



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

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Number 8

From the President

de Pat Volkmann, W9JI



As of July 1st, we have a new ARRL Wisconsin Section Manager. Patrick Moretti KA1RB has retired after serving three terms as our SM. Patrick is succeeded by Jason Spetz KC9FXE. Jason has been a ham since 2004 and his main interests are in emergency services and traffic handling. Jason is also working on learning CW. I invited Jason to talk to us about the goings on in the Wisconsin section and he has accepted the invitation. Jason will join us at the October ORC meeting. He invites your questions on the ARRL and Wisconsin section. You can contact Jason at KC9FXE@arrl.org or talk to him at the October meeting.

Do you enjoy the monthly meeting programs or would you like see the Club do something else? I have been the program chairman for about 7 years now and have (so far) been able to come up something every month. I don't have anything lined up after October and am looking for some ideas. Maybe you would like to tell us about a project that you have been working on or talk about a subject that you find interesting? Perhaps you've heard of someone outside of the Club who has done an interesting presentation and might be willing to talk with us. What about doing something else besides a presentation? Let me know what you think.

The International Lighthouse and Lightship Weekend has been held annually on the third weekend of August for 25 years. Fred Schwierske W9KEY and a core group of volunteers plan to activate the 1860 Light Station in Port Washington. This is a Field Day type event and has been popular in the ORC for a number of years. Fred is looking for operators and could use some more help with setup and teardown of the radio stations. Contact Fred at fredschw@sbcglobal.net if you are interested in helping out with this event.

It's not too early to start thinking about the elections that will be coming up in January. The ORC has term limits for the offices of President, First Vice President, and Second Vice President. I believe that the term limits are very good for the Club as they allow

new people with a different point of view take a turn in office. Ben Evans K9UZ (First VP) and I have reached the limit for our offices. Let me know if you are interested in running for any of the Club positions. January will be here before you know it.

Ever wonder how you stack up against other operators in the contesting world? The World Amateur Radio Contesting Association (WARCA) publishes an annual ranking of all active international contesters. I don't generally enter contests anymore, but I received a message from WARCA letting me know that I ranked number 38,471 out of 43,338 contesters. You can look up yourself and your friends at the WARCA website - www.warca.org.

See you at the meeting.

Pat Volkmann W9JI

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de: **Bill Shadid, W9MXQ**

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. Pat talks about the upcoming International Lighthouse and Lightship Weekend and our part in leading a special outing for that event. Also check for details of the entire global event at <https://illw.net/index.php>.

Our regular Ozaukee Country Amateur Radio Emergency Coordinator (ARES EC, Don Zank, AA9WP) is back with us this month, "Ready or Not." The other regulars Stan Kaplan, WB9RQR, Bill Shadid, W9MXQ (your Editor), Gary Sutcliffe, W9XT, and Ken Boston, W9GA, are here as well with monthly contributions. Speaking of Ken, W9GA, a complete 2022 Field Day Report follows in the September ORC Newsletter.

Last, but not least, is a short article about the club call letters, W9CQO, from Ray Totzke, W9KHH. Ray has always sought me out with interesting historical items for radio – something I greatly appreciate. Take a look at his interesting story – especially if, like me, your involvement with the club predates the membership of George Hoffman, W9CQO. (That may be most of us.) Stay tuned for the September Newsletter when Ray returns with a unique Morale Radio. What's that, you say? Stay tuned. Welcome to the author's ranks, Ray.

I am looking for first person articles about your life in ham radio. Interesting projects involving radio, operating events in which you were a participant, getting that first license of an upgrade, etc. contact me for details at newsletter@ozaukeeradioclub.org.

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Onward To the Newsletter

THE COMPUTER CORNER

No. 293: Belarc Advisor

de: Stan Kaplan, WB9RQR

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This is perhaps the best system information software available for Windows. It has been around longer than any other of the six best (rated by Majorgeeks) and is said to be the one most often found in tech toolboxes. It is really clean, very complete, does no harm (all data is kept locally in your machine) and is rated 5 (geek-o-licious) by 592 votes on Majorgeeks. To find it easily, go to <https://www.majorgeeks.com/> and look at the information columns on the left side. The first is Files, the next is Spread the Word, and the third (the one of interest) is Majorgeeks Top Freeware Picks. Click that and scroll down to System Information. Belarc Advisor is the third of six shown.

Belarc Advisor is completely free of charge for personal use only. It quickly builds up a profile of your hardware and software, network inventory, antivirus status, security benchmarks and missing Microsoft hotfixes. Then it presents its findings in your Web browser. A nested report, it is easy enough to increase details by clicking appropriate places in the main report. They are mindful of your personal security and will never sell your personal information to third parties. They may ask for your email address to send the download, and your first name, last name, and company if you have one.

So, what can you expect in a report? Below is a partial list, with more detail available by expanding areas in the main report.

Operating System	Communications
Processor	Display
Drives	Multimedia
System model	Group policies
Main circuit board	Other devices
Memory modules	USB storage use last 30 days
Local Drive volumes	Hosted virtual devices
Network drives	Network map
Printers	Missing security updates
Users	Software licenses
Controllers	Software versions and usage
Bus adapters	Installed Microsoft hotfixes last 90 days
Virus Protection	

You can also use “save the page as” in your browser to make a permanent copy on your desktop or elsewhere. That is a good idea every six months or year or as often as you like to compare changes (including security improvements) that you have made over time in an effort to generally improve security.

All in all, this software is an extremely useful piece of “freeware”. You can use it to not only reveal things you did not know about your machine, but also to design new im-

provement strategies that will make your computer easier to use and safer. A good goal and at no charge. Thanks, Belarc. And to you, Happy Computing!



Something we need to be thinking about all the time – repeated again this month:

What happens to you if you have a direct or close-in Lightning Strike?

Is your insurance setup to cover your loss?

It's too late to check after you smell smoke!!

Spring and Storm Season is Upon Us!

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)
-

OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank, OZARES Emergency Coordinator, AA9WP@arrl.net

Ready or Not



First, I would like to thank Vic, WT9Q, the Washington County Emergency Coordinator for the July ARES message. Occasionally Vic will check into the OZARES net with "WT9Q, Vic, Boltonville." Invariably our net control will reply "W9.... WQ.... WT uh, can you come back with that call sign?" Always good to keep the net control stations on their toes.

I am a counselor at Pine Lake camp for intellectually challenged adults at the end of June. Getting ready for camp always takes more time and effort than I plan for and that's why the OZARES report was missing. The camp is located near Westfield, in Marquette County. It is a busy and fulfilling week of activities, and this year it was hot. I will bring along my HT and have a mobile in the car but there is not much time for radio.

The week previous to our camp a severe storm blew through the area. Towering pine trees, some close to 20 years old were snapped in half. Other trees came down across the roads the head into camp. Power was out, phone and internet, which are very iffy during good conditions, were definitely not working. The campers and staff were cut off from any contact with families and friends. The camp, using ATV's and nearby neighbors, was able to reach out to local services for any medical emergencies.

So that got me to thinking. What if this had happened during our camp? Our camp is made up of two dozen adult campers and eight counselors. There is another camp of two dozen younger campers plus their staff. Throw in several other full-time counselors and a nurse that make up the camps support group. All with no way to provide a welfare report back to their families.

As an amateur radio operator what could I do to help with communications with the outside world? What equipment and skills do I need to be properly prepared to provide emergency communications?

First, because electrical power is out, what other modes of emergency power are available? Batteries, preferably the lithium-ion type, should be available. Another source are car batteries. How are the batteries going to be charged if this is an extended outage? A solar powered source would be helpful for the lithium-ion batteries. And running the car engines can recharge the auto batteries.

Are the nearby repeaters programmed into the radio or, at least, do I have a list of stations, frequencies, and tones? The internet is not available so I cannot google the repeater handbook. Did I bring along a list of nearby amateur radio operators? The Coloma WECOMM site is nearby, can contact be made with the repeater? If these sites are down or cannot be reached how else could I establish contacts?

Normally I don't bring a hf rig but in this scenario, it could prove very useful. Using a NVIS antenna (assuming I packed the extendable mast and antenna) I should expect to establish contact with a Wisconsin ARES/RACES net, such as the Badger Emergency net, or another Wisconsin operator. Otherwise, I can reach out to hams in nearby states. A good sense and understanding of hf propagation would be invaluable.

How would I pass welfare messages? How would I track who, what, where, and when messages were sent? Would I be expecting return messages? How can I maintain the privacy of the people at camp?

Now I need a good working knowledge of how traffic is passed and the use of ICS forms. The ICS-214 form, used to log all communications, coming, and going, would be a good starting point. I should be able to use the ICS-213 general message form and/or radiogram to send information. But this would also be great deal of writing and paperwork.

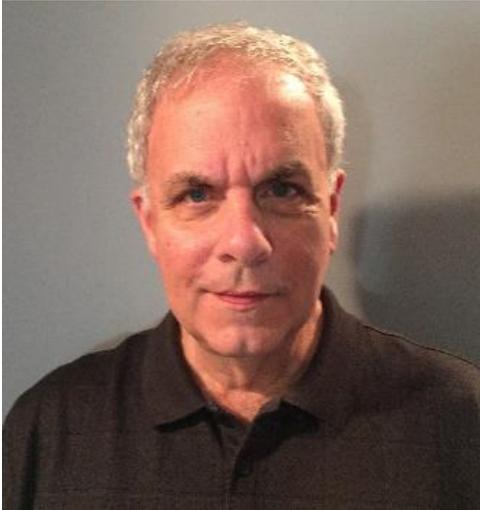
A much more efficient mode is creating and sending messages in a digital format. If connections can be made to a WINLINK RMS gateway, vhf or hf, the welfare message templates available in WINLINK Express can be easily completed, sent, and tracked. Of course, do I have a list of nearby VHF RMS gateway stations? Do I have HF gateways saved as favorites in WINLINK Express? Or can I connect to a station that uses Narrow Band Emergency Messaging (NBEMS)? Does my computer have enough battery capacity, or can it operate from an emergency source?

These are a few of the questions and concerns of emergency communications. In May I discussed keeping ham radio relevant for disasters and support in small, remote locations was one-way hams can be helpful. But it takes some time and effort to be prepared. (Don't forget that our campers still want to have their dance, bingo games, breakfast, lunch, and dinner. Well, I want those last three too.)

Now this was an interesting discussion on the sending side. What about the receiving side? Next month's topic.

Vintage Amateur Radio

de Bill Shadid, W9MXQ



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

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

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



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

W9MXQ Collection

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

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

The circuitry for the time was noteworthy in that it used the then relatively new RCA Nuvistor¹ ultra-miniature vacuum tubes. While the “VHF” model was very impressive in the 1960’s, it would not hold a candle to today’s VHF receiver front ends. The HF part of radios of the day, while inferior to today’s offerings, had many good traits and can be used in non-competitive² communications.

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

- HQ-170 Receiver
 - Introduced in 1958.
- HQ-170C Receiver
 - Same as HQ-170 but included an optional clock on the front panel.
- HQ-170A Receiver
- HQ-170AC Receiver (same as above but included a clock on the front panel)
 - Same as HQ-170A but included an optional clock on the front panel.
 - This is the one I had in 1965.
- HQ-170A-VHF Receiver
 - The VHF model is very rare, today.
 - I do not think these were ever shipped in this form from the factory. That is, without the optional clock.
- HQ-170AC-VHF Receiver
 - Same as HQ-170A-VHF but included an optional clock on the front panel.
 - The VHF model is very rare, today.
 - This is the one in my collection now.

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

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



Hammarlund HQ-170AC-VHF used as a separate Receiver with a Collins KWM-2 Transceiver. Also seen is the Collins 312B-5 Remote VFO for the KWM-2. The 312B-5 was merely in place because it had an internal speaker connected to both the KWM-2 and the HQ-170AC-VHF. They worked surprisingly well together because of the Collins's rig feature set allowing antenna switching and muting for a remote/separate receiver³. The Collins 516F-2 Power Supply is out of site, behind the transceiver. You can also see the Electro Voice EV-638 (with EV-428 PTT Base) Desk Microphone.

W9MXQ Collection

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

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

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

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

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

The Valiant that now duplicates my original station comes from a local ham friend here in Southeast Wisconsin, John Schroeder, KB9BPM. John had acquired it from a well-known Johnson Restorer, Chuck Hurley, K1TLI⁴. It is an incredible restoration that takes the radio from a good used radio to a piece of artwork!

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



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



Turner 254C Hi-Z Ceramic Microphone



Amphenol 80-MC2M 2-Pin Offset Mic Connector
W9MXQ Collection

The left picture shows the Dow Key Antenna Relay. The relay is mounted to the RF Output connector with a double female Barrel Connector. The blue and gray wire pair go to the receiver mute connections present on the Eight-Pin Octal System Socket Connector on the back panel of the HQ-170AC Receiver. The green and black wire pair go to the 120 VAC Antenna Switching connector on the back of the Valiant transmitter. When the Valiant goes into transmit mode, it puts 120 VAC on that wire pair. Look again at the picture (which is actually from the back of a Johnson Viking II Transmitter). The connector arrangement on the Valiant is the same. See at the right edge of the picture what looks like a crystal plugged into the socket? Johnson transmitters had a crystal socket used in these locations with 120 VAC present at transmit. Users had two choices.

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

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



While not easy to find operational today, a major attraction (to me) on the Valiant Transmitter are its Mercury Vapor 866A Rectifiers in the High Voltage Power Supply of the transmitter. The picture at the left shows the pair operating under load with the full-wave rectifier circuit. The “electric blue” glow is bright (this is not a time exposure) and ripples with the keying of the transmitter on CW or with modulation on SSB. On AM, they just glow brightly. The more current drawn the brighter they flash. This pictures shows the pair of 866A tubes installed in the Johnson Valiant Transmitter at W9MXQ.

Often these very efficient rectifiers (approaching the efficiency of a solid-state rectifier/diode) are replaced by more plentiful (and more dependable) 3B28 rectifiers.

They are most often replaced with diodes as there is no significant voltage increase as with most diode replacement of tube rectifiers. While I have both 3B28 Vacuum Tube and solid-state plug-in replacements on hand, I prefer the originals.

I measure Valiant Transmitters as being early or late models and this one is an early version. This is based on my own parameters. I feel that early Valiant Transmitters have their screen voltage adjustment on a large ceramic resistors with two slider contacts accessible at the underside of the right rear corner of the chassis. The cabinet need to be removed to make the adjustment.

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

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

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

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



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

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

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

- The 866A Rectifier Tubes were shattered.

The Mercury Vapor design of the 866A hints at one of the issues with this tube – it contains mercury. A shattered tube means that mercury could be present somewhere on

the chassis. In instances where the base of the tube survives (which is usually does as it is generally a plastic or phenolic piece) and the “drop” was directly on the bottom (on the transmitter’s feet, which it was), the mercury collects in the socket. In such a case, the mercury can be easily collected and removed.

These kinds of issues – the presence of stray mercury – are just one of many dangers if working with older radios. Remember that mercury is very toxic and must not be handled. In this case, I trust the technical capability of the former owner that any mercury has been sought out and removed.

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

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

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



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

CW operation was much as it is today except for a very high percentage of operators on CW as compared to Phone. The CW band segments were filled with conversational CW that are generally gone today. Semi-break-in, popular along with QSK (full-break-in) today was around but not common. When I had my first Valiant – and with the one I have today, I still switch to transmit via the transmit toggle switch on the lower right front of the transmitter. It would be easy to use the PTT circuit in the Valiant to be triggered by a foot switch – but actually I rarely use the Valiant on CW today as that mode is so much easier on modern radios. Actually, the very next generation of transmitters after the Valiant made use of semi-break-in.



Good friend, Gary Drasch, K9DJT⁵, and I enjoy a common heritage in that we had the same first radios as General Class operators. Here is Gary, at age 13, at his attractive Valiant and HQ-170C station. Also see the Johnson Matchbox Antenna Tuner. Where I had used the Turner 254C Microphone, Gary used the Astatic D-104 with the PTT Stand. We returned to common ground with the Vibroplex Original bug. We did not discuss it, but I believe I had (and still have in my shack) that same world globe!

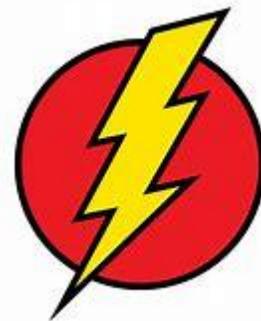
K9DJT and I recently discussed our next transmitter. As if staying on the same path, we moved to a Hallicrafters HT-37 Transmitter to replace our Valiant models. To some degree we missed the obvious move of the market to SSB from AM – hindsight being 20-20, we should have started with the HT-37 – the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

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

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



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



A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a lot more than a proofreader as he often adds commentary that makes it into the article. Bob and I both

own numerous pieces of Hammarlund equipment. Between the two of us, however, I believe that only I have any E. F. Johnson gear. Many comments herein are subject to opinions that W9DYQ and I hold and believe. Your experience may differ – and if they do, I would like to hear from you for further discussion.

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

Credits and Comments:

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

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

³ A feature some transceivers to allow for including a separate receiver was not uncommon in the time of the Collins KWM-2 and still is in transceivers to this day. Most notable of transceivers that are contemporaries of the KWM-2 with this feature were the Drake TR-3 and TR-4, the Hallicrafters SR-150, and others. Check your vintage transceiver instruction manual for details.

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

⁵ Gary Drasch, K9DJT, is an accomplished author in the amateur radio field. Check his current book, “Ham Radio is Alive and Well: Traditional Ham Radio... The stuff we did and continue to do into the 21st Century.” For details, contact Gary at Books@K9DJT.com.

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Hammarlund Radio Company

Logos of the Day

On The Air!

de: Gary Sutcliffe, W9XT



The typical summer HF doldrums held for July. There were some good openings compared to recent summers because of higher sunspot numbers. We had solar flux (SF) numbers hit as high as 170 this month. A couple of months from now that will translate into some really fun openings on the higher bands. Those of you who don't believe me that you can work the world on 10 meters with a very small station will finally become convinced.

Fred, W9KEY, and Bill, W9MXQ, report getting a clean sweep in the Indianapolis Motor Speedway Special Event. Most of my HF operating in July has been chasing POTA parks. I am starting to work many of the same popular parks over again for the second or third times

Lighthouse Event

After a two-year absence, the ORC will join the LEFROG Radio Club to activate the 1860 Light Station Museum in Port Washington, WI for the annual Lighthouse Weekend. They will be setting up around noon on Friday, August 19. The plan is to operate during the daylight hours on Saturday and Sunday, tearing down on Sunday afternoon. Stop by to help set up or tear down or for some operating.

Information on the International Lighthouse Lightship Weekend can be found at <https://illw.net>. For the ORC/LEFROG operation, contact Fred, W9KEY, for more information on the ORC activation or to help out.

VHF

The 2022 Sporadic E (Es) season is ending this month. Openings will be less frequent as the month progresses. I am disappointed in the 2022 season. I had two things I wanted to work on, my 6M DXCC and the Fred Fish Memorial Award (FFMA).

I picked up seven new countries on the band. I was hoping to pick up more than that, but we didn't get as many or as good DX openings as in the last couple of years. However, as Murphy would dictate, we had an outstanding 6M opening to eastern Europe on the day of the South Milwaukee hamfest. A few attendees there had remote access to their stations and were seeing stations in eastern Europe.

New grids to the western states were harder to get as well. We didn't get much of the double hop propagation needed for that. There also seemed to be fewer grid rover stations than in previous years. No doubt part of that was the high cost of gasoline, not just for the long drives but also to fuel generators for electricity in isolated locations.

But we are coming up to a big event in the VHF calendar, the Perseid meteor shower. Every year in August, the earth passes through the orbit of the comet Swift-Tuttle which contains debris of the comet. Small pieces of rock enter the atmosphere and burn up, leaving a trail of ionized gas. Radio signals can be bounced off these trails up to about 1300 miles. The most popular bands are 6 and 2 meters, but some also try it on 222 MHz. The ionized patches are more frequent and last longer on the lower bands.

You will need an all-mode rig for your band of choice to make meteor contacts. If you are already operating FT8, you are all set. MSK144 is the mode you select in WSJT. The peak is August 12-13, but there is good activity on either side for a week or so. The best times are about 4:00-8:00 AM local time because that is when the earth will be moving into the debris stream.

If you don't have the equipment for meteor scatter, there is a fun website. <https://www.livemeteors.com/> This site "listens" for meteors by monitoring transmitters normally out of the range of the receiver. When a meteor comes through, the receiver will hear the transmitter for a short time. Most of them will last a fraction of a second but can last much longer. So, you will hear a tone when one comes through and can watch the waterfall and other displays.

Often, I am split between wanting to go outside to watch the meteor fireworks or operate. That is not going to be a problem this year as we will have a full moon at the time of the peak. That will cover all but the brightest meteors.

There is a new contest for the meteor scatter peak. Points are based on distance and band. I am not sure this is a good idea. Getting more stations on for the shower is good, but I worry about QRM. Generally, many stations can be on the same frequency. Narrow beam patterns and meteors coming in different areas allow it. But, if you have someone nearby (a couple of hundred miles), they will be strong the entire transmit period, covering up stations popping up via meteor. Gary, K9DJT, and I have to coordinate if we are chasing meteor contacts simultaneously, even though we are about 22 miles apart. Generally, the western station transmits in the first and third sequences and listen in the other two. We can both operate, but we must work in the same direction and sequences to prevent blocking each other's receivers.

If you have a bunch of big guns calling CQ trying to work everyone they can, it could prevent others from getting new grids or states they are chasing. On the other hand, maybe it will encourage ops to move to alternate frequencies. We will see. Despite my misgivings, I will put it on my contest table.

Speaking of VHF contests, I am remiss in not congratulating Gary, K9DJT, for winning the low power category for the Central Division in the ARRL January VHF contest. Excellent job, Gary!

For the last year or so, I have been concerned that my three element 6-meter beam at 55' is too high. Work by others, some terrain modeling, and being unable to work sta-

tions K9DJT, W9GA, and others in the area are working convinced me I had to do something. I put up a five-element beam at about 18'. There is a drop-off near the tower, so the effective height is somewhat higher.

But it has proven to be an improvement to the south. I have found cases where CW and SSB signals are a good two S-units better on the lower antenna. I also picked up Ecuador for a new country with the new antenna. Good openings have been rare, so I have not been able to test in all directions. On one 6-meter opening to Greenland, the higher antenna was better. This proves that you don't need to put up a high band to enjoy 6 meters!

CSVHF Conference

Every year the Central State VHF Society holds its conference at the end of July. It was in La Crosse this time. I usually go when it is in Wisconsin or a surrounding state. COVID prevented the 2020 or 2021 events. CSVHF is an excellent way to meet serious weak signal operators on the VHF+ bands, plus learning a lot from the talks and a published proceedings book.



New low 6-meter beam at W9XT

Ken, W9GA, is active in the CSVHF and was involved in organizing the event this year. He also talked about building VHF beams, including the ones he and John, W9JN, made for their joint 6-meter moon bounce station near Stevens Point.

One of the interesting events is Rover Row/Dish Bowl. This is where stations show off their mobile rover and portable microwave stations. One of the things that caught my eye were rigs for 122 GHz. That is really way up there. On HF, we speak of the 80- or 20-meter bands. That is the wavelength of the band. The wavelength on 122 GHz is about 0.0025 me-

ters, which is less than 0.1 inch!

Operation on 122 GHz is made possible by some new ICs designed for radar for autonomous vehicles. The size of antennas and difficulty getting RF out is accomplished by

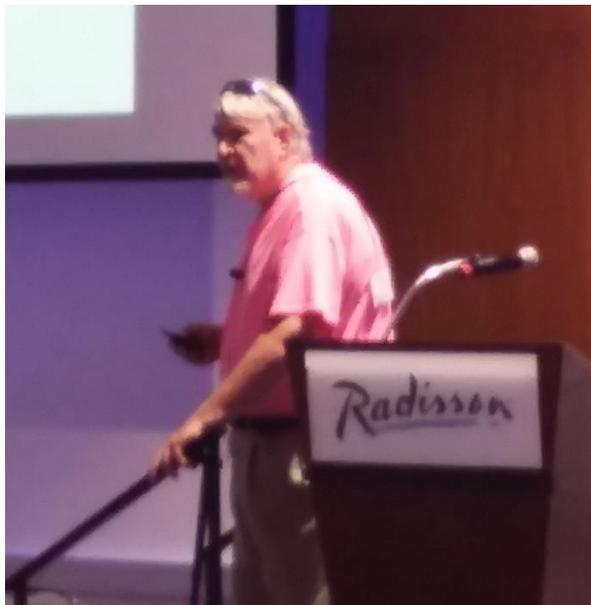
putting antennas right on the chip. Some clever hams figured out a way to adapt them to ham use.

Conferences are a great way to see people you have not seen in a while. The CSVHF president and conference chairman was Bruce Richardson, W9FZ. I have known Bruce since the late 1980s. He had a lot of help on the convention from his wife, Janice Hoettels, KA9VVQ. You may remember Janice was an ORC member until around 2014, when she and Bruce married and moved to the Twin Cities.

Upcoming Conventions

There are a couple of conventions coming up in late August and September. I mention them now so you can take advantage of the special hotel room rates if you decide to attend.

The first one is SMC Fest, the Society of Midwest Contesters annual get-together. It is a chance to meet regional contesters and learn how to become a better contester. I am on the SMC board of directors and will make a short presentation. It is August 27, but most attendees show up on Friday afternoon to get together for dinner.



Ken, W9GA, speaking on home brew VHF beams



**WF0T's 122 GHz rig.
The dish is 3-D printed.**

The next one is W9DXCC. This very popular event is the premiere event for DXers in the region. It is on Saturday, September 17, but there are the optional DX University and Contest University programs on Friday.

The Northern Illinois DX Association, which puts on the W9DXCC event, also sponsors the Friday DX University. The SMC sponsors Contest University. Both tracks have talks aimed at beginners. If you sign up, you pick either DX or Contest U, but you can mix or

match which presentations you attend. I will speak at DX University on the importance of antenna take-off angles.



Bruce, W9FZ, and former ORC Member Janice Hoettle, KA9VVQ, with their rover mobile.

KA9VVQ photo.

Contests

This month has the summer North American QSO parties, CW, and SSB. These are short contests, and the exchange is your first name and state. They are great contests for small stations.

The Worked All Europe CW contest is the second weekend of August. As the name suggests, the world works Europe. WAE is a very popular contest, and there is a lot of activity when the band is open to Europe. The exchange is a signal report and serial number starting with 001.

Besides QSOs, you can get points for QTCs. These are when you send previous QSO information to a European station. They may ask you if you have any QTCs. If so, send the info for up to 10 QSOs for additional QSO point credit. The process is somewhat long to explain, so read the rules if you plan to participate. The phone weekend is September 10-11.

The ARRL September VHF is the weekend of September 10. This is for all bands, 50 MHz and up. The exchange is your four-digit grid number. We are not as likely to get good 6-meter Es propagation as we hope for the June event, but we are more likely to

get tropospheric propagation. Tropo will be more pronounced on 2 meters and the higher bands if present.

DXpeditions

Rodrigues Island will be on August 5-9. This is a reasonably rare Indian Ocean Island. They will be running 100W and dipoles, so this will be challenging but worth keeping an eye out for.

Otherwise, August will be kind of slow. August is rarely a big month for DXpeditions. However, September and October promise to be very interesting, and it will get exciting at the end of the year. Stay tuned.

August is considered to be the last month of summer. Traditional advice is that now is a good time to get moving on antenna projects. But we all know that antennas don't work unless they are put up in a snow storm. Even here in Wisconsin, that is a ways off. But with the supply chain issues, you might want to start lining up materials for when the snowflakes begin to appear, and a proper installation can be done.

**Please see the next page – with
Contest, Operating, Special Event,
and DXpedition picks
for August and early September 2022. Print
that page separately and keep it next to your
radio.**

W9XT's Contest, Operating, Special Event, and DXpedition picks for August and early September 2022

W9XT's contest picks for August and early September 2022					
Name	Start	Length	Bands	Mode	Link
NAQP	Aug 6, 1800Z	12, work 10 max	HF	CW	https://ncjweb.com/naqp/
North American Meteor Scatter Sprint	Aug 12, 15:00Z	48, work 36 max	6M, 2M, 222MHz	MKS144	https://kv5w.com/2022/07/23/north-american-meteor-scatter-sprint-digital/
WAE CW	Aug13, 0000Z	48	HF	CW	https://www.darc.de/der-club/referate/conteste/wae-dx-contest/en/wae-rules/
NAQP	Aug 20, 1800Z	12, work 10 max	HF	SSB	https://ncjweb.com/naqp/
ARRL VHF	Sep 10	33	6M & up	CW/PH/Digital	https://contests.arrl.org/ContestRules/JanJunSep-VHF-Rules.pdf
WAE Phone	Sep 10, 0000Z	48	HF	CW	https://www.darc.de/der-club/referate/conteste/wae-dx-contest/en/wae-rules/

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 2022					
Event	Dates	Call	Bands	Mode	Link/notes
Jefferson Outdoor Fest	Aug 6 Jefferson				http://w9mqb.org
Perseid Meteor Shower	Aug 12-13 +/- 1 week		6M & 2M	MSK144	
W9UDU Free Fest	Aug13 Racine				http://www.w9udu.org
International Lighthouse Lightship Weekend	Aug. 20-21 Set-up Aug 19	W9CQO	15, 20M		International event: https://illw.net Local info Fred, W9KEY
SMC Fest	Aug 27				https://www.w9smc.com/smc-fest/
ORC Fall Swap-fest	Sept 10 Cedarburg				https://www.ozaukeeradioclub.org/downloads/fall-swap-fest/2022_Fall_Swapfest_flyer.pdf
W9DXCC	Sept 16-17				https://w9dxcc.com

W9XT's DXpedition picks for August and early September 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Rodrigues Isl.	Aug 5-9	3B9	?	?	?

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

W9CQO is Our History

de: Ray Totzke, W9KHH

“de W9CQO” at Field Day 2022 is history. What is the origin of the ORC callsign, W9CQO? When club leaders determined to have a club call, they did not pick W9CQO as “CQ Ozaukee” which you may have thought. The W9CQO call sign has been in Ozaukee County since the late 1940’s.

The call sign of Ozaukee Radio Club, W9CQO, belonged to George Hoffman of Port Washington. He was one of the original hams in the area long before the ORC was formed. His call was chosen to honor him and his influence on the ones that followed, such as Joe Collins, W9PYM, Hal Giese, W9RXJ, Bert Klopp, W9OFM, and others who borrowed calls so they could get on the air before their licenses arrived. Sometimes resulting in “WX9XXX” calling CQ being answered by the real holder of “WX9XXX.”

Will it be heard again during the Lighthouse and Lightship Weekend? And at Field Day 2023?



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1969 Top of the Line

I remember wanting one of these. Today, be careful what you ask for!!!

W9MXQ

Ozaukee Radio Club Minutes of Membership Meeting. 7/12/2022

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 1ST VP Bill K9GN officially initiated the meeting at 7:29 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance but were not addressed individually. Markus, KD9UWG won the 50-50 raffle.

Program:

Mike, WH6ZZ did a program on the use of the new JS8 mode. [similar to FT8]. This digital mode performs somewhat akin to FT8 but allows for the passing of free form messages between stations. This mode has the weak signal performance of WSJT modes, depending on the messages and formatting, which is variable. There are several other features that Mike explained, like a chat mode, and 'heartbeat'. [similar to PSK reporter]. It is a freeware program that can be downloaded and run on most of the popular computer platforms

There was also some additional Field Day information provided by members: KD9HLN operated a solo QRP effort, and Bill W9MXQ operated solo from the home QTH. Fred W9KEY reported on the LeFrog FD effort, running 4A [actually more of a 3A or 2A effort due to only having 5-6 operators] with a QSO count of 862 digital and 853 phone contacts. ORC field day report shows that we had 47 guests sign the tracking sheet, and a ton of 'Idle' bystanders stop and ask questions! Pete W0NG has also made available some more pictures posted of our FD event.

Scholarship Auction:

After a short break Stan WB9RQR held the auction, which had a few items including boxes of miscellaneous parts, and a Dell Laptop.

Committee reports:

[There were no First or Second VP reports and no Repeater VP report.]

Treasurer: Gary N9UUR handed out the current balance sheet. The June treasurers' report was accepted; motion made by KC9FZK 2nd by KC9TSO and carried.

Secretary: Ken W9GA reported the June 2022 minutes are posted; a motion to accept was made by N9VSV; AE9MY 2nd, and motion carried.

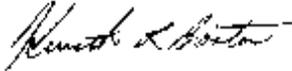
Scholarship/STEM: Tom W9IPR has accepted a donation by Ed, AA9W, who will be relocating to a condo in VA, to be close to family.

OLD business: W9GA presented the “Program of the year” award to Mike WH6ZZ for his 2021 presentation on the Marconi wireless telegraph station, a Transpacific wireless facility on Oahu.

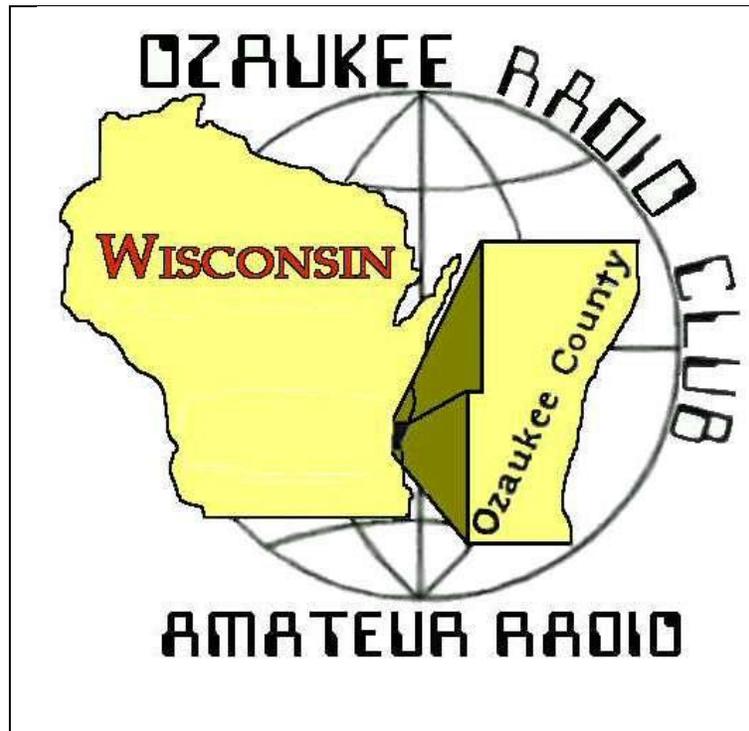
NEW business: Tom KC9ONY addressed the upcoming Lighthouse operating event. [8/19-8/21] where LeFrog and ORC combine to set up and operate. Tom is looking for assistance and some financial support from ORC. Ken W9GA mentioned the upcoming CSVHFs conference in LaCrosse. The scholarship \$2000 award was issued to Mike KD9TZK of New Berlin by the ARRL.

Adjournment: WB9RQR moved to adjourn, N9VSV 2nd, motion carried; time ending was 9:00 PM. There were 25 in-person attendees, 12 Zoom attendees.

Respectfully submitted,



Kenneth Boston, W9GA, Secretary:



Upcoming ORC Monthly Meeting Programs

de: Pat Volkman, W9JI

- August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures
- September – Dave Ellison, W7UUU - From the Ashes: Fire and Rebuilding the Ideal Ham Shack
- October – Jason Spetz KC9FXE, ARRL Wisconsin Section Manager
- November – Open
- December – Open
- January - Elections

We need some programs for later in the year. Please consider sharing some of your experiences with the rest of us. Contact Pat W9JI with your program ideas.

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 Volkman, W9JI, at orc_pat_w9ji@outlook.com to discuss your idea for a program

ORC Meeting Agenda <i>August 10, 2022</i>	
1. 7:15 – 7:30 PM Check-In and Introductions	6. 1 st VP Report: Ben Evans (K9UZ)
2. 7:30 PM Call to Order: President Pat Volkman (W9JI)	7. 2 nd VP Report: Bill Greaves (K9GN)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.	8. Repeater VP Report: Gregg Lengling (W9DHI)
4. Presentation: Bill Shadid, W9MXQ R. L. Drake Linear Amplifiers Features and Failures	9. Secretary's Report: Ken Boston (W9GA)
5. President's Update: Pat Volkman (W9JI)	10. Treasurer's Report: Gary Bargholz (N9UUR)
	11. Committee Reports
	12. OLD BUSINESS
	13. NEW BUSINESS
	14. Adjournment

**Next Month's ORC Meeting
Planned Hybrid In-Person/Zoom Meeting
14 September 2022**

**Program
"From the Ashes"
"Fire and Rebuilding the
Ideal Ham Shack"
Dave Ellison, W7UUU**

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