**50/50 Raffle:** This was won by Todd N9DRY ; winning an award of \$18.00

**Scholarship Auction:** No auction held.

**Committee reports:** [there were no Tech, and no RPT VP reports.]

1st VP: Jeananne N9VSV is still taking orders for member badges, also has mugs for \$33. She is also checking the embroidered items and prices, to be determined.

Treasurer: Gary N9UUR provided reports on the tables. We have \$5561 in checking, recent bills include FD expenses like the materials for the FD trailer The May treasurers' report was accepted; motion by W9JI; 2<sup>nd</sup> by WB9AZH & carried.

Secretary: W9GA reported that the May 2023 minutes are posted, a motion to accept was made by N9VSV; 2<sup>nd</sup> by W9IPR & carried.

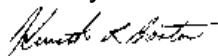
W9IPR did mention that he gave Sandy W9BTN his lifetime achievement award at the Saturday breakfast at PJ Pipers but took no picture of the event.

**OLD business:** There was no old business.

**NEW business:** There was no new business.

**Adjournment:** WB9RQR moved to adjourn, KC9TSO 2<sup>nd</sup>, motion carried; time end was 8:45 PM. There were 20 in-person attendees, 11 Zoom attendees.

Respectfully submitted;



Kenneth Boston W9GA, Secretary

# Classified Advertising For Sale & Wanted Items Ozaukee Radio Club Members

de: Bill Shadid, W9MXQ

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**For Sale:** Kenwood TS-450S HF Transceiver in Good Condition. Only \$400. I am moving into an apartment, and you know what that means.

<https://www.rigpix.com/kenwood/ts450s.htm>

Contact Richard Holt, ABØVF, at 262-665-2918 (Cell Phone)

or Contact Tom Ruhlmann, W9IPR, at 262-844-6331 (Cell Phone)

---

**For Sale:** Heathkit SB-104A HF Transceiver in Excellent Cosmetic Condition. Works on all HF-Bands with full power. Needs further alignment and further electronic restoration. Erratic digital readout – but an uninstalled Heathkit Shop Retrofit Readout Kit is included with this sale. \$350. (Most recent contact was a MidCARS check-in a week ago.)

<https://www.rigpix.com/heathkit/sb104a.htm>

Also for sale, package including Heathkit SB-604 Matching Speaker for the SB-104A with the internally installed Heathkit HP-1144 AC Power Supply for the SB-104A. Sold only with the SB-104A. Price is \$150 for Speaker and Power Supply, together.

Other matching accessories also available – contact me for details.

Contact Bill Shadid, W9MXQ, at 262-352-7304 (Cell Phone) or [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com)

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Classified Advertising for Ozaukee Radio Club Members is a new feature. Only contact advertiser for details – Editor has no knowledge of any sale items (unless he is the seller!!).. Ozaukee Radio Club is not responsible for any purchases and cannot be involved in any buyer/seller agreements or disagreements – all sales are final other than what you work out between the buyer or seller.

Advertisements will be accepted up to the 10<sup>th</sup> of the month before Newsletter publication.

Advertising is for one month, only. Ads must be submitted each month by the deadline to be published.

Advertising from non-ORC Members not accepted at this time.

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# Upcoming ORC Monthly Meeting Programs

de: Pat Volkman, W9JI

July – Fred W9KEY – Lighthouse Event

August – Field Day Reports from the Club and Members

September – Bruce AC4G – Report on a DXpedition

October – Janice KA9VVQ and Bruce W9FZ – “Getting on the Air and Having Fun with Roving!”

November - Jeananne N9VSV – Collecting Amateur Radio Themed Stamps

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com).

## Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you getting your talk ready for the club.

Contact Pat Volkman, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*July 12, 2023*

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. 7:15 – 7:30 PM<br/>Check-In and Introductions</li><li>2. 7:30 PM Call to Order:<br/>President Bill Greaves (K9GN)</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Fred Key, W9KEY<br/>Lighthouse Event</li><li>5. President's Update:<br/>Bill Greaves (K9GN)</li></ol> | <ol style="list-style-type: none"><li>6. 1<sup>st</sup> VP Report:<br/>Jeananne Bargholz (N9VSV)</li><li>7. Repeater VP Report:<br/>Tom Trethewey (KC9ONY)</li><li>8. Secretary's Report:<br/>Ken Boston (W9GA)</li><li>9. Treasurer's Report:<br/>Gary Bargholz (N9UUR)</li><li>10. Committee Reports</li><li>11. OLD BUSINESS</li><li>12. NEW BUSINESS</li><li>13. Adjournment</li></ol> |
|---|--|



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**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
12 July 2023**

**Program:  
Fred Key  
Lighthouse Event**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

---

**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
9 August 2023**

**Program:  
Field Day Reports  
from the Club and Members**

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# ORC 17<sup>th</sup> Annual Regional Fall Swapfest



Test Equipment, Radios, Antennas, Accessories, Tools, Hobby Stuff & More

*Saturday, September 9<sup>th</sup>, 2023*

Firemen's Park (W65 N796) on Washington Avenue in Cedarburg WI 53012  
**N 43° 18.283' W 087° 59.500'**

**Setup and general admission from 6am to noon – Door prizes**

**Refreshments available inside the exhibit hall**

**\$5 admission at the gate – buyers and sellers – 12 & under free**

***Just park on the grounds and sell your stuff or just browse & buy their stuff***

Inside tables \$10 as available (5 for \$40) – ARRL and any Commercial Vendors are typically inside.



Go to

[www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) or

Facebook.com/orcwi

For more information call

262-377-6945 (h) (W9IPR)

262-844-6331 (c)

Talk-in @ 146.97 PL



## 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.



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

Volume XLI

August 2023

Number 8

## From the President

de: **Bill Greaves, K9GN**



Summer arrived in late June with the solstice and now it is already August with warmer weather, travels, and outdoor ham activities and personal ham projects. Antenna building and maintenance gets on everyone's To Do list; checking items as "Done" is another story. My own list is way too long and requires focused attention as September is coming soon. Speaking of September, the ORC Swapfest is September 9<sup>th</sup> and an excellent way to spend a Saturday morning meeting, greeting, and browsing at the tables.

Even before the Fall Swapfest is the joint ORC and LeFrog Lighthouse operating event August 18-20 in Port Washington. Fred Schwierske W9KEY leads the event and can always use assistance with the setup on Friday afternoon, operating during the weekend, and tear down on Sunday.

The ORC membership meeting presentation next week will cover the Field Day event in June (always the 4<sup>th</sup> weekend in June). Ken Boston W9GA will present, and members will add their own experiences, from the ORC FD site as well as from their homes. I am looking forward to hearing about the different setups and individual experiences of operating Field Day. Also, one of the Bioenno batteries, artfully obtained by Tom Trethewey KC9ONY for the ORC, will be auctioned at the meeting. Zoom participants WILL be able to bid on the battery. Our Treasurer Gary Bargholz N9UUR decided payment will not be a problem because "we know where you live!"



I seem to have settled on this picture of myself for the Newsletter. I have not gotten any compliments on it – just that it is not “so scary” (the phrase that started the picture search about six months ago).

The club membership will gather on Wednesday, August 9th, both in-person and on Zoom, at 7:30pm, with a meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. I look forward to seeing you there.

73,

Bill, K9GN



# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

Ken Boston, W9GA, leads off this issue with a report on the Ozaukee Radio Club 2023 Field Day Event. Stay tuned for a more detailed report and a program on the event at the upcoming 9 August 2023 Regular Club Meeting.

Check out regular columnist, Dan Zank, AA9WP, talking about Artificial Intelligence and Emergency Communications. Another regular is Stan Kaplan, WB9RQR, in his 305<sup>th</sup> consecutive article – this time about What to do with Old Computers? Think of it as Fall Housecleaning.

Regular On The Air Columnist, Gary Sutcliffe, W9XT, brings us the August and early September activities. Just a reminder, check out the final page of Gary's article. Maybe not always noticeable but that last page is suitable to print and place in your shack as a reminder of what is going in the Radio World this month. Take a look.

Your Editor, Bill Shadid, W9MXQ, continues his "go through" of Heathkit's selection of products to compete with the Collins S-Line radios. Check out Vintage Amateur Radio and the Heathkit SB-400 Transmitter. (The radio covered is actually the nearly identical, but improved, model SB-401.)

Looking for ham radio things to do and places to go in the area? Check out Tom Trethewey, KC9ONY, as he tells us all about Upcoming Events.

Again, this month, right after you see the minutes of the July ORC meeting (brought to you by our Secretary, Ken Boston, W9GA) you will see the new "Classified Advertisements" column from your Editor, Bill Shadid, W9MXQ. This is a members only Selling and Buying column for ham radio equipment. I am happy to report that the Heathkit SB-104A HF Transceiver advertised last month is on the air now with a buyer in New York state.

Pat Volkmann, W9JI, tells us about coming Programs and an invitation to make a presentation at a club meeting.

Finally Check out the Flyer for the Ozaukee Radio Club Fall Swapfest on the very last page of this month's Newsletter.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents on the very next page.

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**Onward To the Newsletter**

## Ozaukee Radio Club ARRL Field Day 2023

de: Ken W9GA; Field Day Chair

The ORC has been participating in Field Day every summer for decades and serves as probably the major social and operating event in the Club's calendar. Field Day [sponsored by the ARRL] is probably the preeminent event in the list of events, and the one with the highest HAM participation.

This June 2023, the ORC once again placed 5 stations in a Pleasant Valley nature park just north of Cedarburg and Grafton. [3 HF stations, a VHF station and a GOTA station for newbies and guests] We were located in Pleasant Valley park, just off county trunk I, about 2 miles north of highway 60. Several club members, their guests and some tower trailers descended on the park and set up for the weekend of operating action.



A few trailers had short towers installed on them, containing a rotatable beam antenna, which were parked and deployed for the three main HF stations and a 6-meter station. An RV housed the radio position for the 40-meter phone station, while tents were set up for the CW [all bands] and the VHF/SAT stations. New this year was a 20 Phone position in the white ORC FD storage trailer.



**VHF Tent Area – Showing Antennas**



**CW [80/40/20/15/10 meters] Tent; Mark KD9NOO at the rig**



**White trailer modified as an Operating Position;  
20 Phone, Jim K9QLP operating.**



**Satellite Station, Gary N9UUR Operating**



**Nate KC9TSO showing off his 'Special' FD Coffee!**



**At the pavilion in the park, our club members were able to meet and chat with the public.**



**Jeananne, N9VSV, mentoring a couple young guys  
on making ham radio contacts on GOTA.**

Along with our club initiative to sponsor and support various STEM projects in the local schools, this kind of outreach is important to foster an understanding and interest in telecommunications among our local youth groups. We position several of the stations close to the pavilion on purpose, to generate interest and curiosity.

Over 35 club members participated this year, which is an increase over recent years; operating, assembling stations, setting up and tearing down, cooking, stopping by and just generally pitching in; making for an overall wonderful club outing! Mucho encouraging!

Again, in 2023 we ran our club effort using the 3A category, with the idea that due to a shrinking operator corps, we needed to make sure that all the stations could be adequately staffed. Even at 3A this year, we managed to have a reasonable effort put forth on the bands, with a QSO count of 2249, which was somewhat lower this year; I guess not enough e-skip. We also managed to qualify for all but a couple of the bonus point add-ons, which helped ORC to obtain a good score, totaling about 9,300 points overall.





**40-meter phone rotatable dipole.**

We all had fun, made lots of contacts, and had to put up with a little rain, both overnight, and right at the conclusion of the operating window.

Now looking forward to a great effort for 2024, come and join us!



**Kenneth Boston W9GA, chairperson FD 2023  
[stuck in the trailer, waiting out the rain]**

# OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)

## Artificial Intelligence and Emergency Communications



*“When AI knows how to destroy a hotel room, I’ll pay attention to it,”* Joe Walsh, American guitarist best known for work with The Eagles.

Artificial intelligence, the good and the bad, has suddenly and impressively hit the headlines. Now would be a great time to look at Artificial Intelligence or AI and emergency management and communications. It is early on the timeline to fully understand the impact of AI but there has been a great amount of study and thought invested in possible uses and concerns. The Federal Emergency Management Agency, or FEMA, has the following definition for an *Emergency*: *Any incident, whether natural, technological, or human-caused, that requires responsive action to protect life or property.*

During an emergency, no matter the cause, emergency managers, first responders, and other public officials have learned that a great amount of information needs to be collected and analyzed. Collected and analyzed quickly. Because of infrastructure problems, breakdowns in communication paths, and insufficient resources, some information may be missing, of bad quality, or just wrong. Today, with more avenues of information the amount of information, both good and bad, can be overwhelming. Still, the decisions must be made quickly.

Artificial Intelligence or AI will be a valuable tool during any emergency situation. So how to find out what is going on with AI and emergency management? What better way is there to search for AI information than by using an AI search engine? I used a search engine called *Elicit*. What is *Elicit*? They explain it as:

*“Elicit is a research assistant using language models like GPT-3 to automate parts of researchers’ workflows. Currently, the main workflow in Elicit is Literature Review. If you ask a question, Elicit will show relevant papers and summaries of key information about those papers in an easy-to-use table.”*

Elicit has the ability to filter the search results using the criteria of the availability of a pdf for the article. That reduces a lot of time spent reviewing articles that are behind paywalls. The website is: <https://elicit.org/>

So, I conducted a search on Artificial Intelligence and Emergency Communications. Below are a few of the results and a short summary of the extensive amount of information available. This is barely scratching the surface.

First, a nice article by Paul Kirvan, <https://www.techtarget.com/contributor/Paul-Kirvan>, *How AI adds value to crisis communications systems* provides a broad overview of how artificial intelligence and machine learning (ML) may be leveraged for an improved response during an emergency. The capabilities of AI and ML in collecting and analyzing information and then providing appropriate responses are just beginning to be understood. While the article provided a general overview it did not provide much in specifics.

Another of the first articles in the search is *Artificial Intelligence in Disaster Risk Communication: A Systematic Literature Review*.<sup>1</sup> This paper focused on the research for the use of Artificial Intelligence for both citizens and emergency responders. Their literature review revealed that research has been focused on two areas: “(1) prediction and monitoring for early warning, and (2) information extraction and classification for situational awareness.”

Unfortunately, this was just a pdf of the abstract. The complete article is behind an IEEE paywall. I am sure there is a lesson to be learned from this result.

Moving on, I did come across a wonderful article regarding AI and disaster management. It did not directly address communication technologies but stressed the requirement that for AI to be an effective tool the information provided must be “high quality.”

*Facilitating adoption of AI in natural disaster management through collaboration*<sup>2</sup> in Nature Communications magazine <https://www.nature.com/ncomms/>. The article is best summarized in a short paragraph from the abstract:

“Recently, interest has grown in leveraging innovative technologies such as artificial intelligence (AI) to bolster natural disaster management. In many fields, such as medicine and finance, AI has gained traction due to advances in algorithms, a growth in computational power, and the availability of large data sets. Within natural disaster management, it is hoped that such technologies can also be a boon: capitalizing on a wealth of geospatial data to strengthen our understanding of natural disasters, the timeliness of detections, the accuracy and lead times of forecasts, and the effectiveness of emergency communications.”

The most interesting article, at least from an amateur radio emergency services perspective, was found in Electronics Magazine, <https://www.mdpi.com/journal/electronics>.

This was the only article that I have found that mentions amateur radio and several of the modes and techniques used by amateur radio.

*Communication Technologies in Emergency Situations*<sup>3</sup> by Anna Carreras-Coch, Joan Navarro, Carles Sans, and Agustin Zaballos from LaSalle Research <https://www.salleurl.edu/en/la-salle-research>

While not directly addressing AI they do provide a look at new and innovative ways of moving information from crisis areas to the decision makers. “From a technological point of view, this can be best seen as a live Ubiquitous Sensor Network—composed of human beings (e.g., first responders, victims) and devices (e.g., drones, environmental sensors,

radios)—with stringent and special communication requirements in terms of flexibility, mobility, reliability, bandwidth, heterogeneity, and speed of deployment.” The authors realize that many of the technologies we now count on may not be available during a disaster emergency. The authors reviewed the challenges faced by emergency communications, review past studies, and understand the technologies now available for emergency communications. They conclude the article with an approach used “to link the relocating agents that constitute a Ubiquitous Sensor Network spanning a large-scale area (i.e., hundreds of square kilometers) by combining Near Vertical Incidence Skywave technologies with Drone-Based Wireless Mesh Networks. The conclusions derived from this research aim to set up the fundamentals of a rapidly deployable Emergency Communications System inspired by the Ubiquitous Sensor Network paradigm.”

Shown in the figure from the article, the technologies used by amateur radio operators today, NVIS antennas, mesh networks, base and mobile stations, and repeaters are proposed in the plan. Again, more information collected from more sites will make using Artificial Intelligence essential for future emergency management.

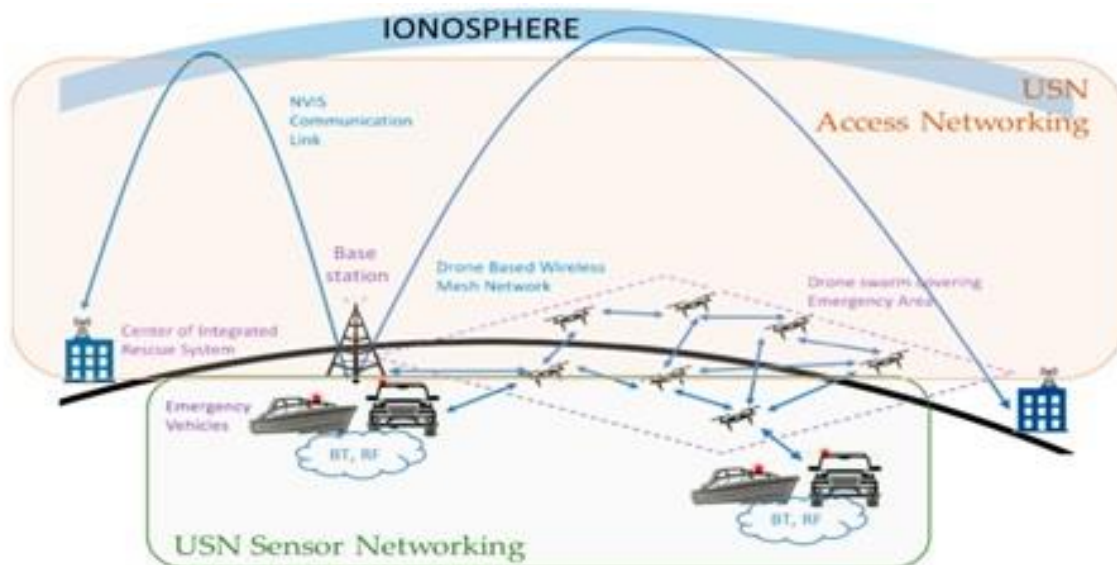


Figure 2. Possible communications technology stack for emergency communications system.

### Notes and Credits:

1. R. I. Ogie, J. C. Rho, and R. J. Clarke, "Artificial Intelligence in Disaster Risk Communication: A Systematic Literature Review," *2018 5th International Conference on Information and Communication Technologies for Disaster Management (ICT-DM)*, Sendai, Japan, 2018, pp. 1-8, doi: 10.1109/ICT-DM.2018.8636380.
2. Kuglitsch, M. M., Pelivan, I., Ceola, S., Menon, M., & Xoplaki, E. (2022). Facilitating adoption of AI in natural disaster management through collaboration. *Nature Communications*, 13(1), 1-3. <https://doi.org/10.1038/s41467-022-29285-6>

3. Citation: Carreras-Coch, A.; Navarro, J.; Sans, C.; Zaballos, A. *Communication Technologies in Emergency Situations*. *Electronics* 2022, 11, 1155. <https://doi.org/10.3390/electronics11071155> Academic Editor: Antoni Morell Received: 25 February 2022 Accepted: 2 April 2022 Published: 6 April 2022 Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations. Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

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## **OZARES Repeaters . . .**

- 147.330 MHz (+ Shift) (127.3 PL)
- 443.525 MHz (+ Shift) (114.8 PL)

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## **ORC Repeaters are On the Air Awaiting Your Call . . .**

- 146.97 MHz (- Shift) (127.3 PL)
- 224.18 MHz (- Shift) (127.3 PL)
- 443.75 MHz (+ Shift) (127.3 PL)

# THE COMPUTER CORNER

## No. 305 What to do with Old Computers?

de Stan Kaplan, WB9RQR, 715 N. Dries Street, Saukville, WI 53080-1664

[wb9rqr@gmail.com](mailto:wb9rqr@gmail.com)



In the last paragraph of the last article, I hinted that old machines should be given to me. Here is what I do with them.

Laptop or desktop, donated machines are first inspected to see if they are 64-bit units. If they are 32-bit machines, they are no longer useful as computers and are broken down (taken apart) for recycling. That means metal parts go in the metal bin, circuit boards in the circuit board bin, plastics in the garbage bin (computer plastics currently cannot be recycled) and so on. My recycle site

does take circuit boards and all metal, though, and some of the metal may well wind up in the frame of your next car, so do not let your old computer wind up rusting in a land fill! The disassembly and recycling I do is a service to any hams that provide me with units that have no more useful life as a computer but may wind up in the melt of some new device or tool. Hard drives from these computers are wiped of data (explained later) or disassembled for metal recycling. In either case, data can no longer be captured from them.

If a unit is a 64-bit computer, it is then inspected to make sure that all the parts are there. For example, cleaned hard drives will be added if they are missing, fans will be added if needed (noisy or slow) and RAM memory may be added if I have it in stock from other units that were recycled. The interior of the machine will then be cleaned of any dust and grime, as well as the exterior, including removal software stickers.

The very next step is to fire up the newly cleaned computer and wipe the hard drive. That means running a data-destructive program that starts at the very first bit on the drive, sets it to a one, then to a zero. Then it moves on to the second bit, and so on, until the first byte (8 bits) is wiped clean. Then it goes on to the next byte, and the next, and the next, until all the bytes on the drive have been so wiped, up to 500-gigabytes or a terabyte, or whatever the drive capacity is. Then the program returns to bit one at the drive beginning and starts the complete process again. When done, it again moves back to the first bit and starts the whole process for an entire third pass.

This three-pass wiping ensures that no one can ever read old data from the hard drive, even using the side-of-track scanning methods that some governmental agencies employ when it is deemed worth the huge sums these covert methods cost to run. Thus, every bit of data, including all private data, any viruses or other malware and even the basic formatting of tracks, is gone forever. Any error messages from the wiping software during

this process will alert me to a defective drive; the wiping is then halted, and the drive is recycled by disassembly as mentioned earlier. If the wiping is completed with no error messages, the drive can be used again because now it is in the same state as it was in when completed in the hard drive factory after manufacture. Of course, it will not boot because it has not yet had a proper format of tracks and other data-organizing areas, but that will come.

As you might guess, the above process takes time. In the very fastest desktop machine, a half-terabyte drive might take overnight to wipe the three passes completely. It can even take 24 to 36 hours or more, depending on machine speed, installed memory and size of the hard drive. When done, it is ready for data.

I then mount the latest 64-bit Linux Mint Cinnamon on the drive. If you read this after the end of June 2023, this will likely be version 21.2, "Victoria". Why this operating system? For several reasons. 1. This operating system can do about anything that Windows can do. 2. It looks much like Windows 10 to the operator, so the learning curve is minimal. 3. Unlike Windows, it is free of cost.

The process of installing Linux also formats the drive with an excellent system for holding data, which is superior to that used by Windows (less like to garble or loose data). Furthermore, installation includes Libre Office, a Microsoft Office equivalent (and more). Look at the comparison:

<b>Microsoft Office Component</b>	<b>Type</b>	<b>Libre Office Component</b>
Word	<b>Document</b>	Writer
Excel	<b>Spreadsheet</b>	Calc
Access	<b>Database</b>	Base
Powerpoint	<b>Presentation</b>	Impress
---	<b>Drawing</b>	Draw
---	<b>Formula</b>	Math

Libre Office can also read and even write data in Microsoft format. So, if someone sends you a Powerpoint presentation, you can open and read it on your Linux machine. The same is true for documents written in Word, and so on.

Installation of Linux also automatically includes the Firefox browser. The email program Thunderbird works fine, too, should the user wish to install it. There are also a myriad of programs that are either automatically installed with Linux or are available for download and installation by the end user. There are currently around 30,000 programs available to be added to a new Linux installation. Plus, there is software you can install that will allow you to run Microsoft programs on your Linux installation, or even Windows itself. It is truly a universally adaptable operating system. That is shown to be true by the fact that almost every modern smart phone uses Linux as part of its controlling software package.

OK, so Stan now has an older Windows machine that has been wiped clean and has a fresh copy of Linux on board. What does he do with it? Simple. It physically goes to the Ozaukee Radio Club for auction at the next monthly meeting. It is auctioned, for as little



as \$10 or as much as \$50 or \$60. Half of those funds go to the ORC STEM (Science, Technology, Engineering, Math) Program, to benefit young folks' education in these areas. The other half goes to OZARES, the Ozaukee County ARES/RACES ham organization that trains members and prepares for emergency communications. Both are worthy organizations, run and staffed by volunteer hams. And those older computers that are still useful have found a second life. Sounds like a win-win situation to me! So go rummage in your closet or basement for any old computer that is just gathering dust and get it to me for reuse or recycling. Happy Computing!

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**Winter Approaches like a Train in the Night!!**  
**Are your antennas ready**  
**for the howling winds of winter?**

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# On The Air Activities!

de Gary Sutcliffe, W9XT



It has been very dry here, and my garden suffered from the high heat and no rain. My attempts to water the vegetables have only kept them alive but not producing much. I watched the weather reports and radar, and it seems that the storms tried to avoid Slinger. They either pass to the north or south or dissipate before they arrive. We only had about 1.5" in all of June and a similar amount in July. I only seemed to experience rain at Field Day and the South Milwaukee Hamfest, only to return to find we only got a trace back home.

That changed on Friday night, July 28. We got 1.6" of rain! But we paid a price. We were out of power for about 10 hours. You do not realize how much you depend on electricity. One thing that I did have power for was my 2M radio.

I was participating in the Washington County ARES severe weather net when we lost power. My radio was running on a LiFePO4 battery I bought at the Hamvention® last May. I had it hooked up because I was evaluating it for the WASHARES participation in the National Night Out in Slinger. (More about that later.)

I wish I had gotten further in my preparations to deal with the loss of power. I have some solar panels and a charge controller, but they have not been hooked up and tested yet. There always seems to be plenty of time to get that stuff going, and it really does not seem urgent until you need it. What have you done or are you planning to do to keep your station on the air if you lose power?

## VHF

I chase DX on HF and operate a lot of contests during most of the year, but the summer is mostly VHF weak signal work. Starting in May, and peaking in June and July, is the Sporadic E (Es) season. This allows propagation up to about 1300 miles on 6M, but multi-hop Es can get across the oceans. Gary, K9DJT, and I have been very active the last few years chasing US grids for the FFMA award, as well as working towards 6M DXCC.

This has been the worst Es season since getting active again on 6M. Long-term 6M ops say it is the worst in a very long time. We only had a few openings to Europe. I only caught one opening to Japan and the Far East, but I spent most of that opening getting my computer and radio talking after Windows decided that the way I had stuff set up was not what I wanted and decided to "fix" it for me.

I have 25 grids left of the 488 needed for the FFMA award. Two-thirds of them are in the western states. We had very few good openings to that area this season. Many grids have no active 6M operators, and it takes a grid rover expedition to work it. I missed a

bunch of rovers because we just never got the double hop Es that we needed to get past Colorado.

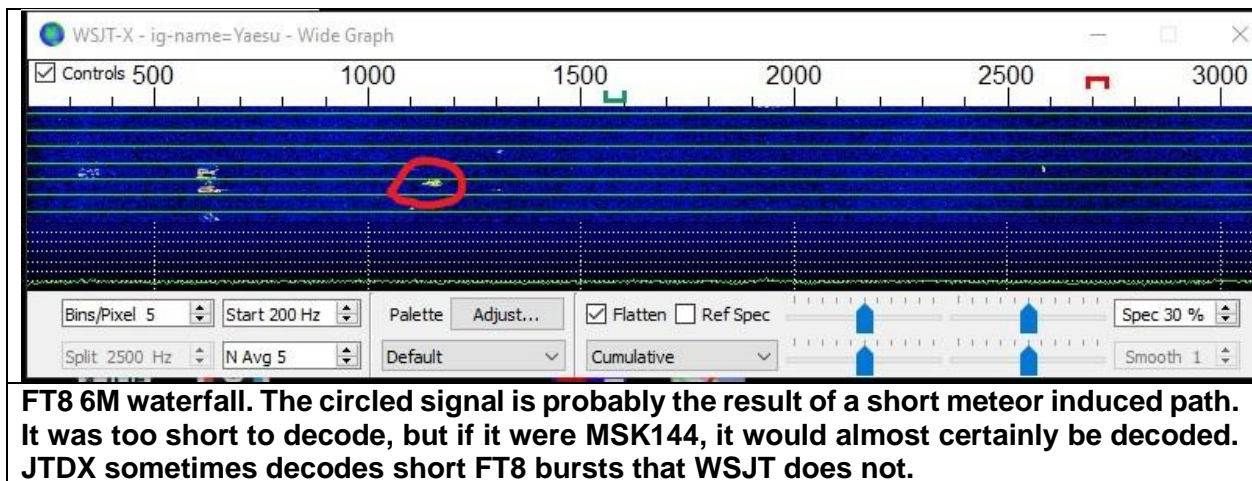
Despite the lack of 6M openings over the ponds, there were a few countries to pick up. Gary, K9DJT recently went over 90 countries worked. He got some really good ones, including 9K2GS and others in Eastern Europe and the Middle East. I got skunked that opening. Gary lives about 21 miles from me, and it is amazing how often one of us is working stuff the other cannot hear. We call it the spotlight effect.

The Es season dies around the end of July, and you can tell it is on its last legs now. We have a few other propagation modes that affect 6M and 2M, which should make things interesting in the coming months.

First of all, is the Perseid meteor shower. As meteors enter the atmosphere, they ionize the air around them, and we can bounce radio waves off them up to about 1300 miles. Meteor showers produce more meteors than regular periods, and the Perseids are usually the year's best shower.

It is expected to peak around August 12. But the Perseids period is pretty broad. I have seen a lot of meteor enhanced signals already, and Gary, K9DJT (Mr. Meteor), and I have been working stations in the mornings on 6 and 2M.

If you monitor 6M with FT8, you might see a signal on the waterfall that is less than a complete sequence but still pretty strong. You might get a decode as well, but often that is the only one you get from that station. You might get a couple of decodes if the meteor is massive.



If you are running 6 or 2M FT8, you are already set up to run MSK144. This is one of the modes supported by WSJT. If you have 100 watts and preferably a small beam, you can work meteor scatter with MSK144. QSOs work similarly to FT8 but require much more patience waiting for another meteor to allow moving to the next step.

WSJT-X - ig-name=Yaesu - Fast Graph

WSJT-X - ig-name=Yaesu v2.6.1 by K1JT et al.

File Configurations View Mode Decode Save Tools Help

Band Activity					Tx Messages				
UTC	dB	T	Freq	Message	UTC	dB	T	Freq	Message
114345	0	1.5	1498	W9XT NJ9R -05	114130	Tx	1500		NJ9R W9XT EN53
114345	0	8.0	1499	W9XT NJ9R -05	114200	Tx	1500		NJ9R W9XT EN53
114415	0	0.6	1501	W9XT NJ9R RR73	114230	Tx	1500		NJ9R W9XT EN53
114515	-2	1.9	1505	K8NTK WB4HIE R+06	114300	Tx	1500		NJ9R W9XT EN53
114515	-1	2.1	1505	K8NTK WB4HIE R+06	114330	Tx	1500		NJ9R W9XT EN53
114530	-5	2.5	1493	W8LMG NOAN RR73	114345	0	1.5	1498	W9XT NJ9R -05
114530	-4	9.0	1502	CQ KFOY DN92	114345	0	8.0	1499	W9XT NJ9R -05
114530	-3	9.0	1502	CQ KFOY DN92	114400	Tx	1500		NJ9R W9XT R+00
114530	1	9.7	1501	CQ KFOY DN92	114415	0	0.6	1501	W9XT NJ9R RR73
114530	-6	11.6	1500	W8LMG NOAN RR73	114430	Tx	1500		NJ9R W9XT 73
114545	-1	6.5	1460	CQ KOMHC EN26	114600	4	5.8	1501	CQ KFOY DN92
114600	1	0.8	1500	CQ KFOY DN92	114619	Tx	1500		KFOY W9XT EN53
114600	2	1.2	1499	CQ KFOY DN92	114630	1	0.7	1502	W9XT KFOY +13
114600	3	5.6	1502	CQ KFOY DN92	114630	0	0.9	1501	W9XT KFOY +13
114600	4	5.8	1501	CQ KFOY DN92	114645	-4	14.4	1499	W9XT KFOY +13
114630	1	0.7	1502	W9XT KFOY +13	114700	Tx	1500		KFOY W9XT R-04
114630	0	0.9	1501	W9XT KFOY +13	114730	Tx	1500		KFOY W9XT R-04
114645	-4	14.4	1499	W9XT KFOY +13	114800	Tx	1500		KFOY W9XT R-04
114645	-1	0.6	1502	KFOY K2DRH EN41	114830	Tx	1500		KFOY W9XT R-04
114645	1	9.4	1500	KFOY K2DRH EN41	114900	Tx	1500		KFOY W9XT R-04
114645	2	9.4	1502	KFOY K2DRH EN41	114930	Tx	1500		KFOY W9XT R-04
114645	3	10.8	1504	KFOY K2DRH EN41	114945	0	13.6	1503	W9XT KFOY RR73
114645	4	11.4	1504	KFOY K2DRH EN41	115000	Tx	1500		KFOY W9XT 73
114715	3	0.8	1503	KFOY K2DRH EN41					
114745	-1	0.8	1500	KFOY K2DRH EN41					
114745	0	1.1	1502	KFOY K2DRH EN41					
114745	1	1.6	1505	KFOY K2DRH EN41					
114945	0	13.6	1503	W9XT KFOY RR73					

Log QSO Stop Monitor Erase Decode Enable Tx Halt Tx Tune  Menus

6m 50.260 000  Tx even/1st F Tpl 200 Generate Std Msgs Next Now Pwr

**Two 6M meteor QSOs on July 31. I was calling KFOY in Wyoming when NJ9R (IL) called. I quickly worked her, then went back to KR0Y and made a QSO. Notice that it took a few minutes to complete the QSO. Actually, it was a pretty fast QSO for MSK144!**

If you have never worked meteor scatter, Mike, WB8BZK, gave an excellent presentation on working meteor scatter.

<https://www.youtube.com/watch?v=RJ-kuvOAKGo>

The Madison DX Club has some top-notch speakers. They record them and put the videos up on YouTube. Their website is <http://www.madisondxclub.org>. There is a link to their recorded presentations on the left side of the bar near the top.

Aurora is another propagation mode that can be used on 6 and 2M. When the sun has a solar flare, charged particles are ejected. If they are aimed at the earth, they arrive in 2-3 days. The planet's magnetic field funnels them to the poles, where they can cause auroras, or the northern lights in our hemisphere. We can bounce signals off them if we point our antennas north.

The Doppler shift of the aurora causes the signals to distort CW, which is the best mode for auroras. Instead of clean tones, they have a buzzing type of sound. Sometimes you can hear SSB signals via aurora. It sounds a bit like Donald Duck. Usually, we need a really good aurora and higher power stations to do SSB.

FT8 will definitely not work with aurora. There are reports of success working via aurora with MSK144 and Q65, another mode built into WSJT. I have not tried those, but it is worth a shot.

Good aurora propagation has been scarce in the last few decades due to low sunspot activity. But as we know, cycle 25 is already higher than the peak of the last one. One side effect of more sunspots is more solar flares. July had a lot of solar flares, but not many were directed our way. Many recent news reports predicted great auroral visual shows coming up, but if you were watching the numbers, you could tell they did not know what they were talking about. We might have an aurora if the K index is 4 or higher.

Auroras are more likely to occur near the equinoxes. The autumnal equinox is in September, but August could produce some good ones with a properly directed solar flare. An excellent place to check current solar conditions, is QRZ.com, but my favorite site is solarham.net.

The other propagation mode I am hopeful for is F2. We rely on the F2 layer for HF long-distance communications. It takes a high solar flux (SF) number to reach 50 MHz. Ken, W9GA, the ORC resident 6M guru, says that in the fall and winter months, an SF > 200, along with a few days of low A and K indices, can be enough to push the MUF (Maximum Useable Frequency) over 50 MHz.

The last time we had frequent F2 on 6M was 2000-2001. I was not in much of a position to take advantage of that then. My 650+ worldwide grids and 95 worked countries on 6M have all been worked with low power and small beams. That will hopefully change with a 6M amplifier by the time you read this. I am a patient person, but at this point, waiting another 20+ years is stretching it! I plan to be ready if it hits.

**HF**

The HF bands were bad in July. Usually, the summer months are kind of poor, but this summer was terrible with so many solar flares. Hopefully, things will improve in August. Certainly, the end of the month should be better.

Despite not hearing anything, Gary, N9UUR, was on 17M FT4 one evening. He was trying to get South Dakota on that band/mode combination for WAS. So, he was calling "CQ SD" with his beam pointed to the northwest, even though there were no other signals on the band. After a few calls, Gary got an answer from FR4OS in the Indian Ocean for a new band country (NBC).

You never know if a band is open even with no signals. It also may be only open to some remote locations. But, if everyone is listening, no contacts are made. Give CQ'ing a try from time to time. It is kind of a pain to call CQ many times without an answer on CW or SSB, but on the digital modes, a string of CQs is just a click away.

## **VOTA**

The second Wisconsin week for W1AW/9 was July 12-18 (UTC). Vic, WT9Q, and I were authorized to operate using that call. Unfortunately, the conditions were terrible. We averaged over a solar flare per day that week. Add that to the usual summer doldrums, and QSO rates were very slow. Sometimes I would CQ for 5 or 6 minutes before getting a reply. And that was on the best band at the time.

Vic, WT9Q, passes along his comments on the event.

A few weeks ago, I received a forwarded email requesting volunteers to operate W1AW/9 here in Wisconsin. This was for the special Volunteers on the Air (VOTA) event. I thought it was a good opportunity to help and have some fun, so I submitted my application for approval. Who knows, maybe I would get more VOTA points too. Time passed and I had not heard anything. I was wondering if I was not qualified or if so many applied that they did not need another one. It turned out that the State Coordinator, Mark KB9S, did not receive my first request. I was soon approved and a few days later I started sending "CQ de W1AW/9."

There was a learning curve with this process; mostly I had to learn how to use the sharable calendar. We had to update it and check it before we started operating because we should never have two signals on the same band and mode at the same time. The rest of it was not much different than operating a contest, but I did send slower than usual and took time to show my appreciation for the contact.

When our week ended, I uploaded my ADIF file to a special spot on the ARRL website. Conditions were poor the entire week, so I only logged 130 contacts, but I enjoyed it. I consider it an honor to have been able to use the W1AW/9 call sign.

Vic WT9Q

As a group, we made about 2450 QSOs. Most were FT8. Vic and I only operated CW, and we were responsible for over half the team's CW contacts. After my experience running the call sign, I will make an effort to work other W1AW/n stations I come across the rest of the year if they are not making many contacts. I know what they are going through!

The VOTA event runs until the end of the year. You get points for working other ARRL members, and some calls are worth extra points because of their ARRL volunteer positions. Vic, and Fred, W9KEY, are pretty high on the VOTA Leader Board for Wisconsin.

### **Light House Special Event**

The annual International Lighthouse Lightship Weekend special event is August 18-20. It is at the Lighthouse Museum in Port Washington. This is a joint effort between the ORC and LeFROG.

Setup starts Friday, August 18, at noon, and they can use help. I helped set up last year, and the view alone was worth the trip. On the air operation will be during the day on Saturday and Sunday, August 19-20. Although the event runs through the night, they plan to shut down around sunset so they don't disturb the neighbors right next to the museum.

Contact Fred W9KEY for more information. Fred gave an overview presentation at the July meeting. If you missed it, the recording can be seen here.

<https://youtu.be/SVNqgs94x6M>

### **National Night Out**

Although it was not an event involving the ORC, several ORC members were active in the National Night Out event on August 1. NNO is a national event where towns and cities get people out in the community to interact with the local police and fire departments, and local community groups. There were about thirty community organizations at the Slinger event.

Vic, WT9Q, is the Emergency Coordinator for ARES in Washington County. With Vic's great effort and working with other clubs in the county, we set up exhibits at Slinger, Jackson, and Germantown.

Each group did their setup based on the number of participants and resources. New ORC member Scott, KD9YEW, and I managed the Slinger event. Since this was our first time doing it, we kept it simple.

We had a 2M mobile rig run off batteries and a vertical antenna on a tripod. We had HTs for backup. When you do something for the public, you always want to prepare for something failing.

I also brought along a keyer and buzzer and a separate straight key and buzzer. We had a sign with the Morse Code alphabet. It said we would send their first name in Morse

Code. Visitors could also attempt to send it themselves with the straight key. The kids thought it was neat.

The Germantown group had more CW operators and planned to have one at each end of the table. Visitors would write their names on a piece of paper and give it to one CW op, who would send it to the other. Then the receiving op would show the name they copied. NNO occurred hours before my deadline, and I didn't hear about the results, but I expect it was a real hit.

We also did a couple of simulated severe weather net demonstrations between the WASHARES members that were on from the NNO sites, home, or mobile. Unfortunately, we were overpowered by a band about twenty-five feet away from our booth. Scott and I had to shout to hear each other a few feet apart.

## **Contests**

August is a quiet month for contests. Two North American QSO Parties are in August. The CW event is Saturday, August 5, and the phone version is August 19. Both contests begin at 1:00 clock local. The exchange is name and state, and you can work stations once per band.

A fairly new contest is the World-Wide Digi DX Contest. It is sponsored by the World-Wide Radio Operators Foundation, which promotes contesting. From time to time, they sponsor some really excellent online presentations.

Contests often bring out lots of activity, and DX countries that are not very active between contests are often on for contests. This one starts at 7:00 local time on August 27 and runs for 24 hours. I plan to give it a shot for a few hours to check out the activity.

## **DX**

DXpeditions are light in August, as usual. Things will pick up in September and October. There is an interesting operation by F1SMB. He will be hitting several islands from French Polynesia as part of the IOTA program.

IOTA stands for Islands On The Air. Basically, there are hundreds of registered islands in the program. You work them for awards the same way you work countries, grids, states, etc., for other awards. I never got into IOTA, but it is a popular program.

They have a designator with two letters indicating the continent followed by a three-digit number. For example, he is starting in OC-046.

He will use the call sign FO/F1SMB and move to a different island every few days between August 13 and September 5.



## Ham Radio Events

There are several great events in August and September. The first one is SMC Fest. The Society of Midwest Contesters has its annual get-together on Aug 12. I am on the board of the SMC and will be giving a couple of presentations.

September 9<sup>th</sup> brings us the ORC Swapfest. I hope everyone shows up for this one.

September 16 is the date of the 70<sup>th</sup> W9DXCC convention. They have talks about DXing and DXpeditions and a banquet. One talk I am interested in is a talk by Craig, K9CT. He erected a 150' crank-up tower with a three element 80M Yagi. That is not for the faint of heart!

The keynote speaker is Glenn, W0GJ. Glenn is a well-known DXpeditioner and often the team doctor on them. Glenn always approaches things from a unique point of view.

I went to my first W9DXCC back in 1974. Since the late seventies, I only remember missing one due to a niece's wedding about five years ago. It is always a good time.

That wraps up August. Get going on those outdoor antenna projects. Fall and cold weather will be here before you know it!

Check the next page for my Operating Reference Sheet for August and Early September.



## W9XT's Contest, Operating, DXpedition, and Special Event Picks for August and Early September 2023

W9XT's DXpedition picks for August and early September 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
French Polynesia	13 Aug 4 Sep	FO/F1SMB	40-10M	SD	IOTA

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

W9XT's contest picks for August and early September 2023					
Name	Start	Length	Bands	Mode	Link
NAQP CW	5 Aug 1800Z	12 hours but op 12 max	160-10	CW	<a href="https://www.ncjweb.com/NAQP-Rules.pdf">https://www.ncjweb.com/NAQP-Rules.pdf</a>
NAQP SSB	19 Aug 1800Z	12 hours but op 12 max	160-10	SSB	<a href="https://www.ncjweb.com/NAQP-Rules.pdf">https://www.ncjweb.com/NAQP-Rules.pdf</a>
World Wide Digi DX Contest	17Aug 1200Z	24 hour	160-10	FT8 FT4	<a href="http://www.ww-digi.com">www.ww-digi.com</a>

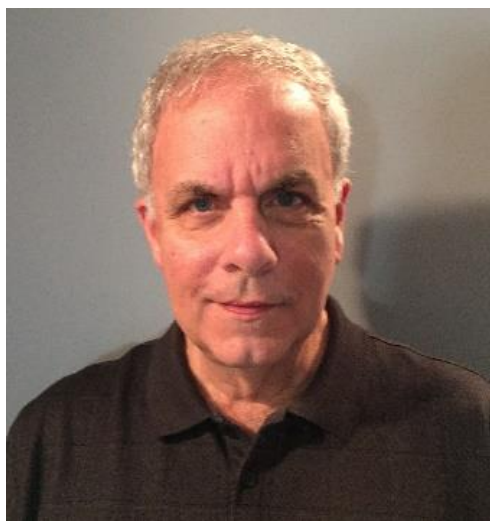
Dates/Times in UTC. Subtract 6 hours from UTC to get local (CST). HF = 80, 40, 20, 15, 10 Meters

W9XT's operating & event picks for August and early September 2023			
Event	Dates	Details	Link/notes
SMC Fest	Aug 12	Naperville, IL	<a href="http://www.w9smc.com/smc-fest/">www.w9smc.com/smc-fest/</a>
Lighthouse Weekend	Aug 18-20	Port Washington	
ORC Fall Swapfest	Sept 9th	Fireman's Park, Cedarburg	<a href="http://www.ozaukeeradioclub.org">www.ozaukeeradioclub.org</a>
W9DXCC	Sept 16	Naperville, IL	<a href="https://w9dxcc.com">https://w9dxcc.com</a>

Topics: Emergency power, VHF, HF conditions, VOTA, Lighthouse weekend, National Night Out, Contests, DX, upcoming HR events

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



Following the previous article about the Heathkit SB-300 HF Receiver, it is appropriate to follow along with the matching Transmitter, the SB-400. However, we are going to skip the original 1964 SB-400 version of this Transmitter and move to the 1966 refresh of the product, the SB-401. Reasons for this will become apparent in this review.

Heathkit had arrived on the market with products to compete with the game changing Collins S-Line (which included the KWM-2 Series Transceivers) by about 1963. Heathkit and Drake went on to provide directly competitive products to Collins, Model by Model. Hallicrafters was there too, but was more selective with where they did, and did not compete with every product that Collins offered.

Here is a picture of the SB-401 Transmitter at W9MXQ . . .



**Heathkit SB-401 HF CW-SSB Transmitter<sup>1</sup>**

W9MXQ Photo

Shown in the following chart are the field of main competitors as amateur radio moved out of the 1950's and into the 1960's. With the addition of Swan and Galaxy, we are looking at the dominant players in the domestic amateur radio market of the time.

<b>Competition to the Collins S-Line/KWM-2</b>				
<b>Device</b>	<b>Collins</b>	<b>Heathkit</b>	<b>Hallicrafters</b>	<b>Drake</b>
Receiver	75S-1	SB-300	SX-117	R-4
	75S-3	SB-301		R-4B
	75S-3B	SB-303		R-4C
Transmitter	32S-1	SB-400	HT-44	T-4X
	32S-3	SB-401		T-4XB/T-4XC
Transceiver	KWM-2	SB-100/101/102	SR-150	TR-3/TR-4
Remote VFO	312B-5	SB-604	n/a	RV-3/RV-4
Linear Amplifier	30L-1	SB-200	HT-45	L-4/L-4B
	30S-1	SB-220		
Transverter	62S-1	SB-500	n/a	CC-4/TC-2/TC-6

Both Heathkit, Hallicrafters, and Drake went on to produce later generation transceivers that are not mentioned here. The chart primarily shows what was happening in the 1960's. Others competed with Collins in their own way. For instance, National, Swan, and Galaxy (and others) produced transceivers only. Hallicrafters, too, went away from the separate receiver and transmitter concept and moved to larger footprint transceivers still in the 1960's with the SR-400 series and the SR-2000. The Hallicrafters products shown above were not upgraded (except for the SR-150) to newer versions and were gone before 1970. Swan, a market leader at the time, did try to take on the Collins line separates with the 600 Series Receivers and matching Transmitter, but they were very late coming to the market, not a commercial success, and are somewhat hard to find, today.

I would be remiss by not mentioning Hammarlund – a market leader entering the 1960's. In a flawed view of the market, they felt no need to produce small footprint radios like the Collins S-Line and KWM-2 until it was too late – and they left the market and shortly after that went out of business altogether.

We need to look at the field of transmitters available to the amateur radio operator at the time the SB-400 was released to the marketplace. Collins led the market at the time. Not to be outdone, the other major players came to the table with worthy, sometimes superior, products.



### **Collins 32S-1 (1958) (Collins S-Line)**

The first of a new generation of compact transmitters using i-f mechanical or crystal filters. Plus, a new capability to Transceive with an equally new generation of Transmitters, like the model 32S-1.



### Drake T-4X (1964)

Drake T-4X, T-4XB, and T-4XC matched its line of Receivers, the R-4, R-4A, R-4B, and the final R-4C in the line. The R-4 Series works with the Drake T-4X Series Transmitters.



### Hallicrafters HT-44 (1964)

The HT-44 arrived later than its stable mate, the SX-117. It used phasing SSB Generation, which had been popular, but many had abandoned the process by this time. It did transceive very capably with the matching SX-117 Receiver.



### Heathkit SB-400 (1964)

(SB-401 is the subject of this article.)

The SB-401 solved functionality issues of the initial SB-400 but was otherwise almost identical. For transceiving Heathkit offered the SB-300 Series Receivers.

**All Pictures – W9MXQ**

A major feature of the SB-400 and SB-401 compared to the Collins 32S-1 or 32S-3, or offerings from Hallicrafters and Drake is its integrated AC Power Supply. Collins, for instance, required the use of the 516F-2 AC Power Supply to provide power for the circuitry in the 32S-1 or 32S-3 Transmitters. Heathkit, like its competition, DOES require an external AC Power Supply (the ubiquitous HP-23 series) when using its transceivers. Like with the HP-23, the power amplifier high voltage, the lower-level circuitry high voltage, bias circuit voltage, and filament voltage are all generated internally with the SB-401 and SB-401.

A word here about the differences between the SB-400 and SB-401 is appropriate. These two models are mostly identical but do have differences that mostly are not noticed in general operation. The SB-400 lacked convenient switching to allow transceiving with the matching Heathkit Receiver (SB-300, SB-301, SB-303). One had to open the hinged top-cover and exchange some coaxial cable connections. This was accomplished with a convenient front panel switch on the SB-401 added to the MIC CW CAR Level Control as a concentric switch.

The LMO (Linear Master Oscillator) changed from using a 6AU6 tube on the SB-400 to a 6BZ6 on the SB-401. Over time the LMO changed yet another time with the last version also using the 6BZ6. This change was not apparent to the user.

A major change – which allowed a reduction in the price of the SB-401 compared to its predecessor SB-400 was based on most SB-400 series transmitters found to be running with SB-300 series receivers. When interconnected, the SB-300 series receiver and SB-400 series transmitter could use the same LSB and USB carrier oscillator as well as then same frequency range heterodyne oscillator crystals present in the receiver. This was true if the units were operating in transceive (off the receiver LMO) or separately (receive using receiver LMO and transmitter using transmitter LMO). That saved the cost of a total of ten crystals. If the SB-401 was to be used with a non-Heathkit, or earlier Heathkit, receiver, then the crystals could be purchased as the SBA-401-1 Crystal Pack.

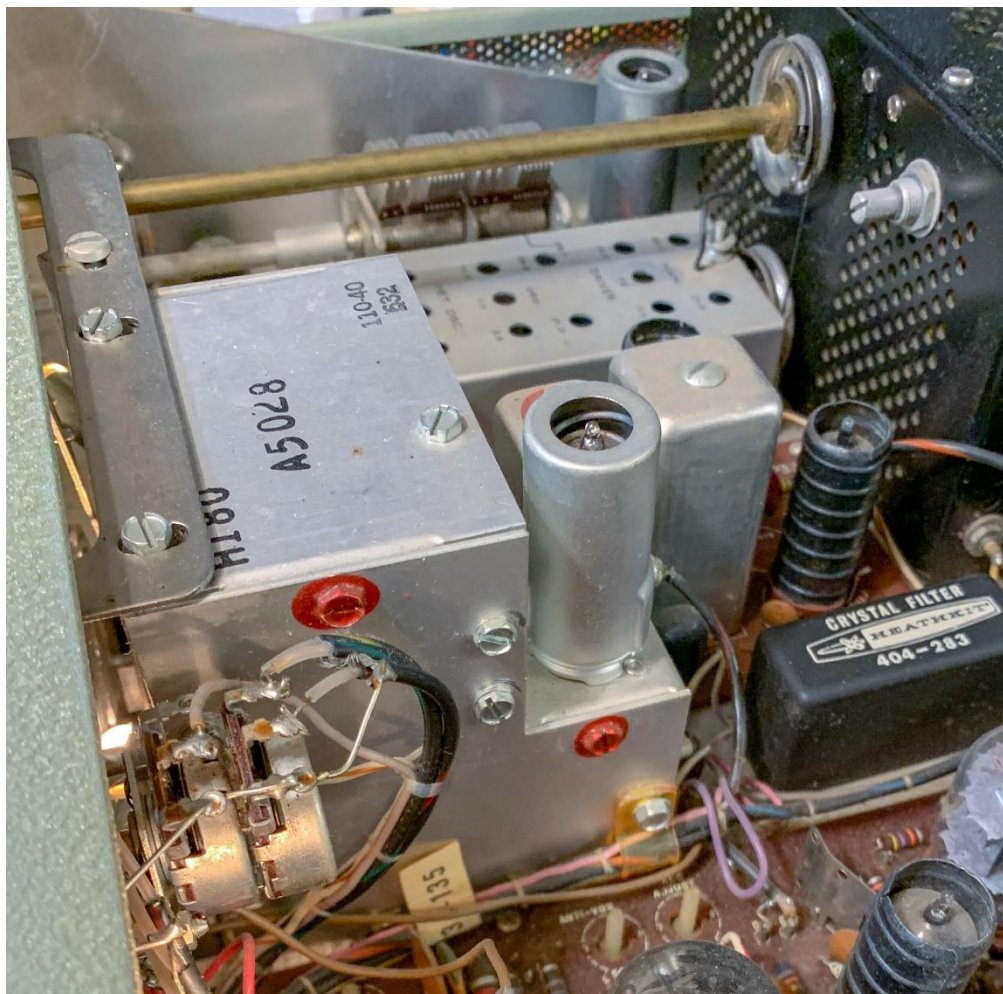
A small point here relates to CW operation. The SB-401 Transmitter did come from the factory with a CW carrier oscillator crystal. This was required because without that the transmitter and receiver would be on the same frequency when transceiving. That would cause the listener to hear nothing when transceiving. In the case of the SB-400 series design, the difference in the carrier oscillator crystals was 1 kHz. That allowed the user to hear a 1 kHz tone when the other station is transmitting. A small but particularly critical point!

Focusing on the SB-400/401 and its target Collins product, look at a selected group of feature comparisons:

<b>Feature Comparisons – Collins 32S-3 and Heathkit SB-400/401<sup>2</sup></b>		
	<b>Collins 32S-1/32S-3</b>	<b>Heathkit SB-400/401</b>
<b>Frequency Coverage</b>	3.5-30 MHz with fourteen 200 kHz Segments	80-10-meter ham bands only in eight selectable 500 kHz segments
<b>RF Power (SSB)</b>	175 Watts PEP Input (100 watts Output) (Less on 10-meters)	180 Watts PEP Input (100 watts Output) (Less on 10-meters)
<b>RF Power (CW)</b>	160 Watts PEP Input (90-100 watts Output) (Less on 10-meters)	180 Watts PEP Input (100 watts Output) (Less on 10-meters)
<b>Frequency Stability</b>	After warmup, stable to 100 Hz	<100 Hz per hour after 20-minute warmup. Less than 100 Hz for 10%-line voltage variation.
<b>Transceive Engagement</b>	Front Panel Switch	Internal Swap of Injection Cables was Required <sup>3</sup>
<b>Modes of Operation</b>	LSB, USB, CW	LSB, USB, CW
<b>AC Power</b>	Separate Collins 516F-2 AC Power Supply	Internal

These SB Series receivers and transmitters, like their competition from Collins, Hallicrafters, and Drake, excel as being closely related to the coming amateur radio preference to transceiving. Unlike the competition, however, the Heathkit radios lacked the interference fighting controls in the receivers that all the others shared (except for the very first Collins S-Line receiver, the 75S-1. In the case of the Heathkit SB-300 series and SB-400 series together – functionality was almost identical to the SB-100 series transceivers. And, with the addition of the Remote VFO (SB-640) the functionality was identical within any one band.

Like in all the SB Series Receivers, Transmitters, and Transceivers, the LMO came fully assembled and calibrated . . .

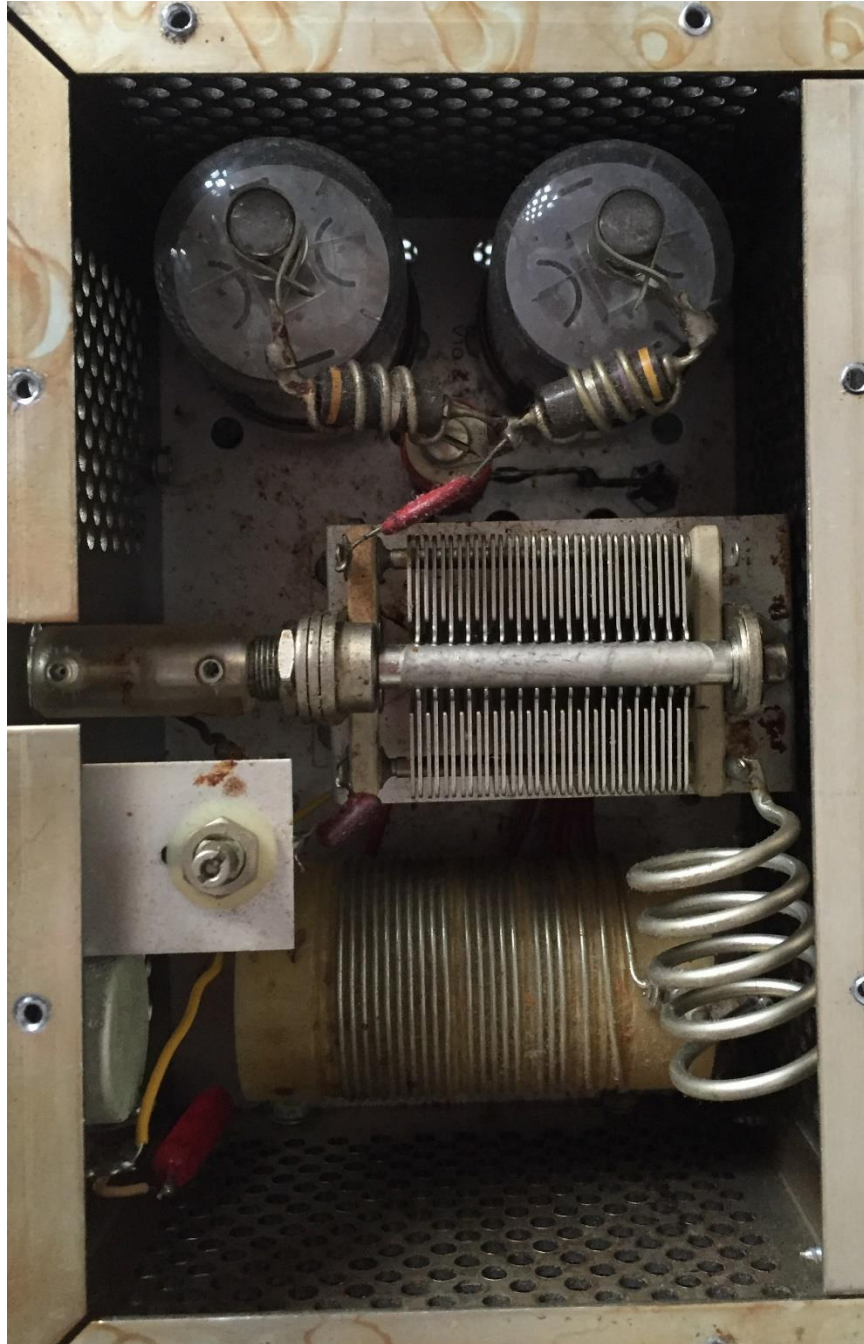


**SB-401 LMO – installed in place. Note red paint to indicate “Factory Sealed.”  
(Front Panel is to the left.)**

**W9MXQ Photo**

Note in the above picture that careful diligence and neatness in wiring. The quality of the wiring is witness to a well assembled kit – something that must be evaluated when buying any used Heathkit. It is only as good as the original builder made it!

Here is the power amplifier compartment. Like most power amplifiers in radio transmitters the amplifier tubes and tank circuit are completely enclosed. The top cover has been removed in this picture . . .

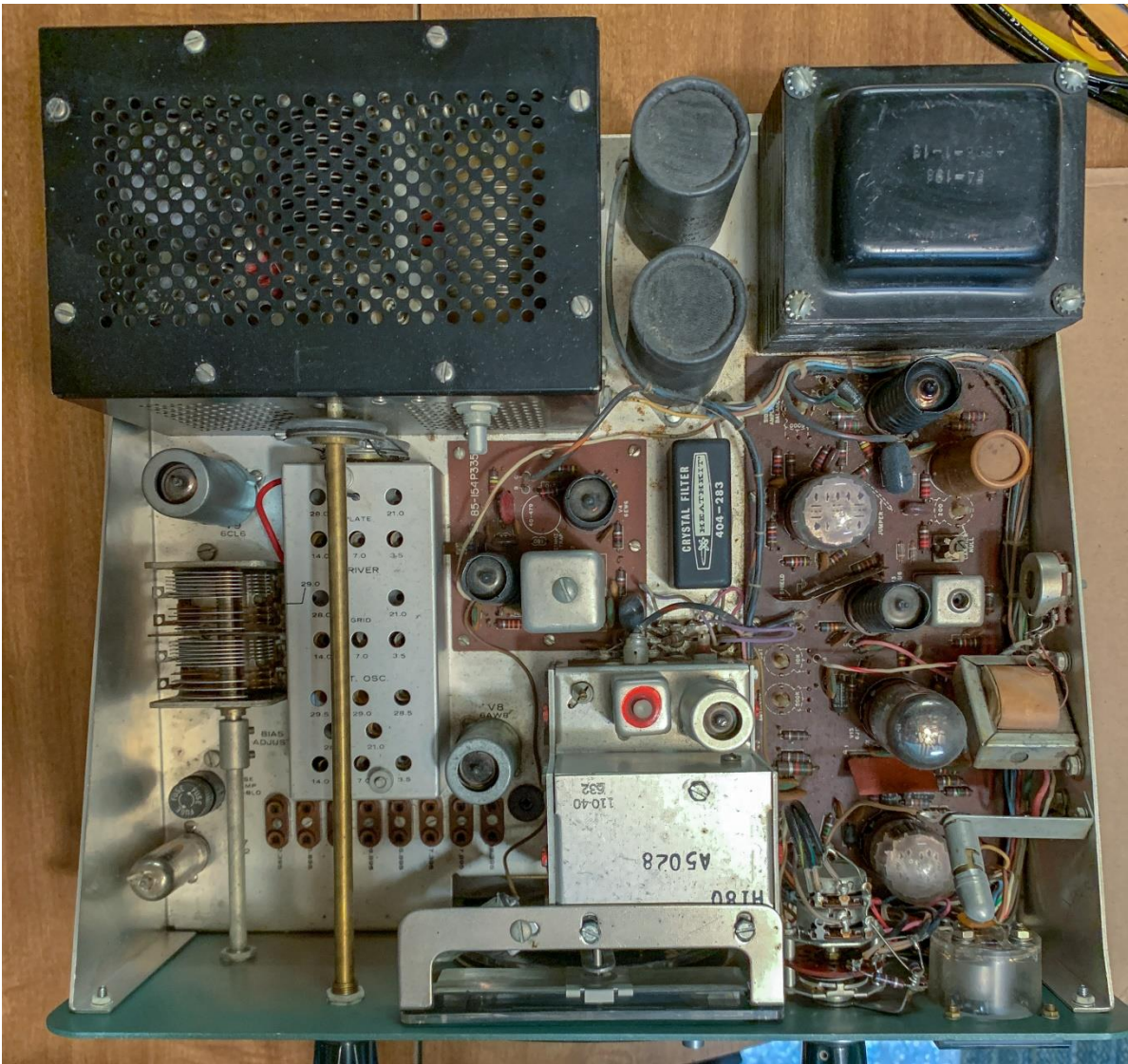


**Power Amplifier Compartment in the back left corner of the top chassis.  
(Front Panel is to the left.)**

**W9MXQ Photo**



Note, above, the 6146 Power Amplifier Tubes to the top of the picture. The Plate Tune Control Capacitor is at the center. The Plate Load Capacitor is directly below the Plate Tune Control Capacitor and therefore not visible in this picture. At the bottom you can see the 80-15-meter tank coil. At a near 90-degree angle to that coil you can see the larger wire gauge, open wound 10-meter tank coil. On the left, just below center, see the Neutralizing capacitor. The protective cover has been removed – be careful as there is 800 or more Volts DC exposed inside this compartment. That is 800, as in DEAD!!



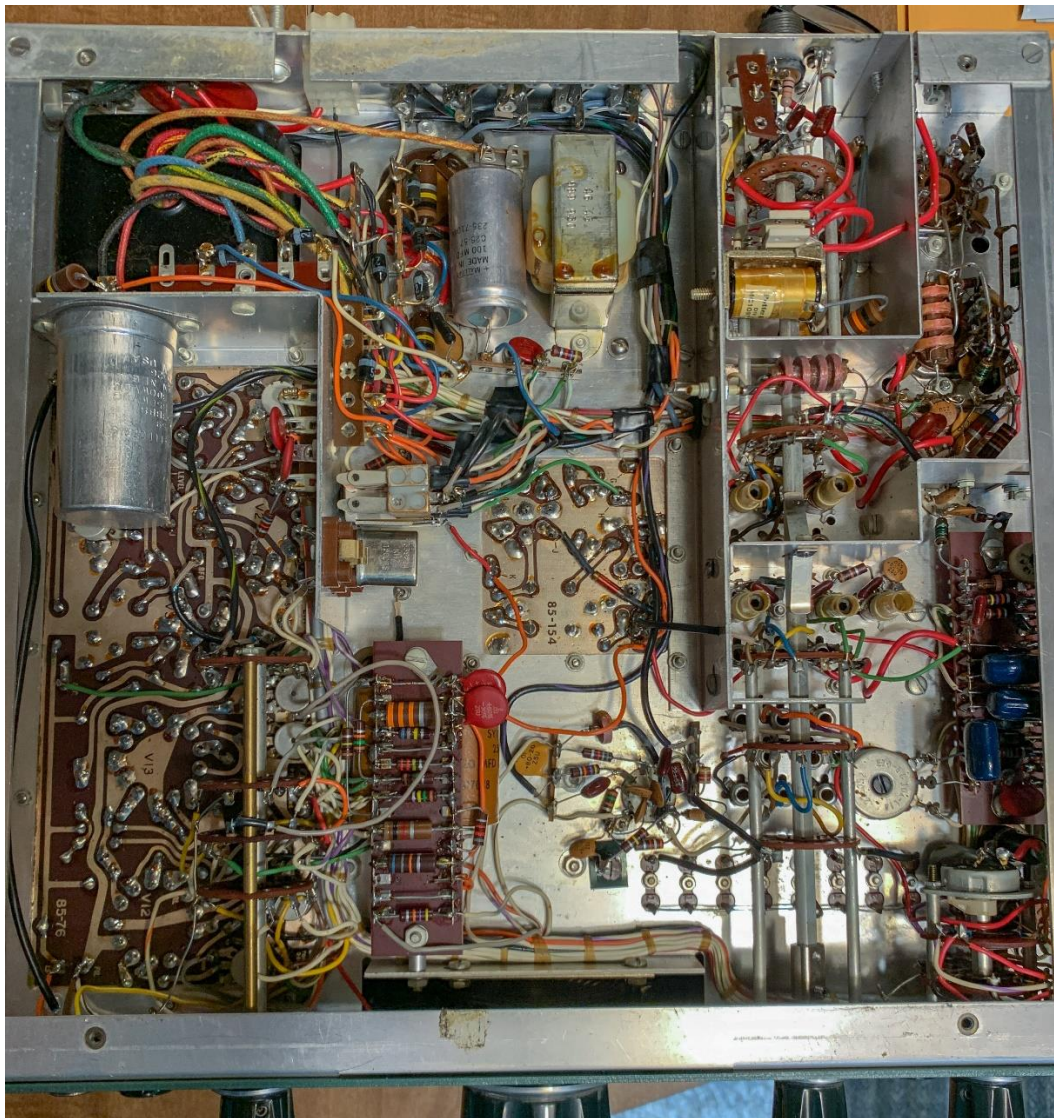
**Top Chassis View of the SB-401 Transmitter – Outer Cabinet Removed.  
(Front of Transmitter is at the bottom of this picture,)**

**W9MXQ Photo**

Above you can see the chassis top – radio removed from the outer cabinet. PA Compartment is at the left rear with the Power Transformer at the right rear. The Drive Control (driver tank circuit) is at the left center with the 6CL6 Driver tube just to the rear of that variable capacitor. Just to the right of the Driver capacitor can see the Plate and Load

Tune concentric control shafts heading back to the PA Compartment. At the lower front center is the preassembled LMO chassis. Just to the left you can see eight empty crystal sockets. Those are for the heterodyne crystals – mentioned earlier – not yet installed at the time I am drafting this article. Under the Plate and Load concentric control shaft you can see the shield cover over the transmitter i-f tuned circuits – lettered for alignment. Close to the center, you can see the transmitter’s crystal filter. That filter is part of the SSB/CW generator that is the large circuit board to the right. Straight below that board, you can see the meter. To the left of the meter is the SSB CW LEVEL control that is concentric with the switching circuitry for choosing which LMO is in use to transmit.

Now let us look at the chassis bottom . . .



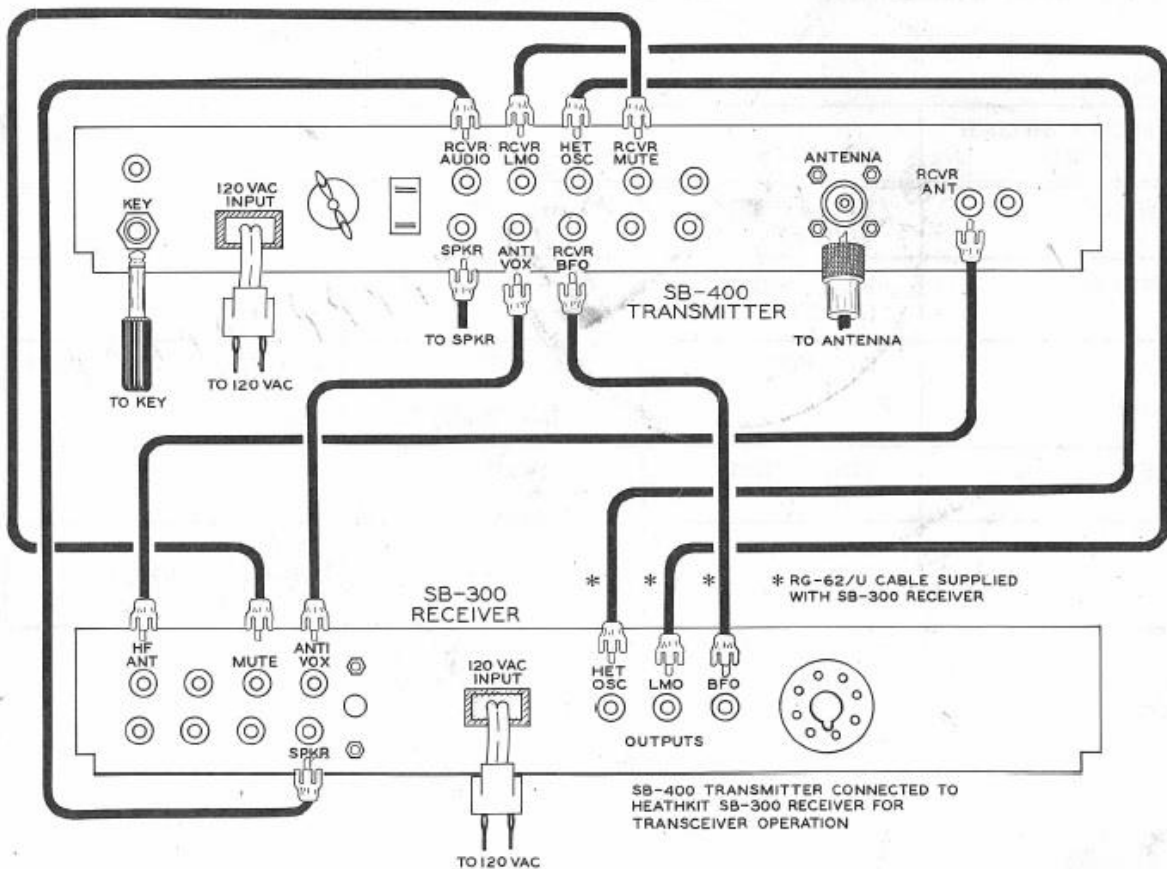
**Bottom Chassis View of the SB-401 Transmitter – Outer Cabinet Removed.  
(Front of Transmitter is at the bottom of this picture,)**

**W9MXQ Photo**

Above you see the bottom chassis view of the SB-401 Transmitter. The rear left two-thirds of the chassis houses the under-chassis parts for the transmitter's power supply. Those parts are directly under the Power Transformer that is visible in the Top Chassis view. This circuitry closely follows that of the Heathkit HP-23 AC Power Supply. Later versions of this transmitter went from the 120 VAC primary Power Transformer used in the SB-400 and early SB-401 to a dual 120 VAC (120-0-120) primary for use internationally and for 240 Volt Service, domestically.

Just to the left of the very center you can see a single crystal for the Transmitter's CW carrier oscillator, mentioned earlier. Careful study will show the sockets for the LSB and USB carrier oscillator crystals not installed at the time of this writing. Right above the crystal you can see the transmit/receive control relay. The parallel wired antenna relay (that sends signal to the receiver, when receiving), is toward the upper right of the picture. The bandswitch is visible to the right in the picture – attached to the front panel.

Today's hams are not so familiar with using separate receivers and transmitters. Here is an excerpt from the SB-401 Operating Manual showing the interconnection of the SB-401 Transmitter to the SB-300 Receiver . . .



**Heathkit SB-300 Receiver and SB-400 Transmitter  
Interconnection for Transceive and Separate Operation  
Page 94, Heathkit™ SB-401 Assembly and Operating Manual**

There are seven cables, as follows:

<b>SB-300 to SB-400 Interconnection Details</b>				
<b>Cable</b>	<b>Cable</b>	<b>Length</b>	<b>Connector</b>	<b>Application</b>
1	RG-62/U	24 Inches	Phono Plug	Heterodyne Oscillator
2				LMO
3				BFO
4	Audio Cable	36 Inches		Mute Line
5				Anti-VOX Line
6				Speaker Audio Line
7	RG-58/U	36 Inches		Receiver Antenna Cable

Cables 1 through 3 are critical as to length while Cables 4 through 7 are not critical, within reason. Premade RG-62/U cables for this application are available, custom made from eBay sellers. I used a Composite Connection TV Triple Cable for my cables 4, 5, and 6 and made my own cable 7 from some surplus RG-8X. RG-62/U is a 90-ohm cable. Use of other cable impedances may be problematic.

The model numbers of the SB-300 and SB-400 Series can be confusing so let us look at them one more time . . .

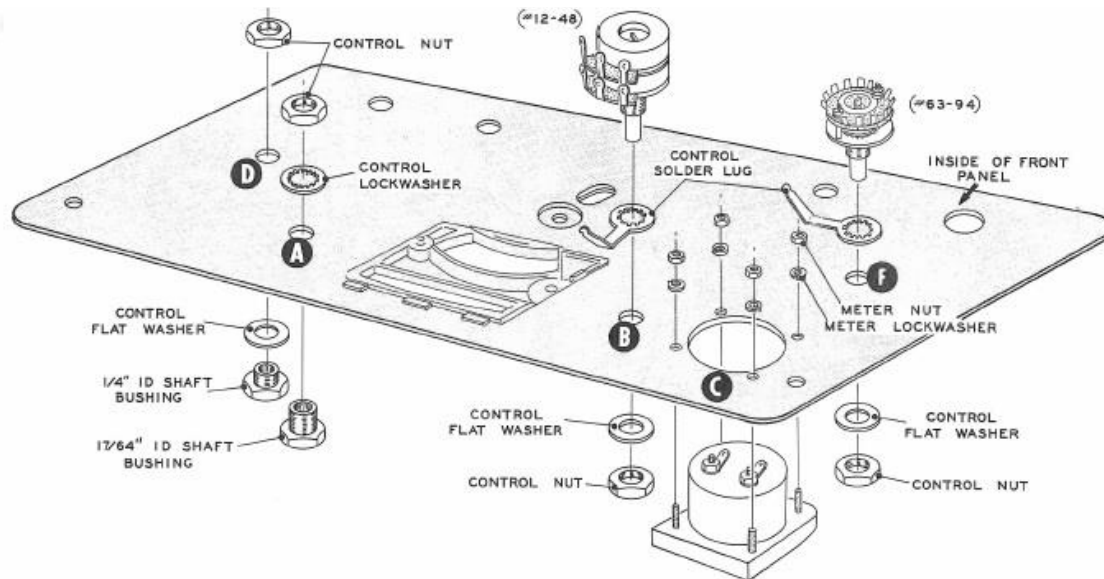
<b>Receivers</b>	<b>Transmitters</b>
SB-300	SB-400
SB-301	SB-401
SB-303	

Any Radio in the Receiver Column will operate as separate units or transceive with any Radio in the Transmitter Column. The Cable Set is the same. Just be careful of the back panel layout because the connectors are not all arranged on the back panel in the same way on every model. For instance, the back panel of the SB-303 is completely different from the back panel of the SB-300.

Do remember the shortcomings of the SB-400 (not SB-401) for separate vs transceive operation. The transmitter is excellent in performance but loses significant marks in convenience. Somehow, the "Hams at Heath" got that one wrong. They did recover in the SB-401, however. Hams being hams, many field modifications made by individuals and published widely provided excellent work arounds for the SB-400.

All the SB Series Receivers and Transmitters shared a complex design main tuning dial mechanism. I am fortunate in that my own SB-300 and SB-401 are expertly assembled and work silky smooth. I also have two SB-303 Receivers wherein one operates just as well as the SB-300 and SB-401 but the other one has all the sounds of a howling cat as it squeaks and growls with every movement of the dial! Thank goodness that is covered in a two-page process in the Heathkit Assembly and Operation Manual for the radio. It is repairable and eventually will yield to my efforts.

Speaking of the Heathkit Assembly and Operation Manual, I am thinking that most of the readers here have never assembled a Heathkit. To that end, here is an excerpt from the SB-401 Assembly Manual . . .

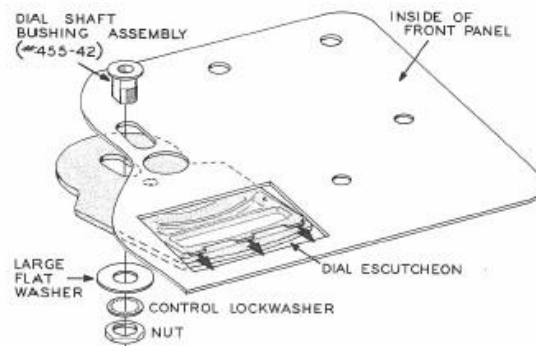


#### PARTS MOUNTING-FRONT PANEL

Refer to Pictorial 19 for the following steps.

- ( ) Place a soft cloth on the work area to prevent scratching the front panel.
- ( ) Referring to Detail 19A, install the dial escutcheon to the front panel with drive shaft bushing assembly (#455-42). Position the tabs at the top of the escutcheon inside the front panel. Do not tighten the nut at this time. Be sure the bushing is inserted from inside the front panel. It may be necessary to sand off any excess paint from the top inside edge of the panel to allow installation of the escutcheon.
- ( ) Install a 17/64" ID shaft bushing at A, using a control lockwasher and a control nut. Do not tighten at this time.
- ( ) Install a 1/4" ID shaft bushing at location D, using a control flat washer and a control nut.

#### PICTORIAL 19



Detail 19A

- ( ) Install the 1-section, 2-pole, 5-position switch (#63-94) at F, using a control solder lug, control flat washer, and a control nut. Position the switch lugs and solder lug as shown.

### Partial Assembly Detail – SB-401 Front Panel Assembly Page 75, Heathkit™ SB-401 Assembly and Operating Manual

Another area of useful design on Heathkit's SB-Line major components was the excellent top accessible (opening) outer cabinet. Collins and Hallicrafters have very nicely designed, fully opening tops on their outer cabinets but I think that Heathkit was a bit more elegant than their competition. Look for yourself . . .



**Closed Cabinet – Corner View**



**Partially Open Cabinet – Corner View  
W9MXQ Photos**

You can see the fitting design – note that removing the closure screw is not required to open the cabinet.



**W9MXQ Photo**

The hardware involved here is an 8-32 UNF Oval Head Chrome Plated Screw. These are difficult to find – and while Flat Head designs work, they just do not look right –

“Flat Head Screws Get No Cigar!!”

These Oval Head Heathkit Cabinet Screws are available from eBay sellers supporting vintage Heathkit equipment.

In closing, here is the SB-401 with the SB-300 from the previous installment . . .



**Left to Right (All Heathkit)  
SB-401 Transmitter, SB-600 Speaker, SB-303 Receiver,  
HDP-121 Microphone, & HA-1410 Electronic Keyer**

**W9MXQ Photo**

The “Green Machines.”

A reminder from the SB-300 installment, if you have any of the SB series radios (or any Heathkit Amateur Radio Equipment), I urge you to locate and purchase an excellent book by Chuck Penson, WA7ZZE, entitled “Heathkit Guide to the Amateur Radio Products,” Third Edition. The earlier editions are good (great, actually), but the Third Edition adds an incredible amount of detail about this fine equipment<sup>4</sup>.

I appreciate that you read my articles. A special thanks go to Bob, W9DYQ, for his proof reading. Remember that I am open to questions and comments at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

#### **Notes:**

<sup>1</sup> This is my first SB-401 Transmitter and comes from fellow collector, W9DYQ. I have a bit of fascination for this series of radios – with an SB-300, two SB-303’s, the SB-401 in this article, and an SB-200 Linear Amplifier in my collection. I have never had the middle model receiver, the SB-301. Like many hams, even today, I have a variety of Heathkit Accessories and several Heathkit pieces of Test Equipment in my shack.

<sup>2</sup> From the Specifications in the respective Operating Manuals of the noted models.

<sup>3</sup> This is covered in the text of the article – and was corrected with the later SB-401.

<sup>4</sup> Chuck Penson’s Heathkit related books are available from his website, <https://wa7zze.com/>. I also recommend his other Heathkit related books, “Heathkit Test Equipment Products,” and Heathkit H-Fi and Stereo Products.” I have all three, plus early editions of the “Heathkit, A Guide to the Amateur Radio Products” books.

**W9MXQ ©2023**

# Upcoming Events

de: Tom Trethewey, KC9ONY

8/07/2023 – USA National Lighthouse Day

<https://uslhs.org/fun/lighthouse-festivals-events/national-lighthouse-day>

8/12/2023 – Racine Free Fest

<http://www.w9udu.org/>

8/19/2023 – Port Washington - International Lighthouse Lightship Weekend

<https://illw.net/>

8/26/2023 – Baraboo - Circus City Swapfest

[http://yellowthunder.org/?page\\_id=66](http://yellowthunder.org/?page_id=66)

9/09/2023 – Cedarburg – ORC Annual Regional Fall Swapfest

<https://www.ozaukeeradioclub.org/>

9/22/2023 – Milwaukee – HRO Superfest, ARRL Wisconsin State Convention – September 22<sup>nd</sup> and 23<sup>rd</sup>

<https://www.hamradio.com/>

9/24/2023 – Belvidere, IL – Chicago FM Club Hamfest - 2023 Radio Expo

<http://chicagofmclub.org/radioexpo/radioexpo2023.html>



**Ozaukee Radio Club Minutes of Membership Meeting. 07/12/2023**  
**de: Ken W9GA, Secretary**

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:30 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. Bill reminds us that we still need help with the technical committee, and an auctioneer. [joking that the winner of the 50/50 raffle automatically becomes the auctioneer]

**Program:**

Fred W9KEY gave a talk on the annual Fieldhouse event, which will be running this August 18-20, 2023. It is a joint event run by ORC and LeFrog and will be set up at the Port Washington lighthouse once again. The event originated in Scotland in 1993, grew in popularity in the EU and then internationally. Recent participation was over 450 stations in 50 countries. It is not considered a contest but an operating event. Plans are to have 3 basic HF stations set up next to the museum at the lighthouse in Port and operate during the daylight hours for the weekend. ORC members are encouraged to take part.

**50/50 Raffle:** This was won by Gary N9UUR {?} ; winning an award of \$13.00.

**Scholarship Auction:** There was a small auction, featuring a Bioenno battery and left over FD soda cans in 'packs.'

**Committee reports:** [there were no Tech, and no RPT VP reports.]

1st VP: Jeananne N9VSV taking orders for badges [\$10] and mugs [\$33]

Treasurer: Gary N9UUR provided reports on the tables. Some FD expenses have been paid, others are outstanding, FD rent was \$195, overall balance still above \$5K overall balances are >\$40K. The June treasurers' report was accepted; motion by K9QLP; 2<sup>nd</sup> by W9KEY & carried.

Secretary: W9GA reported that the June 2023 minutes are posted, a motion to accept was made by N9VSV; 2<sup>nd</sup> by KC9TSO & carried.

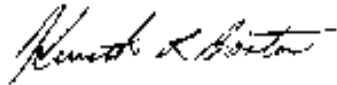
Scholarship: W9JI reports that the ARRL foundation had a poor year for investment returns in 2022, leading to a situation where we did not issue a scholarship for the current year [2023] Pat had no other statistics concerning endowment performance at ARRL, but the report is available.

**OLD business:** W9JI has dropped by AA9W's home, to give him the president's award, and was pleased to get it. Also discussed was the process of posting presentations on YouTube, as there could be copyright issues.

**NEW business:** N9UUR has submitted our club FD entry to the ARRL; he also reiterated other facts from the posting. We did miss out on the solar QSO's due to a technicality. We can also count any member entries that were submitted separately toward our aggregate club entry. W9JI will be asking for pictures from individual members on their FD efforts from their separate sites.

**Adjournment:** W9IPR moved to adjourn, N9DRY 2<sup>nd</sup>, motion carried; time end was 8:46 PM. There were 18 in-person attendees, 12 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary

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**Sometimes you just get stumped!!!**  
Remember – you have fellow ORC Members all around you  
that have “been there, done that.”

# Classified Advertising For Sale & Wanted Items Ozaukee Radio Club Members

de: Bill Shadid, W9MXQ

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**For Sale:** Uniden Bearcat SDS100 Portable Digital Scanner.

Comes with radio, antenna, charger, manual, belt clip, extended battery.

<https://uniden.com/products/sds100> Asking \$500 (retails for \$650).

Contact Paul Martis, W9PEM at 630-551-8155 or at [W9PEM@digitalmisery.com](mailto:W9PEM@digitalmisery.com)

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**For the Asking:** Rohn 25G Tower Sections.

Four Regular Sections plus a Top Section – for pickup at my Port Washington, WI, QTH.

Contact Gary Drasch, K9DJT, at [gary.drasch@k9djt.com](mailto:gary.drasch@k9djt.com)

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**Do you have an old radio that needs a home?**

Classified Advertising for Ozaukee Radio Club Members is a new feature. Only contact advertiser for details. The Newsletter editor has no knowledge of any sale items (unless he is the seller!!). Ozaukee Radio Club is not responsible for any purchases and cannot be involved in any buyer/seller agreements or disagreements – all sales are final other than what you work out between the buyer or seller. Advertisements will be accepted up to the 10<sup>th</sup> of the month before Newsletter publication.

Advertising from non-ORC Members not accepted at this time.

Advertising works!! The Heathkit SB-104A HF Transceiver advertised last month was SOLD.

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# Upcoming ORC Monthly Meeting Programs

de: Pat Volkman, W9JI

August – Ken W9GA – Field Day Reports from the Club and Members

September – Bruce AC4G – Report on a DXpedition

October – Janice KA9VVQ and Bruce W9FZ – “Getting on the Air and Having Fun with Roving!”

November - Jeananne N9VSV – Collecting Amateur Radio Themed Stamps

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together let me know at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com).

## Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you getting your talk ready for the club.

Contact Pat Volkman, W9JI, at [orc\\_pat\\_w9ji@outlook.com](mailto:orc_pat_w9ji@outlook.com) to discuss your idea for a program.

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### ORC Meeting Agenda

*August 9, 2023*

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. 7:15 – 7:30 PM<br/>Check-In and Introductions</li><li>2. 7:30 PM Call to Order:<br/>President Bill Greaves (K9GN)</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Ken Boston, W9GA<br/>ORC 2023 Field Day Report</li><li>5. President's Update:<br/>Bill Greaves (K9GN)</li></ol> | <ol style="list-style-type: none"><li>6. 1<sup>st</sup> VP Report:<br/>Jeananne Bargholz (N9VSV)</li><li>7. Repeater VP Report:<br/>Tom Trethewey (KC9ONY)</li><li>8. Secretary's Report:<br/>Ken Boston (W9GA)</li><li>9. Treasurer's Report:<br/>Gary Bargholz (N9UUR)</li><li>10. Committee Reports</li><li>11. OLD BUSINESS</li><li>12. NEW BUSINESS</li><li>13. Adjournment</li></ol> |
|---|--|



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**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
9 August 2023**

**Program:  
Ken Boston  
ORC 2023 Field Day Report**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
9 August 2023**

**Program:  
Bruce Smith AC4G  
Report on a DXpedition**

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# ORC 17<sup>th</sup> Annual Regional Fall Swapfest



Test Equipment, Radios, Antennas, Accessories, Tools, Hobby Stuff & More

*Saturday, September 9<sup>th</sup>, 2023*

Firemen's Park (W65 N796) on Washington Avenue in Cedarburg WI 53012  
**N 43° 18.283' W 087° 59.500'**

**Setup and general admission from 6am to noon – Door prizes**

**Refreshments available inside the exhibit hall**

**\$5 admission at the gate – buyers and sellers – 12 & under free**

***Just park on the grounds and sell your stuff or just browse & buy their stuff***

Inside tables \$10 as available (5 for \$40) – ARRL and any Commercial Vendors are typically inside.



Go to

[www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) or

Facebook.com/orcwi

For more information call

262-377-6945 (h) (W9IPR)

262-844-6331 (c)

Talk-in @ 146.97 PL



## The *ORC* Newsletter

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

Volume XLI

September 2023

Number 9

## From the President

de: Bill Greaves, K9GN



The ORC Fall Swapfest will be held now, on Saturday, September 9<sup>th</sup>, at Fireman's Park in Cedarburg, starting at 6:00am for attendees and vendors. Tom Ruhlmann W9IPR ably leads the Fall Swapfest again this year. Thank you, Tom. (You can always call or email the event organizer to volunteer a couple of hours or so to help out by checking the membership roster on the ORC website at ozaukeeradioclub.org.) This event will be a good opportunity to see some friends, old and new, browse some equipment deals, lighten your wallet, and still make it home in time to cut the grass! I look forward to seeing you there.

Also, for your calendar, the HRO Superfest and the ARRL Wisconsin State Convention will be September 22-23 at the Ham Radio Outlet on Good Hope Road just east of 60<sup>th</sup> Street. Many local clubs, including ORC, and ham radio organizations as well as vendors will be staffing tables. This event provides an overview of amateur radio in the entire area and a good look at what everyone is doing and at the opportunities available.

I would like to give Fred Schwierske, W9KEY, congrats for another very well organized and executed Lighthouse Weekend in Port Washington, August 19-20, including setup on the 18<sup>th</sup>. This joint event with the LEFROG club taking the lead contacted other lighthouses and totaled more than 650 contacts nationally over the weekend. Field Day and the Lighthouse Weekend are the two major outdoor preparedness activities of the ORC.

I was asked by WiARC President, Nate Seidler, KC9TSO, to give their membership a presentation on my tower and ground radials installation. This might have been my first

and last presentation as I fumbled the start of the zoom slide sharing, but I did recover my own fumble. My slides covered just about everything and totaled over 100; one viewer said it went quicker than over 100 slides would suggest. He's a very nice person!

The club membership will gather on Wednesday, September 13th, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. I look forward to seeing you there.

73,

Bill K9GN

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<https://www.orangeboxtraining.com>

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# **A Message from the Editor**

## **Newsletter Table of Contents**

de: **Bill Shadid, W9MXQ, Newsletter Editor**

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

Fred Schwierske, W9KEY, starts out this month with an article on the successful Lighthouse Weekend event held as a cooperative event with both Ozaukee Radio Club and LEFROG Radio Club. Take a look at their impressive results.

Right behind follows Jim Albrink, K9QLP, follows up with a description of an impressive aeronautical mobile contact he made during the Lighthouse Weekend.

Over in Washington County, fellow member Vic Shier, WQ9T, Washington County ARES Emergency Coordinator, brings us an article detailing the successful fielding of three booth setups at Germantown, Jackson, and Slinger, Wisconsin, during their “National Night Out” events. They were held simultaneously on Tuesday evening, 1 August 2023.

Regular columnist, Dan Zank, AA9WP, Ozaukee County ARES Emergency Coordinator, talking about Artificial Intelligence and Emergency Communications in Part 2 of a series.

Another regular is Stan Kaplan, WB9RQR, in his 306<sup>th</sup> consecutive article – this time about Artificial Intelligence.

Regular On The Air Columnist, Gary Sutcliffe, W9XT, brings us the September and early October, “On The Air Activities” information. As always, check out the final page of Gary’s article. That last page of his article is suitable to print and place in your shack as a reminder of what is going in the Radio World this month. Take a look.

This month, your Editor, Bill Shadid, W9MXQ, covers history involving his favorite ham radio manufacturer, R. L. Drake Company. This time, a story of Drake’s last ham radio package. Just to be clear, Collins, Hallicrafters, National, and Hammarlund, among others, are also my favorite ham radio manufacturer!

Looking for ham radio things to do and places to go in the area? Check out Tom Trethewey, KC9ONY, as he tells us all about Upcoming Events.

See the “Classified Advertisements” column. This column is here for your use.

Pat Volkmann, W9JI, tells us about coming Programs and an invitation to make a presentation at a club meeting. Also see information about our September meeting presenter, Bruce Smith, AC4G.

Finally Check out the Flyer for the Ozaukee Radio Club Fall Swapfest on the very last page of this month’s Newsletter.

Due to conditions beyond our Secretary's control, Ken Boston, W9GA, will provide the minutes of the August meeting at a later time.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents:

<b>Ozaukee Radio Club Newsletter September 2023 – Table of Contents</b>	
<b>PAGE</b>	<b>DESCRIPTION</b>
1	<b>Bill Greaves, K9GN: From the President</b> Monthly Update
3	<b>Bill Shadid, W9MXQ: A Message from the Editor</b> This Month's Table of Contents & Comments
5	<b>Fred Schwierske, W9KEY</b> Lighthouse Weekend – An Outstanding Success!!
10	<b>Jim Albrinck, K9QLP</b> Aeronautical Mobile Contact During Lighthouse Event
11	<b>Vic Schier, WT9Q: WASHARES – Washington County ARES</b> National Night Out
13	<b>Don Zank, AA9WP, OZARES – Ozaukee County ARES</b> Artificial Intelligence and Emergency Communications, Part Two
16	<b>Stan Kaplan, WB9RQR: Computer Corner</b> No. 306: Artificial Intelligence (AI)
17	<b>Gary Sutcliffe, W9XT: On the Air Activities!</b> Topics: HF, VHF, ORC Swapfest, HRO Superfest, Ham Radio Workbench, QSO Today Academy, Contests, DX.
24	<b>Bill Shadid, W9MXQ: Vintage Amateur Radio</b> Drake's Last Stand. The "75" Series Products
35	<b>Bill Shadid, W9MXQ: Vintage Amateur Radio Addendum</b> Collins Amateur Radio Club Special Event Stations
36	<b>Tom Trethewey, KC9ONY</b> Upcoming Events
37	<b>Bill Shadid, W9MXQ</b> Classified Advertisements
38	<b>Pat Volkmann, W9JI: Upcoming ORC Monthly Meeting Programs</b> Creating a Presentation for Club Meetings & This Month's Agenda
41	<b>Programs for This Month and Next</b>
42	<b>Flyer for the Ozaukee Radio Club Fall Swapfest</b>

**Onward To the Newsletter**

# LIGHTHOUSE WEEKEND – *An Outstanding Success!!*

de: Fred Schwierske, W9KEY

Members of the Ozaukee Radio Club, LEFROG organization and Guests gathered on August 18-20, 2023, at the 1860 Lightstation Museum in Port Washington, WI to participate in the International Lighthouse Lightship Weekend <https://illw.net/>.



ILLW, now in its 30<sup>th</sup> year, is always held the 3<sup>rd</sup> full weekend in August. This was our 11<sup>th</sup> year, and unlike 2022 – the weather was perfect. Our Special Event Station was one

of 409 Lighthouses activated worldwide, 65 of which were in the USA. Positive increases compared to 2022, which saw 393 worldwide Lighthouses, 47 in the USA.

Objectives for the weekend consisted of promoting the beautifully restored 1860 Lightstation Museum, now operated by the Port Washington Historical Society, and contacting as many other Lighthouses and amateur radio stations as possible.



Setup began Friday Noon, consisting of a 20-meter station with tri-band beam at 35 feet, a 40-meter station using a wire dipole, and frequency agile battery powered portable station with a ground mounted vertical – all running 100 watts. On-Air operation began 8:00 AM Saturday morning, running into early evening – and resumed Sunday 8:00 AM

through 2:30 PM. In consideration of the quiet residential neighborhood, we limited operation to daylight hours.

The 20- and 40-meter bands were generally good. 15 meters proved quiet, impacting hoped for DX activity. We battled to hold band positions on Saturday with stations competing in the North American QSO Party. But Special Event Stations are not contests! Operators were encouraged to actively discuss the Lightstation history, buildings, and fabulous view of Lake Michigan. Since casual conversations are best accomplished using phone modes, we did not operate Digital or CW.



**THANKS:** A big “Thank You” to all ORC Members, LEFROG Members, Guests, and especially Museum Staff who contributed to a very successful weekend!!

- Extra special thanks to Tom, KC9ONY ; Loren, N9ENR ; and Joe, KD9RAW – whose long hours of event planning, equipment organization, transportation, and station construction were crucial to our success.
- If you have not seen Peter’s, W0NG, excellent drone video, check out: [1860 Port Washington, WI Lighthouse & International Lighthouse / Lightship Weekend](#)
- And finally, Mike, KD9GCN, for handling the expected inrush of QSL requests.

**HIGHLIGHTS:** With the Log analysis & repairs completed (well mostly) - final statistics are summarized below:

- Operated as Amateur Radio Station W9CQO - one of 65 USA and 409 World-wide Lighthouses entered in 2023.
- 750 Total Contacts, including 23 Lighthouse to Lighthouse Contacts.
- 18 Operators – A huge increase over the 10 operators in 2022.
  - 44 Daily Event Attendees: Including ORC / LEFROG Members + **Guests** - Friday (6+2) = 8 ; Saturday (16+5) = 21 ; Sunday (12+3) = 15
- Successfully maintained Band presence, even during Saturday’s crowded North American QSO Party conditions.
- Not much DX. Perhaps a missed opportunity, but 15 Meters was quiet.

- Surpassed our rain shortened 2022 effort – 750 contacts, versus 281 last year. 22 Lighthouse contacts, versus 12 last year.
- Station ambiance greatly enhanced by active participation of Jeananne, N9VSV ; Nancy, KC9FZK ; Cherri, K9WOC ; & Darlene, KC9SBN.
- ARRL WI Assistant Section Manager Tom Czaja, KG9EE operated 40 meters and submitted an article to the Wisconsin Section Newsletter.
- Hosted visitors from the Milwaukee Radio Amateurs' Club, Miller Valley ARC, Milwaukee School of Engineering ARC, and Lightstation Museum Staff members.
- Enjoyed excellent weather, decent band conditions, enthusiastic operators, and a beautiful Lake Michigan view!

**2023 ILLW WORLDWIDE LIGHTHOUSE ENTRANTS: 409**

Argentina-9 ; Australia-40 ; Austria-1 ; Azores-1 ; Barbados-1 ; Belgium-4 ; Canada-9 ; Canary Islands-3 ; Chile-2 ; Cuba-4 ; Denmark-15 ; England-25 ; Finland-5 ; France-6 ; Germany-63 ; Gibraltar-1 ; Greece-3 ; Guernsey-1 ; Iceland-2 ; India-2 ; Ireland-11 ; Israel-1 ; Italy-10 ; Lithuania-2 ; Malaysia West-8 ; Netherlands-16 ; New Zealand-9 ; Norway-3 ; Northern Ireland-7 ; Poland-1 ; Portugal-9 ; Puerto Rico-8 ; Scotland-12 ; South Africa-18 ; Spain-4 ; Sri Lanka-3 ; Sweden-12 ; Switzerland -2 ; Trinidad & Tobago-1 ; Uruguay-3 ; Virgin Islands-1 ; **USA-65** ; Wales-6.

Hope everyone had fun!!  
73 ..... Fred Schwierske, W9KEY

**STATISTICS: 2023 INTERNATIONAL LIGHTHOUSE LIGHTSHIP WEEKEND – August 19 & 20, 2023**

**TOTAL EVENT CONTACTS: 750**

Contacts, 20M: 472  
Contacts, 40M: 278

**TOTAL LIGHTHOUSES CONTACTED: 23**

Lighthouse Contacts, 20M: 14  
Lighthouse Contacts, 40M: 9

**TOTAL EVENT OPERATORS: 19**

Operators, 20 Meters: 12  
Operators, 40 Meters: 7

**DAILY EVENT VISITORS: 43**

**Friday: 8**  
**Saturday: 20**  
**Sunday: 15**



**2023 International Lighthouse Lightship Weekend - W9CQO**

W9KEY's Contest Summary Report for N3FJP's Amateur Contact Log  
 Created by N3FJP's Amateur Contact Log  
 Version 7.0.8 www.n3fjp.com

**Total Contacts = 750**

Operating Period: 2023/08/19 13:31 - 2023/08/20 19:10

**Total Contacts by Band and Mode:**

Band	CW	Phone	Dig	Total	%
40	0	278	0	278	37
20	0	472	0	472	63
<b>Total</b>	<b>0</b>	<b>750</b>	<b>0</b>	<b>750</b>	<b>100</b>

**Total Contacts by Operator:**

Operator	Total	%
W9KEY	149	20
KC9ONY	121	16
WB9RQR	79	11
AC9JV	75	10
KD9GCN	56	7
KD9RAW	50	7
K9FI	31	4
K0DSC	27	4
N9VSV	26	3
K9QLP	22	3
N9UUR	22	3
K9GN	18	2
KG9EE	18	2
KD9VGM	17	2
KB9TMB	16	2
KC9SBN	13	2
W0NG	8	1
N9ENR	2	0

Total = 18

**Total Contacts by State \ Prov:**  
 43 States Contacted - missing  
 AK, HI, NE, NV, SD, UT, WY.



**Total Contacts by Country:**

Country	Total	%
USA	716	95
Canada	24	3
Australia	2	0
Spain	2	0
Brazil	1	0
Federal Republic of Germany	1	0
Puerto Rico	1	0
Sweden	1	0
US Virgin Is.	1	0
Total = 9		



**Total Contacts by Continent:**

Continent	Total	%
NA	742	99
EU	4	1
OC	2	0
SA	1	0
Total = 4		



**Total Contacts by CQ Zone:**

CQ Zone	Total	%
05	374	50
04	323	43
03	43	6
14	4	1
08	2	0
30	2	0
11	1	0
Total = 7		



# Aeronautical Mobile Contact During Lighthouse Event

de: Jim Albrinck, K9QLP

There are many experiences that hobbyists encounter during their activity in their particular hobby. Amateur Radio is no exception. I became a Ham because I enjoy people and exchanging information and learning from others. This fact and my travel adventures has taught me more than most of the courses that I took in school. I especially enjoy a good conversation with other Hams, whether it's on the repeaters or on HF. Too many activities (that is, contests) limit your ability to chat about many things such as radios, antennas, other hobbies, etc. The Lighthouse Event was different.

The organizers, LeFrog and Ozaukee Radio Club, did a great job setting up stations at the Port Washington Lighthouse. It was loads of fun to operate, log, chat with guests, and enjoy the pleasant breeze off Lake Michigan. I especially enjoyed talking with Hams on the 40- and 20-meter bands.

While operating on 20 meters I had the unique experience to work an aeronautical mobile (Stephen Colleton, EA7BEJ) flying east of Newfoundland in an Airbus A300.

We chatted about his destination (New York Kennedy) and the plane. Since my in-laws and a cousin had worked for General Electric Aircraft Engines in Cincinnati, I learned quite a bit about the engines and the planes that used them during Open House visits to the plant and conversations with my family. The A300, I was told during the QSO, was using Rolls Royce engines. Commercial aircraft are designed to use engines of the three major manufactures (GE, Pratt Whitney, and Rolls Royce). The airline customers negotiate with the plane manufacturer and the engine producers separately. We discussed the plane, engines, electronic equipment on board, and other topics. It was very enjoyable.

Since becoming a Ham, I have made 3 or 4 QSO's with commercial aircraft and they have all been pleasurable. I also made contacts with Lighthouse enthusiasts who wanted to learn more about the Port Washington Lighthouse and Port Washington and Ozaukee County.

If you have never worked the Lighthouse Event, put it on your calendar for next year. It's usually the third weekend in August. For details see:

<https://www.illw.net/>

Note: Stephen Colleton, EA7BEJ from Estepona, Spain. There is a picture of an Airbus on his QRZ page:

<https://www.qrz.com/db/EA7BEJ>



# Washington County ARES Project National Night Out

de: Vic Shier, WT9Q  
Washington County ARES Emergency Coordinator

On Tuesday evening, 1 August 2023, Ozaukee Radio Club members Gary W9XT, Scott KD9YEW, Nate KC9TSO and Vic WT9Q along with other hams set up and staffed booths for Washington County ARES on National Night Out in Germantown, Slinger, and Jackson, Wisconsin. The Germantown event was set up and staffed by members of the Wisconsin Amateur Radio Club. The Slinger and Jackson events were set up and staffed by members of the Washington County Amateur Radio Club.

Teams of two were assigned for each location. Banners and handouts were created containing ARES and local club information. Two meter and HF stations were set up. Severe weather spotting and reporting was demonstrated. Code oscillators were available so visitors could hear their names in Morse code.

National Night Out is an annual nationwide event that takes place on the first Tuesday in August. Police and Fire Departments from around the country set up displays at local parks. They also invite organizations to set up booths. It is like a mini-fair with food, demonstrations, police cars, fire trucks, and sometimes even a helicopter.

The project was a success. We promoted ARES and local ham radio clubs. The public, members of the police and fire departments, and even a few ham radio operators learned more about ham radio activity in Washington County. We all enjoyed the event, and we plan on doing it again next year.

Check out these pictures from the Germantown, Wisconsin, setup:

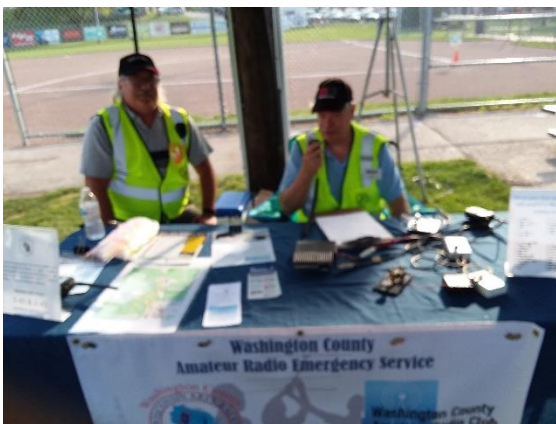




And now a couple pictures from the Jackson, Wisconsin, setup:



Last, but not least, a picture from the Slinger, Wisconsin, setup:



All three setups enjoyed great attendance from the public visiting the events in the three communities. A great opportunity to showcase the amateur radio and ARES!!

Watch for us again in 2024.

## OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)



### Artificial Intelligence and Emergency Communications Part Two

In last month's issue, I started looking at the use of Artificial Intelligence, AI, in emergency management and communications. Recently there has been a great deal of academic study in using AI in the medical area including emergency rooms. For emergency management and communications, several commercial firms are promoting their variety of concepts. Many of the commercial concepts reflect the same opportunities and challenges of incorporating AI into the emergency management field.

The August article concluded with the *Communication Technologies in Emergency Situations* by Anna Carreras-Coch, Joan Navarro, Carles Sans, and Agustin Zaballos from LaSalle Research. Their advice was based upon the International Telecommunications Union, ITU, Recommendation ITU-T Y.1271 or **Framework(s) on network requirements and capabilities to support emergency telecommunications over evolving circuits switched and packet-switched networks**

[https://www.itu.int/rec/dologin\\_pub.asp?lang=e&id=T-REC-Y.1271-201407-!PDF-E&type=items](https://www.itu.int/rec/dologin_pub.asp?lang=e&id=T-REC-Y.1271-201407-!PDF-E&type=items)

The ITU is recommending using present emergency technologies to create a ubiquitous sensor network. Or as they describe it *Public telecommunication infrastructure resources over large geographic areas should form the framework for ubiquitous coverage of emergency telecommunications*. In some communities, especially rural areas, the communication infrastructure is seriously lacking. In such a situation public communication technologies may need to be used. No matter what technology is used, the goal of emergency communication goal is to provide an increasing level of accurate information. However, an increasing level of information, some of which may be accurate and some which may not be accurate, increases the workload of emergency managers and first responders.

But AI can help sort through the messages, reports, and situation reports. A properly prepared and trained AI system can identify potential threats and alert emergency management of impending threats. While first responders may be focused on saving

property and/or lives they may not be aware of changing weather conditions. AI can include weather forecasts in its analysis and make recommendations or provide warnings to the first responders. Several benefits of AI are its speed, scale, and ability to process real-time information.

There are some concerns about the use of AI. AI is a learning system that learns from the information it receives. So bad information leads to bad learning. As one provider has put it "Think of AI mathematical algorithms as the recipe and the data are the ingredients, so if either is bad or corrupt so is your AI platform."

<https://www.techtarget.com/searchdisasterrecovery/feature/Using-AI-for-disaster-response>

Decisions made during emergencies are still made with political and social concerns in the background. Occasionally basic human understanding and creativity are needed for a proper response to be applied. It reminds me of the original Star Trek and the discussions between Captain Kirk and Mr. Spock. Sometimes the logical thing is not always the right thing.

The AI system also needs to understand many different disasters and potential disasters. So, a great deal of effort, time, and money is still needed to create an effective AI disaster response. Much like the emergency managers and first responders. This provides a great opportunity to train the AI system together with managers and responders. AI can learn from the human element and the human element can have a better understanding of AI responses and recommendations.

Artificial Intelligence will be a significant benefit to emergency management and communications someday. Today it is still in its infancy but growing quickly and expanding into more and more aspects of our lives. What is that expression? "May you live in interesting times." Indeed.



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## **OZARES Repeaters:**

- **147.330 MHz (+ Shift) (127.3 PL)**
- **443.525 MHz (+ Shift) (114.8 PL)**

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## **ORC Repeaters are On the Air Awaiting Your Call:**

- **146.97 MHz (- Shift) (127.3 PL)**
- **224.18 MHz (- Shift) (127.3 PL)**
- **443.75 MHz (+ Shift) (127.3 PL)**

# THE COMPUTER CORNER

## No. 306: Artificial Intelligence (AI)

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

de: [wb9rqr@gmail.com](mailto:wb9rqr@gmail.com)



My daughter lives in Lexington, KY, and works for a large, multinational company that makes printers, other business machines, and software. She is a corporate writer and has recently been experimenting with the use of artificial intelligence (AI) for her company. During a July 2023 family visit with me, we were discussing her exploration of AI and she offered to let me try it. So, we logged into <https://chat.openai.com> and she permitted me to challenge the

AI software with a task. I asked it to “write a paragraph on why one should use Linux instead of Microsoft Windows.” The AI software responded as follows:

*“There are several compelling reasons why one should consider using Linux instead of Microsoft Windows. Firstly, Linux is an open-source operating system, which means its source code is freely available to the public. This allows for transparency, security audits, and a vibrant community of developers who continuously improve and update the system. Secondly, Linux offers a high level of customization and flexibility, allowing users to tailor their experience to suit their specific needs. Additionally, Linux is known for its stability and reliability, making it an ideal choice for servers and enterprise environments. It also boasts a vast array of software options, many of which are open source and free to use, offering a cost-effective alternative to Windows.*

*Lastly, Linux is not as susceptible to viruses and malware as Windows, thanks to its robust security measures and smaller user base. Ultimately, Linux provides a powerful and reliable platform that empowers users with control, security, and a rich ecosystem of software.”*

Pretty nifty work, for a computer program tasked with writing a single paragraph on the subject! I think the AI program provided a very succinct description of the advantages of Linux, similar to those points I have been describing in my recent series on the subject (Computer Corner articles Cc296 through 302). While the AI program didn't use nearly as many words as I did in the series, I think it did a very good job with the few words (I count about 147) it used to describe the general advantages of Linux without delving into the details covered in my series. By the way, any or all of the Computer Corner articles, and an Index to them all, are yours for the reading or downloading on the ORC site (<https://www.ozaukeeradioclub.org/>). Just Ctrl-click the link to take a look. Also, by the way, version 21.2, “Victoria,” of my personal favorite Linux Mint Cinnamon, was released on 14 July 2023. Ctrl-click the following link to explore Linux or to get this latest version: (<https://www.linuxmint.com/>). Happy Computing!

# On The Air Activities!

de Gary Sutcliffe, W9XT



September is a busy month for hams. We transition from the summer doldrums on HF with high absorption to better DX conditions. For us in southeast Wisconsin, we have a couple of local events, the ORC fall Swapfest and HRO Superfest.

September is also an excellent time to finish antenna projects before it gets too cold. It is also a good time to inspect your antenna system before it is exposed to the winter elements. Check that the nuts are tight. Check your guy wires for wear, proper tension, etc., if you have a tower. Are the seals around your coax connectors still good? Is the outer covering of your coax intact?

## HF

HF conditions get better towards the end of September. We have a lot of absorption in the summer. In the fall, different chemistry in the ionosphere is in play, and conditions improve. Already, the higher bands have been improving with openings to the Pacific an hour after sunset on 10 meters.

If you don't have an antenna for 10 meters, now is the time to get one up. If you have a tripod on the roof for a TV antenna, a small 10M beam is possible. Otherwise, a dipole or even a used CB vertical can be cut down to operate on 10M.

Ten meters provides some amazing propagation during high sunspot periods. During the CQWW DX phone contest at the end of October, you will hear SSB signals from 28.300 through 29.500, or even higher in the morning when the band opens to Europe, over a MHz of solid signals.

I remember a time when I was visiting my parents in Madison during a high sunspot period. My dad (W9FRF SK) wanted to show me something in his car. He had a converted CB radio and a whip. We sat in the driveway talking to stations in Japan with 5 watts!

Ten meters is the only HF band Technicians have phone and data privileges, so if you have that license class, don't miss your opportunity to experience a lot of HF excitement this fall and winter.

## VHF

The VHF bands provided some excitement recently. In mid-August we had the Perseid meteor shower. I concentrated on 6 meters, trying to get some needed grids in IA and MN. Those are tough for me. They are too far for ground waves and typical tropo propagation. To make matters worse, I have a big hill blocking my signals to the northwest.

But meteor trails allow for higher angle signals. The angles for some of the grids I needed were in the 13-16° range, plenty high to clear the hills. I picked up three new ones, leaving two more in Minnesota as the only two grids needed on 6 meters east of the Rocky Mountains.

Another propagation mode that kicks in during late summer and early fall is tropospheric ducting, or "tropo" for short. Temperature inversions allow VHF signals to travel long distances. They often happen when a cold front moves through. Another option is a stable high-pressure zone. We had one between August 19-23, then another over the Labor Day weekend.

The openings were widespread and in many directions. I don't think the opening really closed, just jumped around. I was working stations on 2M well after midnight and well before sunrise. This was all FT8.

Gary, K9DJT, passed on his comments on the August and early September tropo openings.

Back in July of 2021, W9XT coerced Lyle, WE9R, and myself, to purchase an Icom IC-9700. As a matter of fact, the three of us went into HRO together to make our purchases. This was going to be my first all-mode, VHF, UHF, and Microwave radio. At the time, I had no idea how much fun it was going to be. Starting August 19<sup>th</sup> of this year, I began to experience my first true Tropospheric ducting event.

Also referred to as "Tropo" or a Temperature Inversion. I made fifteen 2m QSO's and 3-70cm that first day. The next day seven 2m and nine 70cm, and the following day, the 21<sup>st</sup>, forty-one 2m and fifteen 70cm. I was in disbelief! (As you may have guessed, the mode we're using is FT8.) From August 22<sup>nd</sup> to September 1<sup>st</sup>, the totals were fifty 2m Q's and sixteen 70cm Q's.

Then the floodgates opened again. On September 2<sup>nd</sup> I logged thirty 2m and ten 70cm QSO's. September 3<sup>rd</sup> netted me fourteen 2m and three 70cm, followed by twenty-three 2m and five 70cm on September 4<sup>th</sup>. If you boil this down, it equates to 124 *Grids* and 35 *States* on 2m, and 39 *Grids* and 11 *States* on 70cm.

Remember, these two frequency bands are normally line-of-sight, or to the horizon, type of communications. I had never thought it possible to work as many Grids, or more so, as many States, on 144 MHz and 432 MHz. I'm indebted to Gary, W9XT, for introducing me to yet another facet, and phenomenon, of this marvelous hobby.

Congratulations on completing 2-meter VUCC so quickly, Gary! The VUCC award is the VHF cousin of DXCC. Instead of DX countries, you count grids. For 6 and 2 meters, you need 100 grids. As you go to the higher bands, the number of grids necessary decreases. Gary already has a good start on the 50 required grids for VUCC on 70 cm.

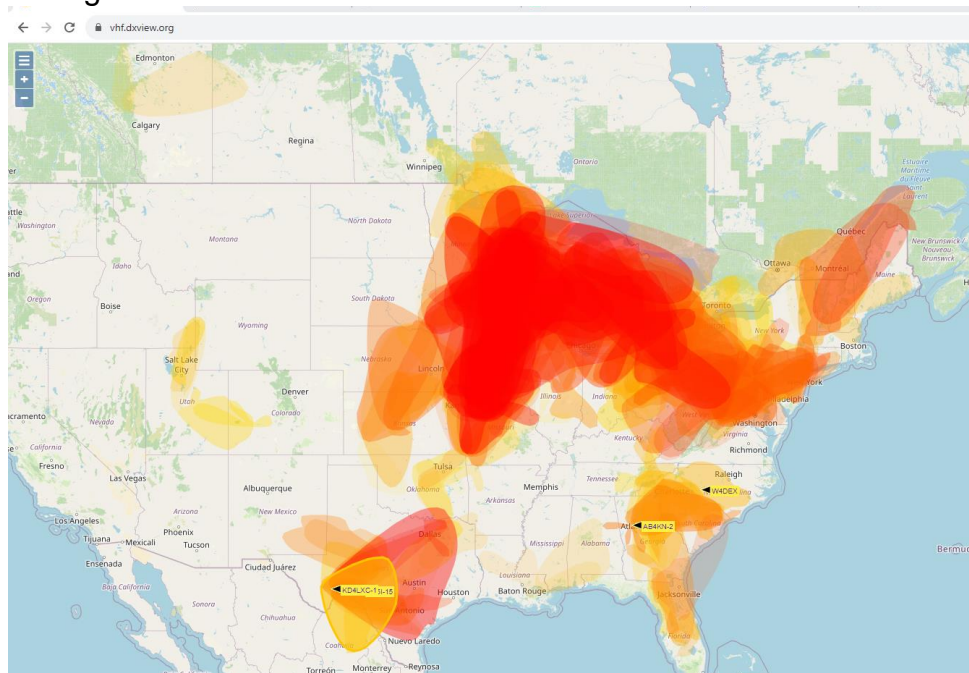


I went from about 130 grids worked on 2 meters to over 160. I also picked up a new state, South Dakota. Gary, K9DJT, was reporting all the stations he worked on 432 MHz. I didn't want to miss the fun, so I jury-rigged something for the band.

There was a small 70cm beam in my shed. I cobbled together three pieces of coax of questionable heritage to get a feed line out to the tower. I just mounted it up 7' off the ground and in a fixed direction. The SWR was about 2.5:1, and it was pointed through trees. Trees create a lot of attenuation on 432 and higher bands. It was probably about the worst combination you could think of.

Despite this, I worked about 20 grids and ten states on 432 MHz. Since then, I made a bit of improvement on the coax situation. Hopefully, I can make further improvements before the September VHF contest.

Tropo openings are likely for the next month or so. K9DJT and I have been on FT8 for 2M and 70cm. Horizontally polarized antennas are the norm. But you can still have fun with a two-meter FM rig. A friend in Illinois, Mark, N9UM, sent me some videos of contacts he made or heard on 2M simplex. One was a QSO between a station in North Carolina and Canada on 146.58 MHz. Another was his QSO with a station in Arkansas. Mark runs a 50-watt FM rig.



**A tropo map showing a tropo opening over the Midwest with paths to the south and east. <https://vhf.dxview.org>**

You might try leaving your 2M rig on a simplex frequency. If you have a small vertically polarized beam, that will help. You might check 2 meters if you hear distant FM broadcast stations. Typically, tropo is best in the morning, especially if it is calm and you see haze in the distance.

Another thing to check is the <https://vhf.dxview.org> site. If you see an orange blob over us, there is a good chance of a tropospheric opening.

### **ORC Swapfest**

The fall ORC Swapfest is September 9, right after this newsletter is published. You should be aware of it by now and hopefully plan on attending.

### **HRO Superfest**

The HRO Superfest is Friday, September 22, and Saturday, September 23. There is nothing on their website yet, but there is a sign at the store announcing it. Washington County's largest ham radio manufacturer, Unified Microsystems, will have a booth there, and I am scheduled to talk at one of the presentations on Saturday. In the past, it opened at noon on Friday and 9:00 AM on Saturday. If you have been to the Hamvention®, you know how long you must wait to talk to one of the major radio company's sales reps. Not so at Superfest. It is something special to have an event this close to home.

Carl, K9LA, our ARRL Central Division Director, and others from the ARRL will also be there.

### **Ham Radio Workbench**

I listen to several podcasts. Some are ham radio focused, and some are more engineering-related. My favorite ham radio podcast is the Ham Radio Workbench. It comes out every two weeks. There is a group of 3 core members with a few additional ones that are occasionally on. They start by talking about the radio-related projects they are working on. Then, it is followed by an interview with a guest.

Back in April, I mentioned that ORC member Jeff, W9KW, was a guest. He talked about caring for rechargeable batteries. I learned a lot from his appearance.

The HRWB again tapped an ORC member. I was a guest in August. I talked about Beverage and other low band antennas. Like many of their podcasts, this was long, and it went over 3 hours. We didn't get to the main topic until the 1:12 point.

It turned out that the very next one also featured a Wisconsin ham. They had Don, K9AQ, on. He talked about building home brew solid state HF amplifiers. Don is a member of my DX club. His amplifiers are works of art.

You can find the list of Ham Radio Workbench podcasts at:

<https://www.hamradioworkbench.com/podcast>

## **QSO Today Academy**

The QSO Today Virtual Ham Expo started during the COVID lockdown. It was a great way alternative to in-person events that were canceled. It continued twice a year since then. The name was changed to QSO Today Academy, and the next one will be September 8-10. It starts Friday night with the Ham Radio Workbench crew doing a live version of their podcast.

The actual presentations start Saturday morning and continue Sunday. It is smaller than the previous ones. There are only 27 presentations this time. That is down quite a bit from the earlier events. My personal view is that twice a year is too often, and that hurts them. But there are some interesting presentations scheduled, and I signed up.

It is at a bad time for us. That weekend is the ORC Swapfest, the ARRL VHF Contest, and the first game of the regular season for the Packers. But if you register, you have 30 days to watch recordings of the talks.

Registration is \$15.00. More info at <https://www.qsotodayhamexpo.com/> Note that the times are listed in PDT. That is kind of odd, but make sure you take that into account.

## **Contests**

September has a couple of big contests. The first one is the ARRL September VHF contest. It starts the afternoon of the ORC Swapfest. Work other stations once per band, regardless of mode. The exchange is the grid. Activity on this one is less than the June event because it is unlikely that we will have sporadic E on 6 meters. But as mentioned before, there might be some good tropospheric ducting that can provide a lot of exciting contacts.

The CQ WW contest season starts the last weekend of September with the RTTY event. The phone version is the last weekend of October, and CW is the last weekend of November. Exchange signal reports and CQ zone. We are in zone 4. In the CW and phone events, contacts with your own country are worth zero points, so you only work them for multipliers. In the RTTY contest, contacts with your own country are worth one point.

If you operate FT8, you already have the equipment to operate RTTY. You just need a different program. I like MMTTY, a free download. RTTY is similar in that the computer prints out what it decodes. It is faster than FT8 but will not decode weak signals as well as FT8 can. It also can have errors if there is QRM. In bad QRM, you only get gibberish printed with RTTY. With FT8, you don't get anything. I prefer RTTY to FT8 in contests because it is faster, and you must be more involved.

The California QSO Party is October 7-8. It is the biggest state QSO party, and there are a lot of stations on for it. It is an excellent warm up and station shakedown for the fall and summer. Work only California stations. Send a serial number and the state. California stations will send a serial number and a four-letter abbreviation of their county. You may

want to print out and review the county list beforehand. You will win a bottle of California wine among the top 20 scoring out of state participants! Talk about incentives!

## **DXpeditions**

DXpeditions will become more common as we enter the fall and winter months. A lot of the best activity is happening in the Pacific Ocean this month and early October.

- A group of Japanese operators will be on from Palau September 12-18. Each will be using a separate T88 call sign.
- K7AR, W7YAQ, and a couple of other US hams will activate Lord Howe Island from September 20 through October 4. They requested the call sign, VK9LAA, but if you hear a different VK9L station, it is probably them. They will also be operating the CQ WW RTTY contest.
- The Rebel DX Group will be in Tuvalu starting September 21 for two weeks. They will have ten stations on the air. Two stations will be on CW, one on SSB, and seven on FT8.
- A group of Croatian hams plan on being on Samoa October 1-14. They will be on 160-6 meters. They land to focus on CW but will be SSB and FT8 as well.
- French Polynesia will be by a German group on October 2-15. 160-10 Meters. Look for TX6D.
- Swains Island is probably the biggest one coming up in the next month or so. An international team of about a dozen operators will operate 160-6M, CW/SSB/Digital/RTTY. The call sign is W8S, and they will have six stations on the air.

The Pacific sure is a popular destination in September and early October! If that is not enough, there are about a dozen more DXpeditions to the Pacific Islands later in October and early November. This will be an excellent opportunity to fill in some needed Pacific countries.

September will be a hectic month with two must-attend local events and a virtual one. The shorter days (losing about 3 minutes/day right now) will improve HF propagation. The cooler weather will make working on antenna projects more comfortable. Take advantage of the month!

What have you been working? Did you have a memorable QSO? Did you try a new band or mode? Tell us about it! Write an article, or if you just have a few comments, email me, and I will put it in the next OTAA column.

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for September and Early October 2023

W9XT's DXpedition picks for September and early October 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Palau	Sep 12-18	T88xx	160-6M	S/D	
Lord Howe I	Sep 20-Oct 4	VK9LAA (requested)	160-6		On for CQ WW RTTY Contest
Tuvalu	Sep 21 – Oct 9	T22T		C/S/D	
Samoa	Oct 1-14	5W0LM	160-6M	C/S/D	Focus on CW
French Poly-nesia	Oct 2-15	TX6D	160-10M	C/S/D	
Swains	Oct 4-17	W8S	HF	C/S/D	Also, RTTY, six stations

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

W9XT's contest picks for September and early October 2023					
Name	Start	Length	Bands	Mode	Link
ARRL VHF	Sep 9 1800 UTC	33	50 MHz & up	All	<a href="http://arrl.org/september-vhf">http://arrl.org/september-vhf</a>
CQ WW RTTY	Sep 23	48	HF	RTTY	<a href="https://www.cqwwrtty.com/index.htm">https://www.cqwwrtty.com/index.htm</a>
CA QSO Party	Oct 7 1600z	30	HF + 160	CW, SSB	<a href="https://www.cqp.org/Rules.html">https://www.cqp.org/Rules.html</a>

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 September and early October 2023			
Event	Dates	Details	Link/notes
ORC Fall Swap-fest	Sept 9		<a href="https://www.ozaukee-radio-club.org/files/2023_Firemens_Park_Flyer.pdf">https://www.ozaukee-radio-club.org/files/2023_Firemens_Park_Flyer.pdf</a>
QSO Today Academy	Sept 8-10	Requires registration. \$15	<a href="https://www.qsoto-dayhamexpo.com/">https://www.qsoto-dayhamexpo.com/</a>
HRO Superfest	Sept 22-23	HRO Milwaukee	

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



By the early 1980's R. L. Drake was feeling the competition from Japan for Amateur Radio Equipment. Hallicrafters, Hammarlund, and National had left the scene, either gone out of business (National and Hammarlund) or morphed into military suppliers (Hallicrafters). Collins, that is with us to this day, had recently released their last amateur radio product, the KWM-380 HF Transceiver. Major producer, Swan, had taken the name of its corporate owner, Cubic, and produced transceivers along with Drake, into the mid-1980's. A spinoff headed by Swan's original founder, Herb Johnson, W6QKI, had started Atlas Radio Company, in 1974, making transceivers, transmitters, and receivers but was fading from the market in the 1980's. (They did attempt a comeback in the early 1990's – but it was not successful.<sup>1</sup>)

Those of you that read my articles regularly know that I am a dyed in the wool fan of the R. L. Drake Company and their amateur radio products. Outside of ham radio and shortwave listeners, they are more well known for their line of data and video downlink receivers and related electronics supporting the satellite communications industry.

So, back to the 1980's where we will be for this installment, talking about this complete Drake TR5 Station from that time (supported by a few modern accessories):



**Front and Center – Drake L75 Linear Amplifier, Drake TR5 HF Transceiver, Drake RV75 Digital Remote VFO with other Accessories.**

**W9MXQ Photo**

The other accessories in the above picture include the Drake SP75 Speech Processor and CW75 Electronic Keyer positioned on top of the TR5 Transceiver. At the left side of the picture, see the Drake WH7 Wattmeter sitting on top of the Drake MS7 Speaker Console. On top of the L75 Linear Amplifier you will see a slightly more modern accessory, the Timewave DSP-59+ External DSP Unit. Out front you can see the Drake 7077 Desk Microphone. Also shown are much more current accessories, including Unified Microsystems XT-4 Memory Keyer, the Bencher BY-1B Paddle, and a Nye Viking Straight Key.

In 1981, following their successful TR7 and TR7A HF Transceivers and accessories, Drake was introducing a cost reduced, and in some ways better performing TR5 Transceiver. Gone was the complex (and expensive) up-conversion design, replaced by a more traditional and conventional design – based on the very successful and long running Drake TR-4CW/RIT Transceiver – the last TR-4 model. Actually, block diagram comparisons of the TR-4 design and the TR5 design shows similarities indicating that the TR5 was perhaps a solid-state version of the old TR-4.



**Never Produced - Drake TR-5**

Three years ago, this author wrote about the Drake TR5 Transceiver and broached the subject of the never produced TR-5 Transceiver of hybrid design (solid state with vacuum tube driver and final amplifier). Readers will recall my comparison of the TR-5 and the ultimately produced TR5. (Drake dropped the hyphens, at the beginning of the TR7 product lineup.)

Moving into the 1980's, Drake was evolving both the Transceivers and the Accessories in their line. It appears that Drake was continuing to field the TR7 Transceiver design (and the later TR7A, which included many optional features original TR7 product offering).

Note: A model TR7B was prototyped that included design opportunities to reduce cost and improved dependability in areas like the digital readout, and elsewhere. Likely, a TR7B variant would also have made the WARC bands easier to access than they were on the TR7 where an optional circuit board, the AUX7, was required.

Drake was evolving its accessory line to become more compatible with both the TR7 (and TR7A) line and the new TR5 product as well. This is evidenced in model designations that evolved away from being things like an MN7 Antenna Tuner evolving into an MN75 Antenna Tuner. Note that the newer tuner (more outwardly embracing the newly assigned WARC Bands) uses the number "75," which enhances its use with both the TR7 and the TR5 radios.

The 200 to 300-watt antenna tuners from Drake had evolved with repackaged, specification adjusted products. These products are shown in different forms over the years: (4-Series Antenna Tuners are shown because they remained very popular.)



**Drake MN-4 Antenna Tuner**



**Drake MN7 Antenna Tuner**



**Drake MN75 Antenna Tuner**

R. L. Drake Company

The 300-watt Drake MN-4 Antenna Tuner matched the Drake TR-4 Transceiver Series and the T-4X Transmitter Series radios. Essentially the same, different adaptations to supported frequency bands the following specifications were supported:

<b>Medium Power – 300-Watt (Input Power) Antenna Tuners</b>			
<b>Models</b>	<b>Bands</b>	<b>WARC Bands</b>	<b>Matching Radios</b>
<b>MN-4</b>	80-10 Meters	No	TR-4(x) & T-4X(x)
<b>MN-4C<sup>3</sup></b>	160-10 Meters	No <sup>4</sup>	TR-4(x) & T-4X(x)
<b>MN7</b>	160-10 Meters	No <sup>4</sup>	TR7
<b>MN75</b>	160-10 Meters	Yes	TR5 and TR7

Respective R. L. Drake Operating Manuals

Interestingly, Drake used a different numbering approach in the high power (2,000 watt) tuners. These included the MN-2000 for the TR-4 and T-4X series transceivers and transmitters (and L-4B Linear Amplifier) and the MN2700 for the TR7 and later the TR5 Transceivers. Later, the MN2700 was also matched with the Drake L75 Linear Amplifier.

<b>High Power – 2000-Watt (Input Power) Antenna Tuners</b>			
<b>Models</b>	<b>Bands</b>	<b>WARC Bands</b>	<b>Matching Radios</b>
<b>MN-2000</b>	80-10 Meters	No <sup>4</sup>	TR-4(x) & T-4X(x)
<b>MN2700</b>	160-10 Meters	No <sup>4</sup>	TR7

Respective R. L. Drake Operating Manuals

In the case of the high-power tuners, note that Drake merely changed the popular MN-2000 to a number referencing the old product but inserting the “7” in the number to denote the new product line and specifically the TR7 Transceiver and L7 Linear Amplifier.



## High Power – 2000-Watt Antenna Tuners



**Drake MN-2000 Antenna Tuner**



**Drake MN2700 Antenna Tuner**

**W9MXQ Photos**

Drake Antenna Tuners were not wide range as far as impedance matching capability. The MN-2000 unit – used by many to this day even in later Drake products – had a capability of matching 3:1 SWR to unity. The MN2700 improved on that figure with the capability of matching 5:1 SWR to unity. And, to go a step further, the MN2700 had an optional, rear mounted 4:1 balun allowing matching up to 5:1 for balanced feed-line antennas. I have successfully used my MN2700 to load end-fed wire antennas – something not always practical with the MN-2000.

Drake also made a variety of Remote VFO products to support the TR7 and TR5 Transceivers. Three of them were announced and two were produced.



### The Drake RV7 VFO

This is the original Remote VFO introduced in 1977 at the time the TR7 Transceiver came to market. It works fine with the TR5 Transceiver, but the dial is backward to what is required in that radio. (That does not cause a problem as long as the user monitors the radio's readout.)

**W9MXQ Photo**



### The Drake RV5 VFO

This VFO was designed for the TR5 and is identical to the RV7 except that the analog calibration is backward to the "7" model.

This model was never produced. It was only made as a prototype.

**WB4HFN**



## The Drake RV75 VFO

This digital, programmable, VFO was actually introduced as an accessory for the TR5 but caught on for the TR7 as well. It is very stable, compared to the RV7. It can be programmed for fixed frequency operation.

**W9MXQ Photo**

The TR5 did not have an analog VFO readout on the front panel as did the TR7. Actually, the digital readout on the TR7 was an option, at first. The analog dial worked just like the one on the Drake TR-4C (and later) Transceiver, the R-4C Receiver, and the T-4XC Transmitter. However, very few TR7's were ever shipped without a digital readout.<sup>5</sup>

Note: All along here I have referenced the “VFO” in the various radios and accessories. To be clear, Drake did not use the traditional VFO we have come to see as being tuned with a variable capacitor. Drake used a Permeably Tuned Oscillator, known as a “PTO.” No matter how we identify it, it is still a “variable frequency oscillator.” So, using the more common “VFO” designation is technically correct, if not common.

A major accessory in any amateur radio product line has to be a Linear Amplifier. Second only in cost to the Receiver/Transmitter or Transceiver in the setup. Drake was no exception. Drake started with the popular L-4 and later the L-4B, 2,000-watt PEP SSB and 1,000-watt CW/RTTY Linear Amplifiers. With the release of the TR7, and later with the release of the TR5, Drake had two newer amplifiers, the Drake L7 and the Drake L75, respectively.

<b>Drake L7 and L75 Linear Amplifiers – Power and Specifications</b>		
<b>Detail</b>	<b>Model L7</b>	<b>Model L75</b>
Vacuum Tubes	Eimac 3-500z (2 tubes)	Eimac 3-500z (1 tube)
Bands Covered	160-10 Meters (Broadband 1.8 to 30 MHz)	160-10 Meters (Broadband 1.8 to 30 MHz)
Power Input (SSB)	2,000 Watts	1,200 Watts
Power Input (CW)	1,000 Watts	1,000 Watts
Power Output (SSB)	1,200 Watts	600 Watts
Power Output (CW)	600 Watts	600 Watts
AC Power Input	120/240 VAC	120/240 VAC
Power Supply	Separate Cabinet	Internal



### Front Panel Layout – L7 at the Left – L75 at the Right

The L7 has a Power Supply that sits elsewhere. The L75, on the other hand, is a self-contained, single cabinet radio. Both operate with about 3,200 Volts.

The internal design of the two is very similar in many ways.

Both are W9MXQ Photos

At the time these amplifiers were produced, the legal power level for amateur radio operators was 1,000 watts DC Power Input (simply stated). Also in that period, the Federal Communications Commission in the United States, had agreed that we could run 2,000 watts input power on SSB. Using linear amplifier technology of the day, it meant running an average input power of 1,000 watts. This is a subject for another day but in today's world in the United States, running these amplifiers loaded to 2,000 watts (for 1,000 watts output) on CW is perfectly legal on the two-tube L7 Linear Amplifier. That amplifier is limited by the capability of the 3-500z finals operating at the plate voltage and current provided by the power supply. The tubes are capable of more power than the amplifier can actually accommodate.

The complete station shown on the first page of this article was setup to demonstrate this vintage of equipment operating on SSB and CW. Modern modes, such as FT8, for instance, are not possible but modes such as RTTY and PSK31 are certainly within these radios' capability.

Operating of the TR5 Transceiver with the L75 Linear Amplifier on CW is a real pleasure. Here are some meter pictures at key down drive power of about 70-watts from the TR5:



TR5 running 70-watts showing 2,800 DC Volts on the plate of the 3-500z. Plate voltage at key up (no output power) is about 3,100 volts.

Further comment on plate voltage can be seen on the next page in the picture showing the station wattmeter.

W9MXQ Photo



TR5 running 70-watts showing 360 mA of plate current on the 3-500z.

360 mA at 2800 Volts = 1,008 watts. That is to Drake's specifications for this amplifier.

Plate current between CW characters (cutoff bias) is about 120 mA. That is to Drake's specifications for this amplifier.

**W9MXQ Photo**



This is the Drake WH7 Wattmeter showing 520 watts output. At 1,008 watts input this shows a plate efficiency of about 52%. That is acceptable for this amplifier operating in class AB1.

When running SSB, the capacitors in the power supply keep plate voltage more at about 3000 volts at the same 360 mA of plate current. That translates at voice peaks of close to 600 watts – an output some Drake literature would quote.

**W9MXQ Photo**

Some popular options at the time were the excellent Drake SB75 Speech Processor and CW75 Electronic Keyer. These, as shown on the first page of this article sitting on top of the TR5 Transceiver, are here:



**Sitting on top of the TR5 Transceiver, left to right:  
Drake SP75 Speech Processor and CW75 Electronic CW Keyer**

**W9MXQ Photo**

The SP75 Speech Processor is setup to process audio from the Microphone, Tape Recorder, and Phone Patch (left to right on panel buttons, MIC, TAPE, and PATCH). The three input buttons are mechanically cancelling so pressing one, releases the other two. Separately there is a push-push power switch. The green lamp next to the ON button indicates power to the device. The AUDIO lamp to the left of the MIC button illuminates on voice peaks, according to the CLIPPING LEVEL-dB knob. I set my SP75 to 3 dB of clipping just to add a little “kick” to my voice. I am not after highly processed audio, but this little device can push a lot of audio into the radio – up to the point of being very irritating to the listener. There is a somewhat involved alignment process when setting up the SP75 Speech Processor that is covered in the Operating Manual. This alignment is very sensitive to the microphone used and even between the several Drake 7077 Desk Microphones that I have. All require individual setup.

Properly adjusted and running a Clipping setting of 3 dB with the TR5 (or the TR7 and TR7A Transceivers) nets numerous audio compliments. Properly adjusted and used, the SP75 is a real asset to any Drake station. While the microphone connections are different, the SP75 works very well with the Drake C-Line Station (R-4C Receiver, T-4XC Transmitter) and the Drake TR-4CW/RIT Station. I have also used the SP75 very successfully with other brand radios, such as the Cubic Astro 103 Transceiver, the Swan 100MXA Transceiver, and the Hallicrafters SR-400 Cyclone II Transceiver. Again, keep the clipping setting to about 3 dB – resist moving it higher!!

One of the items that every collector of Drake solid state (TR5, TR7, and TR7A) transceivers looks for is the CW75 Electronic CW Keyer. Few were made and a lot fewer ever become available today. They draw hundreds (and hundreds!!) of dollars when one solo unit appears on eBay or one of the sellers of vintage radio equipment. Look above at the CW75 at W9MXQ sitting to the right of the SP75. Here is the CW75 back panel, showing connections:



**Rear Panel – Drake CW75 Electronic CW Keyer**

**W9MXQ Photo**

This is a discrete TTL chip CW keyer – no dedicated keyer integrated circuit, such as the Curtis™ Keyer Chip (now owned by MFJ Enterprises). The CW75 is Iambic so modern in

that way. No memories are available, but it does have the ability to key not only a solid-state radio but also has an optical coupler allowing it to work with more modern tube radios with grid block keying (+/- 300 volts at up to 100 mA). The reader has to remember that when the CW75 Keyer and the TR7 Transceiver were new, Drake was still making the Drake T-4XC Transmitter and the TR-4CW/RIT Transceiver. These were vacuum tube radios using grid block keying. So, Drake felt compelled to make the little CW75 backward compatible to grid block keyed radios in their lineup.

The 11-16 VDC IN line on pins 1 and 2 of the back panel strip could connect to 12 VDC that might be available in the shack – or to the 12 VDC accessory line on the back of the Drake PS75 Power Supply (for the TR5) or the Drake PS7 Power Supply (for the TR7 and TR7A). Note the polarity requirement on the key line (pins 3 and 4). One nice feature of the CW75 was the easy accommodation of a straight key (HAND KEY) on pin 5 (and pin 7 for ground, just to the right). (Pin 7 is also the ground connection for the Keyer Paddle on pins 6, 7, & 8.) This Key connection is handy on radios like the TR7 for quick key down if tuning a Linear Amplifier or Antenna Tuner. (The later TR5 has a front panel “Lock Key” position on the MODE switch to send a carrier for the same purpose – without a key.)

Note: Times change and many hams today, not familiar with CW as a mode they use, have a key at their station simply to key their transmitter to get a carrier for the wattmeter, tune an amplifier, or tune an antenna tuner. Such keys are a nice visual touch but have never been used to send CW. Not a good or bad thing, necessarily, just reality!!

The CW75 Electronic CW Keyer is a fine piece of equipment but for this article and this setup, I did not use it. Of course, I did use the TR5 Transceiver (without the L75 Linear Amplifier most of the time) to operate CW, contacting Parks on The Air (POTA) stations. To run on CW, I used a very nice little CW Electronic Memory Keyer, the Unified Microsystems model XT-4. In the left picture, below, I had just finished setting it up and had the keyer power turned off, while listening to 40-meter CW:



**CW Tools – Ready to go to work.  
Unified Microsystems XT-4 Memory  
Keyer, Bencher BY-1B Key, and Nye  
Viking Speed-X Straight Key.**

W9MXQ Photo



**The Unified Microsystems after a  
string of CW contacts of POTA and  
Special Event Stations.**

W9MXQ Photo

In the right picture, I moved the XT-4 so you can see it better. This was right after working a POTA station on 7026.9, running the 300 Hz filter in the TR5 – note the BW AUX rocker switch engaged on the TR5 – the switch to the left of the RIT control switch. The TR5 has one extra filter band position and in this one the filter is the Drake SL-300, 300 Hz unit. Running the RF Gain at about 1:00 and the AF Gain about 12:00 gives nice response with plenty of sensitivity in the radio coupled with very low background noise. “Riding the RF Gain,” as hams used to call it, is not very well known these days. In this series of CW QSO’s, I was running the TR5 barefoot (that is, without the L75 Linear Amplifier) at its full power of about 80-watts. (The TR5 is not as powerful as its big brother, the TR7.)

Just after finishing the above line, I had a fine QSO with a Mississippi ham on SSB. As I was checking some things on the setup (again, as you see on the first page of this article), I heard this fellow calling CQ with a strong signal. We had a nice, ten-minute QSO and gave each other “over S9” reports he complimented me on the sound coming from the TR5. I was running the L75 Linear Amplifier at the time at about 600 watts output. He was running a nice sounding Icom IC-7300 driving an old Heathkit SB-220 Linear Amplifier that his grandfather (now a SK) had built and used. “Nice to keep it in the family,” he said.

The last piece of this station setup is the Timewave DSP-59+. Along with a somewhat more advanced JPS NIR-12, these external Digital Signal Processing (DSP) units are often used in vintage station setups at W9MXQ. Some more recent technology is admittedly a good tool to help the old gear compete better when using it in today’s band conditions. These are audio-based DSP units – and as such are installed in the line between the radio and speaker in the station setup. Without getting too technical, their shortcoming is that they are outside the AGC loop in the receiver which can limit their effectiveness in some situations. This is not a major issue in the kind operating that I do with vintage equipment. Their biggest use for me is the automatically null out carriers, even multiple ones, and provide one of DSP’s finest features – Noise Reduction.



**The Timewave DSP-59+ is sitting on top of the Drake L75 Linear Amplifier.  
See the station setup picture on the first page of this article.**

**W9MXQ Photo**

While connected, the Timewave DSP-59+ was not used in this article. Band conditions did not call for more interference rejection than already provided by the TR5 Transceiver, alone. But, in addition to Noise Reduction (NR), the DSP-50+ can provide its own bandwidth filters at the audio level to reduce close-in QRM. Turning off the AGC in the TR5

removes the problem of AGC in the radio impacting performance of the DSP unit. Unlike many Transceivers in its price class, AGC in the radio could be set for Slow Attack, Medium Attack, Fast Attack, or Off. With AGC set to off, the DSP-59+ becomes a very effective Bandwidth, Low Pass, High Pass, and Noise Reduction unit assisting reception on the Transceiver.

All the above said, I want to add a closing note. Some of my articles showing operating stations are staged to show scenes similar to literature from the original manufacturer. One of my criticisms of manufacturer's literature is that they often show stacked accessories with the radios. This is evidenced in the picture on the first page, and elsewhere duplicating Drake literature and magazine advertising from the time the radios were on the market. Personally, I almost never stack radios. The tendency is for the feet on the stacked radio to damage the cabinet surface of the radio sitting under it. If you must stack a radio, find a way to isolate two with thin paper. Better yet, don't do it!!

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he nearly always adds commentary that makes it into the article.

#### Credits and Comments:

<sup>1</sup> Herbert G. (Herb) Johnson, W6QKI, and Atlas Radio Company are good subjects for future articles.

<sup>2</sup> Drake of today is a part of Blonder Tongue™ at: <https://www.blondertongue.com>.

<sup>3</sup> The MN-4C was actually an MN7 that was painted and included a front panel to match the Drake R-4C, T-4XC, and TR-4CW/RIT equipment that was still in production and in stock at dealers. They supported a large established customer base.

<sup>4</sup> While these tuners did not cover, specifically, the WARC Bands, setting them to the closest band possible, made them fairly effective.

<sup>5</sup> A model TR7, initially did not have the optional DR7 Digital Readout included with the radio. Radios with the digital readout were known as a TR7/DR7 when first introduced. The option quickly disappeared and all TR7's soon came out of the factory with digital readout. The analog readout did not appear at all on the TR5 Transceiver.

© **W9MXQ**





# Vintage Amateur Radio Addendum

de Bill Shadid, W9MXQ

## Collins Radio Company



™ Collins Aerospace

Several members of the Ozaukee Radio Club are known to be collectors of Collins Radio Company amateur radio equipment. Primarily they include Pat, W9JI, Michael, AE9MS, Chuck, W9KR, and your Editor, Bill, W9MXQ. These I know are actively involved in collecting, restoring, and operating Collins equipment. There are many others known to me that read this Newsletter but are not ORC members.

In September and October there are two Special Events in celebration of the Collins Radio Company and its place in Amateur Radio History – “Vintage Amateur Radio,” if you will. These operations are planned and brought to life via the Collins Amateur Radio Club. Use of Collins equipment is encouraged but not required.

### **9 September 2023 | Celebrating Arthur Collins' Birthday**

**Sep 9-Sep 10, 1400Z-0200Z, W0CXX, Cedar Rapids, IA.**

**Collins Amateur Radio Club.**

**7.180 MHz 14.263 MHz 21.380 MHz 28.380 MHz.**

**QSL. Brice Anton-Jensen, 1110 Lyndhurst Dr, Hiawatha, IA 52233.**

**<https://www.w0cxx.us>**

### **14 October 2023 | Collins Radio 90th Anniversary**

**Oct 14, 1400Z-2000Z, W0CXX, Cedar Rapids, IA.**

**Collins Amateur Radio Club.**

**7.180 MHz 14.263 MHz 21.380 MHz 28.380 MHz.**

**QSL. Brice Anton-Jensen, 1110 Lyndhurst Dr, Hiawatha, IA 52233.**

**<https://www.grz.com/db/W0CXX>**

# Upcoming Events

de: Tom Trethewey, KC9ONY

9/09/2023 – Cedarburg – ORC Annual Regional Fall Swapfest  
<https://www.ozaukeeradioclub.org/>

9/16/2023 – Sixth Annual Wisconsin Parks on the Air (WIPOTA)  
<https://wipota.com/>

9/22/2023 – Milwaukee – HRO Superfest, ARRL Wisconsin State Convention  
September 22<sup>nd</sup> and 23<sup>rd</sup>, 2023  
<https://www.hamradio.com/>

9/24/2023 – Belvidere, IL – Chicago FM Club Hamfest - 2023 Radio Expo  
<http://chicagofmclub.org/radioexpo/radioexpo2023.html>

10/04/2023 – Nationwide Emergency Alert System Test (EAS)  
<https://www.fcc.gov/general/eas-test-reporting-system>

10/20/2023 – Scouting Jamboree On the Air (JOTA)  
October 20-22, 2023 (third full weekend in October)  
<https://www.arrl.org/jamboree-on-the-air-jota>  
  
<https://www.scouting.org/international/jota-joti/jota/>

11/04/2023 – Milwaukee - MRC91 Friendly Fest  
<https://www.arrl.org/hamfests/friendly-fest-1>

11/05/2023 – Neenah - Fox Cities Amateur Radio Club, Inc (FCARC) Hamfest  
<https://www.arrl.org/hamfests/fcarc-swapfest-9>  
  
<https://www.fcarc.club/hamfest.php>



# Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

## A Change to the ORC Program Committee

After a number of years of organizing programs for the ORC I have decided that it's time for me to move on and for someone else to take over the role of Program Committee Chair. As an interim measure, Jeananne Bargholz N9VSV, will run the Program Committee, in addition to her role as First Vice President.

If you are interested in helping with the Program Committee or have an idea for a program, contact Jeananne at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com).

## Upcoming ORC Monthly Meeting Programs

- September – Bruce Smith AC4G  
Report on a DXpedition – “Marshall Islands-V73CW”
- October – Janice KA9VVQ and Bruce W9FZ  
“Getting on the Air and Having Fun with Roving!”
- November - Jeananne N9VSV  
Collecting Amateur Radio Themed Stamps
- December - Open

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together, contact Jeananne at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com).

## Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

Contact Jeananne Bargholz, N9VSV, at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com) to discuss your idea for a program.

## **Bruce Smith AC4G**

Bruce AC4G will talk the ORC at the September meeting to tell us about his ham radio experiences while living on the Marshall Islands.

Bruce has provided this biography, highlighting some of his experiences:



*Bruce Smith, AC4G received his ham ticket as a senior in high school and graduated from Tennessee Tech University in 1984 with a BSEE degree in Electrical Engineer and later his MSCE in Computer Engineering in Huntsville, AL. He and his wife moved their family to Taft, TN where they currently reside. He worked in Huntsville, AL as a Flight Test Engineer and Flight Safety Engineer supporting DoD testing of interceptor missiles launched from the Marshall Islands. In 1999, his agency moved him to Kwajalein for a couple of years. While on Kwajalein Island, he operated his ham radio and set country records for the Marshall Islands for several amateur radio contests using the callsign V73CW. His best contest finish was 7<sup>th</sup> place in the world in the 1999 ARRL 10m Contest as V73CW. He was fortunate to*

*operate from Wake Island for the 2001 ARRL International DX Contest and set a country record from Wake Island as AC4G/KH9.*

*After 34 years supporting missile testing, he retired to enjoy time with his wife, Suzy and take care of his elderly mother who suffers from dementia. He is currently the QSL manager for V73C, Ken Wells who lived on Kwajalein Island for several years prior to 1998. Bruce continues to chase DX from Taft, TN, and operates in ham radio contests, and is actively increasing his DXCC totals. He has worked all DXCC countries except North Korea (P5). His favorite band is 160m where he has 228 countries confirmed and enjoys experimenting with different receive and transmit antennas. He is currently President of the North Alabama DX Club in Huntsville, AL. He continues to maintain their family farm in Taft, TN which keeps him busy growing corn, soy beans, cotton, and "new towers."*

---

**ORC Meeting Agenda**  
*September 13, 2023*

1. 7:15 – 7:30 PM  
Check-In and Introductions
  2. 7:30 PM Call to Order:  
President Bill Greaves (K9GN)
  3. Announcements, Bragging Rights, Show &  
Tell, Upcoming Events, etc.
  4. Bruce Smith, AC4G  
Report on a DXpedition
  5. President's Update:  
Bill Greaves (K9GN)
  6. 1<sup>st</sup> VP Report:  
Jeananne Bargholz (N9VSV)
  7. Repeater VP Report:  
Tom Trethewey (KC9ONY)
  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
- 



**What can I say? "If the shoe fits.....!!!"  
AND, it does not have to be a "guy!!!"**



-----  
**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
13 September 2023**

**Bruce Smith AC4G  
Report on a DXpedition  
"Marshall Islands-V73CW"**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

-----  
**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
11 October 2023**

**Program:  
Janice KA9VVQ and Bruce W9FZ  
"Getting on the Air and Having Fun  
with Roving!"**

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# ORC 17<sup>th</sup> Annual Regional Fall Swapfest



Test Equipment, Radios, Antennas, Accessories, Tools, Hobby Stuff & More

*Saturday, September 9<sup>th</sup>, 2023*

Firemen's Park (W65 N796) on Washington Avenue in Cedarburg WI 53012  
**N 43° 18.283' W 087° 59.500'**

**Setup and general admission from 6am to noon – Door prizes**

**Refreshments available inside the exhibit hall**

**\$5 admission at the gate – buyers and sellers – 12 & under free**

***Just park on the grounds and sell your stuff or just browse & buy their stuff***

Inside tables \$10 as available (5 for \$40) – ARRL and any Commercial Vendors are typically inside.



Go to

[www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) or

Facebook.com/orcwi

For more information call

262-377-6945 (h) (W9IPR)

262-844-6331 (c)

Talk-in @ 146.97 PL





## The *ORC* Newsletter

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Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XLI

October 2023

Number 10

## From the President

de: Bill Greaves, K9GN



The Ozaukee Radio Club maintains its designation from the ARRL as a Special Service Club. What does this mean? The ARRL defines a Special Service Club (SSC) as an amateur radio club that goes above and beyond for their communities and for Amateur Radio. An SSC provides active training classes, publicity programs, and actively pursues technical projects and operating activities. ( See [www.arrl.org/ssc-application](http://www.arrl.org/ssc-application) ) There is an annual renewal application required to maintain SSC status. The application addresses New Ham Development and Training, Public Relations, Emergency Communications, Technical Advancement, Operating Activities, and Miscellaneous Activities unique to our club. Reviewing the ORC's strengths and opportunities is one of your Board's tasks in preparation for our renewal application.

And, speaking of all of those volunteer opportunities for the club's members (I was mentioning that wasn't I?), any member can participate in the life of the club by simply emailing me at [president@ozaukeeradioclub.org](mailto:president@ozaukeeradioclub.org) and we can link you into ongoing club activities.

The ORC Programming Committee is always ready and willing to assist you in preparing your presentation to your fellow club members at a monthly meeting. What can you talk about? How about that modification to your station, how you approach connecting your equipment, what you have been working on but are now at a seemingly impasse and would like club members' input to solve the issue – literally anything that is ham radio related is fair game. We have people to assist you in putting a presentation together. This could be the start of something beautiful! Just let us know. Jeananne N9VSV, Bill K9GN, and Pat W9JI can give you input, help, and guidance.

The club membership will gather on Wednesday, October 11th, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. As always, I look forward to seeing you there.

73,

Bill K9GN

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<https://lovetobeinthekitchen.com>

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# **A Message from the Editor**

## **Newsletter Table of Contents**

de: **Bill Shadid, W9MXQ, Newsletter Editor**

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

Tom Ruhlmann, W9IPR, starts us out with a report on the Fall ORC Swapfest. He provides credits and excellent pictures. Good work, Tom. (And everyone involved!!)

Following you will find two excellent first person experience articles from Nate Seidler, KC9TSO on the Wisconsin POTA Special Event and from Gary Bargholz, N9UUR, on his quest for Worked All States and DXCC in his article titled, "You've got to have a Goal!!" I always consider it a highlight when we have first person activities documented in an article in this Newsletter. When we get them, they always have top billing.

Be sure to check out Don Zank, AA9WP, in his Ozaukee County ARES column this month. Lots of opportunities are documented – local and national. Visit the links Don shows – I did, and all were very interesting.

Do all of you know that Don, as the Ozaukee County ARES Emergency Coordinator and the adjacent Washington County ARES Emergency Coordinator, Vic Shier, WT9Q, are both Ozaukee Radio Club Members? I am sure most of you know that – but it is always good to mention. Thanks to you both for accepting that responsibility.

Stan Kaplan, WB9RQR, brings us his 307<sup>th</sup> consecutive Computer Corner column. Stan often mentions Majorgeeks and their line of software. Check out his column for more information on that supplier.

Gary Sutcliffe, W9XT, is back with his On the Air Activities column. We are headed into the more active times for ham radio as the weather turns colder and indoor activities take more priority. Be sure to check his "pull-out" activities page.

You Editor, Bill Shadid, W9MXQ, has two articles this month. The regular Vintage Amateur Radio column discusses the Ten-Tec Corsair and Corsair II with emphasis on one particular example of the Corsair II and all of its operating accessories. Right along with that is an article on the Unified Microsystems XT-4 MK2 Memory Keyer used with the Corsair II and other solid state radios. This is a review that is based on being a beta tester for this latest upgrade of the XT-4 product.

Tom Trethewey is back with his Upcoming Events column. Take a look.

Jeananne Bargholz, N9VSV, and Bill Greaves, K9GN, provided the Minutes for the September meeting. And, also, following that, Ken Boston, W9GA, provided the delayed minutes for the August meeting. Both will need to be approved at the meeting next week.

Jeananne Bargholz, N9VSV, our new Program Committee Chair (in addition to being 1<sup>st</sup> Vice President), outlines the speakers and their topic for next week's meeting. Take a look at her writeup on Janice Hoettels, KA9VVQ, and Bruce Richardson, W9FZ, and their "Getting on the Air and Having Fun with Roving" program for the next meeting.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents:

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50	<b>The Back Page – Quick Note – Meeting Night and Next Month</b>

**Onward To the Newsletter**

# The Annual ORC Regional Fall Swapfest Is Again a Success

De: Tom Ruhlmann, W9IPR

Thanks to all of the volunteer's efforts we had fun, and the event was a real success. We had 38 vendors and a paid attendance of 200. The club treasury increased by about \$650 after expenses and the STEM (scholarship) fund increased by over \$1,100. We had door prizes donated by Bioenno Power (12 and 20AH of the LiFePo4 batteries), Cable Experts and ARRL. Our number of vendors and attendance both increased by about 25% this year. We had good advertising due to the email "group" postings and the flyers at HRO and as handed out at the various area swap fests by Loren Jentz and Tom Trethewey.

My special thanks to Jim Albrinck for arranging for the Fireman's Park grounds and Mike Harrington for providing the audio equipment and the announcing.

Thanks to all of the following who volunteered and made the event such a success:

## Friday at the barn and setup at the park:

Pat Volkmann, Bill Greaves, Gary Sutcliffe, Fred Schwierske, Jim Albrinck, Ken Boston, Jeananne Bargholz, and Gary Bargholz

## Saturday at Fireman's Park:

**Refreshments:** Todd Fast

**Admissions:** Gary Bargholz, John Thielen, Jim Albrinck, Scott Golaska, and Chuck Meyer

**Parking:** Bill Greaves, John Thielen, Rod Kleist, Kristian Moberg and Mark Heleniak

**Sound Equipment and Announcing:** Mike Harrington

**Scholarship Trailer Sales:** Jeananne Bargholz, Tom Ruhlmann and Nate Seidler

**Grounds and Tear Down:** Jim Albrinck, Fred Schwierske, Pat Volkman, Ken Boston, Don Zank, and Matt Myszka.

Following are a few pictures of various members buying, selling, and just browsing. Thanks again for all the help. Hope you had fun and got a few treasures.





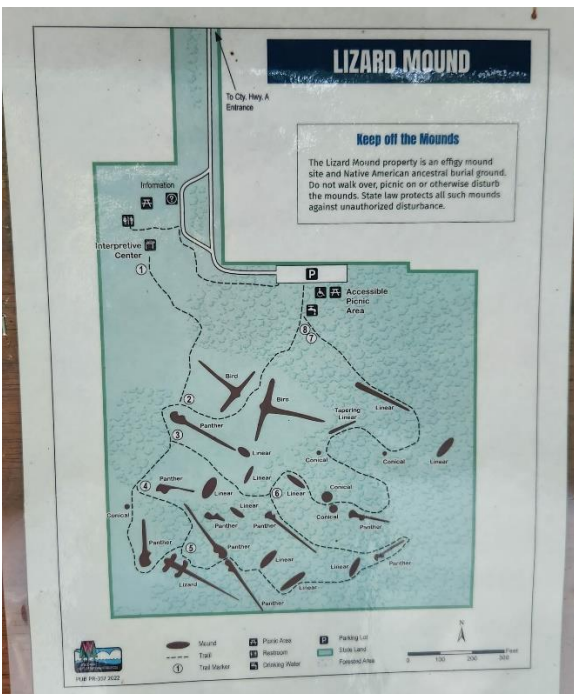
# CQ WIPOTA CQ WIPOTA

de: Nate Seidler, KC9TSO

On Saturday, September 16<sup>th</sup>, there was a special event sponsored by Fox Cities Amateur Radio Club surrounding Parks on The Air. The purpose of the Wisconsin Parks on the Air (WIPOTA) operating event is to promote public awareness of ham radio within Wisconsin's beautiful state park system.

The objective of WIPOTA is to have competing stations operate from as many Wisconsin parks as possible and work hams in other WI parks, as well as hams not located in a park in any state, province, or country. This event had normal contesting type rules that kept the operating off the WARC bands even though a typical POTA operation would allow WARC bands to be operated. So, throughout the time period, you heard WI stations on 80, 40, 20, 15 and 10 meters. Bonus multipliers were available for contacting other parks so most activators stayed on the lower bands.

For this event, I set up my station at Lizard Mound State Park (K-9704) in West Bend, WI. Lizard Mound is one of the most well-preserved Native American effigy mound sites in the nation, with 28 extant conical and linear mounds on the property. The property's effigy mounds have been interpreted as representing spiritual and/or animal-like forms, including bird, panther or water spirit, and the eponymous lizard. It has a picnic area that is on the north end which is not an effigy area where I can set up my antenna without disturbing the sites. Since it is nestled in among corn fields, the ambient noise level is a S0 so you can run a preamp to really pull the distant stations out of the weeds.



Map Lizard Mound State Park as Posted on Park Grounds



Welcome Sign for Lizard Mount State Park

The event was held from 11am to 6pm but I only operated from 12:30 to 3:30pm due to family and weather. During this time, I was not hard-core contesting but having more fun searching out others in the state as well as some DX on higher bands. I made 11 contacts on 40m (3 of them other WI parks for multipliers), 17 contacts on 20m, 19 contacts on 15m (DX of Spain, France, and Venezuela) and 1 contact on 10m in California. Half of these contacts were from hunting other stations and the other half was actively calling CQ. I had the rare DX on 15m of contacting W9MXQ a whole 19 miles away....

Here is the setup for KC9TSO as he operated from Lizard Mound State Park.



Left to Right: Windows® PC,

**This and all photographs – KC9TSO**

The radio used for the Pota is an Icom IC-7200. The tuner is an LDG AT-200ProII. The Coax is ARB-240 with an orange abrasion shield and ferrite beads. The antenna is a Wolf River Coils Sporty-Forty setup. The battery is a Valence U1-12RT, 40AH Lithium Iron Phosphate Battery (see picture, below). Logging software is N3FJP. Also, an HP Victus laptop computer.

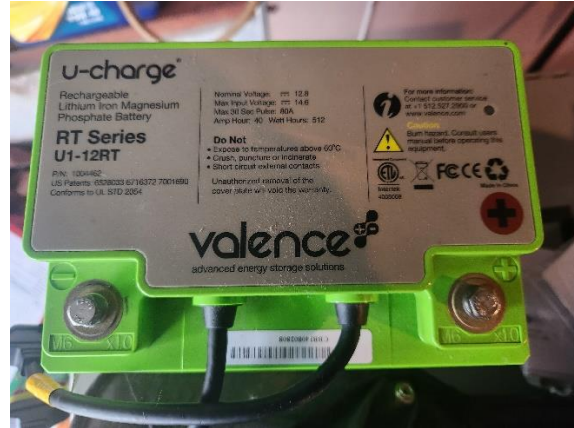
While operating, Matt, KD9QLS, showed up after leaving work. He also does POTA as well and never activated this park. So, I moved aside and let him hunt out enough contacts to make it a proper activation to report. These pictures are what I took of him while he was logging. He uses HAMMRS to log while I use N3FJP. If you use N3FJP, there is a POTA format that you can download so it will arrange the information fields for quicker



entry. It also helps to know the macros to quickly enter multiple parks or operators if they are doing a group operation.



**Matt, KD9QLS, making a few QSO's**



**The Valence U1-12RT Battery**

Mark down the 3<sup>rd</sup> Saturday in September on your calendar for next year. You may say to yourself, “Why should I worry about this if I don’t go out and activate parks?” They made this event inclusive to all operators. They have 5 different categories available to fit every type of op.

#### Operator Categories:

- Single transmitter at one time in WI park
- QRP for single transmitter at one time in WI park
- Multiple simultaneous transmitters in WI park
- WI operators not in a park
- Non-WI operators

Since the multipliers are given for contacting WI parks, having a NVIS 40 and 80 meter antenna would be to your benefit. Operating with a vertical hurt my ability to work Wisconsin parks and I will remedy this for next year. But many of you have home stations with great capabilities that would really clean up in the “not in a park” class. As an activator, we want to make as many contacts as possible and getting home stations to work us in a pile up makes the activation a lot more fun than sporadic contacts. Hope to hear from you next year.

Nate  
KC9TSO

# You've got to have a Goal!

de: Gary Bargholz, N9UUR

As many of you know, I started my HAM Radio interest with working Satellites.

I had a Short-Wave receiver and read an article about these "HAMS" talking to astronauts on MIR, the Russian Space Station.

Something clicked in my head, and I "Just Had To Do That."

So off to Amateur Electronic Supply (now Ham Radio Outlet), where I met Dick Engle, K9RWE, who became my early mentor.

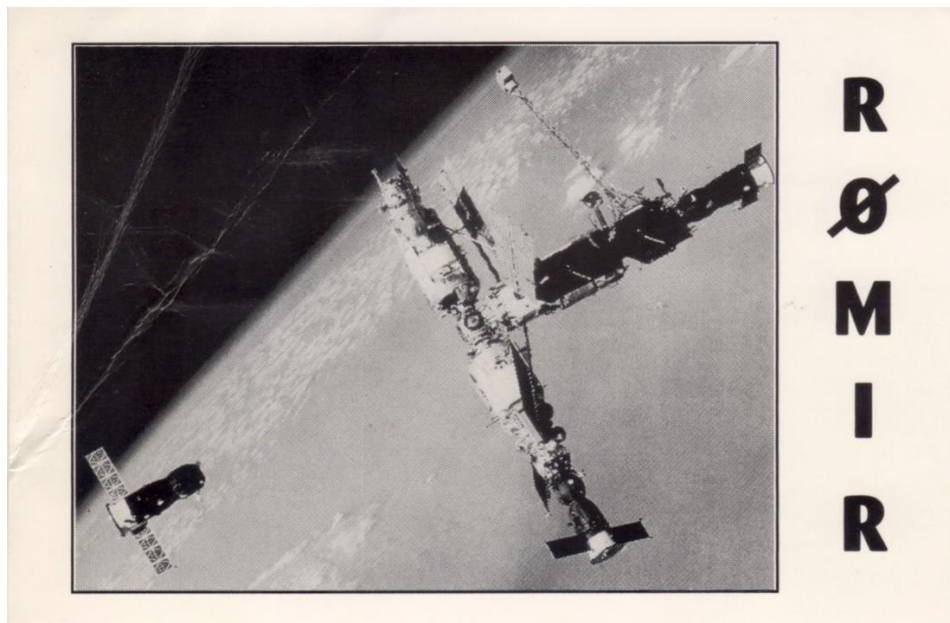
Buy books, study for the Tech exam, dream about gear needed... saving pennies.

I took my exam on July 10, 1993, at the Oak Creek Swapfest, it was corrected by Kate Kedney, KA9MWT, and Joe Mettry, AA9DO. I'm now a VE with Joe. I truly miss Dick and Kate, both now SK's.

When I took my Tech exam, I had studied an ARRL book, but I guess I waited too long to take the test. When I sat down, I had never seen the first question, or any on the first page. The question pool had changed! I still passed with only one mistake.

At that time, the FCC was changing over from paper filing to electronic submissions from the VE's. It took 3 months to get my callsign issued. Frustrating, but plenty of time to build my SAT Station, and do a lot of testing, and listening.

Once I was the proud holder of ARS N9UUR, I did QSO MIR.



And later, Bill McArthur, KC9ACR, on the International Space Station.



With these two goals achieved, and two nice cards in hand, I set off on a 30 Year Amateur Radio career. And the QSL cards started coming in, all from SAT QSO's.

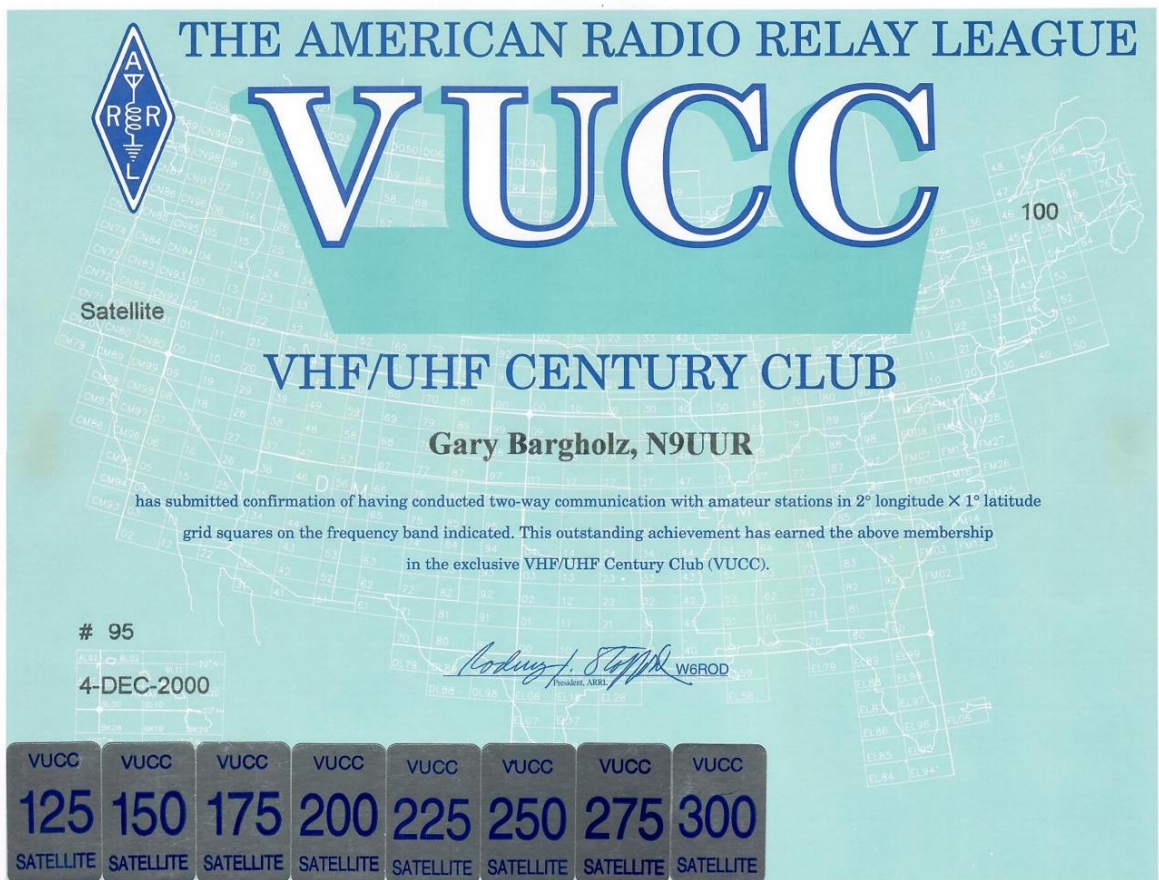


Eventually, Dick Engle said "You probably have enough for WAS, maybe VUCC." I of course replied, "What's That?."

WAS or Worked all States, is an ARRL Award issued for working all the US states.

VUCC or the VHF/UHF Century Club, is an ARRL Award for working 100 or more stations in separate Grid Squares on 50MHz, or above.

Turned out I had plenty for both. I then sat down with Stan Kaplan, WB9RQR, who is an ARRL Awards checker. I brought a 3 ring Binder filled with QSL Cards from around the world. Stan approved my SAT VUCC award (Certificate #95) and SAT WAS award (Certificate #280) in 2000.





## THE AMERICAN RADIO RELAY LEAGUE



Gary Bargholz, N9UUR

has submitted confirmation of having conducted two-way communication with amateur stations in each of the states constituting the United States of America.

#280

  
President W5JBP

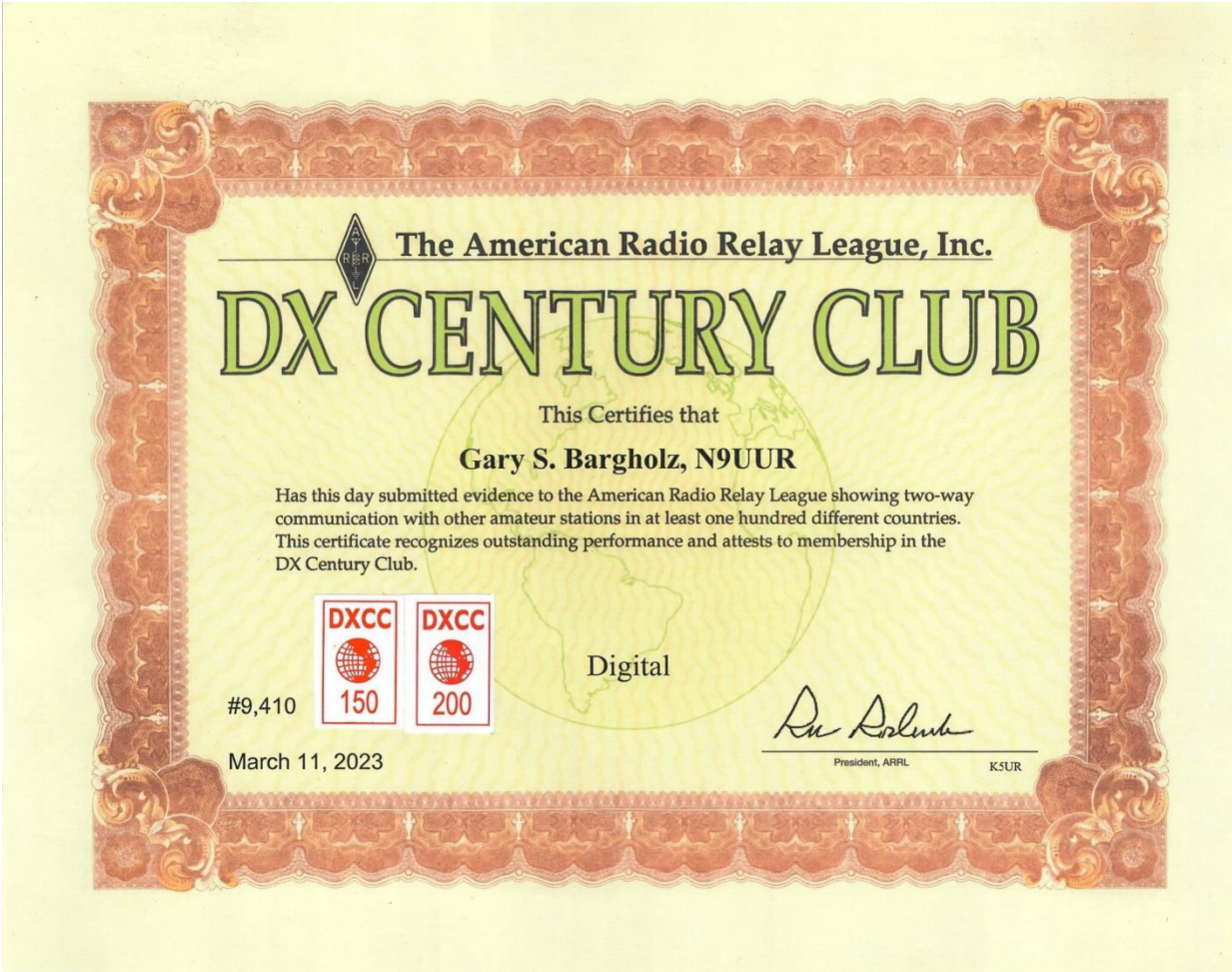
13-Nov-00

So that is where I sat for many years. These days I really only operate Satellite once a year at the Ozaukee Radio Club Field Day site. Got to get those Bonus Points, yah know. So why am I telling you all of this history? It's just my background, and mindset for hunting Grid Squares and States.

In June of 2020, I got my Extra Class License, and entered the world of HF.

On HF, the big award is DXCC – the DX Century Club, awarded for working 100 or more countries. There are currently 340 entities on the ARRL DXCC List. This list is not just Countries but includes rare Islands and territories.

So of course, I had to peruse that one. So far I'm at 206, and hunting for more.



But my interest in WAS and Grid Squares has not gone away. WAS on HF (Mixed Bands) came pretty easy, so I invented a new personal Challenge. I am Working individually Band by Band (each Band Separate). And I count FT8 and FT4 as separate as well (no "Mixed Mode"). So, that makes things a bit more interesting, and challenging.

So where am I after 2 years on HF?

I have (LOTW Confirmed) WAS FT8 on:

80, 60, 40, 30, 20, 17, 15, 12 and 10 Meters.

I still need Alaska and Hawaii FT8 on 160 Meters and 6 Meters.

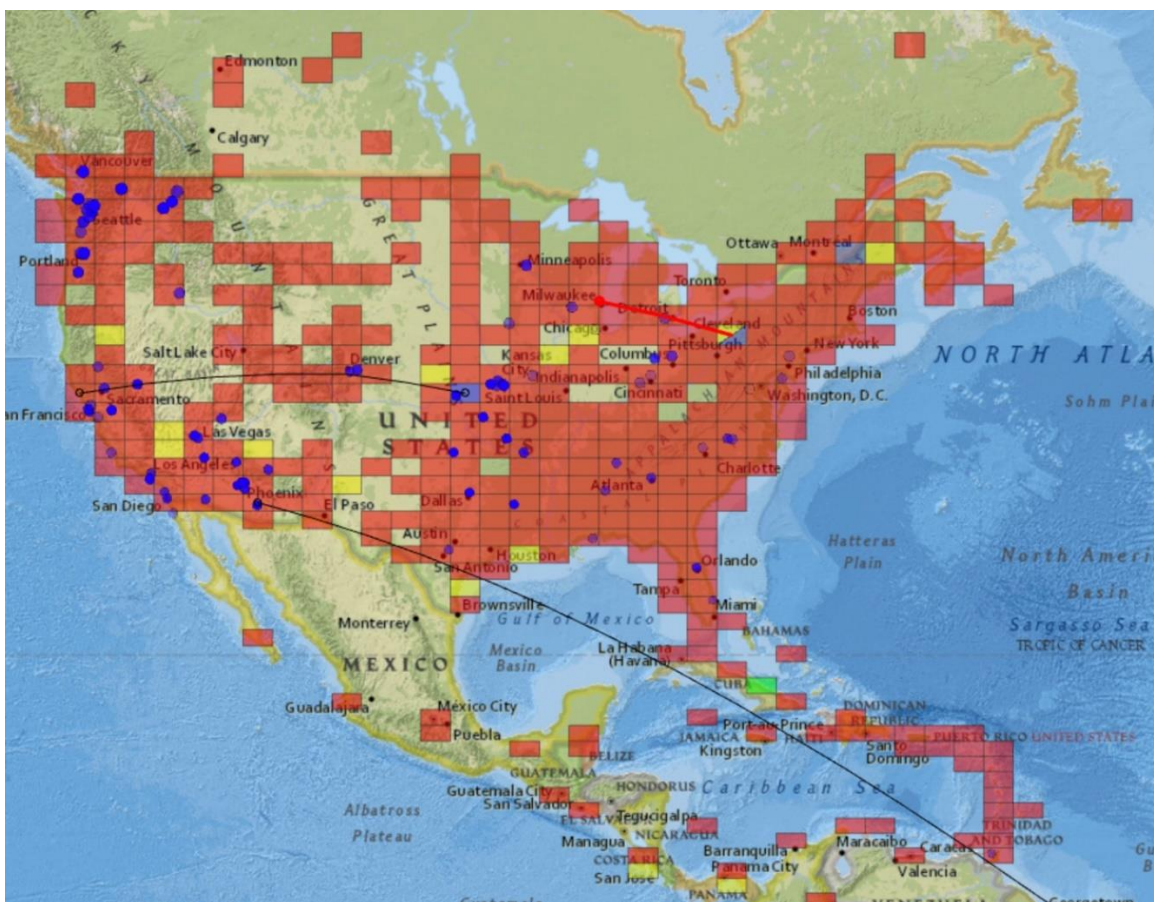
I have (LOTW Confirmed) WAS FT4 on:  
40, 20 and 15 Meters.

I only need South Dakota on 17 Meters, and Rhode Island and Montana on 30. 10 and 12 Meters are getting close too.

My VUCC on 50Mhz is at 298.

You may wonder how I keep track of all of this. The answer is a piece of software called "GridTracker." GridTracker (available for MAC, Windows, and Linux) links into my logging software, and WSJT. It continuously looks at the heard stations from WSJT and compares them to my Log. It then displays a map of the world, and colors in the grid squares, or states that I have confirmed QSO's with in RED, if I need the station it colors them GREEN. Yellow grids on the screen are stations I have contacted but have NOT confirmed the contact via LOTW.

Here is a screenshot of GridTracker displaying (RED) confirmed Grids on 17 Meters FT8.



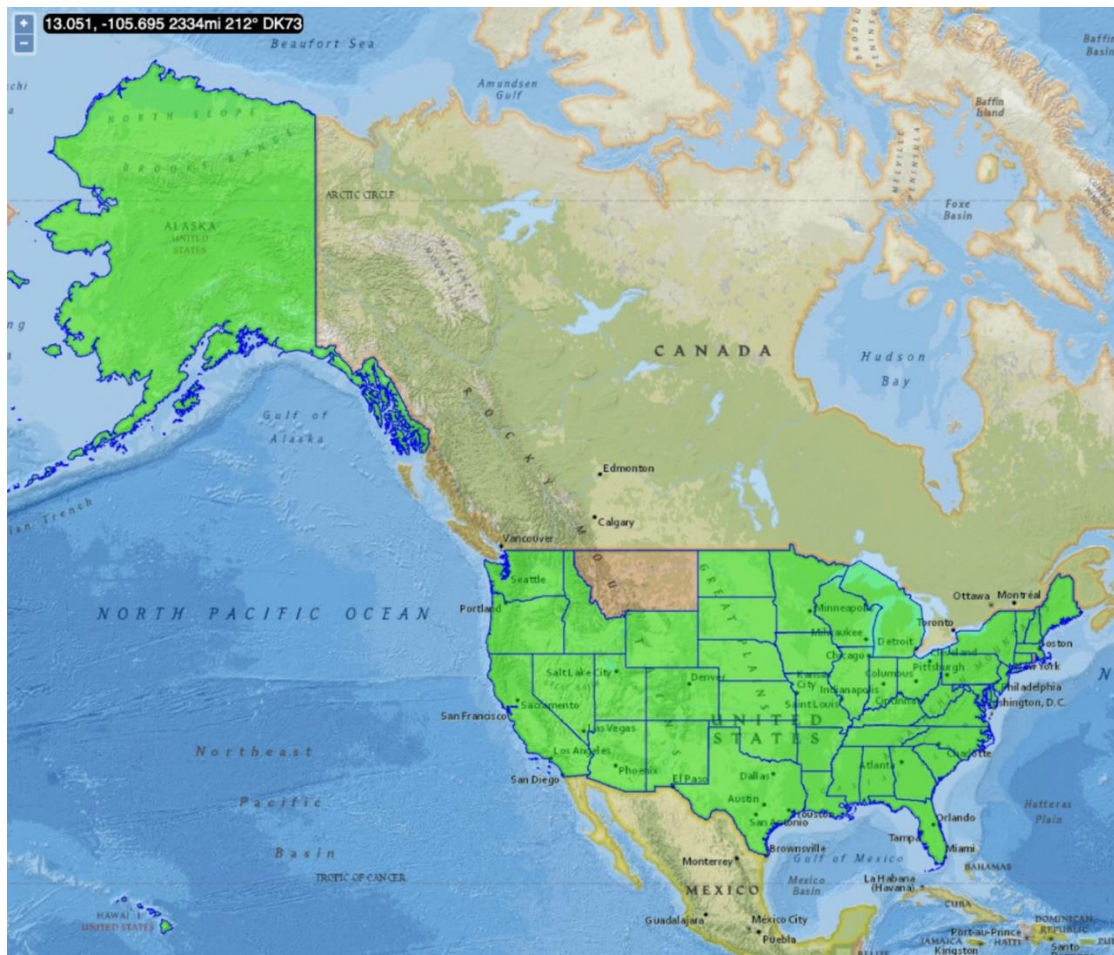
The RED Line is me trying to contact KM3P in Grid FN01 Pennsylvania.

Note that Grid FN01 is colored Blue AND Yellow. The yellow shows I do have a QSO there, but that station has not confirmed the Q in LOTW. The BLUE is showing an active station (KM3P) there, that I'm trying to contact. The BLACK lines are other stations in QSO with each other.

The BLUE dots are stations that have reported hearing my signal. GridTracker also links into pskreporter.info to get heard station reports.

Lots to see and digest in one shot. But you get used to looking at it pretty quick, and picking up the information you want. I'm very visually oriented, and really prefer this graphical display over other software that reports in text. I can just glance at it and see who is calling CQ or active, and if I need them.

Here is a screen shot of GridTracker in Award Mode displaying my standing with WAS on 30 Meters FT4. Note Montana and Rhode Island are not colored in, I still need those states.



GridTracker will display most of the major awards: DXCC, CQ Zones, ITU Zones, WAC (Continents), WAS, and WAP (Prefixes). It displays in text all the entities you have



contacted in one column, and your confirmed contacts in another, and a third column of what you still need.

The screenshot shows the 'Statistics' window in GridTracker, specifically the 'DXCCs' tab. The window title is 'Statistics' and the current view is 'Viewing: Mixed Bands / Mixed Modes'. The interface includes tabs for 'Logbook', 'Scores', 'DXCCs', 'CQ Zones', 'ITU Zones', 'WAC / WAS', 'WPX', 'Live', and 'Decodes'. The main content is divided into three columns: 'Worked (207)', 'Confirmed (204)', and 'Needed (133)'. Each column has a table with 'Name', 'Flag', and 'DXCC' columns. The 'Worked' column lists 207 entities, 'Confirmed' lists 204, and 'Needed' lists 133. The 'American Samoa' row in the 'Worked' column is highlighted in yellow.

Worked (207)			Confirmed (204)			Needed (133)		
Name	Flag	DXCC	Name	Flag	DXCC	Name	Flag	DXCC
Alaska	🇺🇸	6	Alaska	🇺🇸	6	Afghanistan	🇦🇫	3
Albania	🇦🇱	7	Albania	🇦🇱	7	Agalega & St. Brandon	🇰🇲	4
Algeria	🇩🇿	400	Algeria	🇩🇿	400	Aland Is.	🇫🇮	5
American Samoa	🇺🇸	9	Andorra	🇦🇩	203	Amsterdam & St. Paul Is.	🇫🇷	10
Andorra	🇦🇩	203	Angola	🇦🇴	401	Andaman & Nicobar Is.	🇮🇳	11
Angola	🇦🇴	401	Anguilla	🇧🇻	12	Annobon I.	🇨🇮	195
Anguilla	🇧🇻	12	Antarctica	🇦🇶	13	Ascension I.	🇨🇮	205
Antarctica	🇦🇶	13	Antigua & Barbuda	🇦🇬	94	Austral Is & Tubuai	🇫🇷	508
Antigua & Barbuda	🇦🇬	94	Argentina	🇦🇷	100	Aves I.	🇨🇮	17
Argentina	🇦🇷	100	Armenia	🇦🇲	14	Bahrain	🇧🇭	304
Armenia	🇦🇲	14	Aruba	🇦🇼	91	Baker & Howland Is.	🇺🇸	20
Aruba	🇦🇼	91	Asiatic Russia	🇷🇺	15	Bangladesh	🇧🇩	305
Asiatic Russia	🇷🇺	15	Australia	🇦🇺	150	Bhutan	🇧🇹	306
Australia	🇦🇺	150	Austria	🇦🇹	206	Botswana	🇧🇼	402
Austria	🇦🇹	206	Azerbaijan	🇦🇿	18	Bouvet	🇫🇷	24
Azerbaijan	🇦🇿	18	Azores	🇵🇹	149	Brunei	🇧🇳	345
Azores	🇵🇹	149	Bahamas	🇧🇸	60	Burma	🇲🇲	309
Bahamas	🇧🇸	60	Balearic Is.	🇪🇸	21	Burundi	🇧🇮	404
Balearic Is.	🇪🇸	21	Banaba Is.	🇵🇹	490	Cambodia	🇰🇲	312
Banaba Is.	🇵🇹	490	Barbados	🇧🇧	62	Cameroon	🇨🇲	406

There are many other things GridTracker can do, such as some interesting Logbook analysis – Furthest Station, Closest Station, Station you have contacted the most, etc.

I encourage you to give GridTracker a try. It may take a bit to get set up, but it is well worth the effort if you are a WSJT operator as I am. Even if you're not into WSJT, just import your Log (It needs an ADIF File export from your Logbook software) and play with the graphic display and log analysis.

So, this is how I spend most of my WSJT HF operating time. Chasing DXCC, Grids and States. We all need some sort of challenge and goals.

And, oh yah, while working on this article, I caught South Dakota on 17 meter FT4. So, WAS completed there too!

Maybe, someday, I'll get over my "Mic Fright," and start all over on Phone...

Gary Bargholz, N9UUR

## OZARES: Ozaukee Amateur Radio Emergency Services

by Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)



Now that summer is slowly ending and fall is approaching, several ham and ARES related activities have popped up on the calendar.

First OZARES, at the beginning of September, set up a table at the Ozaukee Radio Club Swapfest. The weather was perfect, and it was a nice turnout of vendors and buyers.

Next, Ham Radio Outlet held their Superfest on September 22 and 23. We originally set up with the ORC table, but the back corner was poorly lighted, so we moved over next to the Red Cross table. And that worked out perfectly.

On Saturday I used two small stations, to demonstrate VARA and packet WINLINK. The Red Cross group also had a portable WINLINK station. Working with Dave, KD9JYL, Steve, WI9ARC, and myself, we were able to practice WINLINK packet peer-to-peer connections. It was a great practice session, and we learned a few things about radio and computer setups.

Thanks to the efforts of Mark, AC9DE, Mike, WO9B, and the cooperation of Ham Radio Outlet, there is a VARA RMS station operating from the store. WI9HRO-10 is the call sign, and it operates on a frequency of 145.610 MHz. Mark and Mike have expanded the coverage of VARA FM WINLINK in Milwaukee County with this station and are looking to get more traffic involved with their station. There appears to be a gap between northern Milwaukee County and Ozaukee, and it would be nice to fill this gap with either another WINLINK RMS station or digipeater. The two also gave a short presentation and demonstration at Superfest which stirred up some good interest.

I had some handouts on the table for WINLINK that provided basic instructions for the installation of software and how to set up radios and related interfaces. Many hams stopped by to ask some WINLINK questions, so interest continues to grow. Remember, if you can do FT8 you can do WINLINK VARA HF.

If you are interested in learning more about WINLINK there are some great sites on the web. Oliver, K6OLI is part of the WINLINK development team and has written some very good articles covering the basic installation of VARA and packet software, as well as interfacing with various radios and sound cards. The article can be found on his web page and qrz.com site. He has created some outstanding videos for the Radio Amateur Training Planning and Activities Committee, or RATPAC, <https://www.ratpac.us/>. Other good sites include Wavetalkers, <https://wavetalkers.com/> and Mike Martens, KB9VBR, website and YouTube channel.

The Federal Emergency Management Agency, FEMA, and the Federal Communications Commission, FCC, will conduct a joint test of the Emergency Alert System, EAS, and the Wireless Emergency Alert, WEA, on October 4 at approximately 1:20 p.m. local time. The WEA part of the test will be directed to all consumer cell phones. The EAS alert will be sent to all radios and televisions. More details can be found at:

<https://www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system/national-test-2023>

The Simulated Emergency Test, or S.E.T., is scheduled for October 7 and most of the southeast district groups will be participating. Unfortunately, because of schedules, OZARES will be conducting their exercise on October 14. We aim to activate the two Ozaukee hospitals, the Radio Rooms at the Justice Center and Saukville Emergency Management, and public health in Port Washington. Exercises will include being net control, passing messages by phone and digital modes, and testing hardware. I will have more information in next month's article.

Also on October 14 is another S.E.T, the Solar Eclipse Test. Various activities will be occurring on Saturday, and they can be found at the Ham Science website, <https://www.hamsci.org/eclipse> There will be a digital contest and a time delay experiment during the eclipse. I believe in our area the eclipse will be approximately 40% coverage of the sun as most of the eclipse will be only visible in the western to southwestern states. The solar eclipse has a starting time of 9:13 a.m. PDT in Oregon and ends in Texas at 12:03 p.m. CDT.

This will be an annular eclipse while a total eclipse will be next year on April 24, 2024. As explained on [solarsystem.nasa.gov/eclipses](https://solarsystem.nasa.gov/eclipses) "A total solar eclipse happens when the Moon passes between the Sun and Earth, completely blocking the face of the Sun. The sky will darken as if it were dawn or dusk." Our area should see 90 to 95% coverage of the Sun if the weather cooperates. More information on both eclipses can be found at <https://solarsystem.nasa.gov/eclipses/home/>

October 19 is the date for the Great Shakeout. This is an exercise to be prepared for an earthquake. Wisconsin borders with the New Madrid Seismic Zone that covers southern Illinois and the bordering states of Missouri, Kentucky, Tennessee, and Arkansas. The exercise begins at 10:19 am local time, (same figures as the date). Individual amateur radio operators and groups are asked to provide WINLINK reports using the "Did You Feel It," or DFYI form, created specifically for the US. Geological Survey. More information and registration can be found at: <https://www.shakeout.org/index.html>

On October 21 and 22 Dave, KD9JYL and myself will be attending an AUXCOM, or the Auxiliary Communications Workshop. The training will be focused on communicators to provide backup radio communication support for public service agencies. Best described by Wisconsin Emergency Management as a "... *course focuses on auxiliary communications interoperability, emergency operation center etiquette, on-the-air etiquette, FCC rules and regulations, auxiliary communications training and planning,*

*certification and accreditation and emergency communications deployment. It is intended to supplement and standardize an operator's basic knowledge of emergency amateur radio communications in a public safety context.*" I will provide some feedback on the course and what we learn in the coming months. It should be an interesting and intense, two 10-hour days of training and learning.

Next, the Wisconsin ARES/RACES conference will be occurring on November 4th, a little later than usual because of a library conflict. This date also conflicts with the ARRL CW Sweepstakes contest so now I am conflicted. The conference takes place in Wisconsin Rapids at the McMillian Memorial Library. A nice time to network with others in the state and learn a few things. The focus this year will be working with served agencies and AUXCOM.

Last but not least. The past two articles looked at how Artificial Intelligence, or AI, could be used in emergency management. There is a podcast, *Freakonomics, the Hidden Side of Everything*, that has three very interesting episodes on AI, #554-#556. If you want to hear some other takes on AI the three episodes are very thought-provoking.

73,  
Don Zank, AA9WP  
OZARES Emergency Coordinator

WI9OZ Repeater: 147.330 + pl 127.3

WI9OZ WINLINK Stations; VARA and Packet

WI9OZ-10, Port Washington, and WI9OZ-11 Saukville, 145.610

Nets: First and second Thursday, and on 5 Thursday months, the 4th Thursday; 1900 local time

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## **OZARES Repeaters:**

- **147.330 MHz (+ Shift) (127.3 PL)**
  - **443.525 MHz (+ Shift) (114.8 PL)**
- 

## **ORC Repeaters are On the Air Awaiting Your Call:**

- **146.97 MHz (- Shift) (127.3 PL)**
  - **224.18 MHz (- Shift) (127.3 PL)**
  - **443.75 MHz (+ Shift) (127.3 PL)**
-

## THE COMPUTER CORNER

### No. 307: Majorgeeks Top Freeware Picks

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



If you often read this column, you already know that I am a longtime fan of the MajorGeeks site for freeware and shareware software for Windows. There is just no better source for the software you use every day to safely run your Windows machine, and their reputation for fair evaluation is unparalleled. To examine the Top Freeware Picks category, ctrl-click this: <https://www.majorgeeks.com/> to go to the MajorGeeks site, look down the left column of the page to find FILES, then OTHER NEWS, then SPREAD THE WORD, and SITE INFO.

Under SITE INFO click the first item, TOP FREEWARE PICKS.

There are quite a few of these picks, organized in several categories. As of this writing (early August 2023) there are 20 categories but be aware that both the categories and their contents change from time to time. Here is the current list, which you should look through. [As an aside, to save yourself some money and lots of your time waiting for a slow machine to respond, please pay particular attention to what is said in the 3<sup>rd</sup> category, Anti-Virus Protection. You can probably speed up that slow machine significantly by following their suggestions!]

1. All-In-One Tweakers	11. Flash or Thumb Drives
2. Anti-Spyware & Anti-Malware	12. Graphics
3. Anti-Virus Protection	13. Multimedia
4. Backup	14. Microsoft Office Alternatives
5. Browsers	15. Partitioning
6. Data Recovery	16. Password Managers & Recovery
7. Diagnostics	17. PDF Alternatives
8. Drive Cleaners	18. System Information
9. Driver Updaters	19. Text Editors (NotePad, WordPad Alternatives)
10. File Compression	20. Uninstallers

Tim Tibbets, one of MajorGeeks directors, is quoted below concerning their Top Freeware Picks category. The Freemium category he speaks about (a combination of the words *free* and *premium*), describes otherwise free software that will do some additional functions for a monetary charge.

*“MajorGeeks.Com <https://www.majorgeeks.com/> takes pride in hand-selecting the best freeware, shareware, Freemium, and Open Source software. However, in our 15,000 plus listings, you can find the cream of the crop, or as we call it, the top 1%. These are the apps that most geeks would recommend to you in their respective categories. There are now (very) few freemium listings included that we could not avoid. For example, Malwarebytes, a household name, is included. You can scan for free, but real-time protection requires a license.”*

While you are at it, take a look at the About Us category under Site Info. There is even a video in there which explains how they bench test (and actually run!) each piece of software before that software becomes one of the offerings on the MajorGeeks site. That sort of testing long ago convinced me to have confidence in the software they list. Happy Computing!

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# On The Air Activities!

de: Gary Sutcliffe, W9XT



October is considered by many to be the best month of the year for propagation. We are past the equinox and, with it, the summer doldrums, where absorption degrades propagation. As the ratio of O<sub>2</sub> and N<sub>2</sub> reverses as the ionosphere cools, we get less absorption. Conditions in the last few weeks have been excellent on the higher bands. I have been hearing and working many distant DX countries I have not heard in years.

If you have nothing up for the higher HF bands, do it before the weather gets too cold. Even a dipole can be effective. I have over 265 countries on 12M and never ran more than a dipole and low power. Don't forget, Technician class hams have phone and digital privileges on 10M, the only HF band they have these. A dipole is only about 16.5' long on 10 meters.

We didn't have FT8 the last time we hit a sunspot peak. I noticed that Europe stays open longer after their sunset on FT8 than I recall when we only did CW and SSB. FT8 gives us another 10 dB advantage in digging out weak signals, so it is not surprising that the band opens earlier and closes later for digital compared to the analog modes. I hope this carries to 6M F2 layer propagation this winter. Maybe we will be able to work some DX when conditions are not good enough to support CW on the Magic Band.

The solar conditions are the best they have been since 2000-2001. Don't miss this opportunity!

## Solar Eclipse

Did you know we have a solar eclipse on Saturday, October 14? It is only a partial here and an annular eclipse in the western states. The moon's orbit is not perfectly circular. So, if the eclipse happens when the moon is at apogee, furthest from the earth, its apparent size is too small to cover the entire sun. At the peak, there will be a ring of light from the sun around the moon. Unfortunately, you will need to be out west to see the ring. With the sun partially covered up, the amount of UV we receive is reduced, and it will affect the amount of ionization which affects propagation. The scientists who study space weather are interested in seeing the changes. You can help science by operating that day.

HamSci is a group I have mentioned before. It is a coalition of scientists and hams to help gather data the scientists can use to better understand the ionosphere. They have several projects, including space weather stations you can build to collect data. Another one is a simple direct conversion receiver. It monitors WWV. In the morning, the ionosphere rises and drops at sunset. This movement causes a Doppler shift of a fraction of a Hz. Tracking these changes provides data.



HamSci has a convention in March. I attended them virtually for the past three years and learned much from them. The October 2023 *QST* has an article about the HamSci conventions.

They are sponsoring a QSO party on the day of the eclipse. If you operate, you will help them collect data. Check out their web page to get the details. There is a lot there.

They want to get as many signals on the air as possible before, during, and after the eclipse. Become a citizen scientist on October 14 by getting on the air!

### **Tracking the New Ones**

With all the activity and DXpeditions, how do you track the ones you need for new bands, modes, or ATNOs (All Time New Ones)? Most general purpose logging programs keep track of your DXCC totals. I use Logger 32, but there are other popular ones.

I connect to the DX Cluster through the W9ODD node at Marquette University. It gets DX spots from all over the world, but I filter them only to include those originating from the US and Canada. It usually does not help to know that Europe is working the Far East on 15 meters at local midnight. I won't hear them. A lot of times stations on the east or west coasts hear DX we don't, but it is worth checking out good ones.

Countries spotted on the DX Cluster that show up on a needed band or mode will be highlighted by my logging program depending on the nature of the need. I can click on a spot, and my radio will move to the DX station's band, frequency, and mode. After 50+ years of DXing, new band countries don't come around that often. I rarely see one I need, although 12 meters has been productive recently since it has not been open much in the last seven years.

Besides propagation cycles, trends in ham operator numbers often fluctuate over time. Sometimes it is due to increased or decreased interest. Other times government policy towards the hobby discourages people getting licensed.

Usually, new band countries or mode countries are from DXpeditions if you have been DXing a long time. If they get spotted, and I need them, they will be highlighted by my logging program, of course. But with so much activity, skimmers reporting every CW station they hear, the ones I need can quickly scroll off the screen. I have band maps set up that show recent spots, but not on every band, and spots there are deleted after 15 minutes.

DXSummit is a site that shows spots. Not as many DX stations are spotted there, and sometimes stuff is missed compared to the regular DX Cluster, but the ones spotted are usually the rarer ones. It does have some additional advantages. One is for the digital spots. My logging program is set up to reject digital spots from skimmers. There are just too many. It would be like drinking from a fire hose.

For whatever reason, DXers seem more likely to spot DX stations running digital off the main digital frequencies. DXpeditions are encouraged to use alternate frequencies, especially when running Fox/Hound mode. It helps to know where to look for them.

The biggest reason I like DXSummit is that you can set filters. You can enter country prefixes or call signs in the search box in the upper right corner. Then, only calls that pass through the filter show up. That makes it easy to track the DXpeditions.

Often, the spots are from Europe or other distant locations. Sometimes, I won't be able to hear them, but I am alerted, and I know we might have propagation soon. I don't filter by band or modes needed. I have a cheat sheet of the needed bands and modes and cross them off as I work them.

The URL for DXSummit is: <http://www.dxsummit.fi>

Spotter	Freq.	DX	Time	Info	Country
IZ7DJS	21089.2	5X3K	12:22 01 Oct	CCC 5X*	Uganda
IT9IDR	28077.7	ZD9W	12:19 01 Oct	AF-029	Tristan da Cunha & Gough
LZ2PL	21089.6	5X3K	12:19 01 Oct	FT8	Uganda
JH1CPN	18100.0	T22T	12:17 01 Oct	FT8	Tuvalu
SP4JP	14074.0	T22T	12:17 01 Oct	FT8 -20 dB 407 Hz	Tuvalu
TEAM-@	28000.0	5X3K	12:16 01 Oct	pse cw/ssb	Uganda
N5AO	3573.0	T22T	12:15 01 Oct		Tuvalu
OZ3TT	28077.0	ZD9W	12:12 01 Oct	Trnx nice FT8 F/H qso	Tristan da Cunha &

**Screenshot of DXSummit showing filters for current DXpeditions.**

## DXpeditions

I don't know where to start! There are so many coming up in October and early November. I will cover some of the more interesting ones but list more in the DXpedition picks.

One of the most interesting is ZD9W, in Tristan de Cunha, a very remote island in the South Atlantic. The operator is YL2GM. Yuris left South Africa and was supposed to arrive on September 22 on the monthly supply ship. The seas were too rough to unload the

freight and passengers, and he finally got ashore on September 29<sup>th</sup>, and on the air the next day. He has been very active on FT8 on several bands. He will be there until October 22, when the supply ship returns. You can follow his progress at:

<https://www.dx-world.net/zd9w-tristan-da-cunha/>

The island is one of the most isolated inhabited areas of the earth, and the people have adapted to it in interesting ways. There is an article in DX News about the island. Scroll down past the operation updates to read more about Tristan de Cunha.

<https://dxnews.com/zd9w/>

A big operation will head to Swains Island in the Pacific from October 4 – 17. They were planning on being there in the fall of 2020 but, like a lot of things, it was postponed due to the pandemic. The call sign is W8S. The multinational team plans to have six stations on the air. One of the stations will be on 6 meter EME. There have not been any moon bounce operations from Swains before. *Late news: Swains will start a few days late due to bad weather preventing transportation.*

Timor Leste should be a good one, November 6 - December 5. This country is located northeast of Australia. It became an independent country in 2002. There have been a few operations there, but going there has been somewhat dangerous. They sent a scouting team to Timor Leste earlier this year to select operating locations for the big operation. Operation during the scouting trip was pretty limited.

These are just a few of the major ones in the next 4-5 weeks. Besides these and those listed on the chart, there are a lot of others, usually by a single operator. The list includes Marshall Is, V73AH; two to Niue, E6; Tuvalu, T2C; North Cook Island, E51JAN; two to Chatham Island, ZL7; Vanuatu YJ0CA; and Cocos Keeling, VK9QO. Others are going to less rare countries too. Keep your eyes out for them.

More DXpeditions are coming up later in November and December. It sure will be a lot of fun chasing DX this fall and winter.

## **Contesting**

October is the start of the fall contest season, which lasts from the last weekend in October until the middle of December.

The California QSO party will occur just after you get the newsletter. The CQP is the biggest state QSO Party, but the Wisconsin QSO Party is still the best! I try to get on a bit for this one to give the station a shake down to ensure everything is working for the fall and winter seasons.

Work just California stations. The higher bands should be great in the afternoon to California. If you put in enough effort, you may be one of the lucky ones who win a bottle of California wine.

You send a serial number and state. They send a serial number and the county. A four letter county abbreviation is sent on CW. Check out the rules. You might want to print out a copy of the California counties list if you are unfamiliar with them, which is the case for most of us in Wisconsin.

The big contest of October is the last weekend, the CQWW DX Phone contest. This is the biggest DX contest of the year. The format brings out activity from almost every corner of the earth, and many DXpeditions are formed just to operate this contest.

The exchange is a signal report and CQ zone. We are in zone 4, so our exchange is 59 04. Multipliers are DXCC countries with a few WAE European countries added. Your logging program should automatically keep track of the countries. You can work the same station again on each of the HF bands for point and multiplier credit, except for the WARC bands, of course.

There are a ton of different categories. High, low, and QRP power levels. Assisted or unassisted. All-band or single band. Pick one from each.

With the good conditions, it should be a lot of fun. Some newer hams do not believe me when I tell them there will be wall to wall Europeans from 28.300 to at least 29.500 mid-mornings during this contest. The exception would be if we got a big solar flare a few days before the contest.

The first weekend of November is the ARRL Sweepstakes CW contest. This one has the most complicated exchange of any contest. The format is based on the header format for ARRL messages. This is the breakdown with an example I might be sending for my first contact.

Serial number	Power class (Precedence)	Your Call	Year first licensed (Check)	ARRL Section
001	A	W9XT	70	WI

I think that the ARRL CW Sweepstakes is the contest where operator skill is the most important factor in the skill vs. station equation.

Be sure your logging program is up to date. The ARRL split the Canadian Maritime (MAR) section into several sections, including Prince Edward Island (PE), New Brunswick (NB), etc. You should also check the rules for sending the proper precedence for your class.

## Events

Hamfests and conferences have just about wound down for the year. The last area hamfest of the year is the Friendly Fest by the Milwaukee Repeater Club. It is on Saturday, November 4, at the Elks Club on Good Hope Road, across from HRO.

That wraps up October. Get on the radio and finish up those antenna projects!

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for October and Early November 2023

W9XT's DXpedition picks for October and early November 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Tristan de Cunha	To Oct 22	ZD9W	160-6	CSD	<a href="https://www.dx-world.net/zd9w-tristan-da-cunha/">https://www.dx-world.net/zd9w-tristan-da-cunha/</a>
Samoa	Oct 1-14	5W0LM	160-6	CSD	Focus on CW
French Polynesia	Oct 2-15	TX6D	160-10	CSD	
Swains	Oct 4-17	W8S	HF	CSD	
East Kiribati	Oct 4-11	T32AN	40-6	CS	
Mayotte	Oct 10-22	TO8FH	160-6	CSD	
Micronesia	Oct 25-31	V6SZ	80-6	CSD	On for CQWW SSB
Temotu	Oct 26-Nov 9	H40WA	160-10	CSD	
Cameroon	Nov 2-Nov 15	TJ9MD	160-6	CSD	Four or more stations
Marquesas	Nov 4-19	TX7L	160-6	CSD	Four or more stations
Timor Leste	Nov 6-Dec 5	4W8X	160-6	CSD	

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

W9XT's contest picks for October and early November 2023					
Name	Start	Length	Bands	Mode	Link
CA QSO Party	Oct 7 1600Z	30 hours	HF	CW SSB	<a href="https://cqp.org/Rules.html">https://cqp.org/Rules.html</a>
Solar Eclipse QSO Party	Oct 14 1200Z	10 hours	HF	All	<a href="https://hamsci.org/seqp-rules">https://hamsci.org/seqp-rules</a>
CQWW Phone	Oct 28 0000Z	48 Hours	HF + 160	SSB	<a href="https://www.cqww.com/r/rules">https://www.cqww.com/r/rules</a>
Sweepstakes CW	Nov 4	30, work 24	HF + 160	CW	<a href="https://arrl.org/sweepstakes">https://arrl.org/sweepstakes</a>

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 2023			
Event	Dates	Details	Link/notes
Friendly Fest	Nov 4	Elks Club, 5555 W. Good Hope Rd, Milwaukee	<a href="https://www.arrl.org/ham-fests/friendly-fest-1">https://www.arrl.org/ham-fests/friendly-fest-1</a>

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



In the late 1970's, a small company in Sevierville, Tennessee, took shape and began manufacturing ham radio equipment, military and commercial radio apparatus, and electronic equipment enclosures.

Over the years, Ten-Tec enjoyed a solid following of customers. In particular, they were well known for their expertise in making some of the best performing Morse Code (CW) radios available to the amateur radio operator. While Ten-Tec made several lines of equipment, they seemed to excel in their Omni, related Paragon, Corsair, and Orion series of equipment. That tradition continues to this day with their Omni VII Plus Transceiver. The Omni VII Plus is available in limited supply and are often heard on the amateur radio bands.

This installment will focus on two models of transceiver that seemed to replace early Omni models – but after that time, Ten-Tec returned to the Omni brand, and, if you will, orphaned the Corsair name. We will focus on the Ten-Tec 560 Corsair and the Ten-Tec 561 Corsair II HF transceivers. These radios covered the 160 through 10-meter bands, including the WARC Bands. They did not include the later 60-meter band<sup>1</sup>.



**Left to Right – Ten-Tec Model 961 AC Power Supply/Speaker, Model 561 Corsair II Transceiver, and Model 263G Remote VFO.  
Also see Ten-Tec 705 Desk Microphone**

W9MXQ Photo



**Model Comparison Pictures**

**Top Picture: Ten-Tec Model 560 Corsair HF Transceiver**  
**Bottom Picture: Ten-Tec Model 561 Corsair II HF Transceiver**

**Top: Ten-Tec**  
**Bottom: W9MXQ**

The Corsair was produced from 1982 to 1985 while the Corsair II was produced from 1986 to 1989. The replacement for the series was the Omni V HF Transceiver.

While the two versions of the Corsair appear to be nearly identical (other than panel and cabinet color), there are substantial technical upgrades to the later Corsair II product. These upgrades and additions to the Corsair II were<sup>2</sup>:

- **Frequency Counter:**
  - The Counter Logic Board and LED Display Driver board are substantially different. The Corsair II manual has the correct new schematics, but the text is substantially incorrect by still describing the original Corsair circuitry.

- **9 MHz I-F Filtering:**

- The stock Corsair stock 9 MHz filter is a 4-pole, 2.4 kHz unit while the Corsair II stock 9 MHz filter is an 8-pole, 2.4 kHz unit. The Corsair II also includes a 2-pole roofing filter on the mixer board before the 2.4 kHz filter. Many original Corsair owners upgraded their 2.4 kHz filter to an 8-pole unit.

- **Audio Bandpass Filter:**

- The Corsair II introduced a variable audio bandpass filter. The control knob for that filter replaced the orange dot Ten-Tec insignia on the original Corsair.

- **CW Keyer:**

- The Corsair II introduced an internal CW keyer, with a single memory.

- **Noise Blanker:**

- The Corsair II added a Noise Blanker Width control to the Noise Blanker circuit included in the original Corsair.

- **RF Mixer:**

- The original Corsair used 4 discrete Schottky diodes in the Mixer while the Corsair II used 4 monolithic Schottky diodes in the Mixer circuit.

- **Spot Control:**

- The original Corsair spot button turns on a sine wave oscillator to inject an audible sidetone (nominally 750 Hz) that's mixed with the receiver audio so the target received signal can be tuned to have the same tone as the sidetone to accomplish zero beat.
- The Corsair II spot button shifts the receive frequency downward by an offset equal to the sidetone frequency (nominally 750 Hz) so the target received signal can be tuned for null to accomplish zero beat.

You can see that a lot of performance attention was paid to the Corsair product line upon the release of the second version (Corsair II). As a user of the Corsair radios, I can say that one issue that was never corrected was an unfortunate error in the sideband selection for 17-meters. Unlike some radios, sideband selection was “standard” or “opposite,” That is to say that it was generally assumed that Lower Sideband (LSB) was used on 160-40 meters and Upper Sideband (USB) was used on 20-10 meters on the HF bands. 30 meters did not (and still does not) allow phone operation – so sideband selection was not an issue. For some strange reason, with both Corsair models, LSB was selected as standard



for 17-meters. That was certainly not the conventional thinking. So, when operating SSB on 17 meters with either version of the Corsair, one must select “opposite” sideband. Perhaps because the radio was so well known for its CW mode, many reviewers of the radio never mention this error in design.

Some important performance parameters with both Corsair models are:

- RF Power Input: 200 watts
- RF Power Output: 85 to 100-watts. The ARRL Review of the Corsair II<sup>3</sup> showed a power output of 92 watts on 160-meters progressing upward to 102-watts on 10-meters. That is the opposite of most radios where the highest power is on the lower frequencies. My own Corsair II seems to be at a fairly consistent 90-watts output across the HF spectrum.
- Receiver sensitivity experienced in the ARRL Review<sup>3</sup> was 0.25uV for 10dB Signal plus Noise / Noise – pretty much a standard kept by well-designed radios of the day. In the real world of operating this radio, the background noise is very low and seems to be missing the assorted noises of digital frequency generation of the day. Why, you ask? One of Ten-Tec’s touted features was its conventional, analog, i-f design using conventional frequency conversion and a permeably tuned variable frequency control (PTO). The PTO in both Corsair models is identical – and silky smooth in its mechanical response to the user.
- Receiver Incremental Tuning (RIT) is selectable for both models and is available in two ranges. Those are +/- 1.5 kHz or +/- 4.0 kHz. Those selectable ranges are available for the receiver alone, the transmitter alone, or receive and transmit together. (Or it can be turned off – but turning off the RIT does not clear its selection. Remember, this is not a digital transceiver – so RIT settings are handled via potentiometer. So, there is no digital register that can merely be erased – the user must return the potentiometer to its zero position.)
- In tests run by the ARRL and shown in the QST Review<sup>3</sup>, the Corsair II met and exceeded FCC requirements for spectral purity.
- As you would expect if you knew Ten-Tec’s reputation, their transceivers were exemplary in the CW mode with outstanding QSK (full break-in) operation on that mode. There is no relay noise – in fact, no noise at all – while keying. The user can hear the band clearly between each character when sending CW. Zero perceived delay between transmit and receive. To this day, they are the game to beat in this field. (Ten-Tec has equals, today, but remember that we were talking QSK CW performance designed and implemented in the early 1970’s – one would expect that some have caught up by now – 50 years on!! (And, I might add, that some prominent and expensive transceivers of today still cannot match Ten-Tec’s CW performance for full break-in operation<sup>4</sup>.)

- The Speech Processor is a mixed blessing. First of all, the Corsair II model (where I have spent most of my time) seems to attract numerous unsolicited “great audio” reports. That was NOT true when I used the Speech Processor. Mind you, no one told me that I was distorted or broad (signal bandwidth) but provided numerous, “turn off that processor, you sound like a contester.” So, was that a compliment or a criticism? I do know that without the Speech Processor turned on, running a barefoot 90-watts, I worked any POTA station I called in one call, pileup or not. So, seemingly good basic and solid audio from this radio without the need for processing. I do use my Vintage Radios in contests from time to time – so when I do, perhaps there will be an update on that “contester audio” comment.

The Corsair models as well as the Omni models (through the Omni VI+) seem to have shared the same 12 VDC Power Amplifier. In operation these radios provide protection for the final amplifier transistors by limiting the amount of current fed through them. The Ten-Tec Model 961 AC Power Supply was designed with an EXTREMELY sensitive current cut-off whereby the power would be cut long before over current – due to antenna mismatch, or other cause – can go on for any significant time. This circuitry was far faster than any fuse or standard circuit breaker. When not using a 260 AC Power Supply/Speaker (physically color matches the original Corsair Transceiver), or the later 960, 961, or 962 AC Power Supply/Speaker units, attention must be paid to the radio’s need for an extremely fast response for high current draw. For that, Ten-Tec marketed their Model 1140 Circuit Breaker. This breaker was specially designed to Ten-Tec’s specifications. These are rare or even unobtainable, today. My advice is to secure a Ten-Tec AC Power Supply if you run a Corsair, Corsair II, or any of the Omni models<sup>5</sup>.

The opening picture in this article shows the equipment as a collector would keep it with all Ten-Tec items. Actually, my own operation at W9MXQ is a bit different:



I do not use the Ten-Tec 705 Desk Microphone. I feel the unamplified Astatic D-104 is much superior with my voice. Also, I do not use the internal electronic keyer and instead

use the Unified Microsystems XT-4 MK2 Memory Keyer<sup>6</sup>. You can see it being controlled by a Bencher BY-1 Key<sup>7</sup> and a Nye-Viking Speed-X Straight Key. The output of the XT-4 MK2 and the Speed-X Straight Key<sup>8</sup> are fed via a “Y” Adapter into the back panel KEY Jack of the Corsair II. (The KEY Jack is separate from the KEYS PADDLE connector used to access the Corsair II’s internal electronic keyer.) Also, I find that many Vintage Radios used on today’s bands can use the assistance of an external Digital Signal Processing (DSP) unit. Shown here is the MFJ-784B Tunable DSP Filter<sup>9</sup>. While the MFJ-784B can provide for bandwidth control and notch filtering, its noise reduction feature in the presence of high atmospheric noise is the most useful from my point of view.

One major feature of the Ten-Tec Corsair II complete station is the Ten-Tec Model 263G Remote VFO. A note here is that the Remote VFO for the Corsair and Corsair II were identical – except that the original Corsair was a gray color which changed more to a beige color in the Corsair II. The original Corsair Remote VFO was the Model 263 whereas the Corsair II Remote VFO was the Model 263G. It is important to understand that difference if you are looking for the Remote VFO for either Corsair as over time the use of the “G” in the model number just got dropped. If you are looking for one, be sure you know the color of the one you are buying. The same is true of the original power supply, the Model 260. Initially, that supply was called the 260G for the Corsair II. Soon afterward, the 260G was replaced by the definitely matching Model 961 – like the one pictured in this article. So, the actual 260G is quite rare.

The 263G Remote VFO is a really handy device – especially if you often operate split in working DX.



**Ten-Tec Model 263G Remote VFO**

Ten-Tec Wiki

The Ten-Tec Model 263G Remote VFO is equipped to allow up to four crystal controlled frequencies – allowing crystal control of the Corsair II Transceiver. Note the rotary switch in the lower right hand corner of the panel showing the selection of crystals or VFO.

Most important is to know that this Remote VFO can allow the operator to listen on the frequency on the radio dial, and on the Remote VFO dial at the same time. The knob in the lower middle of the panel allows a mixing of the two frequencies with intensity all to the “A” (Transceiver) when turned completely CCW or all “B” (Remote) when turned completely CW. If that knob is pointing straight up, intensity will be balanced between the two VFO’s with both audible on the speaker on in the headphones. So, if you have the radio set to listen to the DX station on VFO A (Transceiver), you can hear those working him split on your VFO B (Remote) transmit frequency. Setting the Remote VFO then to handle transmit, you would be transmitting right where the DX station last listened to a caller.

It goes perhaps without saying that the A-B knob that blends the two receive signals can be at varying degrees between fully CCW, at the center, or fully CW. Making those intermediate adjustments – for instance half way between CCW and center – will net signal levels more or less favoring one frequency or another. Remember that the position of the TB button (that is, which VFO is being used for transmitting) always determines transmit frequency. The setting of the A-B knob has no impact on transmit frequency.

The 263G Remote VFO indicates its own frequency on the Transceiver when engaged. It has its own screen to show in what 50 kHz segment it is running. It has separate scales for different frequency ranges.

I have always been rather amazed at how similar the outer cabinetry is designed on some Ten-Tec equipment when compared to R. L. Drake equipment in the “5,” “7,” and “75” lines of product (Drake’s last Amateur Radio focused product lines). I touched on this subject in an article covering the later Ten-Tec Omni series radios written in the recent past. The fascination with this apparent cooperative design is based on things I have seen in my manufacturing career. The Ten-Tec products using this cabinetry design seemed not to have a long parallel life with the similar Drake equipment. Almost as if it was an, “okay, I am done with it now, so you can use it,” agreement. Of course, that is my opinion, based only on personal observation.

The original Corsair, as noted earlier, was introduced in 1982. That was about the time that the last of the Drake TR5 and TR7A were being produced. I only mention that point because of a similarity with the Corsair, Corsair II, Omni V, Omni VI, and Omni VI+ radio cabinetry with that of the Drake radios of the period. One of the core businesses of the Ten-Tec at that time (and maybe still) was injection molding and custom radio/electronic cabinetry. The cabinet design for the Corsair and Omni radios shown is exactly the same unique design used on the Drake TR5, TR7, TR7A, and all the accessories for the “7” and “75” line of Drake like of equipment. Check the following pictures showing the similarity – differing only in size.



**Top is Drake TR7A Transceiver – Bottom is Ten-Tec Corsair II Transceiver  
W9MXQ Photo**

Note the extruded aluminum front panel with clear plastic insert along the top third of both panels and the silk screened, painted aluminum insert panel on the lower main panel. The same design appears on both radios. To be sure, the cabinet (behind the front panel) was a clamshell (top and bottom) design on the Ten-Tec and a “wrapper” design for the top and sides on the Drake.

Now I will remove the side panel strips and let’s take an end (or side) view of the front panel with those strips gone:



**Left Side View – End Strip Removed  
Drake TR7A Transceiver  
W9MXQ Photo**



**Left Side View – End Strip Removed  
Ten-Tec Corsair II Transceiver  
W9MXQ Photo**

Check the aluminum panel – visible on both products. There are small offset differences (top and bottom inserts) between the two. You can see that the Ten-Tec panel has a large proportion as part of the top insert compared to the Drake.

Also visible in these views is the way the covers enclose the electronics. On the left you can see enough of the top and sides wrap-around single wrapper (that is exactly what Drake called it, the “Wrapper”). On the right you can see the front to back line denoting the seam between the top and bottom half of the clam shell cabinet over the top and bottom of the radio. Internally the Corsair and Corsair II used individual boards with connectors between them. That was unlike the motherboard and plug-in boards in the Drake TR7 series – but identical to the individual boards with connectors between them system in Drake’s later (in spite of its number) TR5. One very positive note about Ten-Tec’s connection system between boards – they used small connectors that after all these years have not been a problem. Drake should have been so lucky with its choice of connectors to mate the individual boards to the motherboard!



W9MXQ Photo

Here is a picture of the End Caps (Drake to the left and Ten-Tec to the right). The Drake End Cap attached with small sheet metal screws into slots in the front panel extrusion. Ten-Tec has tabs molded into the End Cap and those tabs slid in behind the front panel and were compressed, that is, held in place, by screws holding the front panel in place on the front of the chassis.

Years down the line, the complex molding of the Ten-Tec system comes back to haunt the user. The Drake End Cap can actually be closely duplicated with sheet plastic and drilled holes – not so with the Ten-Tec. In fact, third party end caps for the Drake cabinetry are readily available.



**W9MXQ Photo**

To the left you can see the assembled End Cap on the left side of the Corsair II Transceiver. Remember the tabs on the Ten-Tec End Cap in the above picture. Those Tabs slide behind the screws you can see at the top left corner and lower left corner of the Corsair Front Panel. Older Ten-Tec gear will often have one of both of those tabs broken off from misuse at some time in their past. As far as I know, Ten-Tec is the only source for these End Caps – and they no longer supply them.

Ten-Tec, for many, has always been an acquired taste. They have always been above board with top performance, especially on CW. In my opinion, much of the time their packaging quality (but not necessarily design) left something to be desired. My focus here is on things like the quality of potentiometers, switches, and capacitors. Also, wide variance in the quality of components in the same radio. Case in point is in the Corsair and Corsair II where the PTO drive mechanism is smooth as silk, but the AF Gain pot seems at the same time to have been akin to something you would expect to find in a Cracker Jack™ box. I have to be careful here because I am reviewing a 50 year old radio that has had numerous users handling that very control. Truth is, however, that the AF Gain pot on my Drake equipment – generally older than the Ten-Tec equipment that I have used – is not that way. True also is the excellent performance of such hardware on Hallicrafters, Collins, National, and Swan that I use.

At the same time, the electronics and its design seems first rate. Attention to those details was excellent. That is ignoring rather odd occurrences where, as discussed earlier, normal side band on the Corsair was wrong (LSB instead of USB). The fact that this error stayed on in the Corsair II seems odd. A lot of engineering improvements went into the Corsair II – did Ten-Tec actually not know of this error?

The last of such things was their Argonaut VI product. An excellent design, all mode, very compact little QRP (10 watts, maximum) transceiver that covered 160-10 meters – or did it? It omitted 12 meters. (It also omitted 60-meters – but that is more understandable – even though by that time, everyone else included it.)

Well, we leave this product on a positive note – I thoroughly enjoyed getting this Ten-Tec Corsair II, Power Supply, and Remote VFO working and for now it has an honored place in my collection of radios that made our hobby what it is, today.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he nearly always adds commentary that makes it into the article. The Corsair II Transceiver in this article was used by Bob for some period of time. Bob is a very nearly 100%, CW operator.

### Credits and Comments:

<sup>1</sup> There is no known way to modify the Corsair or Corsair II for 60-meters.

<sup>2</sup> Reference Location: <http://corsair.wikidot.com/start>. This is a very complete site to locate information related to the Ten-Tec Corsair and Corsair II HF Transceivers.

<sup>3</sup> **QST Magazine**, August 1987, page 32.

<sup>4</sup> The prowess of the Ten-Tec QSK operation is perhaps the choice of some CW operators. And, may I add, more power to them for their exemplary skills. I also know many operators who use semi-break-in CW Transmit/Receive Switching and are perfectly happy with that performance. Some modern transceivers use relatively fast semi-break-in and call it QSK.

<sup>5</sup> Ten-Tec users have reported that they have found a particular circuit breaker, not sold by Ten-Tec, to be useable in this application. I cannot verify the accuracy of the statement but the one being sourced is from Amazon under this link:

[https://www.amazon.com/gp/product/B07H9483K4/ref=ppx\\_yo\\_dt\\_b\\_search\\_asin\\_title?ie=UTF8&th=1](https://www.amazon.com/gp/product/B07H9483K4/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1)

The description is: "T Tocas AC/DC Single Pole Magnetic Circuit Breaker Toggle Single Pole Circuit Breakers 20A 415Vac 80 Vdc"

<sup>6</sup> Unified Microsystems can be found at <https://www.unifiedmicro.com/> for product details. Products are sold at: Ham Radio Outlet <https://www.hamradio.com/> and at: DX Engineering <https://www.dxengineering.com/>.

<sup>7</sup> The Bencher BY-1 is shown at:

<https://vibroplex.com/contents/en-us/d67.html>.

They are available at the same URL or at: Ham Radio Outlet <https://www.hamradio.com/>

and at: DX Engineering

<https://www.dxengineering.com/>.

<sup>8</sup> Unfortunately, the Speed-X Straight Key shown is no longer sold new to my knowledge. For details on Nye-Viking Straight Keys, check ham radio classified sites or eBay.

<sup>9</sup> The MFJ-784B Tunable DSP Filter is available direct from MFJ Enterprises via their website at:

[https://mfjenterprises.com/products/mfj-784b?\\_pos=2&\\_sid=86b1cf31f&\\_ss=r](https://mfjenterprises.com/products/mfj-784b?_pos=2&_sid=86b1cf31f&_ss=r)

or from most ham radio dealers, such as: Ham Radio Outlet at:

<https://www.hamradio.com/>.

© **W9MXQ**



# Running CW with Vintage Solid State Radios Using the Unified Microsystems XT-4 MK2 Memory Keyer

de: Bill Shadid, W9MXQ



The Unified Microsystems XT-4 MK2 has been a real turning point for me in running CW with my solid-state Vintage Radios. In this month's Vintage Amateur Radio article, you saw the little Unified Microsystems XT-4 MK2 being used with the Ten-Tec Corsair II here at W9MXQ. In a recent article, you saw me making CW contacts using this same XT-4 MK2 with a Drake TR5. For most POTA (Parks on the Air) CW contacts the exchange is minimal. You need to recognize your call, of course, which the POTA station will send back to you when he hears your call. For that initial call, I have "W9MXQ" programmed into Memory 1. When the POTA station calls you, he/she will provide a signal report. I program Memory 2 with my standard reply of "DE

W9MXQ 599 599 MKE WI KN" or "DE W9MXQ 5NN 5NN 5NN MKE WI KN" would also be acceptable. If needed, I have "TU 73" in Memory 3. Depending on band conditions, I may think it improper to provide a 599 report. So, in those cases the keyer portion of the XT-4 MK2 comes into play when I send a different report, manually.

For making my own calls, I have a regular "CQ" call with my call letters programmed into Memory 4. I have done that a few times – cringing at my current skill level that the caller will be wanting an extensive conversation. But, I have survived just fine. The XT-4 also is a traditional keyer with speed set the SPEED control. That speed control also translates to the speed at which the memory data is sent.



Programming the memories is easy, too. Taken directly from the Unified Microsystems XT-4 MK2 Manual:

With the power turned "ON" the XT-4 MK2 Memory Keyer:

- 1) Press the REC button. The LED will blink rapidly.
- 2) Press a message button (1, 2, 3, or 4) that you wish to record. The LED will come on without blinking.
- 3) Start sending the message you wish to record with the paddle. The XT-4 will not begin recording until the first dit or dah is sent.
- 4) Press the REC Button to stop recording. The LED will go out. Press the REC board as soon as possible after you finish sending the message. This will minimize recording dead time at the end of your message.

The Unified Microsystems XT-4 MK2 (and its predecessor, the XT-4) is only designed for keying solid-state radios. Be advised that grid block keying or cathode keying a tube transmitter will damage or destroy the Keyer.

The XT-4 or XT-4 MK2 is not designed to key a vacuum tube transmitter. Grid Block Keying or Cathode Keying often used with vacuum tube transmitters is going to involve switching 90 volts – or even several hundred volts. Switching much over 12 volts is out of the question with most solid state electronic Keyers. Check this warning from the XT-4 and the XT-4 MK2 Manual:

“If you are unsure of your transmitter type, plug the CW cable into the transmitter but leave the other end free. Measure the voltage across the other end of the cable. Ground is the outer shell, and the inner pin is positive. The voltage should measure +5V to +12V. Do not use the XT-4 keyer with your radio if the voltage is negative or is more than 24V.”

The XT-4MK2 and other Unified Microsystems products can be found at <https://www.unifiedmicro.com/> for product details.

The wide variety of Unified Microsystems products are sold at:

Ham Radio Outlet – <https://www.hamradio.com/>

DX Engineering – <https://www.dxengineering.com/>.

I have run the XT-4 MK2 (and its predecessor, the XT-4) with the Drake TR5 and TR7, the Ten-Tec Corsair, Corsair II, and Omni VI, the Swan 100MXA, and the Cubic Astro 103 Transceivers. I tested each one per the note shown above to confirm compatibility. Obviously, any of the many modern solid state radios work fine with the XT-4 and XT-4 MK2. It is good to note here that the MK2 version of the XT-4 has some improvements like more memory and some additional special modes. I am sharing with you my own experience being a beta tester for the XT-4 MK2.

There are many power on options for different parameters that can be set up with the XT-4 MK2. Read the manual for details. I have only scratched the surface here with the capabilities of this product. For now, it is set up to meet my own level of expertise. As I progress, so will the Keyer!!

Are you doing CW in a POTA setup even with a modern radio? The easy to carry in your pocket XT-4 MK2 is a gem to program and use. It is a little gem. It's common 9V Battery will likely get you through many hours of operation – and, to lengthen battery life, it even puts itself to “sleep” when not being used.

Have fun – that is the name of the game, you know!!

# Upcoming Events

de: Tom Trethewey, KC9ONY

10/04/2023 – Nationwide Emergency Alert System Test (EAS)

<https://www.fcc.gov/general/eas-test-reporting-system>

10/20/2023 – Scouting Jamboree On the Air (JOTA)

October 20-22, 2023 (third full weekend in October)

<https://www.arrl.org/jamboree-on-the-air-jota>

<https://www.scouting.org/international/jota-joti/jota/>

11/04/2023 – Milwaukee - MRC91 Friendly Fest

<https://www.arrl.org/hamfests/friendly-fest-1>

11/05/2023 – Neenah - Fox Cities Amateur Radio Club, Inc (FCARC) Hamfest

<https://www.arrl.org/hamfests/fcarc-swapfest-9>

<https://www.fcarc.club/hamfest.php>



## **Ozaukee Radio Club Minutes of Membership Meeting. 9/13/2023**

**de: Jeananne Bargholz, N9VSV, and Bill Greaves, K9GN**

**for: Ken Boston, W9GA, Secretary**

The ORC meeting continues to be “hybrid” in nature. About half of the 28 attendees (15 members and 1 guest) were present and half (10 members and 2 guests) attended via Zoom.

ORC President, Bill K9GN, called the meeting to order at 7:30 pm and lead introductions around the room. He then gave the floor to Bill W9MXQ to coordinate introductions for Zoom attendees. Visitors were specifically welcomed.

**Announcements:** Although not present, congratulations were given to Tom W9IPR for another successful Fall Swapfest – good call on the weather, Tom! There were no other announcements.

**Program:** The program was presented by Bruce Smith AC4G who described his “DXpedition” on the Kwajalein Atoll in the Marshall Islands. Bruce spent three years on the Atoll with his family. Bruce discussed the many considerations that went into the planning and organizing of the trip. He also shared what it was like living on the atoll from family attractions and schools to how the weather affected the radio gear. Bruce’s presentation was well-received, and he graciously answered a number of questions afterwards.

**50/50 Raffle:** After a 5 minute break, Jeananne N9VSV conducted the 50/50 Raffle draw. This month’s winner was Gary W9XT!

**Auction:** Gary W9XT held the auction, which had only a few items.

### **Reports:**

- **President:** Bill K9GN called for volunteers needed to help Tom Trethewey KC9ONY setup of the audio equipment for the monthly meetings.
- **1<sup>st</sup> VP Report:** Jeananne N9VSV 1. Need volunteers for club table at HRO Superfest on September 22 and 23. 2. Club Swag (name badges, mugs, and hats) available. Contact Jeananne.
- **2<sup>nd</sup> VP Report:** Vacant
- **Repeater Update:** Tom KC9ONY provided a brief history of our 220 Repeater and then gave the floor to Gregg W9DHI to talk about the new 220 Repeater purchase (actually two repeaters purchased), along with custom cables. The “new” repeater includes a club owned SCOM Controller and a donated Astron Power Supply. The

repeater has the capability of a 2m link for our nets. Gregg was on Zoom and screen-shared a brief PowerPoint with pictures of the equipment.

- **Treasurer's Report:** Gary N9UUR provided the current report and account balances. Gary gave a preliminary report on the Fall Swapfest, in Tom W9IPR's absence. Gary also shared that our accounts at Cornerstone Bank will be transferred to the new Horicon Bank who purchased the Cornerstone Bank. Unfortunately, there has been little to no communication as to account numbers, checks, etc. The merger becomes effective September 18. Gary is monitoring this closely. Jim K9QLP motioned to accept the Treasurer's report; Todd N9DRY seconded; motion carried unanimously.
- **Secretary's Report:** No minutes/report for now.
- **STEM Committee:** No report
- **Technical Committee:** No report
- **Programming Committee:** Jeananne N9VSV - Our Program Calendar is set through November, but we have no additional programs scheduled after then. Would you like to talk about a recent project? Know of any presentations that the members might appreciate? Is there an area within amateur radio that you'd like to know more about? Jeananne is looking for ideas. The programs must be amateur radio related.

**Old Business:**

- No old business.

**New Business:**

- No new business.

**Adjournment:** Stan WB9RQR motioned to adjourn the meeting; Nate KC9TSO seconded; **Motion carried unanimously.**

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## Ozaukee Radio Club Minutes of Membership Meeting. 08/9/2023

de: Ken Boston, W9GA, Secretary

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:31 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. Bill reminds us that we still need help with the technical committee, and an auctioneer. [joking that the winner of the 50/50 raffle automatically becomes the auctioneer]

**Program:** This program consisted of a group of power point displays and photos from our recent Field Day outing. Submissions included pictures submitted by W9GA, W9XT, W9MXQ and W0NG. Our group site at Pleasant valley park was featured, and also home efforts were shown.

**50/50 Raffle:** This was won by Bill K9GN ; winning an award of \$8.00

**Scholarship Auction:** There was a small auction, with a 15A Bioenno battery, bought by Vic WT9Q. Also, items included a router, cables, SWR bridge, and an antenna book.

**Committee reports:** [there were no 1<sup>st</sup> VP, Tech, and scholarship reports.]

RPT VP: KC9ONY advises that the Germantown site is back fully operational.

Treasurer: Gary N9UUR [and N9VSV] being gone on vacation, did supply a report showing ORC is still quite solvent. No motion made, however.

Secretary: W9GA reported that the July 2023 minutes are posted, a motion to accept was made by KC9FZK; 2nd by W9DHI & carried.

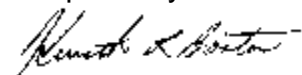
**OLD business:** W9IPR reminds every one of the upcoming fall outdoor SwapFest on September 9, and that he needs a few more volunteers, please add names to the list! Last year the fest was quite successful, so hoping for a repeat.

Tom mentioned that Ed Rate AA9W is now 91 yrs. old, but still active. W9KEY also reminded folks of the upcoming Lighthouse event and put out an invite.

**NEW business:** No new business

**Adjournment:** WB9RQR moved to adjourn, W9DHI 2<sup>nd</sup>, motion carried; time end was 8:33 PM. There were 20 in-person attendees, 11 Zoom attendees.

Respectfully submitted;



Kenneth Boston W9GA, Secretary

**Next Meeting: October 11, 2023 - 7:30 PM**  
**Program: Getting on the Air and Having Fun with Roving**  
**De: Jeananne Bargholz, N9VSV**

Janice Hoettels, KA9VVQ, and Bruce Richardson, W9FZ, have been active rovers together since they began dating back in 2012. When they married in 2014, Janice moved to Bruce's townhouse in Woodbury, MN (suburb of St. Paul), which is sadly not conducive to ham radio because of its HOA rules and regulations. While they have a small cabin in Hillsboro, WI where they have a "little pistol" 100W HF station with some wire dipoles up in the trees, it takes some scheduling in order to take advantage of the cabin and ham radio!

And this is where roving has played an important part in their enjoyment of ham radio and getting on the air.

"Roving has brought us great fun and some wonderful adventures, and this is what we'd like to share with the ORC. And maybe--just maybe--some ORC meeting attendees who find themselves with similar fixed station restrictions, might consider roving as a way to finally GOTA!"

Janice has been a ham since 1986. She is a former member and officer of the Ozaukee Radio Club. Presently, she is a club officer of the Northern Lights Radio Society (NLRS). The NLRS is a large organization of Upper Midwest amateur radio operators who are active in weak signal SSB, CW, and digital work on the VHF, UHF, and microwave bands.

She, like Bruce, is an active contester on HF, VHF, UHF, and microwaves!

Bruce has been a ham since 1977. He is the founder of the Badger Contesters and is an active member and officer of the Central States VHF Society.



**Bruce, K9FZ, and  
Janice, KA9VVQ**

## Upcoming Meeting Programs:

**November 2023: 8 November 2023, 7:30 PM**

Carl Luetzelschwab, K9LA  
ARRL Director, Central Division,  
HF Rules Petition - Shortwave Modernization Coalition”

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**December: 13 December 2023, 7:30 PM**

Gregg Lengling, W9DHI  
Club 220 Repeater System History and Upgrades 1988 to Present

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### Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

Contact Jeananne Bargholz, N9VSV, at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com) to discuss your idea for a program.

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## ORC Meeting Agenda

October 11, 2023

1. 7:15 – 7:30 PM  
Check-In and Introductions
  2. 7:30 PM Call to Order:  
President Bill Greaves (K9GN)
  3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
  4. Janice, KA9VVQ, and Bruce, W9FZ  
Getting on the Air and Having Fun with Roving
  5. President's Update:  
Bill Greaves (K9GN)
  6. 1<sup>st</sup> VP Report:  
Jeananne Bargholz (N9VSV)
  7. Repeater VP Report:  
Tom Trethewey (KC9ONY)
  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
- 



# The Back Page

**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
11 October 2023**

**Program:  
Janice, KA9VVQ, and Bruce, W9FZ  
“Getting on the Air and Having Fun  
with Roving!”**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
8 November 2023**

**Program:  
Carl Luetzelschwab, K9LA  
ARRL Director, Central Division,  
HF Rules Petition  
Shortwave Modernization Coalition**



## 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.



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

Volume XLI

November 2023

Number 11

## From the President

de: **Bill Greaves, K9GN**



Happy November – what a wild weather swing the last couple of weeks. One week started with nearly 80 degree sunny weather and ended more than 30 degrees less. Then a few days later the first snowfall of the season graced our lawns. I do enjoy the change of seasons!

As you have probably seen, the ARRL requested supportive comments to the FCC on the continued use of the 60-meter band. The ARRL encourages expressions of support to the FCC for the current 100 E ERP power limit (instead of reducing the power limit to 15 W EIRP) and continuing secondary access to the current channels. The deadline for 60-meter comments has been extended to November 28, 2023. It is a fact of life that regulatory agencies examine not only the quality of comments but also the quantity of supportive comments. I encourage you to

go to <https://www.arrl.org/60-meter-band> to find instructions on how to submit comments and to locate background information on the issue. Any supportive comment is better than no comment.

Please note a new date for the Spring Swapfest: Saturday, April 27, 2024. Please put this date in your calendars now. We have been on a string of successful Swapfests – both Spring and Fall – for several years due to the efforts of many club members, particularly the two Toms: Tom Trethewey KC9ONY and Tom Ruhlmann W9IPR. We thank you both! Our Treasurer, Gary Bargholz N9UUR, deserves a shout-out for his efforts over the past couple of months navigating the sale of Cornerstone Bank to Horicon Bank. We had been using Cornerstone for some time. While the sale itself may have been smooth, assuring our several accounts are properly accounted in the Horicon system has been exciting (!) for Gary. His many communication and detailed bookkeeping efforts have successfully produced accurate new accounts at Horicon. Thank you, Gary.

The club membership will gather on Wednesday, November 8th, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. As always, I look forward to seeing you there.

73,  
Bill K9GN

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**Daylight Savings Time Ends – 2:00 AM, local time, 5 November 2023.  
Move Clocks back one hour at 2:00 AM!!**

# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

Tom Ruhlmann, W9IPR, starts us out with a nice article on a project to organized the tools in his shack. Interesting idea – take a look at Page 5.

Check out Don Zank, AA9WP, in his Ozaukee County ARES column this month. A special update on the recent Section Emergency Test (SET) and Ozaukee ARES involvement. Interesting reading. Want to know more about ARES? Contact Don at:  
[AA9WP@ARRL.net](mailto:AA9WP@ARRL.net)

Stan Kaplan, WB9RQR, maybe jumps the gun on the holiday giving season. Did you ever think of giving your Main Mahine a Gift? Details in Stan's 308<sup>th</sup> consecutive Cpm,ute4r Corner Article.

Gary Sutcliffe, W9XT, is back with his On the Air Activities column – starting on Page 12. Gary gives us a good head start on the busy winter contest season. Also see information on recent Federal Communications Commission activities. Some of this stuff has real potential to negatively impact ham radio. Read Gary's material and also be sure to attend next week's meeting presentation by Carl Luetzelschwab, K9LA. See further details on the meeting within the article by Jeananne Bargholz, N9VSV, Page 34.

Your Editor, Bill Shadid, W9MXQ, has his regular Vintage Amateur Radio column discussing the Hallicrafters SX-117 Receiver and HT-44 Transmitter and all the available accessories offered for it back in 1963 through 1965. This pair has been with W9MXQ since the late 1960's. Check this article beginning on Page 20.

Tom Trethewey is back with his Upcoming Events column. Check Page 32.

Details of the October Ozaukee Radio Club are outlined in the Minutes of that meeting provided by our Secretary, Ken Boston, W9GA. See Page 32.

Jeananne Bargholz, N9VSV, our Program Committee Chair (in addition to being 1<sup>st</sup> Vice President), outlines the speakers and their topic for next week's meeting. Take a look at information on our speaker, Carl Luetzelschwab, K9LA, ARRL Central Division Director.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

Check out the Table of Contents:

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7	<b>Don Zank, AA9WP, OZARES – Ozaukee County ARES</b> Simulated Emergency Tests – or – SET
10	<b>Stan Kaplan, WB9RQR: Computer Corner</b> No. 308: Give Your Main Machine a Gift
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**Onward To the Newsletter**

# Projects, Tools, and Tip's

de: Tom Ruhlmann, W9IPR

I have often thought that there are far more projects in process or completed (sometimes) within the club than the membership is aware of and from which the rest of us can learn or become inspired to start our own project. Further, what about the various tools different members have bought, borrowed, or devised to complete a project? And where do you keep those tools so you can find them when needed?

That brings me the point of hand tool storage.



Normally I kept my electronic hand tools in a tool box near my bench in the “radio room.” Typically, when I needed a specific tool it “might” be in the tool box and if so, it took a while to actually find it. On a recent visit to Harbor Fright, I noticed some magnetic rails like the ones I use to hold my wood working chisels next to the lathe and then it struck me. They were only about \$5.00, and I could use several to hold my electronic hand tools.

But where do I place them near my work bench?



Years ago, when we remodeled the kitchen, I saved the wood cabinets and hung them in the “radio room.” On the outside of the cabinet doors seemed like a good accessible place to keep my hand tools as you can see in the photo.



I liked the idea so much I decided to use some of the doors to store several spools of lead wire for easy access when needed. All that was required were several screw hooks (with long shanks) and some dowels. Again, you can see the result.



## OZARES: Ozaukee Amateur Radio Emergency Services

by Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arrl.net](mailto:aa9wp@arrl.net)



The first weekend in October means it is time for the Simulated Emergency Test or S.E.T. The S.E.T. is a nationwide exercise sponsored by the ARRL for the Amateur Radio Emergency Services, ARES®. This is an opportunity for communicators to test the capabilities of their stations and skills as operators. Now is the time to find any weaknesses in performing emergency communications.

The S.E.T. follows the National Preparedness Month of September. During the month, individuals, families, businesses, and organizations are encouraged to review their abilities to be prepared for emergencies. Information about preparedness can be found at: [www.ready.gov](http://www.ready.gov).

This year the S.E.T. was scheduled for October 7 and 8. However, due to schedules with several members, the OZARES exercise was conducted a week later on October 14.

Roland, KB9TMB, spearheaded the exercise for our group putting together a working schedule, and frequency plan, operating as net control, and tracking our results. He did a great job.

One of the aims of the Simulated Emergency Test is to create, maintain, and strengthen working relationships with served agencies and partners. This year, for the first since the pandemic, OZARES operated from both Ozaukee hospitals. Art, AC9CD, worked from Ascension St. Mary's in Mequon, and Dave, KD9JYL, operated from Aurora in Grafton. We were joined by John, NO9X, from the Sheboygan Aurora hospital.

Another first was working with the Red Cross station in Milwaukee. Steve, WI9ARC operated the station and had a very good signal into Ozaukee County.

On the technical side, WINLINK capabilities were also included. The two gateways in Ozaukee, WI9OZ-10, located at our radio room in Port Washington, and WI9OZ-11, located at Saukville Village Hall received and forwarded both packet and VARA WINLINK messages. Members checked into the exercise using the WINLINK check-in form that uses the mapping function. This allows members to pinpoint the locations of all checked-in members by using either the mapping function or generating a text list.

VARA HF WINLINK was used in the exercise to pass messages by using gateways outside of our local area.

Other members who participated include Cindy, KA9PZG, Markus, KD9UWG, and Tony, AD9BR.

We do have two locations that were able to hear all our simplex operations. The Aurora Hospital in Grafton, and KA9PZG's, also in Grafton. This is one of the lessons learned from the exercise. Some stations, including mine, need to increase the height of their antennas to improve simplex operations.

Operations using emergency backup power were encouraged during the S.E.T.

We did learn some important lessons this year and have established goals for next year. One of the important goals established for 2024 is testing our message-handling competency. OZARES did a nice job of testing our communication effectiveness within Ozaukee County stations and at the Red Cross office in Milwaukee. However, an important element during emergency operations is the proficiency of the operators to pass and handle messages between the served agencies and partners.

As well for next year, the Public Health office in Port Washington should be included in the exercise.

Last year we used the texting function that is part of WINLINK Express for alerting the operators of the exercise but failed to include it this year. That will not happen next year!

This year we missed working with our neighboring counties and organizations in the exercise. Operating the first weekend of October will be a priority.

OZARES operating skills and equipment for the HF bands will also be added to the exercise. The State Emergency Operations Center in Madison and the Badger Emergency Net are operating on the HF bands during the exercise. It would be a good test of our HF station to see if we can contact both nets.

Improving our operating skills and stations will be on-going goals for OZARES for 2024. This means all year not just for a weekend in October. Looking forward to the Simulated Emergency Test in October 2024.

73,  
Don, AA9WP  
OZARES Emergency Coordinator

WI9OZ Repeater  
147.330 + pl 127.3  
WI9OZ WINLINK Stations; VARA and Packet  
WI9OZ-10, Port Washington, and WI9OZ-11 Saukville, 145.610  
Nets: First and second Thursday, and on 5 Thursday months, the 4th Thursday; 1900 local time



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### **OZARES Repeaters:**

- **147.330 MHz (+ Shift) (127.3 PL)**
- **443.525 MHz (+ Shift) (114.8 PL)**

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### **ORC Repeaters are On the Air Awaiting Your Call:**

- **146.97 MHz (- Shift) (127.3 PL)**
- **224.18 MHz (- Shift) (127.3 PL)**
- **443.75 MHz (+ Shift) (127.3 PL)**

## THE COMPUTER CORNER

### No. 308: Give Your Main Machine a Gift

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



Nancy (KC9FZK) suggested that a holiday gift for your main machine, be it laptop or desktop, might well be a topic to explore in the Computer Corner. So, we thought about that for a bit, and came up with a couple of ideas for you. These would be items you don't have, or don't have enough of, that would make your computing life easier and more productive, without breaking your personal bank.

My first thought was an increase in memory. If you are running Windows 10 or 11 presently and have less than about 8 GB of RAM on board, you are very likely to see a noticeable increase in speed and efficiency by kicking the RAM up to 12 or even 16 GB. Currently, about 16 GB on board is fairly well accepted as a "sweet spot" for all usual Windows mortals except perhaps the most avid gamer. Just as an example, for a desktop you can get 16GB (2 X 8 GB) DDR4 RAM for as little as \$29.97. If you have 2 empty slots now and a couple of 2 GB sticks already, \$30 would bring you up to 20 GB total, well over the sweet spot and enough for just about any heavy jobs you might have. While a Linux machine will work along nicely with as little as 3 GB of RAM, it will really smoke if you bring it up to 6 or 8 GB.

On the other hand, while an increase in RAM would be a good thing, it may not be that easy. If your main machine is a laptop, it will take only 2 SODIMMs, the **Small Outline Dual In-line Memory Module** boards that constitute RAM in laptops. So, you need to see what is already there. The easiest way for that is to get the free program CPU-Z from MajorGeeks (<https://www.majorgeeks.com/> - just ctrl-click the highlighted hyperlink shown here and search for CPU-Z, then download and run it). CPU-Z will tell you exactly what you have and how much. Then, the easiest path is to do a search for, download and run Crucial System Advisor or Kingston Memory Finder (Crucial and Kingston are companies that sell memory) to see what is available from them to increase or upgrade what you have at present. Be aware that you can get snarled in the fine points of different types of memory, and it can drive you crazy! Unless you want to engage in those topics (and you will learn a lot in the process), the easiest path is to run both Crucial and Kingston programs and follow what seems to be the best (and least expensive) path, be it an upgrade for a laptop or a desktop. But you can rest assured that if you get up near or to that sweet spot or more, you will see a difference in performance, without spending a whole bunch of money.

A second possibility is a nice change that will definitely not cost a bunch; a wireless keyboard and mouse combination. If you don't already have this setup, it is almost assuredly because you are set in your ways, and you have been too lazy to try it. You can get a Veilzor wireless mouse/keyboard combination for only \$17.99 at current listings (Oct 23), compatible with Windows, Linux and even Mac. And there may even be a 5%-off coupon available on top of that low price, so look for one if you order. If you want a more familiar name brand, a Logitech MK270 wireless keyboard/mouse combo for Windows will cost you only \$27.95, but, use caution if you wish to use it with both Linux and Windows. The older models M-R0038 mouse and Y-R0015 keyboard that come with some of these combos may not work with Linux, so check that out and read the specs before you order. Don't hamper yourself by buying a model that will not work with all operating systems; you may find later that you want a Linux-compatible setup as well as one that works with Windows and Mac.

In my experience, you will not miss those two cables from your desktop no matter what brand you go with. On the other hand, be prepared to put in fresh batteries about every 3-6 months (even if they tell you that batteries last a year), typically a single AA or AAA in the mouse and two AAA in the keyboard. Have spares handy when the old ones give out, so your work flow is not disturbed – it takes only seconds to switch batteries so long as you don't need to go to the store to buy new ones! Yep, it is worth it to lose the cables.

Nancy suggested an addition that can be considered frosting on the cake. Get your system a new mouse pad – it will cost little or nothing. Sure, you can get a free one as a giveaway from any number of stores, but why not spend \$3-5 or so for one with a really good looking printed surface? Impress your significant other and make your working area a bit nicer. Do use a mouse pad; it makes for a smoother cursor on the screen.

One more suggestion from wife Nancy. Do some significant cleaning. Oh, not physical cleaning of the computer – that was covered in Cc304 (last July) and earlier in Cc259 and Cc137. Rather, we are talking about cleaning of files to make more storage space, by moving off really old pix from the hard drive onto DVDs, so that there will be more space for pix you burn during the holidays from your cell phone and move to your computer. That way you won't be caught with nowhere to move snapshots of family and friends that you can conveniently access with a moment's notice. And those old pictures will safely reside on DVDs, filed and secure for at least five or more years. Yes, they should last that long or more, in my experience; I have some CDs that are still perfectly readable 24 years after burning (just keep 'em away from light). Need burning software? There are a myriad of excellent, no cost packages, but the one I have found that works simply and consistently and beautifully is BurnAware Free. Get it with a search, after clicking the MajorGeeks URL I embedded earlier in this article. And Happy Computing!

# On The Air Activities!

de: Gary Sutcliffe, W9XT



Activity and conditions on the HF bands were really good in October, especially in the first half. The sunspots dropped off in the second half, but conditions don't change much from short-term sunspot count levels. So even with the daily solar flux index (SFI) being at 161 at the start of the month, conditions at the end at 128 were still pretty good. The other part of the equation is the geomagnetic field, which was disturbed at the end of October. More about that later.

## DX Reports

As mentioned above, conditions in October were good for working DX. The large number of DXpeditions to relatively rare countries created plenty of targets. I picked up about a dozen new band countries and a few new digital countries. Most of them were on 12 meters. That band has been poor for many years, so I have not had the opportunity to work much DX there.

Gary, K9DJT, worked 229 DX stations in October and says that might be the most DX he worked in one month. He really covered the W8S Swains Island DXpedition, working them on all bands 160-10 on FT8 and 10, 12, and 15 meters on CW.

Six meters has been a pleasant surprise too. We had several days with openings into South America. K9DJT picked up new countries of Paraguay and the Falkland Islands, which were the ones he was most happy with. I missed them but worked New Zealand for the first time on 6 meters.

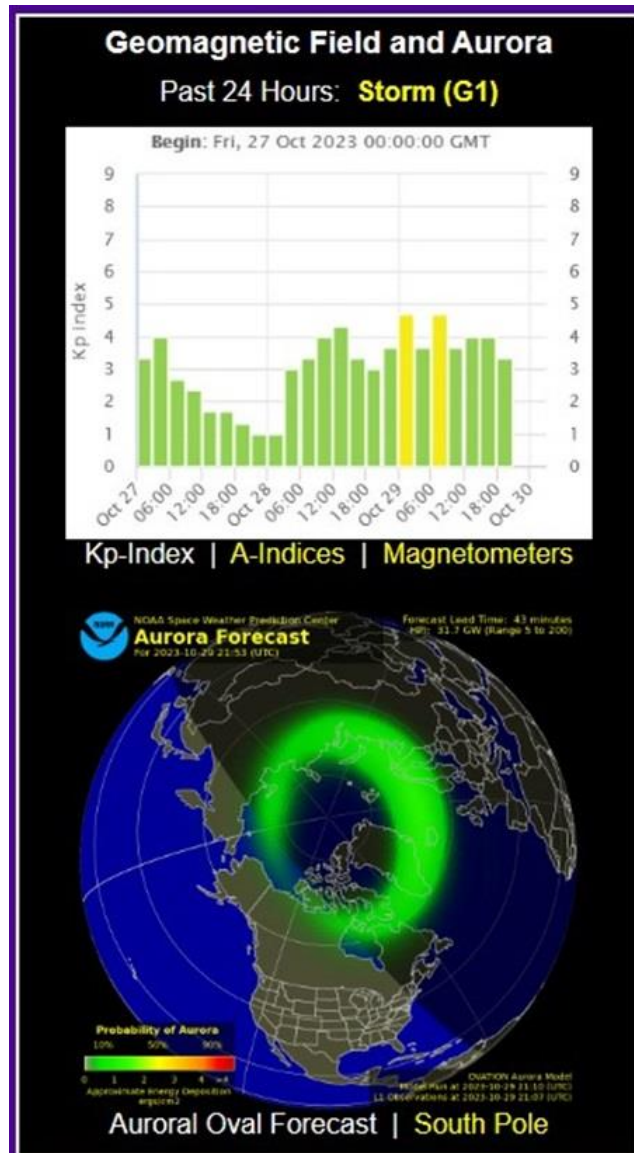
Gary's Paraguay QSO was interesting. I saw Gary working the ZP station on FT8 but had no copy here. Just as I got my first decode, Gary reported he was not getting any decodes anymore. I was getting decodes for a few minutes but could not make a QSO. Meanwhile, Noll, W9RN, a friend of Gary and me in Franklin, was not getting any decodes. Noll finally got a decode at the same time I got my last decode. Later, another friend of mine in Illinois, Mark, N9UM, started decoding the station. The propagation was like a small spotlight that moved south. Six meters is like that.

Gary, N9UUR, also reported a great month of October. He added ten ATNO (All Time New Ones) DXCC countries. Some of them were worked on four or five bands. Gary goes on to say that he never heard of some of the places he contacted. He and Jeananne have a large world map on the shack wall. He said he and Jeananne were referring to it constantly.

Gary said the W9ODD DX cluster was a big help in finding new ones he needed. It is linked into his logging program to identify needed countries. He also mentioned using PSKReporter to see where the band was open, plus DXSummit for additional DX reporting.

Thanks to Gary and Gary for sharing their DX accomplishments this month. You don't have to be named Gary to work DX, but apparently, it helps!

### CQWW Phone



K Index during CQWW Oct 28-29 (UTC) weekend.  
From solarham.net

Last month, I suggested you check out 10 meters during the CQWW Phone contest on October 28-29. I promised the band would be packed with European stations from 28.300 through at least 29.000 MHz mid-morning. Well, if you did, that is probably not what you heard. Was Gary lying, or just didn't know what he was talking about?

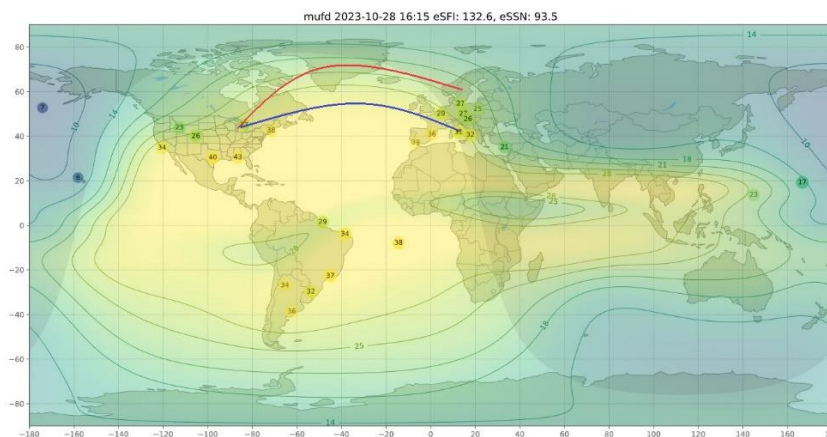
Well, I was not lying, and you must decide for yourself on the latter question. But the 10 meters band was packed with Europeans. We just could not hear them here in Wisconsin.

The problem was that the geomagnetic field was disturbed along with some drop in the solar flux. The drop in solar flux reduced the MUF, the maximum useful frequency. That is the highest frequency where the ionosphere refracts signals back to Earth. A disturbed geomagnetic field expands the auroral zone over the poles, which results in the absorption of signals on polar paths to Europe and the Far East.

Signals that don't go through the polar regions are not affected much. In fact, a small jump in the K index can temporarily improve conditions in non-polar paths. The chart shows the K index over the CQWW weekend. Values of 0-1 mean good conditions, and 3-4 are poor conditions. Values of 5 or more indicate bad conditions and can result in visible auroras.

Ionosondes are special instruments that send radio signals straight up and look for reflections back from the ionosphere. They sweep the frequency during data acquisition. The highest signal frequency returned is called the Critical Frequency ( $F_o$ ). This frequency will be much lower than the MUF. For example, on Monday morning of October 30,  $F_o$  was about 7.7 MHz, compared to a 300 km MUF of 25.8 MHz at the Alpena, MI station, the closest one to us. MUFs are calculated from  $F_o$ .

As you can see, the K index jumped up shortly after the start of the contest. Any signals that travel through the green aurora zone will be attenuated. The disturbance was caused by coronal holes allowing charged particles from the sun to reach us.



**MUF chart from prop.kc2g.com. Great circle paths (red and blue lines) were added by the author. The dots with numbers are reporting ionosonde stations with the calculated MUF above them.**



The lower solar flux reduced the MUF somewhat. The second graphic shows MUF on Saturday morning, October 27. The MUF chart is sort of like air pressure on a weather map. This map is created from data from ionosondes located around the world.

There are ionosonde stations around the world, but there are areas with few stations and none in the middle of the oceans. The MUF charts use interpolated data, so you should take them with a grain of salt. However, they do give a valuable estimation of current propagation paths.

I added the paths from SE Wisconsin to Finland and Italy with red and blue lines. If you follow the path to Finland, you see it crosses into areas where the MUF is around 22 MHz, so it would not support 28 MHz 10 meter signals, even if the disturbed aurora zone didn't absorb the signals.

Signals to Italy follow a more southern route, and the MUF was above 28 MHz. Most European stations I worked that weekend were to western countries like France and Spain and southern ones like Italy with lower latitude paths. I worked very few stations in the northern or eastern parts of Europe.

On the other hand, the East Coast had a larger range of paths that avoided the auroral zones and were running stations we could not hear. For the record, some were operating over 29 MHz, and I did work a few stations over 29 MHz, so the band was packed. Just not here.

As you can see, the MUF to the south is much higher. The sun ionizes the atmosphere more in the tropics in the same way it heats the air more in lower latitudes. Signals to South America were strong.

I only worked one Scandinavian station, one in Finland. Sometimes, we get openings to the northern part of Europe in the early afternoon after their sunset. If I don't work stations in Norway, Finland, Sweden, etc., during the regular daylight opening, I make a point to listen for that opening.

In the end, I was disappointed. I had 50 fewer QSOs than in 2023. I ran low power, 100 watts, which made it more difficult.

The CW weekend of CQ WW is coming up at the end of November. Will conditions improve by then? Hopefully, but we have one thing working against us. The sun rotates once every 28 days. That means that what we see now can return in a month. But things change. We might have more sunspots, and maybe the coronal hole that caused us fits during the phone weekend will disappear. Cross your fingers!

### **FCC Activity**

A couple of things are on the FCC agenda in November. The first is the deadline for filing comments on the 60 meter band has been extended to November 28. Currently, the 60

meter band is channelized and has a power limit of 100 watts PEP ERP. The FCC proposes replacing the five channels with a single 16 kHz wide band with an ERP of only 9.15 PEP watts.

The ARRL proposal is to add the new 16 kHz segment, keep the current four channels outside that segment, and leave the power limit at 100 watts PEP ERP.

The ARRL urges all amateurs to file comments with the FCC supporting the ARRL plan. More information can be found at <https://www.arrl.org/60-meter-band>.

The other item of interest is that the FCC will finally vote on the proposed changing the rules governing digital signals. Our current regulation is based on symbol rates. This goes back to post-WWII when the only digital type mode was RTTY.

Technology has improved, and many clever methods have been developed to squeeze more data in narrow bandwidths. Regulations that are based on bandwidth are long overdue.

The new rule would allow modulation techniques confined to a 2.8 KHz bandwidth. Such a regulation would encourage the development of new technologies for more efficient data communications. More information is available at: <https://www.arrl.org/news/fcc-to-vote-on-removing-symbol-rate-restrictions>

## **Contests**

We are into the fall contest season that started with CQWW Phone at the end of October and runs until mid-December.

The ARRL Sweepstakes happen in November. The CW event starts Saturday afternoon on November 4<sup>th</sup>. The phone event is two weeks later, on November 18. I covered operating that in last month's newsletter. Remember to update your logging program to recognize the new ARRL section multiplier.

The last weekend of November is the CQWW CW contest. The description for the phone weekend in the previous month's column covers this contest.

The ARRL 160 Meter Contest starts on Friday afternoon local time. It is becoming one of my favorite contests. The drawback is that I am not a night person. I usually operate until after European sunrise, a period where signals on the low bands are typically enhanced. I then try to get up about an hour before our sunrise.

We send a signal report, and our ARRL section (WI), but DX stations only send a signal report. Contacts with other W/VE stations are worth two points, and DX stations count for five points. DX stations only work US and Canadian stations. Multipliers are ARRL/RAC sections and DXCC countries.

## **DXpeditions**

October was the best month for DXpeditions in a very long time. Excellent propagation and so many operations kept DXers busy. November will continue with a lot of new DXpeditions.

One that was not on my radar last month was Botswana. A group of European operators will use the call sign A25R. They showed up a few days before the end of October and will be there until November 13.

TJ9MD will be active from Cameroon with over a dozen operators. No one has operated from this West African country since 2018, so there will be a lot of demand for contacts. They will be there November 2-15.

One I need is Cocos-Keeling, an Australian possession. This island group is a tough path from Wisconsin, so I need it on several bands. It is located northwest of Australia and is actually closer to Indonesia than Australia. Unfortunately, the Japanese group using the callsign VK9QO will focus on satellite operation but plan some 80-6M activity. The dates are November 3-7.

A large group of French hams will visit Marquesas November 4-19. The callsign is TX7L. This South Pacific island is in an area with good propagation and should be workable on the low bands through 10 meters.

Another group of French hams are also heading out. Their destination is Laos. They will be operating XW4DX from November 16-27. This is another country that is not frequently on the air. One major disappointment to US hams will be that they will not be allowed to operate on 80 meters. One popular but challenging award is the 5 Band Worked All Zones (5BWAZ). You need to work each of the 40 CQ Zones on the bands 80, 40, 20, 15, and 10 meters. Often, the last zone needed by US DXers is Zone 26 on 80 meters. Laos is in Zone 6 meters.

The main group for the Timor Leste operation, consisting of 20 operators, will last a month, November 5 through December 6. A small advance team was there a few months ago, scouting out the best locations. Timor Leste is a pretty new country, gaining independence from Indonesia in 2002. Civil unrest made visiting the area dangerous for many years of its existence, and ham activity has been infrequent. This operation should have a lot of demand, but a month of activity should allow everyone a chance to get it.

Another operation to an Australian possession occurs from November 21 through December 5. Two Scottish hams will be operating under the call VK9GXM on Christmas Island.

A small group of German hams will be in Micronesia December 4-16. The call sign is V6EU.

These are just the DXpeditions with multiple operators. There are many one person operations. Often, they are part of a vacation while operating during free time, which is sometimes scarce. Also, look for contest DXpeditions for the CQWW CW contest on the last weekend of November. They often arrive well before the contest to set up and operate to get a feel for propagation from the DX location.

A last minute addition was announced just before the newsletter. 708AD (SSB) and 708AE (CW/FT8) will be on from Yemen from November 3-16. Yemen has been difficult to work because of little activity. The last big operation there was in 2013.

## Events

The only hamfest in the area is the Friendly Fest on November 4 at the Elks Club on Good Hope Road, across from HRO.

That wraps up November. Between the contests and DXpeditions, there is little time for the rig to cool down.

**Check the following page for Operating Tips on a Separate Sheet**



## W9XT's Contest, Operating, DXpedition, and Special Event Picks for November and Early December 2023

W9XT's DXpedition picks for November and early December 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Botswana	To Nov 13	A25R	160-6	CSD	9 stations
Cameroon	Nov 2-15	TJ9MD	160-6	CSD	4 stations
Cocos-Keeling	Nov 3-7	VK9QO	80-6	CSD	Mostly satellite
Yemen	Nov 3-16	7O8AD 7O8AE	160-10	CSD	
Marquesas	Nov 4-19	TX7L	160-6	CSD	4 stations
Timor Leste	Nov 5-Dec 6	4W8S	160-6	CS maybe FT8	<a href="http://www.timor-leste-dx.de/">http://www.timor-leste-dx.de/</a>
Chatham	Nov 9-22	ZL7A	160-10	CSD	<a href="https://www.qrz.com/db/ZL7A">https://www.qrz.com/db/ZL7A</a>
Laos	Nov 16-27	XW4DX	160,40 -10	CSD	
Christmas Is.	Nov 21 - Dec 05	VK9XGM	80-10	SCD	
Micronesia	Dec 4-16	V6EU	160- 10, maybe 6	CSD	

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

W9XT's contest picks for November and early December 2023					
Name	Start	Length	Bands	Mode	Link
Sweepstakes CW	Nov 4	30, work 24	HF + 160	CW	<a href="https://arrl.org/sweepstakes">https://arrl.org/sweepstakes</a>
Sweepstakes Phone	Nov 18	30, work 24	HF + 160	SSB	<a href="https://arrl.org/sweepstakes">https://arrl.org/sweepstakes</a>
CQWW CW	Nov 25 0000Z	48 Hours	HF + 160	CW	<a href="https://www.cqww.com/rules">https://www.cqww.com/rules</a>
ARRL 160	Dec 3, 2200Z	42 Hours	160	CW	<a href="https://arrl.org/160-meter">https://arrl.org/160-meter</a>

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 November and early December 2023			
Event	Dates	Details	Link/notes
Friendly Fest	Nov 4	Elks Club, 5555 W. Good Hope Rd, Milwaukee	<a href="https://www.arrl.org/ham-fests/friendly-fest-1">https://www.arrl.org/ham-fests/friendly-fest-1</a>

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



As I write these installments about vintage amateur radio equipment, sometimes it is easy to get lost on their interesting and even innovative appearance and lose sight of what they were really like to sit in front of and operate. To that end, more and more installments will be on the use of the radios.

At W9MXQ, vintage are setup and run on what right now is a two to four week schedule, depending on how much I enjoy using them. This month I will cover a family of radios from my long time love affair with all the many products from The Hallicrafters Company. To begin that series, we will talk about using the premier Hallicrafters ham radio station from the mid-1960, the

HT-44 Transmitter and SX-117 Receiver – along with the several accessories that were marketed with the pair.



**The Hallicrafters HT-44 and SX-117 Station**

**W9MXQ Photo**

While you see the above picture as the main station and the subject of this article, it also included a very capable Linear Amplifier, the HT-45 “Loudenboomer.” The HT-45 was made by a Hallicrafters subsidiary, Radio Industries, Inc. Hallicrafters main offices and most manufacturing was in Chicago. Radio Industries was in Kansas City, the home town of Hallicrafters’ corporate owners, Northrup Aviation. Here is the complete station set up at W9MXQ when the HT-44 and SX-117 are operating with the matching amplifier:



## The Entire Line Supporting the SX-117 and HT-44 (The Hallicrafters Bread and Butter Line in 1964)

W9MXQ Photo

- Hallicrafters HT-45 HF Linear Amplifier – far left
- Hallicrafters HT-44 HF Transmitter – second from left
- Hallicrafters PS-150-120 Power Supply/Speaker – second from right
- Hallicrafters SX-117 VLF, LF and HF Receiver – far right
- Hallicrafters HA-8 Splatter Guard – atop the HT-44
- Hallicrafters HA-1 Electronic Keyer – atop the PS-150-120
- Hallicrafters HA-10 LF Tuner – atop the SX-117
- Astatic D-104 Microphone and UG8 PTT Desk Strand – out front, left
- Vibroplex VibroKeyer Single Paddle Key – out front, right
- Hallicrafters P-45 Power Supply (for HT-45) – out of sight, below the desk

The entire station, HT-44, SX-117, and HT-45 covered the 80-10 meter bands only. Some general coverage was available in the SX-117 only (see later in this article). The HT-45 Linear Amplifier was “legal limit” in RF power input, as defined at the time of its marketing in the 1963/1964 time frame. It was rated at 1,000 watts input – before the time, a bit later when it was agreed that 1,000 watts could be defined as average power input. That small phrase, “average input,” gave rise to the term, “2,000 watts PEP input.” That is a whole different subject.

A strong competitor to the Collins S-Line 32S-3 Transmitter, 75S-3 Receiver, and 30L-1 Linear Amplifier, the “Hallicrafters Twins<sup>1</sup>,” as Hallicrafters fans knew them, would operate separately or could transceive with the Receiver VFO controlling the operating frequency. The desk layout of the Collins and Hallicrafters were very similar, except that the HT-45 Linear Amplifier was not self-contained. Unlike the single unit Collins 30L-1 Linear Amplifier, the HT-45 relied on the floor or shelf mounted Hallicrafters P-45 AC Power Supply unit.

Hallicrafters was a study in different technologies in the late 1950's and 1960's. Where Collins opted for tight bandwidth mechanical filters<sup>2</sup> in the S-Line Receiver i-f filters, Transmitter signal generators, and KWM-2 series Transceivers, Hallicrafters had a mixture of phasing and crystal filter<sup>2</sup> signal i-f and signal generation. In the case of the SX-117 Receiver, however, Hallicrafters chose to stay with tried and proven capacitor-inductor tuned circuit filters in place of mechanical or crystal filtering.

The receiver performance differences were rather dramatic and showed positives and negatives for both the different technologies used.

<b>Receiver Bandwidth Selection Hallicrafters SX-117 Receiver vs Collins 75S-3 Receiver<sup>3</sup></b>				
<b>Received Bandwidth</b>	<b>Mode</b>	<b>-6dB (Hz)</b>	<b>-60dB (Hz)</b>	<b>Shape Factor (Calculated)</b>
Hallicrafters SX-117 Receiver	SSB	2500	11000	4.4:1
	CW	500	3000	6.0:1
	AM	5000	15000	3.0:1
Collins 75S-3 Receiver <sup>4</sup>	SSB	2100	4200	2.0:1
	CW	200	1250	6.3:1
	AM	4500	25000	5.6:1

Like many things in radio design, the above does not tell the complete performance story. Notice that the SSB bandwidth at the -6dB point is wider on the SX-117 than the 75S-3 but only by 400 Hz. That does indicate the clarity of the sound on one vs the other – with the SX-117 theoretically (and in real life, I might add!) being the better sounding radio. Its slightly wider bandwidth lets a wider sampling of the received voice. What does make a significant difference is the -60dB bandwidth. On the SX-117, that -60dB point shows an 11000 Hz bandwidth while on the 75S-3 that bandwidth is 4200 Hz. Those two numbers divided for each radio (such as 11000 / 2500 for the SX-117 = 4.4 and on the 75S-3 it is 4200 / 2100 = 2.0) indicate the Shape Factor of the filter function. A perfect filter would have a Shape Factor of 1:1, that is the -6dB and -60dB would be the same number. While effective, the sound would not be pleasant to this writer's ear. It would restrict some of the sound bandwidth that is pleasant to the ear. At the time of the radios shown here, the aspired Shape Factor was, in my opinion, 2:1.

*Special Note: Modern DSP and SDR based radios using software to determine filter Shape Factor, can and do attain 1:1 Shape Factor in some cases.*

While both radios were effective in their day, the Collins 75S-3 is most able to be useable in virtually all band conditions of today. The SX-117 would most certainly be more pleasant to the ear – but, alas, that is a subjective statement more to the individual user to determine. For this article and the subsequent use of the SX-117 and HT-44 station setup shown on the first page of the article, heavily QRM laden bands can overload the



receiver's i-f system. Coming from a time of 200,000 hams when the radio was designed to the 850,000 of today shows that the SX-117 was in keeping with its day in the sun. For the Collins S-Line user (75S-1, 75S-3, 75S-3B, and KWM-2 Transceiver) – in many ways they were ahead of their time. Still, on a nice winter afternoon, rag chewing on 40-meters is definitely more pleasant with the SX-117. And it's warm tones on CW have to be heard to be appreciated. "Every dog has its day," as they say.<sup>5</sup>

Hallicrafters did understand this design issue and took the path they thought best. Actually, the other radio in this group, the Hallicrafters SR-150 HF Transceiver,<sup>6</sup> used a crystal filter in its i-f on receive and transmit. It offered much better selectivity than the SX-117. Perhaps in a bid to hide the shortcomings of the SX-117, Hallicrafters did not publish the -6dB and -60dB selectivity specifications of the SR-150. And, a later model set of Hallicrafters Twins, the SX-146 and HT-46 did use a crystal filter in the receiver and even offered optional bandwidths. Unfortunately, the SX-146 and HT-46 were released at the time when separate receivers and transmitters were losing out to the transceiver in the world's ham shacks.

The HT-44 Transmitter produced 200 watts PEP input on CW, SSB, and AM (25 watts carrier on AM with linear modulation). Output power for CW and SSB was indicated as 100 to 130 watts. (This is per the HT-44 Operating Manual.) The all vacuum tube radio used a matched pair of 6DQ5 Sweep Tubes. These durable tubes had a reputation for solid and dependable performance. The pair in the HT-44 in this article are Hallicrafters branded – meaning they came originally with the transmitter from the factory. That was nearly 60 years ago.

Hallicrafters used the Phasing System to generate SSB signals (and the other modes by the way the circuit was handled. Known for instability and regular adjustment for carrier suppression, Hallicrafters "tamed the beast" and unlike its competition using this methodology, they had the carrier suppression controls inside the top cover – requiring the removal of four top cover screws to access the control. As long as all circuits are working correctly there is no need to access the multiple carrier suppression controls.

The HT-44 Transmitter had one feature that was primary – the ability to allow the VFO in the SX-117 to control the frequency of the HT-44's signal. That meant that the pair could transceive on the receiver's frequency – a feature that the Twins shared only with the Collins S-Line Receivers and Transmitters.

Note: Unlike later separate receivers and transmitters that could transceive together, the Collins S-Line and the Hallicrafters Twins could only transceive off the receiver VFO. Later radios, like the R. L. Drake R-4(x) and T-4X(x), could transceive from either the receiver or the transmitter VFO – at the immediate choice of the user.

It is interesting, from the point of view past 60 years after the SX-117 and HT-44 were offered, to discover that the first SX-117, produced almost a year before the matching HT-44 arrived on the market. The early SX-117 Receivers were found not to be able to match the frequency stability of the later, but matching, HT-44 Transmitter. Referencing

the HT-44 Transmitter Operating and Service Manual will show the procedure needed to modify three circuit areas in the SX-117 Receiver. Necessary parts were provided by Hallicrafters by contacting their Customer Service Department – as described in detail in the HT-44 manual.

Note: Bob Bailey, W9DYQ, always credited in my articles as proof reader and contributor, owns two Hallicrafters SX-117 and HT-44 sets of Twins. One of these has an unmodified SX-117 which exhibits more stability issues than the one that has been updated (or produced after the time the modification was incorporated into production units leaving the Hallicrafters factory). Bob would tell you that the transceive feature was of no consideration to him, as a 100% CW operator with the SX-117 and HT-44. Bob would attest to the superior CW prowess of the pair and the ease of setting offset when working with the receiver and transmitter operating separately. I can attest to this after using this pair to work several Parks on The Air (POTA) stations on CW with it. In this application, I used the separate VFO's to control receiver and transmitter.

Hallicrafters offered a CA-44 Cable that included a 29-inch control cable (11-pin Octal plug at the HT-44 end and three spade lugs at the SX-117 end). It also included two 29-inch phono cables made using RG-62/U coaxial cable. RG-62/U is 93-ohm cable that is about the diameter of today's RG-8X or LMR-240 coaxial cable. Instructions are also shown in the HT-44 manual for fabricating the CA-44 Cable.

The HT-44 Transmitter did not include a transmit-receive relay to feed antenna signals to the SX-117 (or other) Receiver. However, the HT-44 Manual did include instructions and a parts list to include this feature internally. The chassis was even punched to aid in the installation of the relay and necessary antenna connector line to the receiver.

Both the SX-117 and the HT-44 were very nicely designed inside to allow for easy work on components in most cases. The installation of the antenna changeover relay, for instance, was easy with plenty of interior space for the work. Hallicrafters used nearly 100% clear anodized aluminum for the chassis and internal support areas – using extra thick aluminum to keep attain a high degree of mechanical stability in the VFO area of both radios. Here, however, we come to the weakest link in the radio's design – the aluminum outer cabinet on the SX-117, the HT-44, the PS-150-120, and also the HT-45 Linear Amplifier. (The internal metal parts on the HT-45 were cadmium plated, conversion coated cold-rolled steel). In the 1960's, the production painting of aluminum sheet was not nearly as developed as it is today. Over the years, the pebble-texture, gray color cabinet paint tended to flake off with the slightest provocation. This was also true on other Hallicrafters radios of the era. The paint on this series (and others from Hallicrafters at the time) are all in very good condition – due to the previous owners' care and my own. Over time, I have matched the paint and used very small amounts to touch up problem areas and paint chips when they appear. The new paint not only matches the old application, but it also adheres much better to the surface and even prevents such damage from spreading.

Note: Collins S-Line radios also used painted aluminum cabinets. However, Collins

equipment from that period do not suffer from the same original paint issues as do Hallicrafters radios from the same time.

The SX-117 and HT-44 station could be equipped with several different accessories to expand the operational ability of the station. Described here, in my personal order of importance, are the HA-8 Splatter Guard, the HA-10 LF (Low Frequency Tuner), and the HA-1 Electronic Keyer.

### **The HA-8 Splatter Guard**

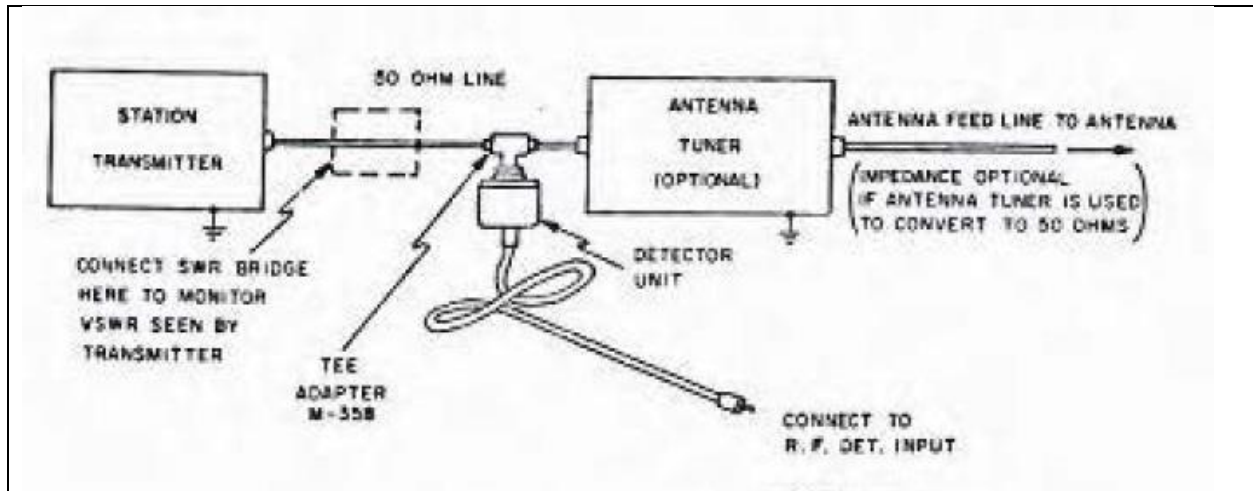
The HA-8 can be thought of as a modulation monitor. While not as capable as using a monitor scope (or specially connected oscilloscope), it did focus the user on monitoring the peak power of his/her signal. Note this front panel view:



**This is the Hallicrafters HA-8 Splatter Guard  
Sitting atop the PS-150-120 Power Supply/Speaker**

**W9MXQ Photo**

The HA-8 is installed in the feedline after the transmitter (or linear amplifier, if one is used) but before any antenna tuner. The SWR Bridge, if one is used, should be before the HA-8 in the feedline. Here is the installation, direct from the HA-8 Installation and Operation Manual plus information on the Detector Unit, a separate assembly that was included with the HA-8 when purchased:



And here is a close-up of the Detector Unit, shown in the diagram, above:



**Hallicrafters HA-8 Detector Unit**  
(Hallicrafters Part Number 150-005631)

W9MXQ Photo

These Detector Units were shipped with the HA-8 and included the coaxial “T” Adapter and a long length of Phono Cable – as shown above. The picture is an original Hallicrafters part number 150-005631 unit. They are ultra rare with collectors paying outlandish prices to get one. The one in the picture was found in my junk box. For this picture., I do not show the original Amphenol coaxial “T” connector installed as received. Shown is a modern day, AIM brand connector. When purchased this HA-8, I paid the seller who

wanted a small amount for the connector and said I could have the “little box and wire.” I was pretty sure I knew what it was – and took his offer. I had looked for one of these for many years. Those little detector boxers are almost impossible to find, today.

In the HA-8 Splatter Guard picture, above, you can see that the small screen from the 6FG6 Tuning Eye Tube shows a green indication at both sides of the readout screen. To use the HA-8, tune the transmitter to full power and gradually increase the SENSITIVITY control until the green bars close from left and right to touch in the center. As SENSITIVITY is increased and the two sides meet, a bright bar will show in the center. Now when modulating on SSB, the indicator will go from the sides to the center at full modulation. Adjust MIC GAIN on the HT-44 Transmitter until the bars from left and right just approach each other. If the bars touch and show a bright vertical stripe, the transmitter is just beginning to overmodulate.

The HA-8 works great with power levels of 40 to 1,000 watts output. There is a modification covered in the manual to allow operation down to 10 watts.

### The HA-10 LF Tuner

The Hallicrafters HA-10 LF Tuner serves as a Low Frequency Tuner for the SX-117:



**This is the Hallicrafters HA-10 LF Tuner  
Sitting atop the SX-117 Receiver**

**W9MXQ Photo**

In standard form, the SX-117 Receiver covers from 3.5 to 30 MHz. With the range crystals provided, it covers the 80, 40, 20, 15, and 10 meter bands. Plus, there is a position on the bandswitch to cover WWV at 10.0 MHz in a band that can hold a range crystal to

allow coverage from 9.5 to 10.0 MHz. (That crystal is optional – as are range crystals from 28.0 to 28.5, 29.0 to 29.5, and 29.5 to 30.0 MHz.)

Note: Radios in the 1960's were often missing coverage of the entire 10-meter band, but did provide for optional, additional coverage with the addition of proper band range crystals. At that time, the common portion of 10-meters with the most activity was 28.5 to 29.0 MHz – in the General, Advanced, and Extra Class allocation for AM and SSB. After the updates to the Technician Class License to include a 28.3 to 28.5 AM and SSB allocation, the common area of 10-meters changed – leaving some radios unable to make contacts with the newly dominant portion of the band.

The SX-117 was perfectly able to cover frequencies down as low as 85 kHz. However, its internal front end was not designed to tune that low. For coverage below 3.5 MHz, the use of the HA-10 LF Tuner was required. The HA-10 provided the front end tuned circuitry to allow coverage of those low frequencies.

For all non-ham band coverage (at the time) on the radio, a bank of four 500 kHz range crystal sockets was just behind the left side of the front panel – behind the XTAL SELECTOR switch. Not to be confused with crystal control of the radios, these allowed ranges of coverage anywhere from 85 kHz to 30 MHz in four user selected ranges. The oscillator for those crystals was in the radio – but the vacuum tube for that oscillator, a 6EA8, was not supplied. To be useable, the tube had to be installed in the provided socket.

The XTAL SELECTOR switch has five positions – the first being NORMAL, meaning the extra coverage crystals were not used. Then there were the four selectable crystal positions (numbered 1 through 4). Positions 1 and 2 could accommodate crystals allowing radio operation between 85 kHz and 14 MHz. Positions 3 and 4 could accommodate crystals allowing radio operation between 14 MHz and 30 MHz.

All was not roses with the HA-10 – it accommodated many amateur operators wanting to:

1. Listen to the Broadcast Band
2. Listen to 160 Meters
3. Have access to HF Shortwave Bands

The downside of the circuitry surrounding the HA-10 was that it fed the SX-117 Receiver after the front end RF Amplifier. So, while the SX-117 on the 80-10 meter bands could provide 0.5 uV Sensitivity on SSB and CW (1uV on AM), it could only provide 5 to 10 uV Sensitivity from 85 kHz to 3.0 MHz. (The circuitry in the HA-10 was only active in this range, from 85 kHz to 3.0 MHz.)

Just for clarity, the use of the HA-10 LF Tuner does require additional range crystals to be installed in the one, or more, of the range crystals controlled by the XTAL SELECTOR. However, the choice of those four crystal positions does not depend on the use of the HA-10 for frequencies of 3.0 MHz, and above.

## The HA-1 Electronic Keyer

Hallicrafters provided for the CW operator with the HA-1 Electronic Keyer:



**This is the Hallicrafters HA-1 Electronic Keyer**  
**Sitting to the right of the HT-44 Transmitter**  
**Shown with a Johnson Speed-X Key and Bencher BY-1 Iambic Paddle**  
**W9MXQ Photo**

The HA-1 was developed for use with an earlier generation of Hallicrafters equipment in the form of the SX-111 Receiver and the HT-37 Transmitter<sup>6</sup>. A later version of the HA-1 Electronic Keyer, the model HA-1A, is identical except that the two knobs match those on its partner transmitter, the HT-44.

Note: There is no other difference between the HA-1 and HA-1A other than the knobs. In fact, many hams using their HA-1 with the later Hallicrafters models, bought the later knobs to make their keyer match their radio. These knobs today are extremely rare and nearly impossible to find in good condition.

More correct would be to use the Vibroplex VibroKeyer Single Paddle Key in this application. But I use the current vintage Bencher Iambic Key because I like its feel. If you look at the picture at the beginning of this article, you will see the radio with the more period correct Vibroplex. The Speed-X Key shown is really there only to key the transmitter for tune-up.

Users of modern electronic keyers should note that electronic keyers from the 1960's were not Iambic<sup>7</sup>.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he nearly always adds commentary that makes it into the article. The SX-117 and HT-44 are also one of his favorite radio setups. Bob is a very nearly 100%, CW operator.

### **Credits and Comments:**

<sup>1</sup> "Hallicrafters Twins" as a term from collectors usually means the HT-44/SX-117 pair that would operate as a transceiving pair or as separate units. Hallicrafters followed the HT-44/SX-117 with the much less well known HT-46/SX-146 pair only about two years after the two or three life cycle of the original. The HT-46/SX-146 also would transceive off the SX-146 VFO or operate separately. Unlike the HT-44/SX-117 that used Phasing SSB Generation in the transmitter and tuned circuit receiver bandwidth control in the receiver, the HT-46/SX-146 pair both used crystal filters for those functions. While the later unit had a superior system in both units, the pair, looking back, seem not to have caught on with the amateur market.

<sup>2</sup> While mechanical filters and crystals are completely different devices, for our purposes here, they serve the same purpose for tight and effective bandwidth control and signal generation.

<sup>3</sup> Information is from individual Operating Manuals of the models shown. The Shape factor shown is calculated from bandwidth data provided in the respective Operating Manuals.

<sup>4</sup> There were other CW and AM bandwidth filters optionally available for the Collins S-Line Receivers.

<sup>5</sup> "Every Dog Has Its Day," is defined as: Everyone, even someone of low social status, has a moment of glory or an opportunity for revenge. Source of this explanation is: <https://writingexplained.org/idiom-dictionary/>

<sup>6</sup> I used an SX-111 Receiver and HT-37 Transmitter – and have written about them. They exist today with a friend of mine not too far away.

<sup>7</sup> I am not an expert on Iambic vs non-Iambic keying. I can, and do, use both but it takes me a bit to "get in the groove," so to speak, when changing between them. Let's let Microsoft Bing's AI Assistant describe it. I asked for it to "Describe Iambic Morse Code Keying." Here goes:



Iambic keying, also known as “squeeze keying,” is a method used in Morse code operation. It requires a dual lever paddle, with one lever dedicated to sending dits (short signals), and the other lever dedicated to sending dahs (long signals). Here’s how you can use it:

1. **Dits and Dahs:** Pushing the paddle one way sends a string of repeating dits, and pushing the paddle the other way sends a string of dahs<sup>2</sup>.
2. **Squeezing:** An “iambic” keyer uses two paddles side by side and therefore lets you press both at once (this is known as “squeezing” them). In this mode, dits and dahs will alternate.
3. **Alternating Dots and Dashes:** If both paddles are squeezed at the same time, the keyer responds by sending a series of alternating dots and dashes. The rhythm of these alternating dots and dashes is referred to as “iambic,” which comes from poetry where an “iambic meter” is a rhythmical pattern of alternating stressed and unstressed syllables.
4. **Starting Element:** The alternating dashes and dots begin with the dash if squeezed first on the dash side of the paddle and dots if opposite to that.

One more question for Bing’s AI expert had to do with something you will encounter in modern keyers – that is, Mode A iambic and Mode B iambic. Here goes that explanation:

Iambic mode A and mode B are two types of keying for Morse code using dual lever paddles. In mode A, the keyer will finish with the last dit or dah that it was sending and stop. In mode B, the keyer will add one more dit or dah opposite to the one that it was sending and stop. Mode B has dot or dash memory, while mode A does not. So, the difference between mode A and mode B is what happens when you release both paddles.

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# Upcoming Events

de: Tom Trethewey, KC9ONY

11/04/2023 – Milwaukee - MRC91 Friendly Fest

<https://www.arrl.org/hamfests/friendly-fest-1>

11/05/2023 – Neenah - Fox Cities Amateur Radio Club, Inc (FCARC) Hamfest

<https://www.arrl.org/hamfests/fcarc-swapfest-9>

<https://www.fcarc.club/hamfest.php>

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## Ozaukee Radio Club Minutes of Membership Meeting – 10/11/2023

de: Ken W9GA, Secretary

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:30 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. Brent, KD9YYK was introduced, as a new member and new ham, and was congratulated. Mike KD9GCN mentioned that he had brought several of the QSL cards he received from the recent Lighthouse event.

### Program:

Bruce W9FZ and Janice KA9VVQ travelled down from Minneapolis to give a program on VHF roving activity, and their exploits over the years. They mentioned Andrea K2EZ, who runs a rover that operates from 160M up to 10 GHz. Janice showed different configurations of rover setups and talked about rig and antenna choices. Being mounted on a car or truck, small yagis, and omni antennas were best choices. Also mentioned were operating events like the contests, and POTA, State QSO parties and the like. They also showcased some of their more memorable roving experiences.

**50/50 Raffle:** This was won by Ken W9GA ; winning an award of \$22.00 [thanx Steffi!]

**Scholarship Auction:** no auction held.

**Committee reports:** [there were no 1<sup>st</sup> VP, Tech, and PGM reports.]

K9GN did report that there are several ORC items, or 'swag' that are available; see N9VSV.

**RPT VP:** KC9ONY said that our 222 site is functioning better, thanks to W9DHI.

Treasurer: Gary N9UUR talked about some hiccups wherein our accounts at Cornerstone bank had been moved over to Horicon bank. [who purchased Cornerstone] Initially showing zero balances, they were corrected, and our money is 'safe.' Gary also proposed that some of our money in a MM account be moved into a CD for better return; the amount of \$5000 was suggested. Current balance sheets were motioned to be accepted by W9DHI, 2<sup>nd</sup> by KC9FZK and the motion passed.

Secretary: W9GA reported that the August 2023 minutes, plus the Sept 2023 meeting [via K9GN, N9VSV] were posted, a motion to accept was made by K9QLP; 2<sup>nd</sup> by KD9DRQ & carried.

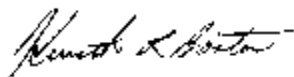
Scholarship: W9JI reports that there is little interest in the High Schools due to no lack of funds from large industrial donors; but found that the West Bend library could use help in funding STEAM kits. [the added A meaning 'Arts']

**OLD business:** W9IPR thanked everyone for helping with the fall Swapfest. Attendance was up 25% from last year, and the club profit was \$650. He also saw good participation from newer club members. W9JI remarked that the ID information to join the zoom version of the meetings was the same for every meeting and did not change.

**NEW business:** No new business

**Adjournment:** WB9RQR moved to adjourn, W9DHI 2<sup>nd</sup>, motion carried; time end was 9:08 PM. There were 27 in-person attendees, 11 zoom attendees.

Respectfully submitted;



Kenneth Boston W9GA, Secretary



**This Month's Meeting: November 8, 2023 - 7:30 PM**  
**Program: An Update on HF Trading Activity**  
de: Jeananne Bargholz, N9VSV

What is HF Trading Activity? Reasons, Implications and Where this Appears to be Headed. Join us for an important, timely presentation from Carl Luetzelschwab, K9LA, ARRL Director of the Central Division.



Carl Luetzelschwab, K9LA, began short wave listening in the late 1950s. He received his Novice license (WN9AVT) in October 1961, and selected K9LA in 1977. Carl is an electrical engineering graduate of Purdue University and was an RF design engineer for Motorola and Magnavox/Raytheon until his retirement in 2013. Carl enjoys propagation research, DXing (he's at the Top of the Honor Roll), contesting (he was Editor of the ARRL's National Contest Journal {NCJ} from 2002-2007), playing with antennas and restoring/using vintage equipment.

He and his wife Vicky AE9YL enjoy traveling, which has included DXpeditions to Syria (YK9A in February 2001), to Market Reef (OJ0/AE9YL and OJ0/K9LA in July 2002) and numerous trips to the Cayman Islands (Vicky is ZF2YL and Carl is ZF2LA). He has written monthly propagation columns for *WorldRadio* and *NCJ* and has written solar and propagation articles for many other Amateur Radio publications. In his spare time, Carl writes and manages his website -- [k9la.us](http://k9la.us) -- that offers a wealth of information on propagation.

Carl was the Vice Director of the ARRL Central Division from 2017-2021. He now serves as the Director of the Central Division and is on several of the ARRL committees.



# Upcoming Meeting Programs:

**December 13, 2023, 7:30 PM**

Gregg Lengling, W9DHI

Club 220 Repeater System, History and Upgrades 1988 to Present

**January 10, 2024, 7:30 PM**

Annual Meeting/Election of Officers

**February 14, 2024, 7:30 PM**

Jeananne Bargholz, N9VSV

Amateur Radio-Related Philately (Stamp Collecting)

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## Creating a Presentation

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together, contact Jeananne at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com).

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### ORC Meeting Agenda

*November 8, 2023*

- |   |  |
|---|--|
| 1. 7:15 – 7:30 PM<br>Check-In and Introductions                       | 6. 1 <sup>st</sup> VP Report:<br>Jeananne Bargholz (N9VSV) |
| 2. 7:30 PM Call to Order:<br>President Bill Greaves (K9GN)            | 7. Repeater VP Report:<br>Tom Trethewey (KC9ONY)           |
| 3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc. | 8. Secretary's Report:<br>Ken Boston (W9GA)                |
| 4. Carl Luetzelschwab, K9LA<br>An Update on HF Trading Activity       | 9. Treasurer's Report:<br>Gary Bargholz (N9UUR)            |
| 5. President's Update:<br>Bill Greaves (K9GN)                         | 10. Committee Reports                                      |
|   | 11. OLD BUSINESS   |
|   | 12. NEW BUSINESS   |
|   | 13. Adjournment  |

# **The Back Page**

**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
8 November 2023**

**Program:  
Carl Luetzelschwab, K9LA  
ARRL Director, Central Division,  
HF Rules Petition  
Shortwave Modernization Coalition  
An Update on HF Trading Activity**

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**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
13 December 2023**

**Program:  
Gregg Lengling, W9DHI  
Club 220 Repeater System  
History and Upgrades, 1988 to Present**

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## 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.



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

Volume XLI

December 2023

Number 12

## From the President

de: Bill Greaves, K9GN



Holiday Best Wishes! Merry Christmas! Season's Greetings! We have entered the winter holiday period and I trust all of your holiday preparations are proceeding nicely, and your family has your ham radio Wish List in hand. You might even help them out with a trip to the Ham Radio Outlet on Good Hope Road. It's good to be helpful!

The Annual Meeting of the club will be January 10<sup>th</sup>. Elections will occur at that time. Two items for you to accomplish by then are: (1) payment of dues - \$20 (still only \$20) payable by credit card online at [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) or by check via mail to Gary Bargholz, Treasurer, and (2) consider volunteering to stand for election as the Candidate List is due December 27<sup>th</sup>, 14 days before the election. Contact Pat Volkman W9JI who is Chair, Nominating Committee. Contact info for all club members is available in the club roster on the ORC www page. There is lots of good information on those pages; it's changing and being expanded all the time – Thank you to Gregg Lengling W9DHI.

A thank you also to the Audit Committee who are preparing to finalize their work throughout the year immediately after January 1st. Jim Albrinck K9QLP, Fred Schwierske W9KEY, and Nancy Stecker KC9FZK – we thank you for your efforts.

You have heard me note our need for a volunteer to assist with the audio equipment to allow the Zoom portion of the monthly club meetings to occur. A big thank you to Tony Schneider AD9BR who has been working with Tom Trethewey KC9ONY on this activity. The zoom participants, especially, thank you, Tony.

Again, please note the date for the Spring Swapfest: Saturday, April 27, 2024. Please add the date to your calendars.

The club membership will gather on Wednesday, December 13th, both in-person and on Zoom, at 7:30pm, with meet-n-greet at 7:00pm, at the Grafton Senior Center or on Zoom. The program for the meeting will be by Gregg W9DHI presenting on the ORC's "Club 220 Repeater System History and Upgrades," 1988 to Present." As always, I look forward to seeing you at the meeting.

73,

Bill K9GN

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# A Message from the Editor

## Newsletter Table of Contents

de: Bill Shadid, W9MXQ, Newsletter Editor

Please note Club President, Bill Greaves, K9GN, on Page 1 for his monthly message.

I draw your attention to Page 5 of the Newsletter for the report from the Nominating Committee with the slate of officers for the ORC Board of Directors. This is a very important part of operating an organization – and is certainly so for us. Check what is presented and consider what you may called to do.

Again, this month, Tom Ruhlmann, W9IPR, presents us with a continuation of his Projects, Tools, and Tips article series. Take a look at Page 6 where Tom talks about The Phoenix Antenna.

Don Zank, AA9WP, in his Ozaukee County ARES column this month talks about AUXCOM or Auxiliary Communicator Program. Want to know more about ARES? Contact Don at: [AA9WP@ARRL.net](mailto:AA9WP@ARRL.net)

Stan Kaplan, WB9RQR, shares some history on Linux Mint in his 309<sup>th</sup> Computer Corner article. Take a look!

Check the Cover Art installment on Page 13 – back after a long absence – showing some Christmas History. Not about Ham Radio? Well, let's just say it is about us!!

Gary Sutcliffe, W9XT, is back with his On the Air Activities column – starting on Page 14 showing us the schedule of many upcoming operating events as we enter the winter activity months. Don't forget Gary's convenient "Pull-Out" Page of activity specifics.

Your Editor, Bill Shadid, W9MXQ, has his regular Vintage Amateur Radio column discussing the increasingly popular, annual, Hammarlund Hullabaloo – this year celebrating the 162<sup>nd</sup> birthday, of Hammarlund founder, Oscar Hammarlund. And it involves using Vintage Amateur Radio equipment – as you might guess.

Classifieds appear on page 29, followed by Tom Trethewey with his Upcoming Events.

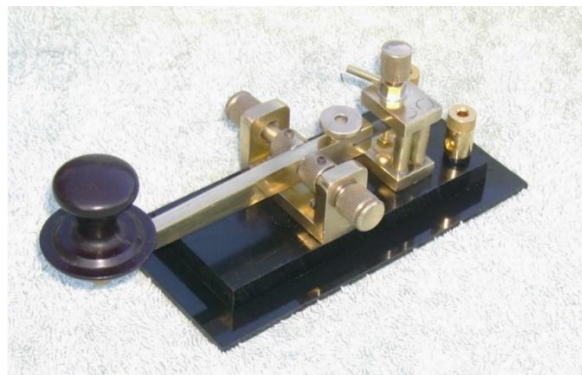
Check the minutes of the November Ozaukee Radio Club meeting as provided are outlined in the Minutes of that meeting provided by our Secretary, Ken Boston, W9GA. See Page 32.

Jeananne Bargholz, N9VSV, our Program Committee Chair, appears on Page 33 with info on this month's program. Check the Last Page for Next Month's program.

Need help to get your thoughts on paper for an article? That is what the Editor does!! Let me know how I can help you. [newsletter@ozaukeeradioclub.org](mailto:newsletter@ozaukeeradioclub.org)

**Ozaukee Radio Club Newsletter  
December 2023 – Table of Contents**

PAGE	DESCRIPTION
1	<b>Bill Greaves, K9GN: From the President</b> Monthly Update
3	<b>Bill Shadid, W9MXQ: A Message from the Editor</b> This Month's Table of Contents & Comments
5	<b>Nominations for the ORC Board of Directors</b> Election of Board Members – January 2024 Meeting
6	<b>Tom Ruhlmann, W9IPR: Projects, Tools, and Tips</b> A Phoenix Antenna
8	<b>Don Zank, AA9WP: OZARES – Ozaukee County ARES</b> AUXCOM or Auxiliary Communicator Program
11	<b>Stan Kaplan, WB9RQR: Computer Corner</b> No. 309: Linux Mint
13	<b>Bill Shadid, W9MXQ: Cover Art</b> Christmas – Who is the present really for???
14	<b>Gary Sutcliffe, W9XT: On the Air Activities!</b> November Review, VHF, WARC, DXpeditions, Contests
22	<b>Bill Shadid, W9MXQ: Vintage Amateur Radio</b> The Hammarlund Hullabaloo – An Operating Event
29	<b>Bill Shadid, W9MXQ</b> Classified Advertisements
30	<b>Tom Trethewey, KC9ONY</b> Upcoming Events
31	<b>Ken Boston, W9GA</b> Secretary's Report – 8 November 2023 Meeting
33	<b>Jeananne Bargholz, N9VSV: Upcoming Monthly Meeting Programs</b> This Month's Program, Making a Presentation, & Meeting Agenda
35	<b>The Back Page – Quick Notes about Meeting Night and Next Month</b>



**Homebrew Morse Straight Key – G3YUH**

**Onward To the Newsletter**

# Nomination of Ozaukee Radio Club Members for the ORC Board of Directors for 2024

Please review the slate of candidates as presented below. This is an important part of running a club focused on the needs and desires of the membership. Your chance to share your talents for leadership and/or support those volunteering here is at hand!!

## The Nominating Committee Members:

- Pat Volkmann W9JI Chair
- Jim Albrinck - K9QLP
- Bill Shadid – W9MXQ

## The Nominees:

- President: Bill Greaves - K9GN (incumbent)
- First VP: Jeananne Bargholz – N9VSV (incumbent)
- Second VP: No nominee
- Repeater VP: Tom Trethewey – KC9ONY (incumbent)
- Secretary: Ken Boston - W9GA (incumbent)
- Treasurer: Gary Bargholz - N9UUR (incumbent)

## More Information:

Note: The Repeater Trustee is appointed by the Board of Directors and is currently Mike Harrington (KD9GCN).

Should any member wish to also be included in the election for a specific office or have questions concerning the elections they should contact Pat Volkmann, W9JI.

The elections will be held at the January 2024 ORC meeting.

Nominations from the floor will be entertained however the nominee must be present at the meeting and accept the nomination or have provided written consent if not in attendance.

Detailed information on the expectations for each office can be found on the ORC website under Bylaws and Officers Handbook.

Candidates and voters must have paid their dues for 2024.

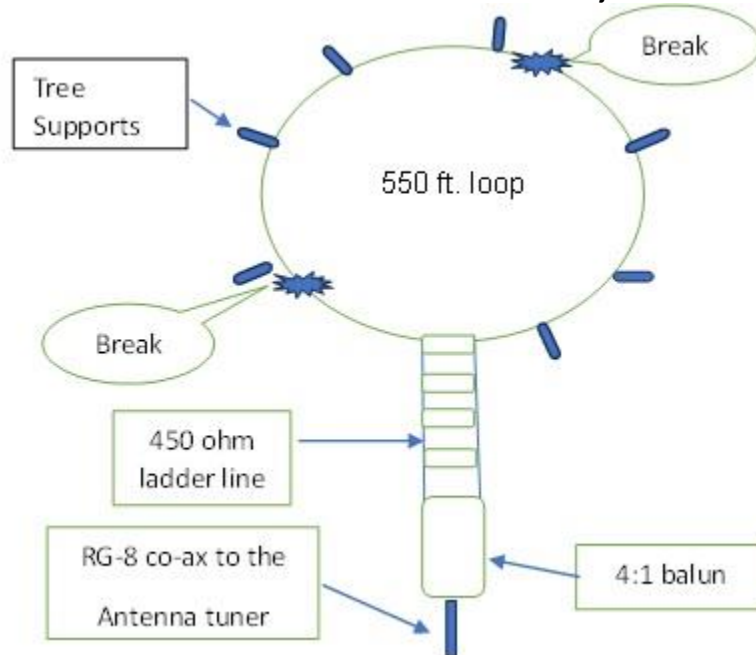
# Projects, Tools, and Tip's

## A Phoenix Antenna

de: Tom Ruhlmann, W9IPR

A few years back I got very interested in 160 meters SSB and thought it would be neat to get WAS (work all states) recognition on 160. While I have a HT-18 tower vertical for the low bands (75, 80 & 40 meters I did not have a horizontal wire antenna for those bands. However, I do have a 38 ft. tower next to the house and a forest of trees out back. I decided to erect a 550 ft. loop antenna through the woods to be fed with 450-ohm ladder line. In the woods there were 7 trees from which the loop was supported.

The antenna center at the tower was supported by a rope and pulley arrangement allowing the center to be lowered and raised for adjustments and maintenance. All of the tree



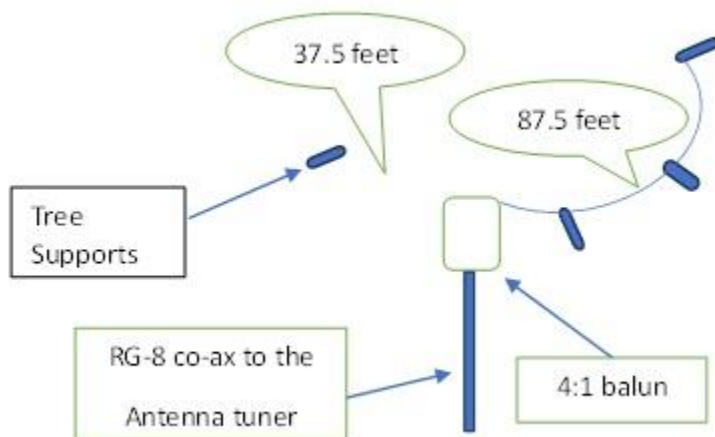
supports allowed for the #12 antenna wire freedom with tree movement etc. via an arrangement of passing through large porcelain power insulators at 4 trees and the alternate trees having supporting ropes through pulleys to “window sash weights”. The 30 ft. ladder line feed to the loop would terminate with a 4:1 balun which provides a transition from the balanced ladder line to the unbalanced 52-ohm co-ax which passes through the basement window to the antenna tuner and trans-

mitter. I felt this should allow me to load 160 through 40 meters, and it did. It worked great for several years but last winter a large limb fell from one of the trees and the stress on the wire caused it to break at two points. Due to the antenna height; a short ladder and the wife watching it was not practical for me climb the trees to repair it. So now what? I decided on a 160-meter OCF (off center fed) dipole with a 4:1 balun at the feed point.

For 160 meters the total length of the antenna would need to be 246 ft. ( $468/1.9 \text{ MHz} = 246 \text{ ft.}$ ). With the feed point being off center (25 to 30 % from one end) the feed point should be about 200 ohms. Not a perfect match but it is designed for multiband use with a tuner. Therefore I lowered the original feed point and installed a 4:1 balun with its output to a 52-ohm co-ax feed line. The resulting antenna would be in the shape of an arc since 3 of the original trees in the loop would be used for support. Then to measure or estimate the length of antenna wire each side of the 38 ft. tower which is where the balun and feed

point would be. As luck would have it there was an estimated 302 ft on the North side (plenty long) and a measured 62 ft. on the south side or about 25% of the 246 ft. required total. Using my Comet antenna analyzer (indicates the impedance and resonate frequency) I continued to trim the North long end until I had resonance at 1.9 MHz (estimated 195 ft.). Unfortunately, while it appeared OK at 160 meters the antenna would not resonate within the 80, 75 or 40 meter bands. As I read a few articles on the OCFD antenna I noted the advice that “for 160 meters, don’t even think about it: it won’t work”. So much for that idea as a 160-meter multiband antenna. So, I decided to make it into a typical 80-meter OCFD multiband antenna.

For 80 meters the total antenna should be approximately 125 feet long ( $468 / 3.75 = 124.8$  feet). For the feed point to be approximately 200 ohms on all bands it should be about 30% from one end or about 37.5 feet. So, I trimmed the short South end, which I could



measure to 37.5 feet. Since the South end measured 62 feet, I cut it to 38 feet and installed an insulator at 37.5 feet. The North end was approximately 195 feet, so I cut off about 100 feet and then used the Comet antenna analyzer to check for resonance at 3.75 MHz. I progressively trimmed the North end to about 87.5 feet as determined by achieving the 3.75 MHz

resonance point. Then with the end insulator installed the end was raised to about 35 feet and the multiband resonance points were checked. The 40 meter and higher frequency bands were also all within reason and using my MFJ model 986 antenna tuner I can tune it for an SWR less than 2:1 and use it on 80, 75, 40,30,20,17,15,12 and 10 meters.

Like Pheonix, the broken wire loop multiband antenna rose from the dust to relive as OCFD multiband (with the exception of 160 meters) wire antenna. It was a fun project with a useful result. However, I failed to consider or test if there may have been RF on the RG-8 co-ax exterior which impacted the resonance points and which could be corrected with a simple RF choke in the co-ax following the 4:1 balun. I think I may wait for warmer weather and make another attempt at a 160-meter OCFD.



**OZARES: Ozaukee Amateur Radio Emergency Services**  
**de: Don Zank AA9WP, OZARES Emergency Coordinator, [aa9wp@arri.net](mailto:aa9wp@arri.net)**

**AUXCOM or Auxiliary Communicator Program**



This past October Dave, KD9JYL, and I attended the Auxiliary Communications or AUXCOM course. The class was held at the Winnebago County Sheriff's office and was an intense weekend of ten hour days learning new procedures, planning, and solving tabletop exercises.

As stated in the National Emergency Communications Plan (NECP) 2014:

"...volunteer organizations such as community emergency response teams and auxiliary communications volunteers (e.g., amateur radio operators; also called Hams) play key roles...Today, nearly all the States and territories have incorporated

some level of participation by amateur radio auxiliary communication operators into their TICPs\* and SCIPs\*\*; this allows them to quickly integrate the operators into response efforts, which can strengthen communications and operations during incidents of any scale."

\*TICP: Tactical Interoperable Communications Plan

\*\*SCIP: Statewide Communication Interoperability Plan

The course provided 20-hours of education to about 22 other hams from throughout Wisconsin, all volunteers for the AUXCOMM program. The focus of the training is to prepare the volunteers for effective interoperable communications and strong working relationships with public safety/service communicators. The AUXCOM volunteers are Technical Specialists with individual and organizational skills and are available to support the National Incident Management System (NIMS).

The Auxiliary Communicators potentially provide assistance help with several scenarios:

- If local communication systems are unavailable, the AUXCOM volunteers can help establish alternatives
- Support public safety officials and staff during emergency situations, planned events and/or training exercises
- Operate "within the emergency management structure." This would include Emergency Operation Centers or EOCs
- Provide other groups, such as the Red Cross or Salvation Army, with communication support

The training also instructs the Auxiliary Communicators on how to work under the supervision of the Communications Unit Leader or COML within the NIMS/ICS structure.

The course objectives included how to organize and plan with all involved agencies, sections, and other communication personnel to meet the objectives established by the Incident Commander. As well, auxiliary comm systems must be properly designed, installed, and maintained during any incident. The AUXCOM communicator may also be responsible for maintaining control of any communication equipment assigned to other groups or personnel.

A rather important but sometimes ignored function is to properly demobilize. Included is the gathering of all hardware, and tracking any equipment that requires repair.

And, of course, the job is not done until the paperwork is done. And there is a good deal of paperwork.

Another major goal for the AUXCOM training is to establish standardized procedures for the state and between states. Two states have been very active in establishing AUXCOM programs. They are:

Michigan:

<https://mi-arpssc.org/auxcommwg/>

North Carolina:

<https://www.ncarrl.org/ares/>

The State of Colorado has created a program in 2020 and is very active. More information can be found at:

<https://dhsem.colorado.gov/emergency-management/field-operations/auxiliary-communications>

At the end of the class all of the AUXCOM volunteers received a Position Task Book. This book is basically a list of skills, abilities, and knowledge of working as an Auxiliary Communicator. By demonstrating the skill and knowledge for any particular task, a Communication Leader will sign off that task off. There is a three year window to complete the task book.

Stay tuned for more information on the Auxiliary Communicator role.

73, Don, AA9WP



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## **OZARES Repeaters:**

- **147.330 MHz (+ Shift) (127.3 PL)**
- **443.525 MHz (+ Shift) (114.8 PL)**

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## **ORC Repeaters are On the Air Awaiting Your Call:**

- **146.97 MHz (- Shift) (127.3 PL)**
  - **224.18 MHz (- Shift) (127.3 PL)**
  - **443.75 MHz (+ Shift) (127.3 PL)**
-



# THE COMPUTER CORNER

## No. 309: Linux Mint

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



Linux Mint is one of the many versions or distributions of Linux and is one of the most popular today. It is bundled with free and open-source applications. For example, so long as you choose to include proprietary (but free) multimedia codecs when you install it, you get full out-of-the-box multimedia support when your installation is completed. Another big plus is that the inclusion of the bundled Libre Office suite makes it largely compatible with Microsoft Office and even exceeds the capabilities of the Office suite in several aspects. But Mint was started long after Linux

itself.

Linux itself began in 1991 when a computer science student at the University of Helsinki (Finland) began a personal project to write an operating system that was free and available to anyone who wanted to use it, thus bypassing almost all systems available then which were expensive and proprietary. Linus Torvalds was the guy, and what he wrote was named (with help by friends) as a combination of his first name and Unix, an existing operating system that inspired his project. Today, about 90% of the top supercomputers, and nearly 3% of all desktop computers use Linux. Even more impressive, nearly 72% of all mobile devices run on Linux. This includes smart phones—most run on Android (a Linux-based operating system).

Mint first began as a distribution or version of Linux at the end of August 2006, nearly 18 years ago and about 15 years after Torvalds began Linux itself. The mint project was created by C. Lefebvre and is actively maintained by a Linux Mint Team. Version 1.0 of Mint was code named “Ada.” Based on Kubuntu Linux, it was not very popular at all. Version 2.0, “Barbara, surfaced in November of the same year and used Ubuntu Linux as its base. It morphed into Version 2.1, “Bea,” in December and Version 3, “Cassandra” in early 2007.

Every version of Linux Mint since the first has been given a version number and a code name. The code names are always feminine first names ending in the letter ‘a’ (one exception, noted in the next sentence) and beginning with a letter of the alphabet that increased with every major revision. The except is Version 18, Sarah, which sounds the same as all the rest but ends in a silent letter ‘h’. Too bad they didn’t just drop the ‘h,’ and name it Sara, for consistency!

The table which follows (markedly abridged from Wikipedia) lists all 38 versions and code names since the start of Mint. Also noted is the cutoff date (END in the table), at which no more updates to a particular version are released. In other words, this is the date at which a particular version's support ends. Examination of the table will show you that only Version 20 ("Ulyana") and newer releases are currently supported.

This end to support by releases prior to Version 20 causes a significant "hit" for owners of older, 32-bit machines. Specifically, you cannot install versions 20 or newer of Linux Mint Cinnamon on an i386 (32-bit) machine. However, the Debian edition of Linux (**Linux Mint Debian Edition**) continues to work with 32-bit critters, so if you have a really old laptop that you just cannot part with using, there is a solution. Start with looking up **LMDE** on the web. For all more modern laptops and desktops, stick with Linux Mint Cinnamon 21.2 ("Victoria"), supported until April 2027, or newer. Minimum hardware requirements for Victoria: 2GB RAM (4GB recommended), 20GB of hard drive or other storage space (100GB recommended), 1024×768 screen resolution, either a CD/DVD drive or a 2.5GB flash drive for installation, and Internet access is also really helpful.

**TABLE 1 LINUX MINT RELEASES**

*VER	NAME	RELEASED	*END	*VER	NAME	RELEASE	*END
1.0	Ada	Aug 2006	Unknown	17	Qiana	May 2014	Apr 2019
2.0	Barbara	Nov 2006	Apr 2008	17.1	Rebecca	Nov 2014	Apr 2019
2.1	Bea	Dec 2006	Apr 2008	17.2	Rafaela	Jun 2015	Apr 2019
2.2	Bianca	Mar 2007	Apr 2008	17.3	Rosa	Dec 2015	Apr 2019
3.0	Cassandra	May 2007	Oct 2008	18	Sarah	Jun 2016	Apr 2021
3.1	Celena	Sep 2007	Oct 2008	18.1	Serena	Dec 2016	Apr 2021
4.0	Daryna	Oct 2007	Apr 2009	18.2	Sonya	Jul 2017	Apr 2021
5	Elyssa	Jun 2008	Apr 2011	18.3	Sylvia	Nov 2017	Apr 2021
6	Felicia	Dec 2008	Apr 2010	19	Tara	Jun 2018	Apr 2023
7	Gloria	May 2009	Oct 2010	19.1	Tessa	Dec 2018	Apr 2023
8	Helena	Nov 2009	Apr 2011	19.2	Tina	Aug 2019	Apr 2023
9	Isadora	May 2010	Apr 2013	19.3	Tricia	Dec 2019	Apr 2023
10	Julia	Nov 2010	Apr 2012	20	Ulyana	Jun 2020	Apr 2025
11	Katya	May 2011	Oct 2012	20.1	Ulyssa	Jan 2021	Apr 2025
12	Lisa	Nov 2011	Apr 2013	20.2	Uma	Jul 2021	Apr 2025
13	Maya	May 2012	Apr 2017	20.3	Una	Jan 2022	Apr 2025
14	Nadia	Nov 2012	May 2014	21	Vanessa	Jul 2022	Apr 2027
15	Olivia	May 2013	Jan 2014	21.1	Vera	Dec 2022	Apr 2027
16	Petra	Nov 2013	Jul 2014	21.2	Victoria	Jul 2023	Apr 2027

\*Ver = version. \*End = end of support for this version. Prior to version 20, Linux Mint could be booted from either i386 (32-bit) or amd64 (64-bit) machines. Since version 20, only 64-bit architecture is supported.

Keep an eye out for Ver. 21.3, which should be out very soon. Happy Computing!



**Cover Art – Toy Trains Magazine  
December 1951**

***“Christmas 1949 saw my first Lionel Electric Train” – W9MXQ  
“Did you ever notice how many hams are also into Model Railroading?”***

## On The Air Activities!

de Gary Sutcliffe, W9XT



If you are a DXer, November was an incredible month. In 50+ years of DXing, I don't remember a month with so many DXpeditions. I needed so many on so many bands that I made up a chart with each DXpedition and the bands and modes I needed that country on. There were 23 separate DXpeditions on my chart. I used a highlighter to mark the ones I worked.

I ended up with about a dozen new band grids, and three new digital countries worked. Band countries are countries that you have worked before but not on a given band. The ARRL DX Challenge is an award for working band countries. The basic award requires 1000 band countries with endorsements as you work more. These are for contacts on 160-6 meters, except

for 60 meters.

I was not the only one working some good stuff in November. Gary, N9UUR, got a few ATNOs, including ZL7A on Chatham Island. ATNOs or All Time New Ones are the first time you work a country for the very first time. ATNOs are very special for DXers as they work their way to the top.

Currently, there are 340 "entities" in the DXCC program. That number changes over time as new countries gain independence or when countries merge, such as when East and West Germany reunited.

Other factors can create new DXCC entities due to distance or other reasons. For example, Alaska, Hawaii, and Puerto Rico are separate DXCC entities from the United States.

Another ORC member named Gary also had a good month. K9DJT sent in the following report:

Most recently, I worked ZL1RS, V51WW, and HC2FG, on 6m FT8. I filled two CW band-slots on 20m by working 3W9A and A25R. The Timor-Leste DXpedition, 4W8X, provided me with 10m SSB and FT8, 12m CW, 15m CW and SSB, and 30m CW. Israel, 4Z1DZ, filled a 30m FT8 slot. The Yemen team, 7O73T and 7O8AD, took care of my empty 10, 17, 30, and 40m FT8 slots.

Then came Sierra Leone, 9L5M, filling my open slots of 12, 15, and 20 FT8. The H44WA group handed me 10m SSB, then 15 and 30m FT8. TJ9MD, operating from Cameroon, managed to get on a few lower bands, which gave me 20 CW, 30 FT8, 40 FT8, and 80 CW. And I'm still not done. There was VK9CY, Cocos Islands, on 30 and 40m FT8, and also VK9XY, Christmas Island, 10, 15, 17, and

20m FT8. Oh, I almost forgot about Laos, XW4DX. I worked them on 12 and 40m FT8.

In total, I made 78 DX Q's since the last newsletter. In the Greater Milwaukee DX Association, some might refer to me as a "DX Hog." I really don't mind, "oink, oink."

Gary, K9DJT

## VHF

While most of the excitement was on the HF bands there was some excitement on VHF in November. Gary, K9DJT, mentioned some of his luck on 6M DX.

We had a few days when 6 meters was open to Africa. I worked St. Helena Island and South Africa for countries 99 and 100 on the band. DXCC on 6 meters! Later, I worked Namibia in South West Africa for 101.

DXCC on 6 meters is very difficult from Wisconsin. We just don't get the propagation they get further east and south of us. Did you know Ken, W9GA, an ORC member, was the first Wisconsin ham to get DXCC on 6M? Ken was also just the second W9 to get it.

Unfortunately, I have been waiting for QSLs from a few countries, some going back over 20 years. I have pretty much given up hope of getting confirmation for them, so I need to work a few new ones to get the required 100 confirmations.

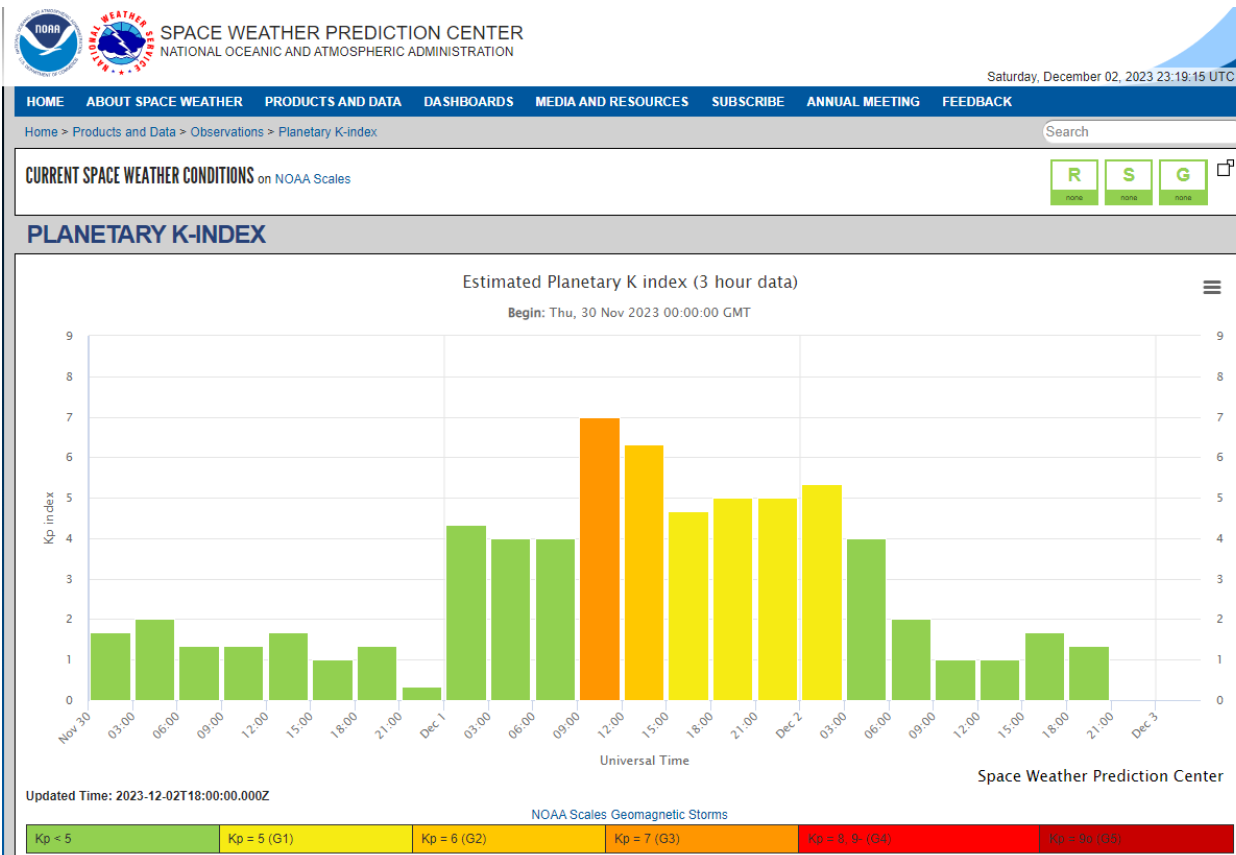
The ARRL 160 Meter Contest was the first weekend of December. We had a near X-class solar flare a few days earlier. The cloud of charged particles from the flare, a CME (Coronal Mass Ejection), showed up Friday night, soon after the 160 meter contest started.

The K-index shot up to seven, and 160 signals were very weak. Northern stations had the worst conditions. DX, except to the south, was non-existent. I was expecting this and watching for it. When the K index reaches four or five, there is a good chance of an aurora. We can bounce VHF signals off the aurora. I forgot about the 160 meter contest and moved up to VHF. I worked about a dozen stations on 6 and 2 meters, including a new grid on each band.

Aurora contacts are interesting. You point your beam north to work stations. CW signals have a raspy sound. SSB signals sound like Donald Duck. Often, it is impossible to understand SSB signals. FT8 and other digital modes do not work with Aurora. Slow speed CW is usually the best mode on aurora.

Solar flares are more common during high solar activity, where we are now. Keep an eye on the K index and check for Aurora if it gets up to four or five. If the sky is clear and you are in an area without a lot of city lights, you might be treated to a nice light show.

Carl, K9LA, is an expert on propagation, as well as being our ARRL Central Division Director. You may recall Carl gave us the program on the threat to our ham bands by the high frequency traders at the October ORC meeting.



### K index centering on the geomagnetic storm and aurora on Friday, December 2 (local). Solarham.net

If you are interested in where we are in the current solar cycle, Carl, K9LA, gave a talk to the Madison DX Club. The talk was recorded, and you can view it on line. <https://www.youtube.com/watch?v=AG4qUuW1XdY>

Sporadic E (Es) is a major part of 6M propagation. It gets us to about 1400 miles, but sometimes we get multi-hop to extend that. The main Es season is from about May through July. But there is a second, more minor season in December. December Es openings could be especially interesting this year.

We are hoping the sunspot count gets high enough to provide F layer propagation on 6 meters. The F layer is much higher than the E layer of the ionosphere and gives longer skip ranges. The F layer has made it so much fun on 12 and 10 meters recently. But it has not been quite high enough for it to work for us much on 6M here in the Black Hole.

Stations to the east and south have been getting a lot of great F2 propagation we are missing. But, if we can get an Es hop into an area of F2 propagation, it would extend our range.

It is likely that the openings that K9DJT and I used to work Africa used Es for the first hop into an area with F2 propagation. Gary mentioned he worked New Zealand on 6 meters in November. I also worked one last month. That one seemed to be straight F2.

I have two beams for 6M, one high and one low. The low one has a more elevated take-off angle than the high one. Es tends to have higher arrival angles that favor the lower beam. Comparing the relative signal strengths between the two antennas gives a clue about the propagation mode for that first hop.

## **WARC/WRC**

We call the 30, 17, and 12 meter bands the WARC bands. Do you know why? The International Telecommunications Union (ITU) has an international conference every four years. These were formerly known as the World Administrative Radio Conference or WARC. These conferences aim to agree on frequency assignments that allow harmony across the radio spectrum. You don't want one country using a frequency for some purpose that will cause havoc to other users in another country. It also helps to standardize things. It is much better if Wi-Fi works on the same frequencies worldwide. Manufacturers don't want to have to make different models for every country.

The 1979 WARC approved frequencies for the 30, 17, and 12 meter bands for amateur radio use worldwide. Later, the FCC approved the use of the bands for us. They got the name WARC bands from the convention where they were authorized.

Somewhere along the way, they changed the name of the conferences to World Radio Conference, and WRC-23 is currently going on in Dubai. From what I have read, the main focus will be satellites and maritime communications.

One topic is of concern to hams. In the United States, the GPS system tells us where we are. These are generically known as Global Navigation Satellite Systems or GNSS. Other countries have their own systems. Russia has GLONASS, China has its BeiDou system, and the European Union has Galileo.

The problem is that Galileo uses frequencies in our 1296 band. Some European leaders feel that hams using the 1296 band will interfere with the Galileo system. They want to ban or limit amateur use of the 1296 band.

Being a frequency in the UHF range, amateur use has been limited. As technology has progressed, producing reasonably priced equipment for this band has become possible. The IC-9700, for example, supports 1296. Repeaters for these frequencies are becoming more popular. Currently, 1296 is the fastest growing band for moon bounce communications.

The very active European EME community is concerned they will lose the band. Some of the proposals at WRC-23 include spitting the band into slices that amateurs will be allowed to operate. Some would be only at very low power levels. The segment used for weak signal work would have restrictions that would pretty much kill EME on the band for Europe.

In the US, we probably won't be affected too much. GNSS is not authorized on the Galileo frequencies here, and they have to turn off their transmitters when over North America.

But, if 1296 is curtailed in Europe, it will affect the availability of new equipment. Manufacturers don't want to develop and manufacture equipment with a limited market. You don't see many radios supporting 222 MHz because those frequencies are only authorized in Region 2, which is North and South America. Without the Asian and European markets, developing products is not cost effective.

Nothing is cast in stone, and it is hard to know what will finally be decided. We will know more when WRC-23 ends on December 15.

## **DX**

Last month will be a hard act to follow with all the DXpeditions that occurred. Activity is down, but there is still plenty of DX to chase.

A group of Germans will put Micronesia on the air until December 16. Look for V6EU on 160-10 meters

A really tough one is from Lakshadweep. This is an island off the coast of India. It is a challenging path from Wisconsin and is on the need list of many hams from around here. This is a single op effort by W4VKU, but he has been pretty active. I have tried to work them a few times. He has not been very strong, and there is a lot of competition trying to work them, so no joy as of this writing.

After Lakshadweep, he will be heading to the Andaman Islands, another group off the coast of India. The call sign will change to VU4N, December 16-26.

Rodrigues Island in the Indian Ocean will be activated by a group of Italian hams from December 29 through January 6.

The Rebel DX Group is out again, this time from East Kiribati in the Pacific. Look for them to be mostly operating FT8 until December 28. I heard them on 30 meters with good signals. They always do a great job.

If you remember, the big DX hope in 2023 was the DXpedition to Bouvet Island near Antarctica. Bouvet is a challenging island to land on. It is also very difficult and expensive



to reach because it is so isolated. They had great difficulty getting on shore, and the operation was severely limited. It cost them close to \$750,000.

The previous attempt was also a failure. That group circled the island for several days, waiting for the weather to improve so their helicopter could take them to the island. Then, one of the two engines on the ship failed, forcing them to abort the operation. Due to prevailing winds and only one engine, they had to make the much longer trip to South Africa rather than Argentina, where they started from. It took them weeks to reach civilization.

Some said there would never be another DXpedition to Bouvet due to difficulty and expense. Well, never say never.

A new group announced they will be attempting an operation in January of 2025. They have a boat and permits in hand. Their boat supports two helicopters, eliminating the difficult task of using boats to land on the island.

They also announced they were planning on a follow up trip to Peter Island in 2026. Peter Island is another difficult to reach Antarctic island. This may seem like a long time out, but remember, it is almost 2024. And, as a DXer, you must learn to be patient.

## **Contests**

There are few contests during December due to the holiday season. The ARRL 10 Meter Contest will be starting shortly after this newsletter comes out. It is one of my favorites, and this year, it should be especially good with the high sunspot count.

It starts on Friday, December 9, at 6:00 PM local time. It runs for 48 hours, but you can only work 36 hours. We send a signal report and state. DX sends a report and serial number. Multipliers are states and DXCC countries.

You can work CW only, phone only, or mixed mode working both. Stations can be worked once per mode. Power levels are high power, low power (100 watts max), and QRP (5 watts).

Remember, technician class ops can operate phone on 10 meters from 28.300-28.500 MHz, so this is a great chance to experience some fun HF operating.

The Stew Perry Top Band Distance Challenge is a fun contest between Christmas and New Year's. Named after an early 160 meter enthusiast, Stew Perry, W1BB, the TBDC is different from other contests. First of all, there are no multipliers. Your score is strictly QSO points. More distant QSOs are worth more points.

The exchange is your grid square. Your logging program will calculate the distance based on the grid squares. The distance points are multiplied by two if you are running low power (less than 100 watts) and by four if you are running QRP.

Many contests give more points if you are low or QRP power. Indeed, making lower power QSOs is more difficult, but in reality, a lot of the heavy lifting is done by the other station in pulling out the weak signal.

In the TBDC, the other station gets extra points for working low and QRP power stations. Of course, you don't know the other station's power level when you work them. Your logging program will assume the other station is high power. When you send in your logs, the log checking software will compare your QSOs with the other stations' entries and assign the extra points.

You can check the website and see your score go up as other stations send in their logs. Of course, you hope your score goes up faster than your competition's. Because working low power and QRP stations are worth more points, other stations put in extra effort to work the weak ones.

That wraps up December and 2023!

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**Check the following page for Operating Tips on a Separate Sheet**

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**AI Created, 12/7/2023**

## W9XT's Contest, Operating, DXpedition, and Special Event Picks for December and Early January 2024

W9XT's DXpedition picks for December 2023 and early January 2024					
QTH	Dates	Call	Bands	Mode	Link/notes
Micronesia	To Dec 16	V6EU	160-10	CSD	
Lakshadweep	To Dec 10	VU7A	160-10	SD	
East Kiribati	Dec 6-28	T32TT	160-6	CSD	Mostly FT8
Andaman & Nicobar	Dec 16-26	VU4N	160-10	SD	
Rodrigues Island	Dec 29-Jan 16	3B9AT	40-10	CSD	

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

W9XT's contest picks for December 2023 and early January 2024					
Name	Start	Length	Bands	Mode	Link
ARRL 10 Meter	00:00Z Dec 9	48, work 36 max	10M only	CW, SSB, mixed	<a href="https://contests.arrl.org/ContestRules/10M-Rules.pdf">https://contests.arrl.org/ContestRules/10M-Rules.pdf</a>
Stew Perry TBDX	15:00Z Dec 30	24, work 14 max	160M only	CW	<a href="https://www.kkn.net/stew/stew_rules.html">https://www.kkn.net/stew/stew_rules.html</a>

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

# Vintage Amateur Radio

de: Bill Shadid, W9MXQ



As in the last three articles, this one continues with “using” Vintage Amateur Radio equipment as much as it is about the “specifics” of a particular model. This month we continue with a special event dating from at least 2020<sup>1</sup> when the High Appalachian Mountain Amateur Radio Society (HAMARS) began an annual Special Event to commemorate The Hammarlund Radio Company. They conduct a three-day “Hammarlund Hullabaloo” to encourage ham radio operators to use their Hammarlund ham radio equipment. It is held every year to commemorate the date of 19 November 1861, the birth date of Oscar Hammarlund. That original company morphed into the Hammarlund Manufacturing Company in 1931 with the introduction of the

Hammarlund Comet Pro Receiver. The Comet Pro was the first commercially produced superheterodyne receiver<sup>2</sup>.



## **The Hammarlund Hullabaloo 2021 Station at W9MXQ Collins KWM-2 Transceiver with 312B-5 Console (used as a Speaker) with a Hammarlund HQ-170AC-VHF Receiver HF/VHF Receiver W9MXQ Photo**

At the time of the picture above, in 2021, there was no proper 312B-3 Speaker Console at W9MXQ. The KWM-2 and KWM-2A in early form lacked a dedicated CW carrier oscillator crystal. So, hams interested in CW needed to provide for offset tuning in the form of a second VFO – in this case the 312B-5 Remote VFO, Phone Patch, Wattmeter, and Speaker Console. Here, the Hammarlund HQ-170AC-VHF Receiver acted as the second receiver, providing offset tuning for CW. In this arrangement, the Collins KWM-2 was acting as a transmitter only in this station setup. When working the Hammarlund Hullabaloo, all signals were received with the Hammarlund.

For the 2023 event, I had three stations set up to try and connect with W4H that was operating at the former Hammarlund Radio Company manufacturing facility in Mars Hill, North Carolina. W4H was the guest of the current owners of the facility, once at the address known to the ham radio world, 73-88 Hammarlund Drive, Mars Hill, NC 28754. From what I can tell that the same location is now 73 Fern Hill Drive, Mars Hill, NC 28754. At least the “73” survived!<sup>3</sup> At the same time, there was one of the sponsoring club stations operating in the event under the call of KE4MH. That is the assigned call of the High Appalachian Mountain Amateur Radio Society.



**Hammarlund Hullabaloo Station #1 in 2023**  
**Drake TR7A Transceiver with a Drake MS7 Speaker Console**  
**running with a Hammarlund HQ-215 Solid State HF Receiver**  
**See Also Icom SP-3 Speaker for HQ-215,**  
**Electronic Keyer, Drake 7077 Microphone, & Bencher BY-1 Paddle.**  
**W9MXQ Photo**

These kinds of stations are rare these days as hams are more accustomed to plug-and-play setups with a single brand of equipment. The Drake TR7 (TR7A used here) easily adapts to any receiver to be used as an adjunct to the receiver in the transceiver. This feature is also available today. My Yaesu FTdx-101MP can be easily setup to feed signal lines and allow receiving from a separate receiver. Your modern receiver may do that as well. The challenge is to feed audio to a single audio amplifier. The Drake TR7 is rather unique in this respect and can be set up to pass audio from a separate receiver to the same speaker used by the transceiver. I did not take the time to setup the cables for that in this installation. Instead, I used the Icom SP-3 (that is the matching speaker for my Icom IC-751A Transceiver.<sup>4</sup> In the above example, the radio is tuned on the TR7A and the HQ-215 to 7.258 MHz and had just been used to check into MidCARS.<sup>5</sup>

Here is a closeup of the Hammarlund HQ-215 as set up with the Drake TR7A.



### Hammarlund HQ-215 HF Receiver

**There is something in this picture even rarer than the HQ-215.  
Do you see what it is?**

**W9MXQ Photo**

When contacting W4H in the 2023 Hammarlund Hullabaloo, I worked Jerry, whose home call is N4KJ. This is his picture, using a Hammarlund SP-600 series receiver in his shack. Guests of the present owners of the Hammarlund factory in Mars Hill, NC, W4H had their station set up inside the facility. Jerry told me that he was a mere “25 feet away from where my HQ-215 came off the assembly line.”



High Appalachian Mountain Amateur Radio Society (HAMARS) member, Jerry Robinson, N4KJ, works with a Hammarlund SP-600 Receiver in his shack. During the Special Event at the former Hammarlund plant in Mars Hill, NC, I worked Jerry with Hammarlund Hullabaloo Station #1.

**HAMARS<sup>6</sup>**

Continuing with the theme of using the Hammarlund HQ-215, I decided that it would be appropriate to run the receiver with components of the Collins S-Line equipment.

This setup actually played on the goal of the Hammarlund HQ-215 Receiver to be a solid-state radio that was a direct functional copy of the Collins 75S-3B Receiver. It even used the same Collins Mechanical Filters. I ran the Collins 32S-3 Transmitter with the Hammarlund HQ-215 in this configuration connected as a separate Receiver and Transmitter. In theory, because of the identical conversion scheme in the HQ-215, compared to the Collins 75S-3B, there is every reason to believe that they should transceive together. The control points and signal taps are available on the HQ-215 as they are on the Collins 75S-3B. I have tried the transceive setup several times with marginal success. Given that I could not be sure of unintended output on odd mixer frequencies, I did not feel comfortable putting the transceiver mode on the air.



**Hammarlund Hullabaloo Station #2 in 2023**  
**Collins 32S-3 Transmitter with 312B-4 Console (used as a Speaker)**  
**with a Hammarlund HQ-215 Solid State HF Receiver**  
**Note Striking Similarity of HQ-215 to Collins S-Line Design!**

W9MXQ Photo

Hammarlund Hullabaloo Station #2 was successful in working a lot of Parks On The Air (POTA) and Volunteers On The Air (VOTA) stations in the several days it ran. But unfortunately, I was unable to work W4H or KE4MH on either SSB or CW with this setup.

Finally, I wanted to try a setup using my Hammarlund HQ-170AC-VHF. Back when I was first a ham radio operator as a newly hatched General, I used the pre-VHF version of this radio, the HQ-170AC. (The VHF version added 2-meters to the originally included 160 through 6-meter coverage.) I had used the HQ-170AC-VHF in the 2021 Hammarlund Hullabaloo and wanted to have the chance again. The 2021 setup is shown in the first picture in this article. This time, however, I wanted to use a different transmitter. Since had run my first HQ-170AC with a separate transmitter, I wanted to do that again. So, I even found one from the same time period as when I was first licensed – in 1964. What I finally used was second place after thinking I would run that HQ-170AC-VHF with a Johnson Viking Valiant that is here – that would duplicate my station in the mid-1960's. But I decided I did not want to lift that 73-pound monster off its display shelf.

Here is the third and final setup for this 2023 event . . .



**Hammarlund Hullabaloo Station #3 in 2023**  
**Hammarlund HQ-170AC-VHF Receiver with Hammarlund S-200**  
**Speaker Console with a Hallicrafters HT-44 Transmitter.<sup>7</sup>**  
**With Astatic D-104 Microphone, Bencher BY-1 Paddle,**  
**and Hammarlund HK-1B Electronic Keyer.**

W9MXQ Photo

A few small details before more information . . .



**Another look at the very rare – Hammarlund HK-1B Solid-State Electronic Keyer**  
**from 1962. This one works, remarkable in itself, but gets suddenly erratic!!**

W9MXQ Photo

I used this setup to try and connect with W4H, or KE4WH, on CW but was not successful in finding them or breaking through the QRM when I did hear them. I did look for them on SSB with this setup, but they were not on the air when I was available.



I was successful getting on SSB with Station #3 with some one-on-one conversations plus more POTA stations on both SSB and CW. I did not use the Hammarlund HK-1B Electronic Keyer at that time because it only arrived here right after the event. For CW at that time, I used the same mystery Keyer, as I identified it, as with Station #1.

One more thing about the Hammarlund HQ-170AC-VHF and its front panel:



Have you ever seen one of these clock faces? This is a General Electric Telechron™ Clock at the upper left-hand corner of the Hammarlund HQ-170AC-VHF Receiver's front panel. It is showing 20:51:57 on its 24-hour clock face.<sup>8</sup> More common in Europe, these are rarely seen here except in a radio-related setup. This clock can be set to turn on the radio at a predetermined time. An example back at the time these were new was to turn on the radio ahead of a schedule so it would be warmed up and frequency stabilized. Criticizing older radios because they drift shows a lack of understanding of the technology of the day.

**W9MXQ Photo**

This article would come under the heading that my proofreader, Bob, W9DYQ, coined, "old time radio at work." More of that to come in future articles.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he nearly always adds commentary that makes it into the article. Bob and I both have "Big Iron" Hammarlund Receivers – and enjoy listening to them and making them part of a QSO, in today's ham radio world.

### **Credits and Comments:**

<sup>1</sup> This event may have predated 2020 – that is merely the earliest reference that I can find.

<sup>2</sup> The information on Hammarlund history comes from: <https://en.wikipedia.org/wiki/Hammarlund>.

<sup>3</sup> This address requires more research. Do you know more? If so, contact me at: [W9MXQ@TWC.com](mailto:W9MXQ@TWC.com).

<sup>4</sup> Icom is a bit unique in that "matching speaker" does not mean a particular radio. Icom has had only a few exceptions over the years that varied from separate three radio sizes

for their fixed station radios. This vintage SP-3 looks great with my IC-751A but would look as well placed with a current Icom IC-7610.

<sup>5</sup> MidCARS is the Midwest Amateur Radio Service on 7.258 MHz SSB. They are available in the midwestern United States primarily to coordinate mobile station operators in contacting friends. They also offer help in testing radios and antennas. I used them all the time when working on a vintage radio – to confirm if it is putting out pure audio or if it sounds like “heck!!”

<sup>6</sup> This picture appeared in the *News Record and Sentinel – The Citizen Times*, of Marshall, TN, concerning the Hammarlund Hullabaloo.

<sup>7</sup> The Hallicrafters PS-150-120 Power Supply for the HT-44 Transmitter is placed just behind the transmitter, almost hidden (but partially visible if you look carefully).

<sup>8</sup> The outer circle with the **red** numbers are minutes, in common with regular analog=, 12-hour face clocks. The inner ring shows 24 hours instead of the 12 hours we are used to seeing.

© W9MXQ



HAMARS



**Hammarlund Factory in Mars Hill, NC, in the 1950's.  
Location of W4H for the 2023 Hammarlund Hullabaloo.**

HAMARS

# Classified Advertising For Sale & Wanted Items Ozaukee Radio Club Members

de: Bill Shadid, W9MXQ

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**For Sale:** Glen Martin roof top tower, model RT936. This is a 9-foot HEAVY DUTY anodized aluminum 4 legged roof tower! Included is a Yaesu TB25 thrust bearing, mounted on the top. It will take [I believe] a 1-3/4 inch mast, and tower has a rotor shelf just below the top. It is rated for a larger antenna, at 16 sq ft wind load. It is in very good condition. It has been stored outdoors but out of the wind. Looking for \$500, contact W9GA on the ORC reflector, please!

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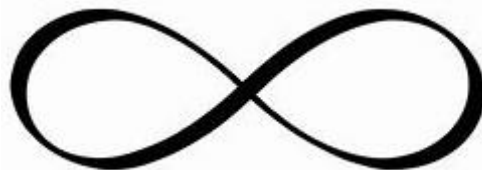
Classified Advertising for Ozaukee Radio Club Members is a members only feature. (Members may post for non-member friends, however.) Contact advertiser for details. The Newsletter Editor has no knowledge of any sale items (unless he is the seller!)..

Ozaukee Radio Club is not responsible for any purchases and cannot be involved in any buyer/seller agreements or disagreements – all sales are final other than what you work out between the buyer or seller.

Advertisements will be accepted up to the 10<sup>th</sup> of the month before Newsletter publication.

Advertising is for one month, only. Ads must be submitted each month by the deadline to be published.

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# Upcoming Events

de: Tom Trethewey, KC9ONY

1/14/2024 – St. Charles, IL – Wheaton Community Radio Amateurs  
Mid-Winter Hamfest  
<https://www.w9ccu.org/wordpressLimitless/hamfest/>

1/27-28/2024 – Winter Field Day 2024  
<https://winterfieldday.org/>

3/17/2024 – Jefferson, WI – Tri-County Amateur Radio Club Hamfest  
<https://www.w9mqb.org/>

4/27/2024 – Cedarburg, WI – Ozaukee Radio Club Spring Swapfest  
<https://www.ozaukeeradioclub.org/>



## Ozaukee Radio Club minutes of membership meeting. 11/8/2023

de: Ken Boston, W9GA, Secretary

The monthly ORC meeting occurred at the senior center as we have returned to live in-person meetings, along with a streaming version held via Zoom. ORC President Bill K9GN began the meeting at 7:30 PM, with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were also introduced. New member, Dragi Trifunovich has received his new ham license; KD9ZCS.

### Program:

K9LA, Carl Luetzelschwab was introduced as our speaker; and laid out a new threat to HF Amateur operation, called HFT for High Frequency Trading. This radio service is utilizing HF frequencies and various digital modes to manage high speed trading of stocks and bonds, in order to shave milliseconds off the trading of these financial entities. Licensed in the FCC part 90 as a 'fixed' service, the portals use high power, somewhat wide band digital modes and high gain antenna systems to effect these trades. Many possible problems were discussed, with test sites already operating adjacent to the 14 MHz ham band.

**50/50 Raffle:** This was won by Nancy KC9FZK; winning an award of \$14.00.

**Scholarship Auction:** W9XT auctioned off a desktop computer; it went for \$20 !!

**Committee reports:** [there were no RPT-VP, Tech, and STEM reports.]

1ST VP: JeanAnn N9VSV promoted the ORC swag: cups, hats, badges. See also reviewed upcoming programs for our meetings

Treasurer: Gary N9UUR mentioned that our bank issues are all resolved. The Grafton Sr center rent is renewed for 2024, and dues of \$20/year are now due. Motion to accept made by K9QLP, 2<sup>nd</sup> by WB9RQR, and carried.

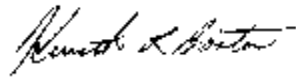
Secretary: W9GA reported that the October 2023 minutes have been posted, a motion to accept was made by N9VSV; 2<sup>nd</sup> by KC9FZK and carried.

**OLD business:** ORC has received inquiries for licensing classes, for the technician class. As there have been no classes for the last 3 years, this issue will be monitored to see what demand there is for a repeat.

**NEW business:** Our dues are now set to \$20/year; and no further increase is under consideration at this time. [N9UUR]. Our officer nominating committee is chaired by W9JI and includes K9QLP and W9MXQ as members.

**Adjournment:** WB9RQR moved to adjourn, K9QLP 2<sup>nd</sup>, motion carried; time end was 9:15 PM. There were 18 in-person attendees, one guest [Jim KF0HGR] 16 zoom attendees.

Respectfully submitted;



Kenneth Boston W9GA, Secretary

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**This Month's Meeting: December 13, 2023 - 7:30 PM**  
**Program: Club 220 Repeater System,  
History and Upgrades 1988 to Present**  
De: Jeananne Bargholz, N9VSV



Everything you might want to know about the club's 220 Repeater System ... and more! This month's presentation is from Gregg Lengling, W9DHI. A retired Engineer specializing in two-way radio, Gregg says "experimenting and building is my main focus of ham radio and has been since Boy Scout Troop 61 W9BSO back in the 1960's."

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## **Upcoming Meeting Programs:**

**January 10, 2024, 7:30 PM**

Annual Meeting/Election of Officers

**February 14, 2024, 7:30 PM**

Jeananne Bargholz, N9VSV

Amateur Radio-Related Philately (Stamp Collecting)

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### **Creating a Presentation**

We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related.

Not sure how to approach talking about a subject? Never used PowerPoint? No problem, I would be happy to help you get your talk ready for the club.

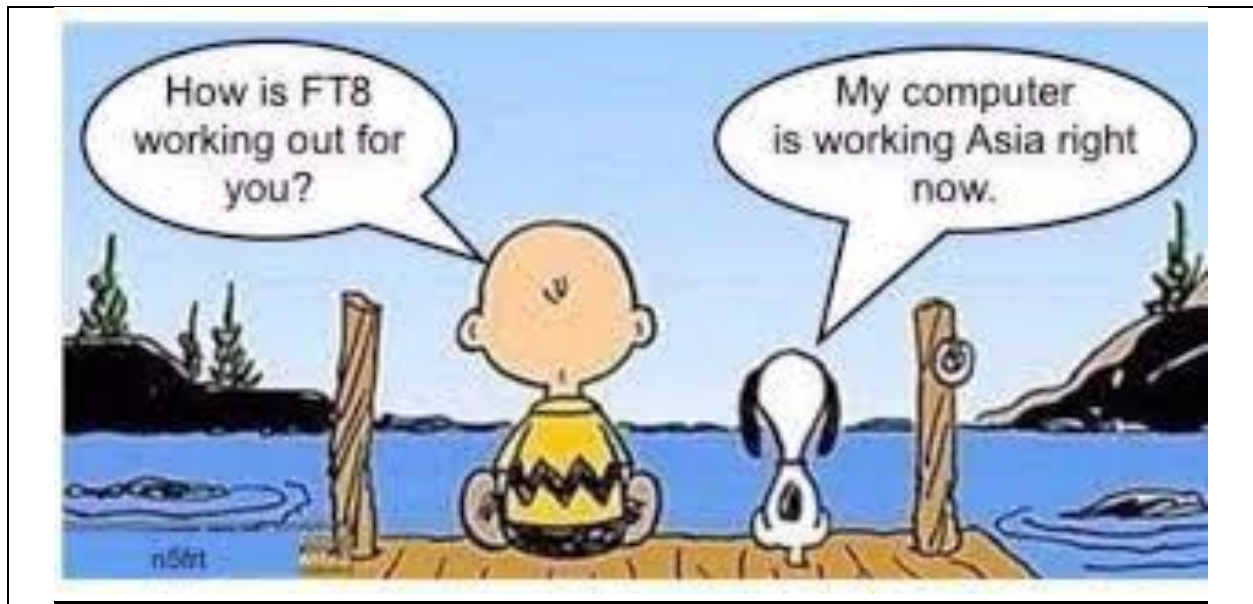
Please consider sharing some of your experiences with the rest of us. If you have an idea and would like some help putting a program together, contact Jeananne at [iamn9vsv@wi.rr.com](mailto:iamn9vsv@wi.rr.com).

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## ORC Meeting Agenda

13 December 2023

1. 7:15 – 7:30 PM  
Check-In and Introductions
  2. 7:30 PM Call to Order:  
President Bill Greaves (K9GN)
  3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
  4. Greg Lengling, W9DHI  
Club 220 Repeater System
  5. President's Update:  
Bill Greaves (K9GN)
  6. 1<sup>st</sup> VP Report:  
Jeananne Bargholz (N9VSV)
  7. Repeater VP Report:  
Tom Trethewey (KC9ONY)
  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
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# **The Back Page**

**This Month's ORC Meeting  
Hybrid In-Person/Zoom Meeting  
13 December 2023**

**Program:  
Gregg Lengling, W9DHI  
Club 220 Repeater System  
History and Upgrades, 1988 to Present**

**7:00 PM – Doors Open  
7:15-7:30 PM – Zoom Check-In  
7:30 PM – Meeting Begins**

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**NEXT MONTH  
Hybrid In-Person/Zoom Meeting  
10 January 2024**

**Program:  
Annual Meeting  
Election of Officers**

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