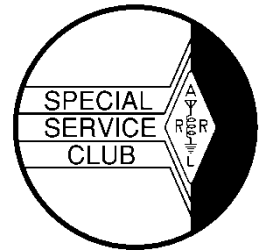




The *ORC* Newsletter

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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

Facebook: facebook.com/orcwi

Volume XXXIV

January 2022

Number 1

From the President

de Pat Volkmann, W9JI



Hang up a new calendar, 2022 is here. It's clear 2021 was quite a year, with some ups and more than a few downs but we've made it.

First off, the Club is doing very well. Membership remains at well over a hundred, with 18 new members joining the group in 2021. There were also 11 members who rejoined after a year of absence. It's been a pleasure to meet all the new folks and to see those that have been absent.

I can't tell you how many times I said, "we'll be back to normal soon," but I think I only said it in print 3 times. The Corona virus has been more persistent than any of us would like, and it is back for another, though somewhat weaker, surge of infections. Will this clear up in 2022? I'm not going to make a prediction.

We have been meeting on Zoom since April of 2020. While initially a huge unknown and something of a novelty, Zoom has become a familiar meeting place for us. The main benefit that I have found with Zoom is the opportunity to have conversations with people after the meeting. I have been able to spend time with and get to know many of you much better than we would have been able to do at the Senior Center meeting room. When we do eventually get pack to meeting in person, I'm sure that we will continue to have the Zoom meeting running in parallel with the face-to-face meeting.

The past year marked the first Club sponsored repeater operating event – the "Key Up" contest. Key Up encouraged members and non-members to use the repeaters to make low key, contest style contacts. It was the first time that I ever heard a pile up on the ORC 2-meter repeater.

This month we will kick off the "Key Up #2" contest. The rules have changed considerably from last time. This version should be more competitive and allow for quite a bit more use of the repeaters. Some of the changes include the addition of fixed and mobile class of operation and the ability to work stations on each repeater. The full rules appear in this edition of the Newsletter.

The Scholarship Program reached a milestone in 2021 – the creation of an endowed fund administered by the ARRL. The 2021 recipient of the Club scholarship was, for the first time, an ORC member – Nesya Graupe, KD9JNT. Congratulations Nesya and the best of luck in your studies. Please see the Scholarship Fund Report in this Newsletter.

Here's hoping that this new year finds you in good health and good spirits, with much to look forward to.

See you at the meeting.

Pat Volkmann, W9JI

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de Bill Shadid, W9MXQ

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Onward To the Newsletter

Nomination of ORC Members For the Ozaukee Radio Club Board of Directors Calendar Year 2022

The nominating committee consists of:

- Tom Ruhlmann, W9IPR Chairperson
- Jim Albrinck, K9QLP
- Tom Trethewey, KC9ONY

The committee nominates the following members to serve on the Board of Directors for the CY2022:

- President: Patrick Volkmann, W9JI (incumbent)
- First VP: Ben Evans, K9UZ (incumbent)
- Second VP: Bill Greaves, K9GN
- Repeater VP: Gregg Lengling, W9DHI (incumbent)
- Secretary: Ken Boston, W9GA (incumbent)
- Treasurer: Gary Bargholz, N9UUR (incumbent)

Note: The Repeater Trustee is appointed by the Board of Directors and is currently Mike Harrington, KD9GCM.

Should any member wish to also be included in the election for a specific office or have questions concerning the elections they should contact Tom Ruhlmann.

The elections will be held at ZOOM meeting on the second Wednesday (1/12/2022) in January 2022.

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.

Candidates and voters must have paid their dues for Calendar Year 2022.



Ozaukee Radio Club “Key Up #2” Activity

Purpose: To support training in radio communications, talk with other amateurs, improve operating skills, and encourage use of the Ozaukee Radio Club (ORC) repeaters.

Objective: To contact ORC members using any of the ORC repeaters.

Who can participate: All licensed hams are welcome to participate? You do not need to be a member of the ORC.

Date and Time: The event will begin on Friday, January 14, 2022, at 5:00 PM Central Time and end at 5:00 PM Central Time on Sunday, January 23, 2022.

Mode: FM

Exchange: Call sign, name, ORC membership (member or non-member), class (fixed / mobile)

Entry: For each contact, record call sign, name, time, date, ORC member status, class and repeater used. If you operate more than one class, submit a separate log for each class.

Award: Qualifying entries may request a certificate. A separate award will be made for each class of operation.

Rules:

1. All contacts must be made using one of the ORC repeater systems during the activity period.

Frequency	Offset	PL Tone
146.970	-	127.3
224.180	-	127.3
443.750	+	127.3

2. Class

- Fixed Class – All operation occurs from the home location.
- Mobile/Portable Class – all operation occurs portable and/or mobile.

All contacts must be made more than 1000 feet from the home location. Stations must identify as being portable or mobile when operating away from the home location.

These are separate classes and members must submit a separate log for each class in which they compete. Stations can compete in both classes. Other stations can work the same call sign twice for credit, one for the fixed station and once for portable/mobile. A station cannot be worked portable and again on mobile for credit.

For example, if you work W9JI/M, you cannot work W9JI/P for credit, but you can work W9JI from his home station for point credit.

3. Scoring – Three points for every ORC Member worked or one point for non-members. Each station may be contacted once per repeater per class. Contacts made during the Tuesday net do not count for credit.

To calculate your final score, multiply the number of ORC members worked on each repeater by three. Multiply the number of non-members worked on each repeater by one. Add the member and non-members points. Submit a separate log for each class of operation for which you are claiming credit.

- Example #1: W9JI worked 15 ORC member on the 2-meter repeater and 7 ORC members on the 440 MHz repeater for a total of 22 members, multiplied by 3 for a score of 66 member points. He also worked 8 non-members on the 2-meter repeater and 4 non-members on the 440 MHz repeater, a total of 12 non-members, for a score of 12 non-member points. W9JI's total score is 66 member points plus 12 non-member points for a total of 78 points.
- Example #2: W9JI worked W9XT on the 2-meter repeater. W9JI also worked W9XT/mobile on the 2-meter repeater. W9XT is an ORC member. W9JI can claim 3 points for each contact, for a total of 6 member points. W9XT can claim 3 points for the fixed station contact and 3 points for the mobile contact, as he was operating as a different station for each contact. W9XT operated both fixed and portable/mobile and must submit a separate log for each class.

4. Operating Conduct – Remember that a repeater is a system shared by many people. Maintain good operating practice at all times and listen before you transmit. Only one person can talk at a time!

5. Safety – Mobile operation can be distracting. Stop at a safe location before participating in the contest. Be especially careful when logging so as not to endanger yourself and others.

6. Logs may be paper or electronic – Cabrillo, .doc, .docx, spreadsheet or plain text format.

7. Entries will be reviewed by the Awards Manager.

8. The Awards Manager may verify some or all of the contacts claimed for credit. All decisions of the Awards Manager are final.

9. All entries must be received by January 30, 2022.

10. Send your entry to kboston6@wi.rr.com

THE COMPUTER CORNER

No. 286: Let There Be Light

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

This article is not about computers, as such. It is about light bulbs, although there are plenty of electronics and computing circuits inside the latest style bulbs. It is really about LED (Light Emitting Diode) bulbs, which everyone should be using nowadays.

First, why should everyone be using them nowadays? Power savings. A 100-watt conventional light bulb consumes 100 watts of power, and we all know that at least a substantial portion of that is released as heat. Try unscrewing a 100-watt conventional bulb right after it was on for a long period with just your bare fingers! Painful! An LED 100-watt replacement bulb shines with about the same amount of light as the conventional bulb but uses only about 13 to 15 watts of power. That won't burn your fingers nearly so badly! Furthermore, it will last 13 to 14 years or so, based on 3 hours use a day (most are guaranteed to last for 5 years). Bulb life also depends on brand and a bit on the type of fixture it is mounted in. But you can get it in soft white (similar to an incandescent bulb, ~2700K), or daylight (bright white, similar to a fluorescent bulb, ~5000K). Negatives are: 1. LED bulbs are usually non-dimmable, unless you shop for ones that specifically state they will work with light dimmers. 2. Many will not start (light up) if they are under 5° F or near that chilly temperature.

Yep, you can get LED bulbs in the 3-way variety, just as you can with the old incandescent style. A 3-way bulb is just that; turn the switch once and it goes on low. Turn it again and it gets brighter. A third turn and it goes on the brightest. The next click turn turns it off. You can tell if you are holding a three-way bulb by looking at the base. One central contact isolated by black or white plastic or ceramic insulation, followed by a surrounding ring (the latter is part of the screw-in threads) indicates an ordinary one-way (on-off) bulb. One metal central contact, then insulation, then a metal ring contact, more insulation, followed by a surrounding metal ring base is a 3-way bulb. See Fig. 1.

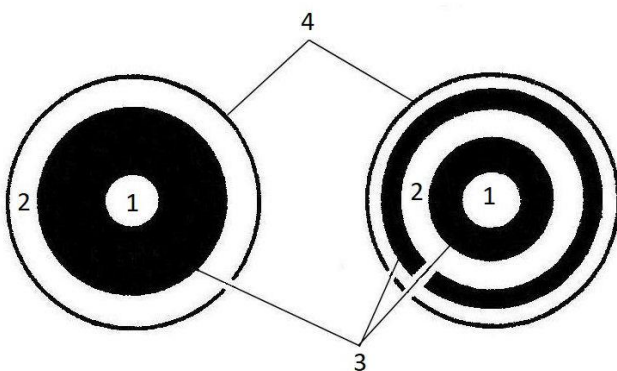


Fig. 1. Light bulb bases, as seen from the bottom. Left is a 1-way bulb (a knob click turns it on or off). Right is a 3-way bulb (a knob click turns it on low, another click turns it on medium, one more click turns it on high, and another click turns it off). 1 is the metal contact in the center of the base; 2 is also a metal contact; 3 is insulation (shown here in black) and 4 is the threaded metallic screw that allows you to screw it into a socket.

Common wattage values for LED 3-way bulbs are 40-60-100 watt and 50-100-150 watt. A 100-150-200-watt bulb also exists but those are incandescent, big, and used in a larger (mogul-size) socket.

Can you use a three-way bulb in a one-way socket? You bet. But just one light level will go on, then off, when you turn the knob. Which goes on/off (low, medium, or high) depends on the design of the bulb. Can you use a one-way bulb in a three-way socket? You bet. But only one of the successive clicks with the knob will light the bulb, and one will turn it off. And it will light only at the single level the bulb is designed for.

I mentioned at the start that there are circuits inside LED bulbs, and when LEDs first came on the market these circuits sometimes gave us hams grief because they generated unwanted noise in our receivers. Some consumers even complained about interference with television reception. This should no longer be a problem in any case. If you come across any sort of interference and you localize it to an LED bulb, try another and take the defective one back to where you purchased it for a replacement. If it happens with more than one, take them all back and try another brand. Such interference should not be tolerated. I can tell you from experience if it happens with an occasional bulb, the store will replace it and will simply write off what they had to supply the customer. If it happens often, they will send the bulbs back to the supplier with information that they are defective, and this will get back to the manufacturer.

So, there you are. Who, among us old-timers would have thought that we would be dealing with complicated electronic devices when we screwed in a new light bulb? But we must since we live in an age of electronics! Happy computing!

OZARES: Ozaukee Amateur Radio Emergency Services

by Don Zank AA9WP, OZARES Emergency Coordinator



It was rather disconcerting news I heard the other week when Amazon Web Services (AWS) suffered a large outage. In fact, I have learned that they had gone through two outages in the past three weeks.

<https://www.nbcnews.com/tech/tech-news/internet-outages-web-concentrations-power-rcna8942>

So, what does that have to do with amateur radio, other than delaying the new rig under the Christmas tree, or emergency communications?

Well, WINLINK, an email over radio or internet application depends upon the Amazon servers to distribute emails for its users. The Amazon servers, known as the Common Message Servers, or CMS in WINLINK terminology, are used to save and distribute the emails. The AWS system has been used by WINLINK since October 31, 2017.

WINLINK has grown from a military and government service to an email at sea application for ocean going sailors and is now an important asset for amateur radio emergency communicators. Because of its ability to transmit forms, which can include ICS type message forms, csv formatted forms, Red Cross health and welfare messages and then distribute the information to a geographically dispersed and varied users, WINLINK has become a highly accepted and used application for Emcomm. Served agencies like it because emails can go to non-amateur radio operators, and they understand how an email message works.

I can use software such as WINLINK Express to compose a message, post the message in the WINLINK Express Outbox and then connect to a nearby gateway station on VHF or, if on HF, a more distant station. So, when I connect to my local VHF gateway or distant HF gateway, after verification of my call sign and password, my message is moved to the CMS server, which again is the Amazon Web Service, and any incoming messages on the CMS server are sent back through the gateway. It is pretty slick.

WINLINK is classified as an asynchronous type of communication. And that means what? Asynchronous communications are communications that take place without the sender and the receiver being in direct contact with each other. I never heard of the term until I watched an OH8STN video titled *Asynchronous Ham Radio for Preparedness*. It kind of makes sense but it just one of those things you don't give much thought to or think of giving it a name.

When I send my WINLINK message I am depending upon the receiver to open his WINLINK app, connect to an RMS station and download the message from the CMS server. The same as any other email application.

So, what are synchronous communications? I am pretty sure you already guessed that type of communication occurs when the sender and receiver are in direct connection. This is your normal face-to-face or over the airway communication.

Is WINLINK, like many other digital modes, a weak Emcomm mode because of its dependency on the availability of the internet and on the message receiver to check for emails? During an emergency, the lack of the internet or very slow-moving internet traffic is almost guaranteed and would be a major disruption for everyone. The missing or slow internet can be worked around by using a feature available in the WINLINK application. It has the capability of performing peer – peer, or direct station to station communications. It then becomes a synchronous mode of communication. Of course, the success of peer-to-peer requires that each of the two stations are in contact so they would know the frequency and when the message is being sent. And in an emergency situation emails everyone would check their emails in a consistent manner.

Does WINLINK make the hand written ICS-205 message form or any other ICS form obsolete? I don't think so. Not every message is going to be a large list of material requests, or list of names from a shelter. And if the WINLINK traffic is heavy it is best not to increase the burden with simpler messages. Emcomm operators should be familiar with all of ICS forms and how they are used to improve their use and understanding of the digital communications.

For more information about WINLINK please see <https://winlink.org/>

OZARES operates a WINLINK gateway, WI9OZ-10, for packet and VARA FM on 145.610.

Next month I will look at Narrow Band Emergency Messaging Software (NBEMS), a great way of sending digital messages without a sound card or TNC interface. <http://www.arrl.org/nbems>

OZARES repeaters are on 147.330, +, 127.3 PL and 443.525 +, 114.8 PL.

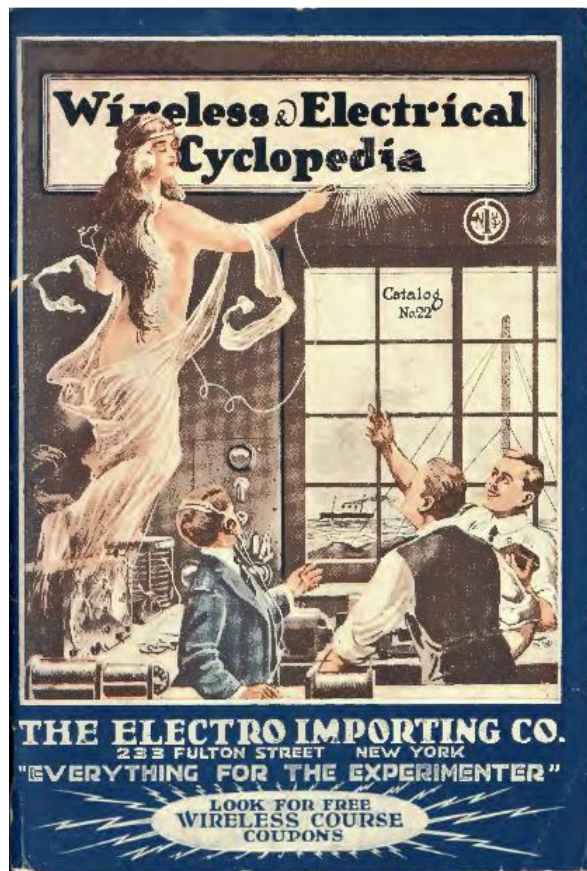
Vintage Magazine Cover Art

de Pat Volkman, W9JI



Our cover this month is from Hugo Gernsback's 1922 Electro Importing Company catalog. Gernsback, an early wireless entrepreneur, started the E.I. Company in 1904 with its stated purpose "to sell solely experimental electrical goods". Gernsback authored many books and articles, offered a wireless radio course and taught telegraphy. Gernsback was also the publisher of *Amazing Stories*, the first magazine dedicated to science fiction.

Radio catalogs were an important part of the early radio landscape. In addition to listing a huge variety of parts for sale, they included detailed information on assembling and using a wireless station. A typical catalog contained more than 50 pages and thousands of words of text. The writing, in a friendly prose style, helped to convince the prospective buyer that they were not only getting the best parts but that they were buying them from the best company too.



Electro Importing Catalog, 1922

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Some of the most successful and historically dependable linear amplifiers offered to the amateur radio community, beginning in the 1960's, came from the R. L. Drake Company of Miamisburg, Ohio USA. While not a producer of the volume of amplifiers made by Heathkit in the same time period, Drake certainly was a contender in the market. This article will discuss the features of the first two Drake Linear Amplifier models. Two subsequent articles will cover the later Drake Amplifiers with attention paid to common failures that can occur across the several products. Some of this detail can apply to other brands of amplifiers of similar design.

Drake's first amplifier and its successor became classics, and in my opinion, two of the finest linear amplifiers made available to the amateur radio community – when cost and effective power are considered. The first model is shown here . . .



Drake L-4 Linear Amplifier

WB4HFN

This first amplifier was meant to match the Drake TR-3 Transceiver that was introduced in 1963, the R-4 Receiver/T-4X Transmitter from 1964, and the early TR-4 from 1964. Here are those matching components:



Drake TR-3 HF Transceiver
W9MXQ



Early Drake TR-4 HF Transceiver
W9MXQ



Drake R-4 HF Receiver
WB4HFN



Drake T-4X HF Transmitter
WB4HFN

The Drake L-4 Linear Amplifier had the following specifications:

- Two Eimac 3-400z or Amperex 8163 Triode Tubes
- 2000 Watts PEP Input SSB or 1000 Watts CW / RTTY
- Linear AM input power to be held to 500 watts (in SSB Mode)
- 80-10 Meters (WARC Bands using close-in appropriate band¹)
- Separate L4-PS Power Supply (see picture below)



L4-PS HV Power Supply Views (Front and Back)

W9MXQ

There appears to have been only one version of the L-4 Linear Amplifier. Unlike the later L-4B, some features were either absent or not as conveniently accessible. For instance, the metering on the L-4 was as follows:

- Top Meter – Plate Current only
- Bottom Meter (on rotary switch, functions – left to right)
 - Grid Current
 - Plate Voltage
 - Relative Output

ALC Threshold was adjustable, via a control that was located on the rear panel. Also on the rear panel were connectors for feeding high voltage (through a Millen High Voltage Connector) and control interface (through a large, 8-pin, Jones Connector) to the separate L4-PS HV Power Supply. The interface cables and main AC feed cables were hard wired to the L-4-PS. The transformer providing filament voltage for the final amplifier tubes, the meter lamps, and the voltage for the transmit/receive control relay was inside the RF Cabinet with primary voltage fed via the control interface cable.

Like some other amplifiers of the time (such as the Heathkit SB-200 and SB-220), there was no way to allow the Drake L-4 Amplifier to operate in Stand By mode – that is, no way to have the amplifier under power but not operating when the exciter was transmitting. The addition of a front panel mounted Stand By switch – which merely interrupted the PTT line from the exciter when high power operation was not desired – was probably the most popular field modification on the Heathkit amplifiers found today.

Presumably, Drake learned from the short life of the L-4 Linear Amplifier because they soon introduced its replacement, the L-4B.



Drake L-4B Linear Amplifier (Early Model)

W9MXQ

As you can see, the L-4B took most of its styling cues from the original L-4. The L4-PS HV Power Supply changed a bit in terms of the location of the high voltage fuse resistor being moved from the negative side of the voltage feed to the positive side. This change may also have appeared in the later shipments of the original L-4 amplifier model.

The Drake L-4B Linear Amplifier had the following specifications:

- Two Eimac 3-500z or Amperex 8802 Triode Tubes
- 2000 Watts PEP Input SSB or 1000 Watts CW / RTTY
- Linear AM input power to be held to 500 watts (in SSB Mode)
- 80-10 Meters (WARC Bands using close-in appropriate band¹)
- Separate L4-PS Power Supply

Pictured above is the first of three versions of the L-4B. Metering and control features of all three versions were very identical. But metering was greatly improved over the original L-4 model:

- Top Meter – Plate Current only
- Bottom Meter (on rotary switch, functions – left to right)
 - Grid Current
 - Plate Voltage
 - Forward Power (3,000 watts)
 - Reflected Power (300 watts)
 - Forward Power (300 watts)

The availability of a true wattmeter was an excellent feature. The selection of 300 and 3,000-watt forward ranges was tied to another feature of the L-4B – the AGC Threshold Control. It was moved to the front panel. And it included an integrated push-pull Operate/Standby switch. In the standby position the meter could be set to accurately read the power level of the exciter as it by-passed the amplifier. (Be careful – do not leave the meter in the 300-Watt Forward position when using the amplifier!)

Here are two product models that matched the L-4B Linear Amplifier in its Early Model design format:



Drake R-4B HF Receiver
Drake Model Examples matching the Early Model L-4B Linear Amplifier



Drake TR-4 HF Transceiver (Late Model)
Drake Model Examples matching the Early Model L-4B Linear Amplifier
W9MXQ

In 1973, Drake released the “C” version of the R-4/T-4X line (the R-4C Receiver and the T-4XC Transmitter models) and the TR-4 Transceiver (TR-4C model). The L-4B did not

change model number but did change in appearance. Below is a picture of the midway model of the amplifier.



Drake L-4B Linear Amplifier (Midway Model)

W9MXQ

The design change is small but is very noticeable once you know where to look go back to the L-4B (Early) picture and compare it to the picture just above of the L-4B (Midway). Look at the edges of the front panel and notice that there is a silver color outer ring at the top, bottom, and sides of the panel. Then look also at the matching product shown with that early version – those products have that same design feature on their front panel.

Below are products that include the same front panel style as the Midway Model version of the L-4B:



Drake R-4C HF Receiver

W9MXQ



Drake TR-4CW-RIT HF Transceiver

W9MXQ

Other products in the series were similarly updated. These include the MN-2000 Matching Network, MN-4 Matching Network, the CS-4 Station Console, and the CC-1 Converter Console. Products such as the FS-4 Frequency Synthesizer accessory for the R-4C and SPR-4 Receivers were not available until after the styling change, so no early design version exists.

Some examples of this new styling are shown below.



Drake MN-2000 Antenna Network
W9MXQ



Drake SPR-4 HF Receiver²
W9MXQ



FS-4 Frequency Synthesizer²
W9MXQ

At the time, the FS-4 was a unique product that replaced the Range Crystals in the 4-Line Receivers and Transmitters plus, depending on the internal main oscillator crystal, can be used with the Drake SPR-4 or 2-C Receivers.

The Late Model of the L-4B Linear Amplifier was identical to the Midway Model except that it lost the ability to work on the 10-Meter band. This was in keeping with legal issues tied to the illegal use of these products on the 11-Meter Citizens Band.



Drake L-4B Linear Amplifier (Late Version)



KO4BG

The Late Version was identical to the Midway Version except for the lack of a 10-meter position on the bandswitch. There was a Drake documented procedure to activate 10-meter operation by a licensed amateur operator. These amplifiers are rare – and it is obvious on the units that Drake used parts from the earlier model even to the point of painting over the “10” printing on the panel. PLATE and BAND legends with a silk-screened circle over the number. The Late Versions indicate model “L-4B-1,” on the rear panel. I have never seen a late version L-4B but “Woody,” KO4BG sent the above

pictures of his amplifier. Woody further reports that the “dots” covering the “10” number on the PLATE and BAND controls are easily removed to reveal the “10” that was hidden from the factory.

A collector’s note for the L-4B relates to the three screws across the top edge and the three screws along the bottom edge of the front panel of the Midway and Late Versions. These are most often silver (likely cadmium plated). But, on some units they are black – chemically blackened, not painted. This is also true of other units, such as the TR-4CW or TR-4CW-RIT, the R-4C, and the T-4XC, the MN-2000, and others of the same timeframe.

The L-4 and all the L-4B versions were equipped with a pressurized chassis. Air intake was on the back panel to a squirrel cage fan that forced air into the sealed under-chassis, through the glass chimneys on each tube, and then out via the perforated top cover.

In the late 1970’s, Drake moved to their 7-Line Transceiver, Receiver, and accessory line. These replaced the venerable 4-Line series. The TR7 HF Transceiver was introduced in 1977 to soon be joined by the matching L7 Linear Amplifier. The Drake L7 and the later L75 will be covered in a future article. Another article will cover the failures, foibles, preventative maintenance, and repairs of all these quality products.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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:

¹ Coverage of the WARC Bands (30, 17, and 12 meters) may require some returning of the input circuits – as covered in the Drake Operating Manual for the L-4 and L-4B Amplifiers.

² Subject of a future article.

³ Product specifications for the Drake L-4 and L-4B models shown come from their respective Instruction Manuals – all of which exist in my files. Most Drake manuals are available on line for downloading. I download Drake manuals from Ron Baker, WB4HFN, at:

<http://www.wb4hfn.com/DRAKE/DrakeManuals.htm>.

⁴ Colors for Drake radios were very consistent through the years. Be advised that such color match does not extend to my pictures in this article! Drake did go to an epoxy panel paint in later models – models that did not have the silver trim ring around the edges of the front panel. The gray on those units is slightly darker than the gray on earlier models. I am blessed, or cursed, depending on how you look at it, with a good color difference perception. This was observed using the MacBeth Color Checker Test in my early professional career in Automotive Trim Systems with 3M Company.

⁵ I am indebted for the kindness of several members of the Drake Technical Net (7.238 MHz, Sunday afternoons at 3:00 PM) for their contributions to this article and their support of my writing efforts on old radios. They include, but are not limited to KO4BG, WB4HFN, NO8J, WA8SAJ, and WB0IQK. I am certain to have missed someone – if so, I apologize and will try to include you in two more articles on Drake Linear Amplifiers.

© **W9MXQ**

On The Air!

de Gary Sutcliffe, W9XT



Ham Radio New Year's Resolution

This is the time of year we usually make resolutions for making us better in the new year. Usually, they are good for us, but we don't find them particularly pleasant, like losing weight, getting more exercise, etc.

What would be some fun resolutions? Something in ham radio! Ham radio is a hobby with many sub hobbies. How many have you tried? Probably a very small fraction of those that are available. So, how about making a resolution relating to your hobby?

Let's start with getting on the air. When was the last time you were on the air? That long, huh? How about making a resolution to make at least ten contacts each month? The upcoming Key Up Contest will make it easy to cover January. How about trying a new band or mode? Ten meters will be getting better, and DX will be easy on the band. If you have a Technician license, you can get on phone and data on 10M, the only HF band you currently have those privileges. A 10M dipole or vertical is pretty tiny.

Try a contest. The Wisconsin QSO Party is coming up in a couple of months (Hint Hint!). Build something. There are a lot of kits available. Or homebrew a new antenna. Every ham should build at least one thing in their station. If you are more ambitious, consider upgrading or learning CW.

The huge tornados that killed about 70 people on December 11 show that a disaster can happen anywhere at any time. Make up a Go-kit. Get involved with ARES. The ORC has an incredible knowledge base. If you speak up and say you would like to try something, there are probably at least one or two old hands on the subject and are happy to give you some guidance.

This is a tiny sprinkling of suggestions. Find something you have not tried before this year. You will learn something, and it might give you a new shot of excitement for the hobby.

When you do, write up something telling us about your experience. Just because you are new at it, and there might be members who have been doing that for years, is no reason not to tell others. A newcomer brings a different viewpoint and a sense of excitement that can be contagious to others. I know Bill, W9MXQ, the newsletter editor, would love to publish a couple of articles like that every month. I'm even going to volunteer his help editing your article if you feel a bit uncomfortable with your writing!

Whatever you decide to put on your radio resolution list, it will be a lot easier than passing up on that slice of chocolate cake because you want to shed a few pounds.

December Meteor Shower Recap

Last month was the Geminids meteor shower. It was a good chance to make some contacts out to about 1200 miles on 6 and 2 meters. I was able to pick up a new grid on 6 meters and make a contact on 2 meters that was not only a new grid, but also a new state, Vermont. That brought me up to 40 states worked on 2 meters. And you think 2 meters is only for local work?

I was not the only ORC member operating the meteors in December. Fred, W9KEY, made his first meteor scatter contacts. Fred made it on 6 meters. He used a wire H Double-Bay antenna. Look for an article on meteor scatter from Fred in this issue of the ORC newsletter.

Gary, K9DJT, was also active on meteor scatter in December. Gary writes:

"I completed *nine* 2m Q's between December 13th and 14th during the Geminids meteor shower. The farthest was KA6U in Florida at 1128mi. During that same shower I had made *three* 6m Q's with the farthest being W5THT at 904 miles in Texas. Closer to the Christmas holiday, during the Ursids shower, December 22nd through the 23rd, 6m's was the band. I managed to work 16 stations with the farthest being W5TRL in Texas at 1039 miles.

For the year though, my very best MSK144 contacts were both in Oregon, K0JJ and N7BAV, 1718 miles and 1639 miles respectfully. Those were made during the Orionids shower and verified on LoTW. I continue to be fascinated by the ability to communicate on a dead band using the ionized trails of meteors. What do I use to accomplish to accomplish it? I run 500 watts to a 4-element beam at 38 feet on 6m, using the WSJT-X MSK144 mode. The same is done on 2m, except it is 200 watts to a 14-element beam at 34 feet.

The big thing though is not the power or antenna...It is patience, patience, patience...and communicating on PingJockey. I've spent as much as an hour and ten minutes to complete a long distance QSO. Therefore, one needs to keep in contact with the person on the other end to ensure they hadn't quit trying."

Ten Meters is hot!

The last two contests of December were the ARRL 10 Meter Contest and the Stew Perry Top Band Distance Challenge. I was looking for good conditions on 10 meters seeing that solar Cycle 25 is progressing faster than expected. But we had a big dip in solar activity, and the solar flux was a measly 76 during the contest, meaning we had one more year of essentially a VHF contest.

The following weekend was the Stew Perry 160 contest, where low sunspot numbers are not a problem and are actually better. So naturally, the solar flux jumped up to around 120 for the 160-meter contest. Murphy must have had control of the sun in December.

The 160-meter contest ended on Sunday morning, December 19. That afternoon we had some exciting openings on ten meters. Gary, N9UUR, and Fred, W9KEY reported working stations worldwide using FT8. Fred said he added many countries to his 10-meter DXCC totals, working 20 different countries that day. Gary was looking for Hawaii on the band to finish his 10 meter Worked All States but did not hear any despite several spotted. He did work Samoa, so he knew he was getting out. Gary got his elusive KH6 a few days later.

Getting only an hour or so sleep the night before during the contest, I woke up from my post contest nap and saw there was a lot of activity on 10M. What interested me was that my favorite "secret" path to Northern Europe was open. This path does not open every day when we have conditions that support 10 meters to Europe, but it often happens.

This path opens after the sun has set in Europe and the higher HF bands have closed. The signals are usually fairly weak and have a hollow tone to them. The countries most often heard are Finland, Sweden, and Norway. Fred reported working the last two on FT8. I decoded Aland Island, off the coast of Finland but did not make a contact.

This answered a question I had been wondering about for a couple of years. Would the odd aurora zone enhanced propagation distort FT8 signals so that this path could not use this mode? Back when PSK31 was the rage, I noticed many times you would see loud signals on long polar paths, but the error rates were really high, making contacts difficult at best.

But the contacts by Fred indicate it does work. There might be some degradation, as it seems contacts are more difficult. More operating will be necessary to see if the path affects FT8 signals.

This path has been valuable to me in many contests over the year. If we have disturbed geomagnetic conditions, the aurora zone expands, and signals going through it are absorbed. From this part of the world means the northern European countries are the first to be knocked out. There are many contests where I could not get these multipliers on the usual paths but got them later in the afternoon on this path when the rest of the country's attention has shifted away from Europe.

It is pretty late in the Scandinavian countries when this path opens up, something like 10:00 PM local. Back in the 1990s, I was playing with some string and a globe. I was trying to find out what the geometry would be if we were on the eastern side of a similar path. It turns out that the other end of the path would be Mongolia.

Now, there are not a lot of hams in Mongolia. So, it might be possible the path was open often, but not a lot of hams around Wisconsin would be looking at 10 meters at that time of day, and probably even less likely there would be a ham in Mongolia listening for us. A DX contest was coming up a few weeks after playing around with the globe. I was doing a single band 10M effort and decided to get back on later in the evening, a few

hours after the band closed, and turned my beam northwest. Before long, I heard a Chinese station near the border of Mongolia!

Unfortunately, he had his beam pointed towards Europe, and he was working them one after another. Although he was easy to copy, he was not very strong. No doubt the European stations were much louder. After a while, I contacted the 10-meter operator at KS9K, a big contest station near Kenosha at that time. They had a stack of four large 10-meter Yagis on a 200' rotating tower. We both tried to get through for a half hour or so without success. But it proved there was a path that opened up at least occasionally.

Finding things like this is what makes HF operating so much fun. Even after 50 years of operating, I learn new things from time to time.

QRP Fox Hunt

One event I have been doing on and off for several years is the QRP Fox Hunt. I am not a QRP fanatic, but it is a fun challenge in small doses. The QRP Fox Hunt program is just the right size. There are two hunts, one on 40 meters on Tuesdays, and one on 80 meters on Thursdays. These are separate events. Some nights are easy, and others are really hard. You might think 40 is easier, but most nights, 80 is easier.

They started at the start of November and run through March. They begin at 8:00 PM local and run for 90 minutes.

Each night there are two "foxes." They will be in a 20 kHz range running 5 watts maximum. Your job as a "hound" is to find and work the foxes while also running 5 watts or less. You gain a "pelt" for each contact you make. The program has all sorts of names for things.

Contacts are on CW. At first, they will be working split, listening up about 1 kHz, and then working on frequency towards the end.

The exchange is "signal report – State- Name – Power" I send "559 WI Gary 5W." Most signal reports are 559, but not always.

There is no cost or registration required. Just work one of the foxes, and you will show up in the standings, which are updated about once a week.

For whatever reason, a lot of hams in the state get on for this. Usually, Wisconsin is near or at the top of the list for state participation. Maybe it is our cold Wisconsin winters.

The website show has the full rules, the schedule of foxes, and the leader board.

<https://www.qrpfoxhunt.org/>

This season I am making all my contacts with my FT-818. That is a small radio designed for QRP. It is a fun radio, but the receiver is not even close to my main HF rigs. The challenge is what makes this fun.

Contests

Starting on January 1, the low power category limit on ARRL contests is 100 watts, down from 150 watts. This was done to be more in step with CQ and just about every other contest that limited low power to 100 watts maximum. Note this does not apply to Field Day.

Since my radio puts out 200 watts, I liked the higher limit. The extra 50 watts give you an additional 1.8 dB in signal strength. That might be just enough not to need to send a repeat or bust through a pile up a bit faster.

January will see the second running of the ORC Key Up contest. The rules have some new wrinkles to make it even more interesting this running. The rules are located elsewhere in this newsletter.

W9XT's contest picks for January and early February 2022					
Name	Start	Length	Bands	Mode	Link
ORC Key UP	Jan 14 2300	Ends Jan 22 2300	2/220/ 432	FM ORC Club re- peaters	
ARRL Jan VHF Contest	Jan 15 1900	Ends Jan 17 0359	6M & up	ALL	http://www.arrl.org/january-vhf
NAQP SSB	Jan 22 1800	12 hours, work 10	HF	SSB	https://ncjweb.com/NAQP-Rules.pdf
CQ 160	Jan 28 220	48 hours	160M	CW	https://cq160.com/

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

The January VHF contest is not as active as the ones in June or September. We don't usually get the sporadic E propagation that is common in the spring, but you never know. We have been getting some really nice 6-meter openings via Es the first few days of January.

You can work a station once per band. The mode does not matter. You can even use FM, but not with repeaters. FT8 has become very popular due to its ability to make contacts under conditions that won't support CW or SSB. One problem is that way too many hams operating VHF contests never get off FT8. If the band supports CW or SSB, you can make 2-3 contacts at the same time in the amount of time it takes to make one on FT8. If the band has some strong FT8 signals, and it's not quite good enough for other modes, at least give FT4 a try. It is faster than FT8.

I have promoted the NAQPs many times. They are great contests for the smaller station. Everyone is limited to 100W, and low antennas work well in domestic contests. The exchange is your name and state.

The CQ 160M contest is the last big 160-meter contest of the season. There is an SSB version in February but doing SSB contests on 160 with low power can be a real exercise in frustration.

DX

Hams are part of the general population and, as such, have their share of bad actors. One fairly common problem is that sometimes someone will get on and sign with a call from a rare country. This sometimes happens when there is a big DXpedition. It can be a big disappointment to think you worked a difficult new one only to find out he was not real.

These miscreants are called "Slims" or "Pirates" in DX terms. Sometimes they are pretty obvious. Maybe they are at the wrong beam heading. Perhaps they are on a band that does not have propagation to that part of the world at that time. Maybe ham radio is not allowed for that country. If you hear a P5 station, you can be pretty sure it is not real because ham radio is not permitted in North Korea.

But how can you be sure? Sometimes countries that don't allow radio suddenly have a change of heart. Maybe a surprise group can get permission but can't or does not want to give advance notification. It is rare but does happen.

What do you do? The standard advice is WFWL. Work First Worry Later. Maybe it is a pirate, but you will be even more upset if you skipped it and found later it was real.

W9XT's DXpedition picks for January and early February 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Guadeloupe	Jan 20- Feb 1	TO6S	HF, 6M	C/S/D	https://les-saintes.f6kjs.fr/index.php
Zimbabwe	Feb 3- 20	Z22O, Z21A	HF, 160	C/S/D	

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

There are not a lot of announced DXpeditions coming up. Guadeloupe is not particularly rare, but a group of five primarily French ops will be there at the end of the month and may be a good chance to fill in some empty band slots.

DL7BO and DJ6TF will be heading to Zimbabwe in early February. I need that on digital and a couple of WARC bands, so I am looking forward to this one.

That wraps up January. Stay warm!

A Beginners Look at Amateur Radio Meteor Scatter and MSK-144

de: Fred Schwierske, W9KEY

Although interested in ham radio way back in my teen years, I didn't become licensed until well into retirement. As my radio involvement accelerated, it became obvious the hobby offered a lifetime of diversified technical activities. So early on - to "get my arms around those opportunities" - I developed a list entitled, "Various Aspects of Amateur Radio." That list contained thirty-six items, and I remember thinking, "There's a lot to do - I should have started this hobby a long time ago"!

While no attempt was made to put those thirty-six items in any order, number 20 on the list was, "Meteor Scatter DX". The idea of bouncing a tiny signal off the ionized trail of a flaming meteor traveling 75,000 MPH at an altitude of 50-75 miles above the earth just seemed so incredibly cool!

That initial meteor scatter (MS) interest dovetailed with a desire to extend my station capabilities to six meters. So last summer I searched for a suitable home-buildable antenna that could join my other backyard tree supported wire antennas. One suggestion was the "H Double-Bay," originally presented in CQ Magazine's September 1995 issue by Paul Carr, N4PC. Design calculators can be found at:

<https://sites.google.com/site/wvfisher/hdoublebay>.

It's two stacked vertical wire loop antennas - one on top of the other - perfect to hang from a tree branch.

Unfortunately, a great opportunity was lost as the antenna was not operational for the large Perseids shower in August. Many meteors enter the earth's atmosphere every day and can certainly be used for amateur communication purposes, but hams tend to focus on the major showers which occur every few months throughout the year.

After several failed attempts in the fall (operator learning curve), my first official meteor scatter (MS) contact was completed during the Geminids shower on December 14, 2021, with NF3R, Joel in PA, on 6m (50.277 MHz) using digital mode MSK-144 and 500 watts.

Like other modern computer enabled digital modes, a valid QSO consists of exchanging very basic information - Call Sign, Grid Square, and Signal Report. Meteor burns (pings) may only last a fraction of a second - so no rag chewing is possible! MSK-144 transmits at an effective transmission rate of 250 characters per second - so it often takes several meteor "burns" to complete a QSO. Six meters is the most popular meteor scatter band, but higher frequencies are also used. At this point I've made a total of eight MS contacts, all on six meters.

Several of those contacts were made using "split" mode, requiring additional settings. But I've been advised that extra complication is rarely necessary. Instead, keep it simple and use the basic calling frequency for your first attempts.

So how do you participate in this exciting aspect of ham radio? Well, if you already use WSJT-X software for FT-8 digital - all that's necessary is switching modes from FT-8 to MSK-144, setting it to run on the 6-meter calling frequency (50.260 MHz), and ensuring your station is properly tuned for 6m operation.

To get started, I'd recommend some basic reading on the operating procedures and (most importantly) listening before making your first transmission. Here are several operating "suggestions" observed by considerate hams:

1. When beaming West, transmit on the odd time slice (Tx even/1st box NOT checked). If transmitting East (in other words you are the western-most station), check the software box to transmit even/1st. Obviously, this is more relevant if you have a directional antenna. However, since transmitting can interfere with others on the calling frequency, coordinate your transmission with other local hams (so all transmit simultaneously) to avoid interfering with their reception.
2. Search for and become familiar with the Ping Jockey Central website. Log in and use that service to see who is working MS. Short text messages can be exchanged but avoid any contact details which would invalidate the meteor scatter QSO.
3. Avoid using MSK-144 for contact with local hams in your area – concentrate on stations in the 300–1500-mile range, which is where MS occurs.
4. Be patient!! Completing a QSO takes time, luck, and several meteor burns. Each contact may take 15 minutes or more. Periods of high meteor activity (showers) make things easier.

For those desiring more technical background, MSK-144 details and specifications are contained in the 2017 July/August **QEX Magazine** article by Franke & Taylor – yes, the same team that created the FT-8 digital protocol:

https://physics.princeton.edu/pulsar/k1jt/MSK144_Protocol_QEX.pdf

While you can run MS anytime, it is easier during times of high meteor activity. The big three showers and their peak dates — Quadrantids (1/3/22), Perseids (8/13/22), and Geminids (12/12/22) — are spread throughout the year and extend a number of days on either side of their peak dates. In addition, several other smaller showers occur during the year – a quick internet search will help configure your 2022 operating calendar.

If you have 6-meter capability and looking for an interesting new amateur radio challenge – consider giving Meteor Scatter a try!

Ozaukee Radio Club Final Scholarship Fund Project Report

For the period of August 31, 2018, thru December 31,2021

Submitted by Tom Ruhlmann, W9IPR, Chairperson

History

The Ozaukee Radio Club (ORC) Scholarship Fund was instituted with the Foundation for Amateur Radio on January 1, 1997, and its original monetary donors were the Ozaukee Radio Club, Dr. Stanley Kaplan, Edward Frac and David Knaus with a total sum of \$600.00. Matching funds were then advanced to provide for an award of \$1,000.00.

The original committee members were Chairman Stan Kaplan (WB9RQR), Dick Scarvaci (K9CAN), Dave Knaus (WA9POV) and Ed Rate (AA9W).

The objective of the project was to provide an annual scholarship to a deserving Wisconsin amateur radio operator youth seeking a 4-year baccalaureate degree at an accredited university/college. The scholarship would be funded by monetary donations and the proceeds from the sale of donated equipment.

The award of the scholarship was administered by an outside board so as to avoid favoritism for ORC related individuals. For the original 20 years the selection was administered by the Foundation for Amateur Radio (FAR) and in 2018 the administration was transferred to the ARRL Foundation. In 2015 the amount of the award was increased from \$1,000.00 to \$2,000.00 at the direction of the Scholarship Committee. We have been sending a check to the selection foundation annually to cover the scholarship award. They in turn notify us of the recipient and we normally receive a letter of appreciation from the recipient.

In two installments we have sent a total of \$60,000.00 to the foundation to fund an endowment in the name of the ORC. The funds are invested by the ARRL with the objective of earning a minimum return of 4% or more annually. The annual award will then be withdrawn from the foundations ORC endowment account. To fund a scholarship of \$2000 in perpetuity would require an endowment of \$50,000. The endowment can be increased in increments of \$2,500 as desired. The amount of the scholarship and their number can be changed at the direction of the ORC. The scholarships would be awarded until such time as the endowment funds are exhausted.

The past Wisconsin youth recipients of the scholarship were:

YEAR	RECIEPIENT	WI HOMETOWN	SCHOOL ATTENDING
2021	Nesya Graupe (KD9JNT)	Mequon	UW Madison
2020	Dakota M. Nyberg (KK6OCG)	River Falls	UW LaCrosse
2019	Adam Johnson (KD9KIS)	Ellsworth	
2018	Emily Palm (KC9VEM)	Westby	Christendom College
2017	Emily Palm (KC9VEM)	Westby	Christendom College

(Continued from previous page)

YEAR	RECIPIENT	WI HOMETOWN	SCHOOL ATTENDING
2016	Christopher Palm (KC9JTL)	Westby	Benedictine College
2015	Christopher Palm (KC9JTL)	Westby	Benedictine College
2014	Christopher Palm (KC9JTL)	Westby	Benedictine College
2013	Christopher Palm (KC9JTL)	Westby	Benedictine College
2012	Sadie Barozos (KJ4PLW)	Madison	UW Madison
2010	Natalie Harding (KC9KIR)	Burlington	UW Madison
2009	Benjamin Steffes (KC9PMN)	North Fond du Lac	Milwaukee School of Eng.
2008	Natalie Harding (KC9KIR)	Burlington	UW Oshkosh
2007	Natalie Harding (KC9KIR)	Burlington	UW Oshkosh
2006	Matthew Weeks	Racine	Cedarville University
2005	Travis Waack (KB9YRC)	Manitowoc	Northland College
2004	Amber Ericksen (KC9FVW)	Chippewa Falls	UW Eau Claire
2003	Jayson Kempinger (KB9VGR)	Milwaukee	UW Madison
2002	Andy Knitt (KB9JOZ)		Michigan Tech Uni
2001	?		
2000	Michael M. Imrick	Madison	Michigan Tech Uni.
1999	Michael M. Imrick	Madison	Michigan Tech Uni.
1998	?		

Typical sources of program revenue:

The ORC typically has an auction of donated items at the monthly membership meetings. Half the proceeds are given to the Scholarship Fund and the other half is donated to support OZARES.

Typically, donated equipment is evaluated, and the donor is provided a letter indicating the value of the donated items for their tax records. Some of the smaller items may be auctioned at a membership meeting however the bulk of the items and higher value items are sold on eBay, directly or at any of several local Swapfests.

Typical of estimated value of recent donations of equipment are the following:

2021	Jon Gilmore (KB9RHZ) <i>IC-746 Transceiver, VHF vertical, mobile and beam antenna, Rig Blaster, headset, CB, mobile antenna mounts, cloning software and various cabling.</i>	\$728.00
	Robert Schatzman (WI9BOB) <i>Antennas, PC, Manual, Speaker, etc.</i>	\$407.00
	Nels Harvey (WA9JOB) SK <i>Antennas, HTs, Mobile Radios, Power Supplies, Test Equipment, tools & parts, Kenwood TS-850S/AT (2), PS-31, SP-31</i>	\$2,121.00
2020	None	
2019	None	
2018	Fred Helmstetter <i>Scanner, TNC, Gin Pole & Books</i>	\$332.00
	Dr. Dan Riley 88 <i>Kenwood mobile Radios (3), Power Supply (2), and Antenna Tuner</i>	\$508.00
2017	Mrs. Kent Christiansen (W9WH - SK) <i>Kenwood TS2000 Transceiver, SP950 speaker, RS-35 Power Supply, Antenna and assy., MFJ Antenna Analyzer, RigBlaster, Heil Headset, Antenna Rotor and Controller, etc.</i>	\$1,757.00

(Continued from Previous Page)

	Mr. Sandy Wirth <i>Kenwood TS950SD Transceiver</i>	\$850.00
	Ms. Anna Lewandowska <i>assorted receiving equipment</i>	\$2,669.00
2016	Everett Hokanson (K9PSX) estate: <i>Variety of assorted vintage equipment</i>	Not estimated
	Mr. Chuck Curran <i>New Components for an RF Amplifier and Test Equipment</i>	\$1,084.00
	Mr. Scott Fischer for Ed Fischer (SK) (KC9LRJ) & Bill Shadid (W9MXQ) <i>Vintage Hallicrafters S-38 and various RME Receivers</i>	\$239.00
	Mr. Ed Seigworth <i>ICOM IC-2710 Mobile Transceiver</i>	\$150.00

TYPICAL SOURCES OF INCOME FROM EQUIPMENT/ITEM

	Income from 2017 South Milwaukee ARC Swapfest	\$84.00
	Income from ORC 2017 Fall Swapfest	\$220.00
	Income from ORC 2018 Spring Swapfest (No Participation Due to Illness)	\$0
	Income from ORC 2018 Fall Swapfest	\$491.00
	Income from ORC 2019 Fall Swapfest	\$449.00
	Income from ORC 2020 Fall Swapfest (Cancelled Due to Covid-19)	\$0
	Income from ORC 2021 Fall Swapfest	\$315.00
	Equipment sales – Direct	\$400.00
	Silent Auction	\$87.00
	Cash/Check donations	\$353.01
	TOTAL NOTED CASH INCOME FOR PERIOD:	\$2,312.01

Cash outlays during the period

	2016 FAR Scholarship reimbursement	\$2000.00
	2017 FAR Scholarship reimbursement	\$2000.00
	2018 ARRL Scholarship reimbursement	\$2000.00
	2019 ARRL Scholarship reimbursement	\$2000.00
	ARRL Endowment first installment – August 2019	\$34,000.00
	ARRL Endowment second and final payment – December 7, 2021	\$26,000.00

Program balance as of December 31, 2021

	Bank Account #1 – Money Market Fund	\$3897.24
	Bank Account #2 – 1-Year CD	\$10,000.00
	Cash	\$400.00

The current committee consists of:

- Chairperson: Tom Ruhlmann, W9IPR
- Ed Rate, AA9W
- HF Equipment Technician: Bill Shadid, W9MXQ
- VHF/UHF Equipment Technician: Jim Albrinck, K9QLP
- Auctioneer: Stan Kaplan, WB9RQR
- Treasurer: Gary Bargholz, K9UUR

The Future

The scholarship program activity as such is essentially ended. However, the club can continue adding to the endowment or change the amount and conditions of the award via the ARRL as desired and voted by the board and membership.

The inventory of equipment for sale and the balance of funds at the Cornerstone Bank are to be transferred from the Scholarship Program for use by the ORC STEM Awards program. The STEM AWARDS program will be locally administered program funded as was the Scholarship program with monetary awards for STEM programs, projects, and related individuals.

Respectfully submitted,

Tom Ruhlmann, W9IPR
Chairperson



Equipping a Powerful Station has its challenges.

Your Newsletter Editor is looking for “fill items” such as you see above. Want to contribute something? Send contributions to . . .

Bill Shadid, W9MXQ, ORC Newsletter Editor: newsletter@ozaukeeradioclub.org

Tasteful material only, please. This is a family Newsletter!!

Ozaukee Radio Club Minutes of Membership Meeting: 12/8/2021

de: Ken W9GA, Secretary

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat W9JI. At that time various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat W9JI officially initiated the meeting at 7:30 PM, as introductions were recognized when members checked into the meeting, a go-around was not conducted.

Program:

The program was given by Brian Page N4TRB on the original transatlantic radio tests conducted in 1921 by the fledgling ARRL and various British hams. An earlier attempt in February of that year had failed, as the British had been restricted to the 1000-meter band, while the US hams were permitted to operate at the 200-meter band and above. Paul Godley [2ZE] was sent to the UK, packing 200 meter receiving gear, and after setting up a reception site in Scotland was successful in copying several US stations in December of that year. Godley had met Harold Beverage on the voyage over to the UK and had erected the new antenna design at his site, helping him to receive signals at 200 meters. Two-way communication soon followed, and the world learned about long distance communication via the ionosphere, using the MF and the HF frequencies.

Committee reports:

Repeater: W9DHI reported good operation of the repeater system, and that some audio balancing had been performed, and minor adjustments made at the Germantown site.

Treasurer: Gary N9UUR reported that renewals are at 70%, and that the \$26,000 payment had been transferred to the ARRL for our scholarship fund. The November treasurers' report was accepted; motion made by WT9Q, 2nd by WB9RQR, and carried.

Secretary: Ken W9GA reported the November minutes had been posted; with a date correction made, K9QLP moved, WB9AZH 2nd, motion to accept carried.

Tom W9IPR reported that an updated report from the scholarship committee would be forthcoming at the January 2022 meeting and is looking for individuals to help in the committee. Tom is also heading up the nomination committee, and any interested individuals should contact him.

OLD business: None

NEW business: None

Adjournment: WB9RQR moved to adjourn, W9DHI 2nd, motion carried; time ending was 8:42 PM.

There were 34 attendees.

Following the meeting breakout rooms for the program, and a general topic; were opened.

Respectfully submitted,



Kenneth Boston W9GA, secretary:

Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

January – Elections

February – Gary Sutcliffe, W9XT – Antenna Basics

March – Chuck Curran, W9KR - Hickok tube testers

April – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

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

ORC Meeting Agenda

January 12, 2022

1. 7:15 – 7:30 PM – Check-In and Introductions
2. 7:30 PM Call to Order:
President Pat Volkmann (W9JI)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Presentation: Elections
5. President's Update:
Pat Volkmann (W9JI)
6. 1st VP Report:
Ben Evans (K9UZ)
7. 2nd VP Report:
Bill Church (KD9DRQ)
8. Repeater VP Report:
Gregg Lengling (W9DHI)
9. Secretary's Report:
Ken Boston (W9GA)
10. Treasurer's Report:
Gary Bargholz (N9UUR)
11. Committee Reports
12. OLD BUSINESS
13. NEW BUSINESS
14. Adjournment

Meeting Note:

Until the club decides it's safe to hold in-person meetings again, we will be holding the meetings via the Zoom Videoconferencing platform on the same evening and time as we had the in-person meetings. President Pat Volkmann will email sign-in info, W9JI via the ORC remailer usually about an hour before the start of the meeting.

**Next ORC Meeting via Zoom
12 January 2022**

7:15-7:30 PM – 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 (W9MXQ@TWC.com). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



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

Volume XXXIV February 2022 Number 2

From the President

de Pat Volkmann, W9JI



Elections were held at the January meeting. We had a full slate of candidates, and all the officer positions are now filled. Here are the results:

President:	Pat Volkmann (W9JI)	Incumbent
First VP:	Ben Evans (K9UZ)	Incumbent
Second VP:	Bill Greaves (K9GN)	First Term
Repeater VP:	Gregg Lengling (W9DHI)	Incumbent
Secretary:	Ken Boston (W9GA)	Incumbent
Treasurer:	Gary Bargholz (N9UUR)	Incumbent

The Repeater Trustee is appointed by the Board of Directors and is currently Mike Harrington (KD9GCN). Kevin Steers K9VIN is the Past President.

I would like welcome new board member Bill Greaves K9GN. Bill is a relatively new club member, but he hasn't been shy about pitching in. I'm looking forward to working with Bill in the coming year.

I would like to thank retiring board member Bill Church KD9DRQ for his service to the club. Bill served two terms as the Second VP, is a regular on the Tuesday night net and helps out at the Swapfests. Please say thank you to Bill when you talk to him.

Thank you to the nominating committee for helping with the election. The committee was chaired again this year by Tom Ruhlmann W9IPR with Jim Albrinck K9QLP and Tom Trethewey KC9ONY serving on the committee.



W9JI portable during Key Up #2

Here's a picture of me operating portable from Huiras Lake Natural area during Key Up #2. The day was very sunny, and the air temperature was 9° F. The bright sunshine caused me to squint and resulted in the funny look on my face – or maybe that's just what I usually look like! I was able to hit both the 2 M and 440 MHz machines with my HT. I only worked a handful of stations and but had lots of fun.

Word was received of the passing of Jerry Rauth, KC9WUI, on December 9, 2021. At this time, I don't have any news on

arrangements. Information will be posted to the reflector as it becomes available

See you at the meeting.

Pat Volkmann, W9JI

A Message from the Editor Newsletter Table of Contents

de Bill Shadid, W9MXQ

Here is a preview of this month's Newsletter Edition

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2	Bill Shadid, W9MXQ: A Message from the Editor This Month's Table of Contents
3	Stan Caplan, WB9RQR: Computer Corner No. 287: Linux Mint 20.3 Is Out
4	Don Zank, AA9WP: OZARES Update Narrow Band Emergency Messaging System
7	Pat Volkmann, W9JI: Vintage Radio Magazine Cover Art Modern Electronics, February 1912
9	Bill Shadid, W9MXQ: Vintage Amateur Radio Drake Linear Amplifiers – Part 2 – the Drake L7 and L75
20	Gary Sutcliffe, W9XT: On the Air! Wisconsin QSO Party, SSTV and the ISS, Deep Space Network, QRZ.com pages, FT8, Upcoming DXpeditions, and Contests
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31	Ozaukee Radio Club Spring Swapfest Flyer Just a reminder – Spring is coming!!!

Onward To the Newsletter

THE COMPUTER CORNER

No. 287: Linux Mint 20.3 Is Out

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

Labeled “UNA” (but I don’t know why; the justification has not yet been printed), Linux Mint Cinnamon version 20.3 is out and ready to install on your laptop, desktop, or other configuration of computer, so long as it is a 64-bit machine. (All versions past version 19 require a 64-bit processor, but don’t assume that your old beater handles only 32 bits; check it out and you may be pleasantly surprised.) This new version is good until at least 2025, so you need not worry about changing versions for a while.

Your machine needs a bare minimum of 2Gb of RAM, though you will be more comfortable with 4Gb. You’ll need a minimum of 20Gb of disk space, though 100Gb is recommended. Your screen should be capable of 1024 x 766 pixel resolution, but if you have less you will be able to adjust for that.

As always, it comes with the Firefox browser (my personal favorite for ease of use and safety), and Libre Office for more or less seamless use with Microsoft Office products (why on earth would anyone spend hundreds of dollars for Microsoft Office today with several products including Libre Office available totally free?).

The Hypnotix IPTV Player has been much improved (my copy sported 859 TV channels from around the world when writing this on 17Jan). A new XApp gadget that comes with this release helps you keep track of your documents and reading program. And Sticky Notes has a new search function that should be helpful.

The themes have been cleaned up and improved for slicker views the way you like them. And there have been printing and scanning improvements that help especially with Hewlett-Packard hardware. I have always said that HP makes the best printing hardware in the world, but the worst printer software in the world, so anytime you can use controlling software from Linux and avoid HP’s stuff, you are definitely ahead!

If you already have an earlier version of Linux, like 20.2 (“UMA”) on board, upgrading is a snap. I recommend you first use the Update Manager (the little shield icon in your system tray). Click it to bring it up on your desktop, then click the refresh button and install all software that it lists. Reboot if suggested. By then, you should find a little System Reports icon in your tray that looks like this: [!]. Click it to expand it on your desktop and it should show an invitation to upgrade to 20.3. The instructions that follow will be clear and easy to follow.

If you want to install Linux on a machine that does not have an earlier version on it, you will have to take a couple of extra steps. You will need to download a copy of the .iso file: [linuxmint-20.3-cinnamon-64-bit.iso](#) which you can safely get from Majorgeeks.com in their Linux Distros section (left column of their opening screen). Find it under [Linux](#)

Mint 20.3, and make sure it is described exactly as shown above in red when you actually begin the download process. The file is 2.1Gb in size, so it will take some time to download it. When you have it, use burning software to make a live, bootable copy of the installation program and use that to actually produce the operating system on your computer.

How is this for an offer? Paid-up ORC members can request a live, bootable copy from me. I will burn one for you, but you will need to pick it up from my QTH. Email or call me for the request, and I will let you know when it is ready to pick up. Happy computing!

OZARES: Ozaukee Amateur Radio Emergency Services

by Don Zank AA9WP, OZARES Emergency Coordinator



Last month the discussion focused on how WINLINK, the email by radio application, is dependent upon the internet and the servers of Amazon web services. And if the availability of the internet is lost the effectiveness of WINLINK is severely crippled. The only other means of using WINLINK would be by using the peer-to-peer or station-to-station mode of operation. So, on the bright side information can be shared but only between two stations. Information sharing to a large or geographically dispersed group, although possible, would not be very efficient.

However, there is another digital mode (isn't there always another digital mode) emergency communication application that can deliver messages to large or widely dispersed group. It also has several distinct advantages. This mode can also use forms, attach csv files and low-resolution pictures.

This mode is the Narrow Band Emergency Messaging System or NBEMS application. NBEMS was created by Dave Freese, <http://www.w1hkj.com/>, and Howard Teller, KH6TY. The amateurs of Pennsylvania have spearheaded the efforts to make NBEMS a viable digital communication mode.

NBEMS uses, mostly on VHF, the MT63 protocol developed by Pawel Jalocho, SP9VRC. MT63, which uses 64 tones for its transmissions, is a robust mode that works great in weak signal areas and is not a fussy application. Bandwidths available are 500 Hz, 1000 Hz and 2000 Hz. On VHF, MT63 with a 2000 Hz bandwidth and long interweave provides the best modes of operation. MT63 uses forward error correction so that even if 25% of the characters are lost it can still provide a solid copy. On HF the preferred digital mode is Olivia. More on this subject later.

NBEMS modem support is provided by the *Fast, Light, Digital Modem* application or FLDIGI. FLDIGI also provides many other digital modes including PSK31, RTTY and

CW so it can be used in general amateur radio. In addition to NBEMS the FLDIGI application is integrated with other applications such as FLMSG that provides access to message form templates including ICS and Red Cross forms. The FMARQ or automatic request software allows messages to be received without the receiver being present at the station. A multi-cast application, FLAMP will transmit several files that include a checksum for verification of reception. Other functions included with FLDIGI are rig control, Winkeyer support and RigExpert antenna analyzer.

A benefit for users using MT63 is that there is no need for external sound cards or TNC's. The interfacing between computer and radio is very simple audio coupling. The only requirement is that the computer have a speaker and microphone, either internally or external. A handheld next to the computer will work great if you remember to hit the PTT before sending your FLDIGI message. Also, any background noises including talking do not interrupt or disturb the sending. A trick from Rick Frost, K4RE, that helps a user to practice with FLDIGI and NBEMS is to merely put two computers side by side and use the speaker and microphone of the computer or use a pair of external headsets; no radio(s) needed.

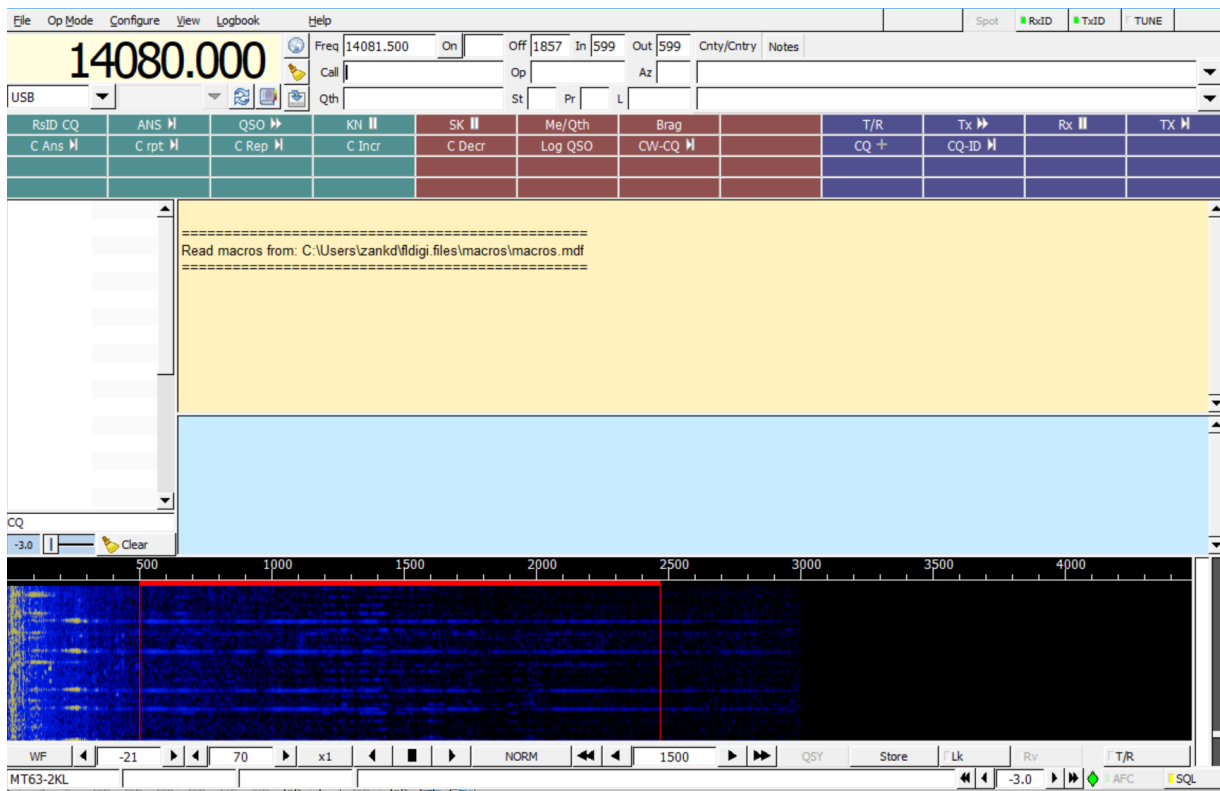


Figure 1: FLDIGI Interface Page

The MT63-2000L mode is a slow mode. A simple 3000-byte message at 1Kb per minute will take over 3 minutes. On hf the Olivia 8/500 mode is used but its transfer rate is 170 bytes/minute.

The ARES members of south east Wisconsin have successfully used NBEMS and the MT63-2KL mode mostly on VHF.

Now on HF the picture gets a little more interesting. Because of bandwidth limitations there have been numerous digital modes tested. These include the robust PSK types of PSK-500R, PSK-250R and PSK-150R. The robust PSK modes include error correction and PSK-500R is twice as fast as MT63-2000. But MT63 is a very forgiving mode, and the simple use of audio coupling is an important factor for keeping things simple.

Another mode is called THOR. The default mode is THOR 11 which has a baud rate of 11 and a bandwidth of 262 Hz. Many NBEMS nets on hf use this mode during check-in then will move to MT63 during the actual net and message passing portion.

I have had experience using NBEMS and FLDIGI on VHF simplex frequencies and found it a great way to pass information. While I have used PSK, FT-8, RTTY and WIN-LINK VARA HF digital modes on HF, I have not used the MT63 or THOR modes. The good news is that there are a number of practice nets during the week. The Pa NBEMS Net google site, paNBEMS@groups.io, provides a list of practice nets available during the week that I need to check out.

The fun thing about amateur radio; always something new to learn and try.

73

**Please check
Page 31 for a
word from our sponsor:**



Vintage Magazine Cover Art

de Pat Volkmann, W9JI



Our cover this month is from the February 1912 issue of *Modern Electrics*, a Hugo Gernsback publication. We see a man in a space ship surrounded by a variety of radio and electrical devices, with a feed line running to the window. A note on the cover directs us to page 790, where the apparatus is explained. Is this a typical radio setup from 1912?

The cover picture foreshadows the direction that some of Gernsback's publications would take in the future – the presentation of what we now call “science fiction” in a magazine article. In this issue, we find the 11th installment of “Ralph124C41+”. Ralph124C41+ (the story title and name of the main character) was described as the greatest inventor that the world had ever produced. Throughout the series, Gernsback describes many fanciful, high-tech inventions, some of which would be realized in years to come. The 12 episodes of the story were published as a book in the late 1920s. The writing is generally panned but the stories are described as the first major work of American science fiction. In my opinion, the writing is not bad and reads better than much of what Gernsback would publish in his later science fiction magazines.

The apparatus shown in the cover illustration plays a key part in the story. The hero uses an “ultra generator” and an “inductive balance” to overcome his enemy and rescue his girlfriend. Wireless communication, both audio and visual, are featured in the story. At this time, the general public may have considered wireless nearly as futuristic as a rocket ship. Fantastic and amazing stuff indeed!

In 1912 there were few regulations for either commercial or amateur radio stations. The Anderson Bill, which passed that year, was the first substantial legislation to effectively regulate radio and it would be the law of the land the next 15 years. For hams, there were a couple of key provisions in this bill – a power limit and a frequency limit. Gernsback's editorial (page 784) discusses his support of both as a means to end interference with commercial and government stations. The power limit proposed was one kilowatt. The frequency plan proposed that “...a few meters up to 200 could be used ...” for amateur communication. This seems an unusual position for Gernsback, an advocate for amateurs before the formation of the ARRL, to take. At the time, the wavelengths below 200 meters were considered useless for communication. The Anderson Bill was an attempt to regulate amateurs out of existence. As it turned out, hams were handed the entire HF spectrum, with spectacular results to follow.

You can find a PDF of this issue and many others at <https://worldradiohistory.com/>

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PRICE 10 CENTS

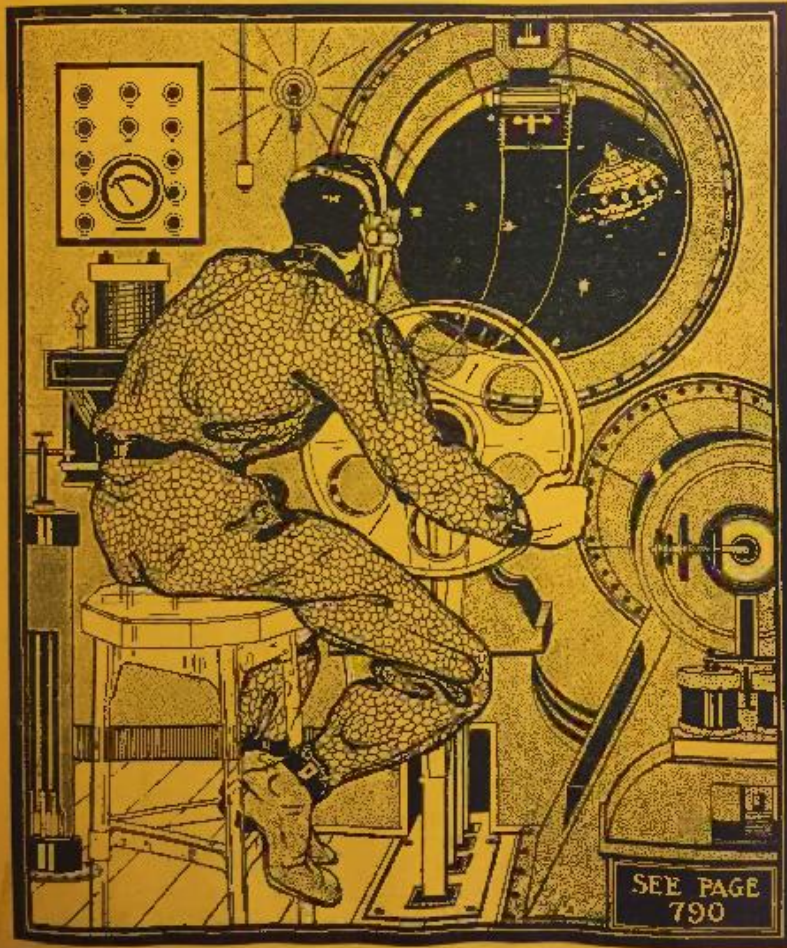
FEBRUARY, 1912



VOL. IV.

No. 11

MODERN ELECTRICS



"THE ELECTRICAL MAGAZINE FOR EVERYBODY"

Copyright 1912, by Modern Publishing Co., 232 Fulton St., New York City.

Modern Electrics February 1912

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Following last month's article about R. L. Drake Company's entry into the Linear Amplifier market, we continue on with two additional models. These were the last amplifiers produced by Drake. In the late 1970's, Drake had moved from basically vacuum tube receivers and transceivers to solid state designs. While Drake never did make a solid-state Linear Amplifier, in 1979 they accommodated their recently introduced solid state TR7 Transceiver with the introduction of the matching 160-meter through 15-meter L7 Linear Amplifier. (The L7 could be field modified to operate on Amateur Radio 12-meter and 10-meter bands.

While keeping some basic performance parameters and tube selection, Drake updated the design of the L7 as compared to its predecessor, the model L-4B.



Drake L7 Linear Amplifier

W9MXQ

By the time of the arrival of the TR7 Transceiver and the L7 Linear Amplifier, Drake had established itself as a major player in the amateur radio market.

With the L7, Drake answered the growing demand for equipment that supported the popular 160-meter band. Essentially, the L7 was a 1.8 to 30 MHz general coverage amplifier which made it well equipped to perform well on the new 17-meter and 12-meter

bands. The L7, however, did come from the factory with its circuitry inhibited from 24 to 30 MHz. This was in keeping with the Federal Communications Commission's ruling that amplifiers marketed in the United States could not function on the 11-meter Citizens Band (at 27 MHz). Of course, a licensed Amateur Radio operator was free to modify such amplifiers for operation on the 12-meter and 10-meter bands – and Drake did offer instructions to do so with proper proof of being licensed.

The design of the Drake L7 Linear Amplifier was meant to match the Drake products of the day:



**Drake TR7 HF Transceiver
W9MXQ**



**Drake TR7A HF Transceiver
W9MXQ**

The Drake L7 Linear Amplifier had the following specifications¹:

- Two Eimac 3-500z or Amperex 8802 Triode Tubes
- 2000 Watts PEP Input SSB or 1000 Watts CW / RTTY
- Linear AM input power to be held to 500 watts (in SSB Mode)
- 160-15 Meters (Continuous coverage from 1.8 to 24 MHz)
 - 24 to 30 MHz coverage could be added in a field modification
- Separate L7-PS Power Supply (see picture below)



**L7-PS HV Power Supply Views (Front and Back)
(Physically, the late L4-PS and the L7-PS Power Supplies are identical)
W9MXQ**

On the rear panel of the L7 are connectors for feeding high voltage (through a Millen High Voltage Connector) and control interface (through a large, 8-pin, Jones Connector) to the separate L7-PS HV Power Supply. The interface cables and main AC feed cables are hard wired to the L7-PS. The transformer providing filament voltage for the final amplifier tubes, the meter lamps, status lamps, and the voltage for the transmit/receive

control relay was inside the RF Cabinet with primary voltage fed via the control interface cable.

The L7 and its predecessor L-4B had a quite different appearance. Look at the two amplifiers, side by side:



Front Panel Layout – L7 at the Left – L-4B at the Right
Functions are the same – but Layout is different – see text below for details.
W9MXQ **W9MXQ**

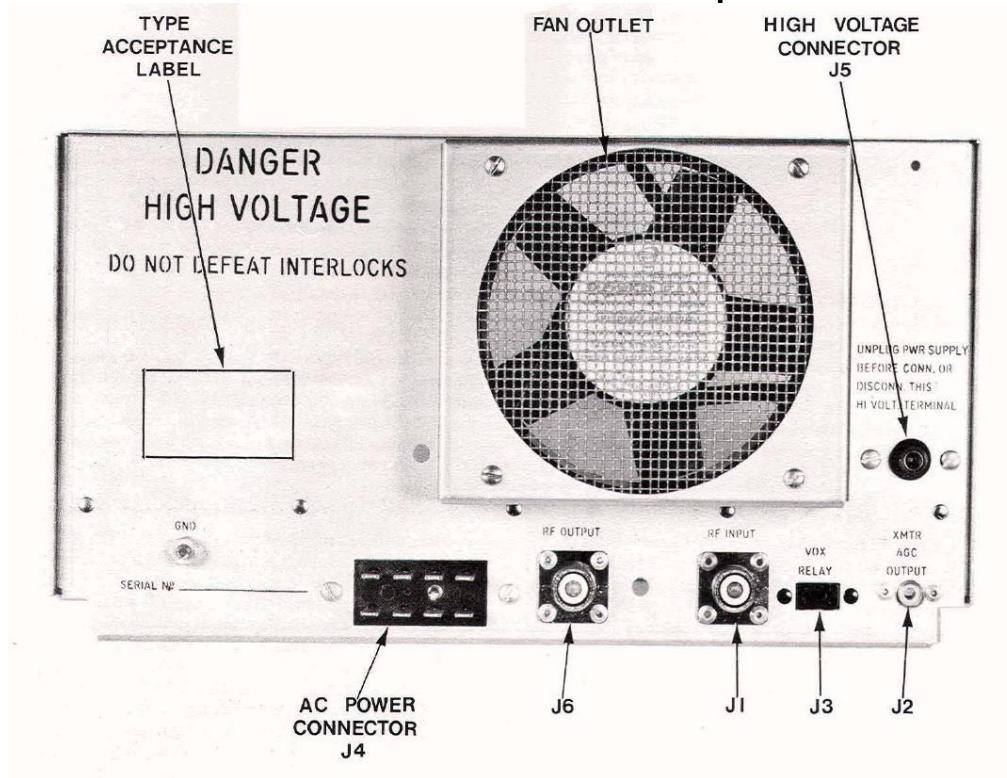
Looking at the above pictures, note that the two different meters have the same purpose. The Ammeter is on the right on the L7 and on the top on the L-4B. The same functions are handled by the multimeter (left on the L7 and on the bottom on the L-4B). Those functions are:

- Grid Current
- Plate Voltage
- Forward Power (3,000 watts)
- Reflected Power (300 watts)
- Forward Power (300 watts)

These are handled by the black pushbuttons on the L7 and a rotary switch on the L-4B. Note the ALC level knob just above the Power and Mode Rocker Switches on the L7 and on the knob to the right of the lower meter on the L-4B. The Standby (SDBY) switch on the L7 is the red button to the right of the row of black buttons on the L7. That same function was handled with a push-pull switch on the shaft of the ALC level knob on the L-4B. Function and status on the L7 are shown by lamp indicators (to the right of the plate ammeter). Also, the illuminated blue color meters on L7 are nearly hidden with power is removed from the amplifier.

The rear panel connections for input and output allowed the Drake L7 HF Linear Amplifier to easily accommodate previous and current Drake (and other brand) equipment of the day:

Rear View – Drake L7 Linear Amplifier



See connection descriptions in the text, below.

From the Drake L7 Operating Manual – R. L. Drake Company

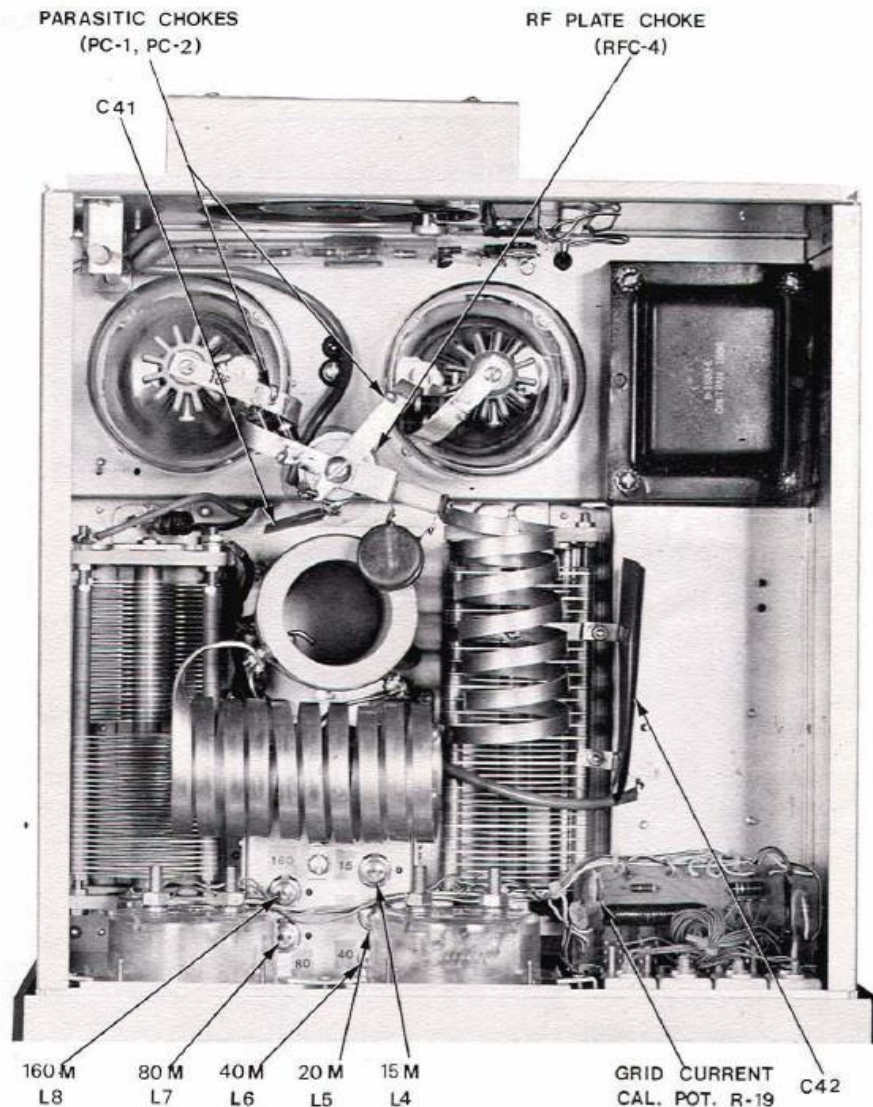
The connection to the remote L7-PS Power Supply were via a cable with two connectors at the amplifier end – one to the heavy-duty AC Power Connector (J4) and the other to the High Voltage positive voltage line to the Millen High Voltage Connector (J5). These two lines actually were one cable from the L7-PS that broke into two lines at the L7 Amplifier end. **BEWARE!!** That cable contains voltages at, or exceeding, 3,000 volts DC.

After a short while in production the connector at the VOX Relay (J3) became a phono jack and it moved away from the two pin (crystal socket) connector traditionally used in earlier Drake Transmitters and Transceivers. The VOX Relay connection requires current and voltages too high for most modern transceivers. Users should modify their amplifier accordingly or use an external switching interface³.

RF input from the Transceiver or Transmitter is connected via the RF Input connector (J1). The drive provided should not exceed 100 watts or damage to the input circuits or tubes can result – not to mention distortion in the radiated output. Output to the antenna is via the RF Output connector (J6). Automatic Level Control (ALC) voltage from the Transceiver or Transmitter is connected to the XMTR ALC Output Connector (J2).

The following are some internal views of the Drake L7 Linear Amplifier:

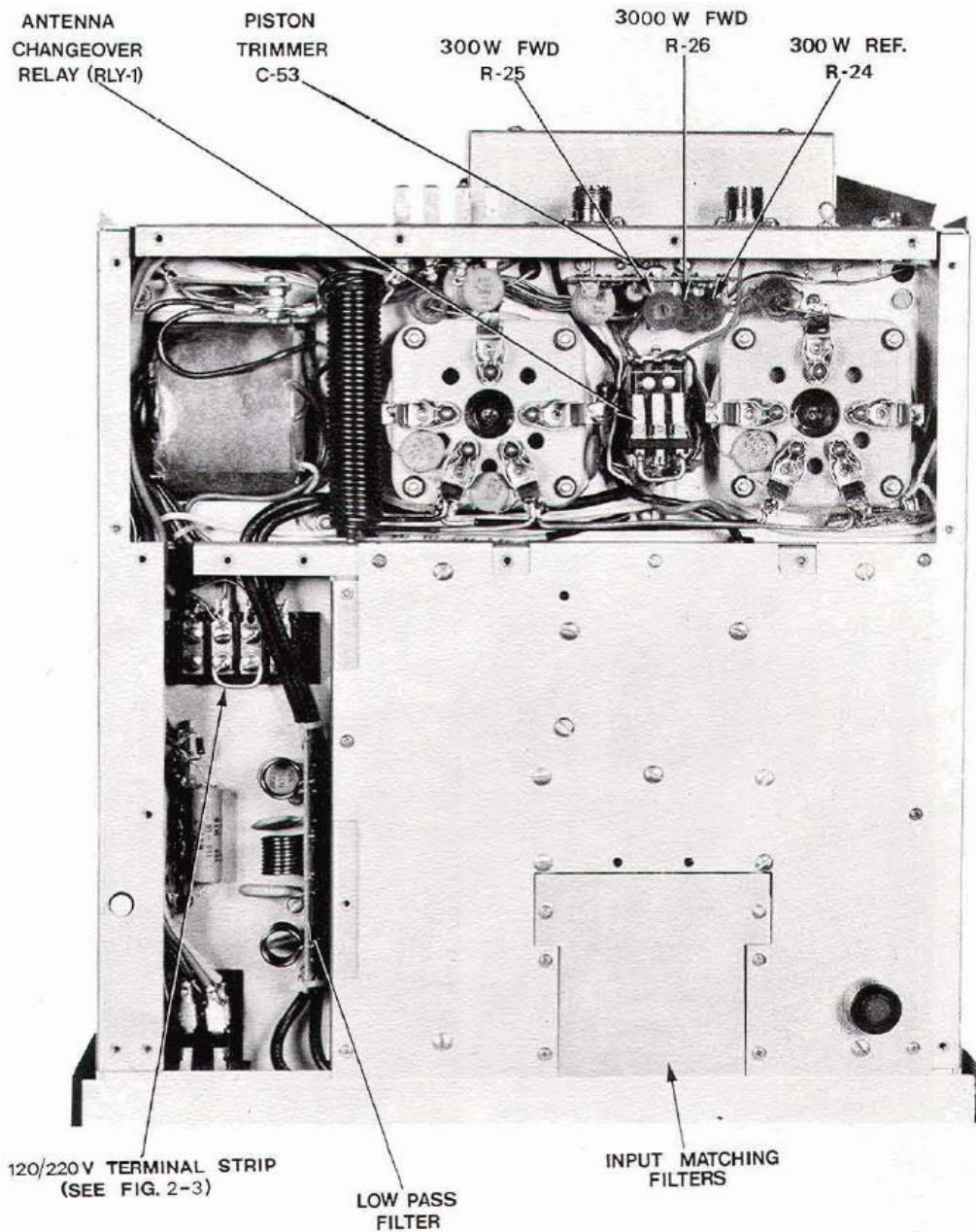
Inside Top View – Drake L7 Linear Amplifier – Front Panel at Bottom of Picture



The meters are at the center and left of the Front Panel – with the indicator lamp array visible to the right. Just behind the meters are the tuned input coils with the three sections of the tank coil visible behind that. The Plate Tune Capacitor is to the right of center and the Load Capacitor is along the left side. Rear left are the two 3-500z triode amplifier tubes cooled by the horizontal fan at the very rear. To the right rear is the filament/control voltage transformer.

From the Drake L7 Operating Manual – R. L. Drake Company

Inside Bottom View – Drake L7 Linear Amplifier – Front Panel at Bottom of Picture



Again, the bottom of the picture is the front panel. The tubes are at the top center and right. The filament/control voltage transformer is to the left of the tubes. You can see the filament choke between the tubes and the transformer. Toward the front from the transformer, you can see the terminal strip for 120/240 strapping of just that transformer. Called out is the LOW PASS FILTER – covered later in the text of this article. The INPUT MATCHING FILTERS removable panel covers the input matching filter components. The ANTENNA CHANGEOVER RELAY (RLY-1) is between the tube sockets. The coaxial connectors for input and output are shown at the top right on the back panel. In that same area you can see the housing for the cooling fan.

From the Drake L7 Operating Manual – R. L. Drake Company

The Drake L7 came in two forms that I can identify. Early models included a rather difficult to access and modify in-inline filter to inhibit operation above 24 MHz. This filter had its own circuit board with the input RF signal fed the circuit on its way to the tuned input coils. Later TR7 models included a by-pass circuit trace on the filter board so that conversion of the amplifier to include the 12-meter and 10-meter bands was somewhat easier to accomplish in the field.

Relatively late in the production running of the TR7 HF Transceiver and the L7 Linear Amplifier, Drake began a product line addition of a lower cost HF Transceiver, the Drake model TR5. The TR5 had a completely different conversion scheme and owes its design heritage more to the former TR-4 series Transceivers than the TR7².

To support the product expansion, Drake began to release accessories with model numbers ending in the number “75,” to show the relationship to both lines. One of those was the L75 HF Linear Amplifier. Shown below is the L75 next to the matching TR5:



Front Panel Layout – L75 at the Left – matching TR5 at the Right

WB4HFN

W9MXQ

The Drake L75 Linear Amplifier had the following specifications¹:

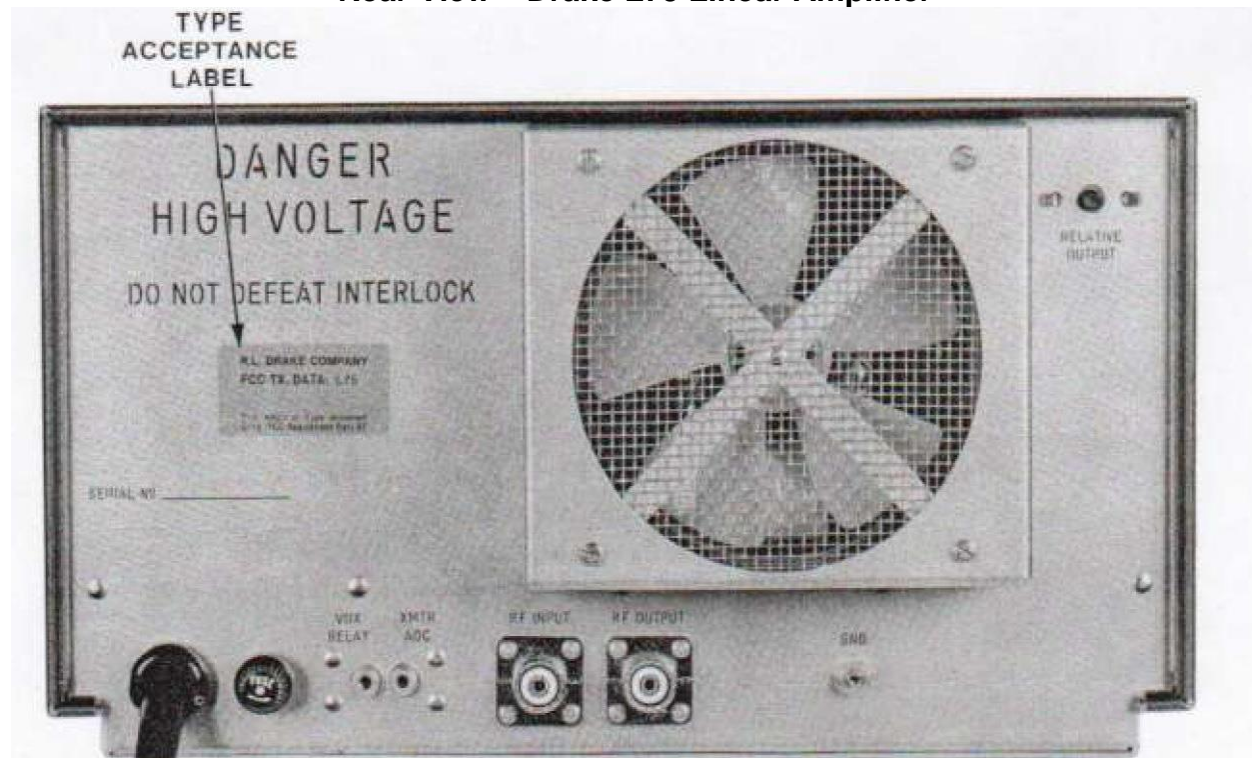
- A single Eimac 3-500z or Amperex 8802 Triode Tube
- RF power was specified as:
 - 1200 Watts PEP Input SSB (Continuous Duty)
 - 1000 Watts CW (50% Duty Cycle)
- 160-15 Meters (Continuous coverage from 1.8 to 24 MHz)
- Internal 120/240 VAC Power Supply – no separate power supply

Metering on the single meter L75 is less convenient than on the dual meter equipped L7. Metering ranges on the L75 (switched via push buttons as on the L7) are as follows:

- Plate Voltage
- Grid Current
- Plate Current
- Relative Output

The rear panel connections for input and output allowed the Drake L7 HF Linear Amplifier to easily accommodate previous and current Drake (and other brand) equipment:

Rear View – Drake L75 Linear Amplifier



See connection descriptions in the text, below.

From the Drake L75 Operating Manual – R. L. Drake Company

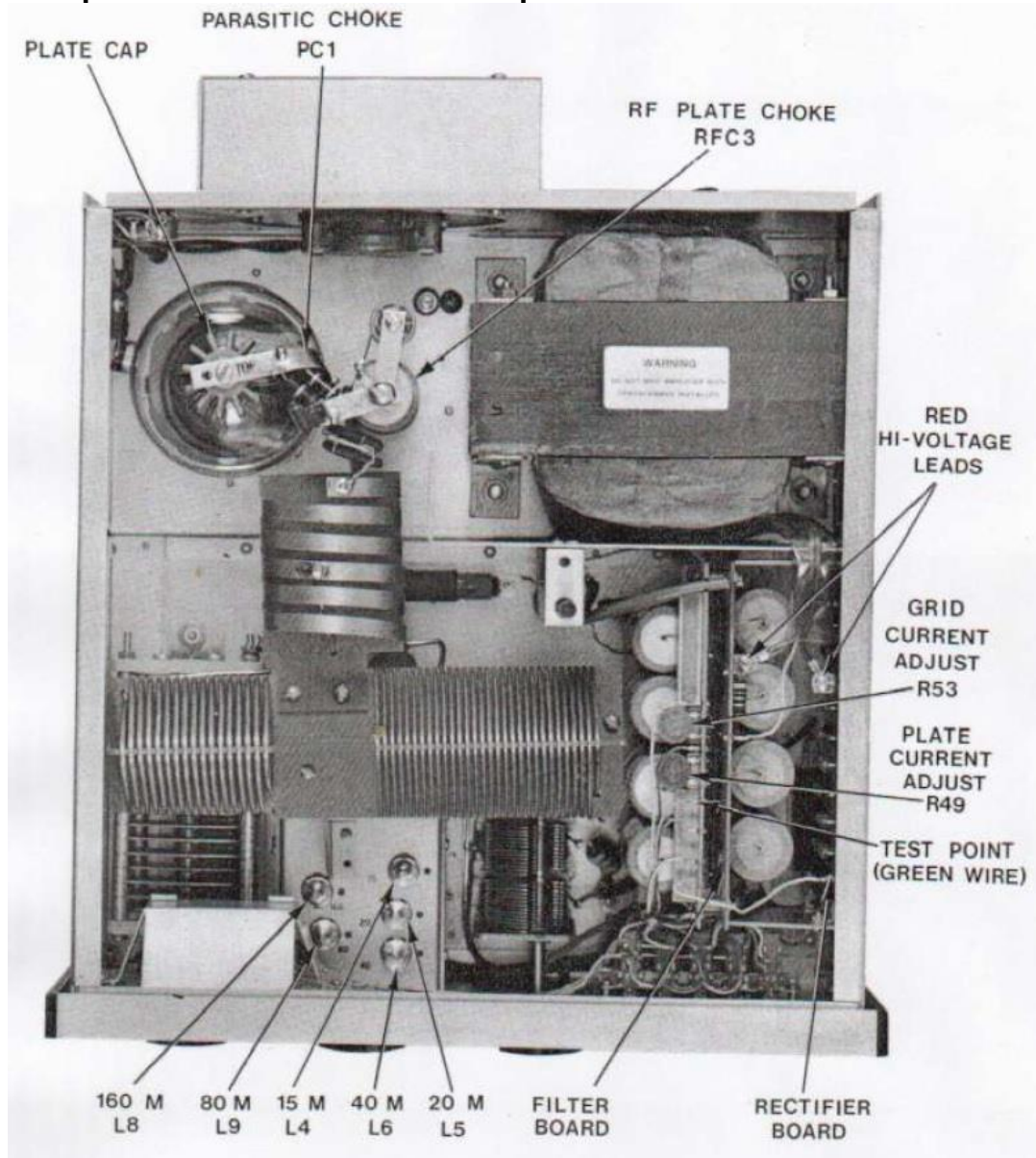
Unlike the L7 Linear Amplifier, the L75 includes its power supply within the single cabinet. So, the dangers and necessary cautions of running high voltage from one cabinet to another is eliminated.

The VOX RELAY is the PTT Line from the Transceiver or Transmitter driving the L75. As in the L7, the connection requires current and voltages too high for most modern transceivers. Users should modify their amplifier accordingly or use an external switching interface³.

Also, as with the L7 Linear Amplifier, the drive from the Transceiver or Transmitter is connected via the RF INPUT connector. The drive provided should not exceed 100 watts or damage to the input circuits or tubes can result – not to mention distortion in the radiated output. Output to the antenna is via the RF OUTPUT connector. Automatic Level Control (ALC) voltage from the Transceiver or Transmitter is connected to the XMTR ALC Output Connector.

The following are some internal views of the Drake L75 Linear Amplifier:

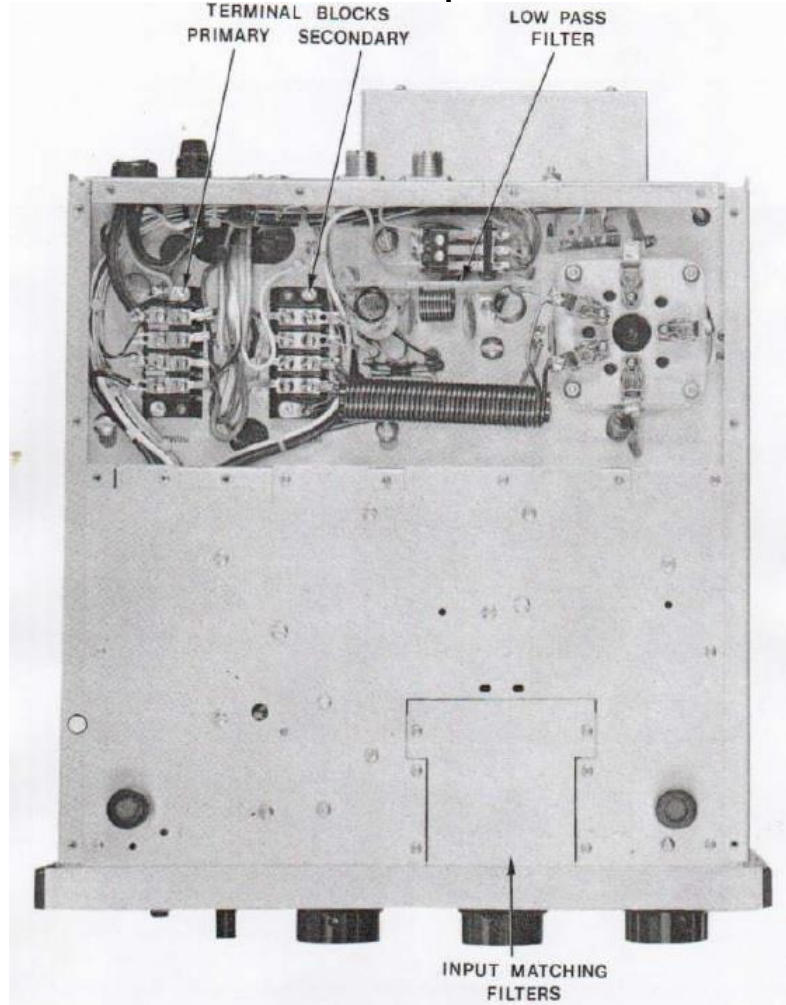
Inside Top View – Drake L75 Linear Amplifier – Front Panel at Bottom of Picture



The meter is at the left, behind the front panel. To the right of the meter are the tuned input coils. The Plate Tune Capacitor is visible to the left, below the meter and the Load Capacitor is in the center, near the front panel. The indicator lamps are to the right of the Load Capacitor. Behind the lamps are the power supply components. Rear left is the 3-500z triode amplifier tube cooled by the horizontal fan at the very rear. Power transformer is right rear.

From the Drake L75 Operating Manual – R. L. Drake Company

Inside Bottom View – Drake L75 Linear Amplifier – Front Panel at Bottom



Again, the bottom of the picture is the front panel. The tube is at the top right. The power transformer connections are to the left of the tubes, along with the filament choke. The INPUT MATCHING FILTERS removable panel covers the input matching filter components. The ANTENNA CHANGEOVER RELAY (RLY-1) is between the tube sockets. The coaxial connectors for input and output are shown at the top right on the back panel. In that same area you can see the housing for the cooling fan.

From the Drake L75 Operating Manual – R. L. Drake Company

Time is the best judge of success for amplifiers such as the Drake L7 and L75. To this day these amplifiers are sought after products. The L75 is extremely hard to find on the used market. The higher volume L7 is hardly better in that respect but are occasionally available. Both command more today to buy than when they were new.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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:

¹ Product specifications for the Drake L7 and L75 models shown come from their respective Instruction Manuals – all of which exist in my files. Most Drake manuals are available on line for downloading. I download Drake manuals from Ron Baker, WB4HFN, at:

<http://www.wb4hfn.com/DRAKE/DrakeManuals.htm>.

² The TR5 HF Transceiver was the subject of a previous article.

³ Reference the Ameritron ARB-704 Interface at: <https://mfjenterprises.com/search?q=ARB-704>.

Not shown here are other ways to mitigate the high voltage and current switching inside the amplifier. Contact me for further details at W9MXQ@TWC.com for details.

© W9MXQ



The Best Of The Best
Drake "C" Line

©WB4HFN

This picture, and the sentiment it represents to Drake radio aficionados is from Ron Baker, WB4HFN, and his Drake related website at

<http://www.wb4hfn.com/DRAKE/DrakePageHome.htm>

If you have one of these sets – contact me to have it included in an updated article on these ground breaking radios – *that are still popular today.*

W9MXQ@TWC.com

Do you have this pair? If so, I need to hear from you!



TR7 or TR7A with R7 or R7A

© R. L. Drake Company

On The Air!

de Gary Sutcliffe, W9XT



It is not too early to reserve the afternoon and early evening of Sunday, March 13, for the Wisconsin QSO Party. We won the club competition in 2020 and came close last year. It is time to win it again. We just need as many people as possible to get on and send in their scores.

It starts at 1800 UTC and runs to 0100 UTC. This is 1:00 PM until 8:00 PM. Note that we switch over to Daylight Savings Time Saturday night.

The web page shows the dates and info for the previous years, but I didn't find a link to this year's event. Keep an eye on their web page as we get closer in case they make some changes to the rules. mail.warac.org/wqp/wqp.htm

SSTV pictures from the International Space Station

The amateur radio equipment on the ISS is used in different modes. One mode is an FM repeater with a 2M uplink and a 70 cm downlink. Signals on the downlink are strong, and a few watts into a small beam are enough to get into it. At other times it is used as a packet digipeater. At other times it transmits SSTV pictures.

During the last week of December, the ISS ham equipment transmitted SSTV pictures showing the past, present, and future of lunar exploration. I had never done anything with SSTV, so I searched for programs for decoding SSTV signals. I came across a YouTube video by K7AGE going through all the steps necessary to copy SSTV from the ISS. <https://www.youtube.com/watch?v=YqY3saXXTXs>

The video recommended the MMSSTV program by JE3HHT. I have been using his RTTY program, MMTTY, for years and found the look and feel of the SSTV program familiar.

The schedule for the ISS being overhead was not great at that time. Most of the passes were after 2:00 AM and repeated about every 90 minutes until 8:00 or 9:00 in the morning. I frequently stay up all night in my ham radio operations, but this one did not quite reach the priority to be losing sleep. Fortunately, MMSSTV will automatically decode pictures and store them, so the radio and computer can stay awake while I sleep.

The other problem is I didn't have a good satellite antenna. My 2M EME array is too sharp and requires manual tracking. The 11-element horizontal Yagi would only be good when the ISS was close to the horizon in the direction it was pointing. So, I decided just to try my 40M dipole.

I got a few good pictures. Unfortunately, fading from polarization was a big problem. An antenna with circular polarization would be much better.

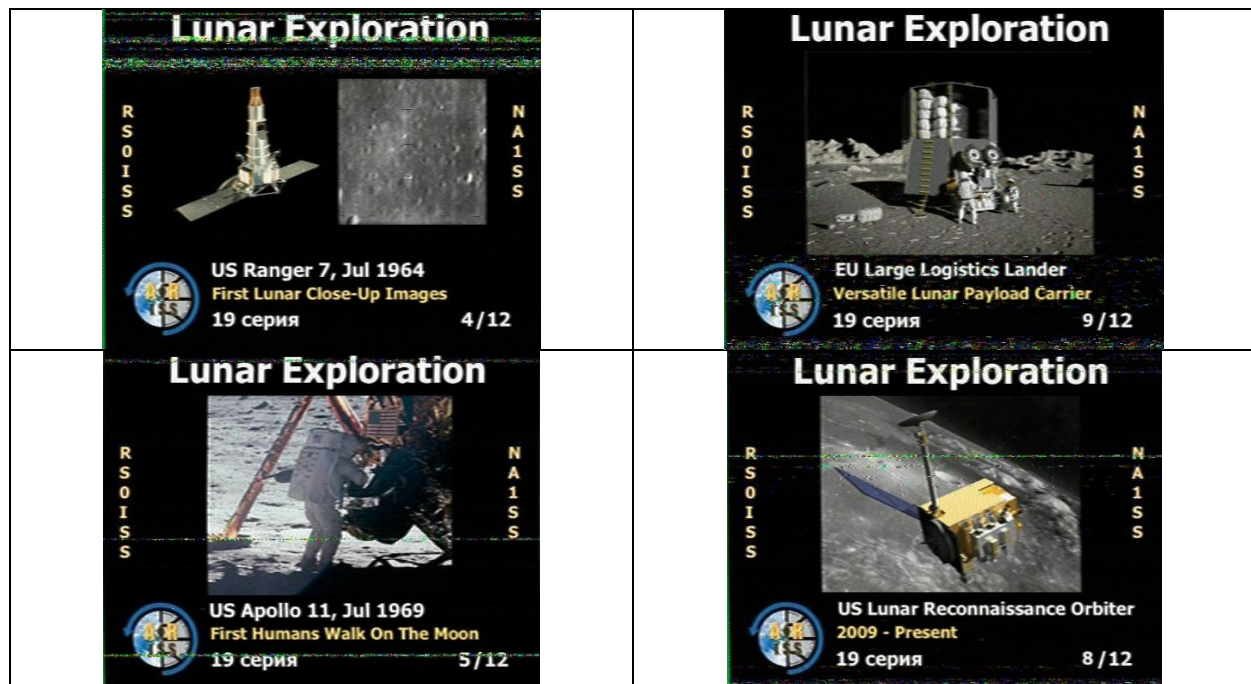
I was not the only ORC member copying SSTV pictures from the International Space Station. Don, AA9WP, also was coping them. I asked Don to send me a few words and some pictures to include in this column, but he sent me an entire article! I passed it on to our editor, Bill, W9MXQ, to publish as a standalone article in its own right. It is located elsewhere in this issue. Thanks, Don, and Bill!

They will be doing more SSTV pictures in the future. You can view the status at the ARISS website. www.ariss.org/current-status-of-iss-stations.html

It appears that the ISS will be in repeater mode, 2-meter FM up, and 70 cm FM down, during at least the early part of February. The best site for finding out when the ISS is overhead is <https://heavens-above.com/>

In the upper right-hand corner, you need to enter your location. Then on the left is a column "Satellites." Go down the list to ISS and click on it. It will show all the visible passes, which will be in the hours of darkness just after sunset and before sunrise. You don't need to see it with your eyes to hear the ISS. It just needs to be above the horizon. Click on the "All" button to see all overhead passes for the next ten days.

I also have the Heavens Above app on my phone. I like to sit out on my patio and see how many satellites I can see on pleasant, clear evenings. But, of course, it will be a few months before I do that again! Sorry iPhone users, the app is only available for Android.



[SSTV pictures copied from the ISS by W9XT December 2021](#)

Deep Space Network

I have always been interested in the space program. I remember sitting on the floor in my PJs as a seven-year-old watching Alan Shepard make his suborbital flight. After that, all my friends wanted to be astronauts. I wanted to be the guy in the control room pressing the launch button. I guess I was destined to be an engineer. Later I was fortunate enough to work on a satellite and planetary probe to Venus in my early career and I am still interested in anything related to space exploration.

The James Webb Space Telescope launched on Christmas Day. Of course, I made sure I watched the launch and followed its deployment on its month-long trip to its L2 orbit location. It arrived at the end of January, and everything in this very complex project has been successful so far. In some technical discussions with an engineer/ham friend of mine, the subject of data transmission came up. Some searching came up with the Deep Space Network (DSN).

The earth rotates, so one spot on earth can't see in a specific location in space 24 hours per day. To communicate with space probes, a minimum of three ground stations are needed, so NASA established the DSN. There are ground stations in Madrid, Spain, Canberra, Australia, and Goldstone in New Mexico.

The website (<https://eyes.nasa.gov/dsn/dsn.html>) has a lot of interesting information, but the most interesting page shows the real-time status of the network. It shows the different dish antennas. At any given time, only some of them will be active. The non-active ones are greyed out. The active ones have waveforms going to and from the dish depending on if it is transmitting, receiving, or both. The name of the spacecraft it is communicating with is also shown. A side panel has more information on the probe and the dish picture, apparently a live feed.

Hams will be interested in the transmission specs, including distance to the spacecraft, the round trip time for the signals, frequencies, data rates, transmission power, and receive signal strengths. I have found myself opening the page on a second monitor while I do other work on the computer. It has become sort of a screen saver for me. So, if you want to see some big antennas working some real DX, check it out.

FT8 Dying?

Is FT8 going to be a victim of its own success? I am starting to think so. FT8 has been valuable during the sunspot minimum. Often it was the only way to make contacts. But conditions are improving as the sunspot counts increase. So has activity on FT8. It is often tough to find an open frequency. Give someone a call, and someone will likely cover them up before you can complete the QSO.

The problem is that there are just too many stations trying to crowd into a space about 3 kHz wide. We need to spread out. There are alternative frequencies for FT8, but I rarely hear anything there. FT4 is another option. FT4 is faster than FT8 but requires some-

what stronger signal levels. Unfortunately, when the FT8 spectrum is crammed with too many loud signals, I often go to FT4 only to find very few stations.

It has been especially bad during VHF contests. We can get some huge 6-meter opening, and it is so crowded on FT8 it takes forever to complete a QSO. Go down to phone or CW, and you can work S9+ stations in a few seconds on CW or phone, but there are very few of them. The ARRL recently sent out a questionnaire on how to encourage VHF contesters to use CW and SSB more during contests. It will be interesting to see what they come up with.

I found a few tricks to improve things on FT8 in crowded conditions. First, go up to the top line and click on Decode. Then, if you are set for fast, try Deep. If your PC is not too fast – fast enough for Deep – try Normal.

The other thing I tried was to download JTDX. It is similar to WSJT, and much of the code is from WSJT. However, the decoding algorithm is somewhat different. I run them simultaneously and sometimes get better decodes on one over the other. My initial experience is that JTDX does a better job when the signal you are trying to decode is partially overlapping another signal. The downside of running both programs at the same time is you fill up your screen. I have two 20" LCD displays in the shack. I need to upgrade to bigger ones and maybe add a third.

Update your QRZ page

If you have a ham license, you have a web page for it. Did you know that? It is on QRZ.com Old-timers will remember the Call Book. It was like a phone book but sorted by call sign. If you wanted to send a QSL, you need a copy of it and hope the guy had not moved. They came out once a year. When I was a Novice and trying to get Worked All States, it was disappointing to work a station too new to be listed. They had quarterly updates, but it got expensive to stay up to date.

Like so many things, the Call Book was a victim of the Internet. But the Internet version is much better. It is not just an address list. You can customize it with pictures, information about yourself, your station, ham interests, or pictures of your dog.

All you need to do is set up an account (it's free), and you can go in and edit it. It is pretty easy once you get the hang of it. It is interesting to see more about the ham you are working. If you are in a rag chew, check them out and you might find something you have in common and make the QSO more memorable.

I typed in a few calls of some of the more active ORC members. Here are a few who have upgraded their QRZ.com listing: N9UUR, W9GA, W0NG, W9KR, K9DJT, WT9Q. The listing for W9XT also has more information about my ham activities. Maybe you should update yours! Also, make sure you add the ORC logo to it!

Contests

The ARRL DX contests are coming up. As sunspots increase, these will be a lot more fun. Check the propagation numbers. If the solar flux is over 90, 15 meters should be good, and 10 meters will be pretty good if it gets over 100. Although cycle 25 is rising about twice as fast as predicted, it is still pretty spikey. In the last month or so, we have seen as low as the mid-70s and as high as 140. Hope for the best.

There are a couple of things I like about the ARRL DX contests. The first is that the DX works only US and Canadian stations. So, you don't get situations where some rare Asian or African station only works much louder European stations. The other thing I like is the DX stations give their power as part of their exchange. It is interesting to work QRP stations. Once, I worked a Belgium station during an ARRL DX phone weekend running 350 mw.

If you like RTTY, you have a couple of chances with the NAQP and CQWW WPX contests. Note that, unlike the ARRL RTTY contest, you can't use FT8 in these. But if you can already work stations on FT8, all you need is a program for RTTY. I like MMTTY, which integrates well with the N1MM logging program.

I don't do the CQWW 160M phone contest seriously. It is challenging doing phone on 160 if you want to work distant stations. But it can be fun to get on for a few hours during the evening hours. It is an excellent way to pick up states for 160-meter WAS, but that KH6 or KL7 may be difficult unless you have good antennas and probably running power.

W9XT's contest picks for February and early March 2022					
Name	Start	Length	Bands	Mode	Link
ARRL DX CW	0000Z Feb 19	48 hours	HF + 160M	CW	https://contests.arrl.org/ContestRules/DX-Rules.pdf
ARRL DX Phone	0000Z Mar 5	48 hours	HF + 160M	Phone	https://contests.arrl.org/ContestRules/DX-Rules.pdf
CQWW RTTY WPX	0000Z Mar 12	48 hours	HF	Digital	cqwprrtty.com/rules.htm
CQ 160M Phone	2200Z Feb 26		160M	Digital	cq160.com/rules.htm
Wis QSO Party	1800Z March 13	7 hours	HF+ 160M + VHF	CW, phone, Digital	mail.warac.org/wqp/wqp.htm
North American QSO Party	1800 Feb 26	12 (Work 10)	HF	RTTY	www.ncjweb.com

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

DX

DXpeditions continue to be slow due to COVID. There have been quite a few announced, but most are for later in the year. But there are some interesting DXpeditions to Africa and the Indian Ocean coming up.

Also, take a listen a few days before the ARRL DX contests. There are usually contest DXpeditions to the Caribbean and other areas, and the ops get on before the contests to test their stations and get a feel for propagation.

W9XT's DXpedition picks for February and early March 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Zimbabwe	Feb 3-20	Z22O, Z21A	160 + HF	C/S/D	
Ivory Coast	Feb 4-14	TU5PCT	HF	C/S/D	
Maldives	Feb 12-Mar8	8Q7WM, OK2WX	160, 80,40	C/S	
Saudi Arabia	Feb	HZ3FD, 7Z3FD, 8Z3FD			Saudi Arabia Founding Day Feb 22. Special event stations expected to be on much of February

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

That wraps up February. HF conditions usually improve as we approach the equinox. Turn on your radio!

73, W9XT



SSTV from the International Space Station

By Don Zank AA9WP



My route to amateur radio started, like many others, with short wave listening. And this holiday season, December 26 to the 31, I got to play some extreme SWL'ing by listening and recording SSTV signals from the International Space Station. I also added to the paper chase collection with a verification certificate and applied for a QSL card. There was a collection of 12 images available in December, but I only managed to capture four.

Amateur Radio on the International Space Station or ARISS is sponsored by a consortium that includes amateur radio organizations and the space agencies of the United States, Russia, Canada, Japan, and Europe. Their goal is to stimulate students interest in the subjects of science, engineering, and mathematics by interacting with the crew aboard the ISS. Much more information can be found at their website <https://www.ariss.org/>

ARISS SSTV images have been sent since 2008 and there are over 150,000 images posted including almost 16,000 from December 2021. They can be viewed at https://www.spaceflightsoftware.com/ARISS_SSTV/index.php (Including one of mine if you look for AA9WP.)

So how do you know when the ISS be sending SSTV signals? Sometimes you will see a post on the ARRL website, but the ARISS blog post is <https://ariss-sstv.blogspot.com/> is probably the best site.

How do you know when to listen? Tracking the ISS can be accomplished by using various app's including Heavens-Above, or AMSAT prediction website: <https://www.amsat.org/track/>

Just be sure you are looking at all passes and not just visible passes occurring in darkness.

Recording the SSTV signals is very easy using a VHF FM radio along with several choices of software. An android phone app, Robot36, set for mode PD120, listening to a HT tuned to the frequency of 145.800 MHz can be used as a portable setup. As the space station comes over the horizon, normally above 10 degrees, the signal can be heard, and the image is created on the phone. One problem with a HT is that the rubber duck antenna is a marginal antenna for maintaining in contact with the transmission. So, you need to chase around with the HT trying to maintain reception. And this setup also requires the listener to be available when the ISS available, which may be 2:30 AM.

A more reliable method is using a good VHF vertical antenna, a vhf receiver tuned to 145.800 and a sound card connected to a computer running MMSSTV software. This

can be left running and it will capture those 2:30 am images. The software will store the images for viewing later.

The PD120 mode will take two minutes to send an image, then be off for two minutes before transmitting again. An overhead pass will take about 10 minutes and provides the best opportunity for acquiring several clear images. Other passes will be close to the horizon and may be only 4 to 5 minutes long. The ISS should be higher than 10 degrees at the horizon to capture an image and the signal becomes weaker as it descends to 10 degrees. Because of the quickness that the ISS is moving there is a Doppler shift in the frequency but, as far as I can tell, that has not been an issue with reception.

Below is one of the better images (Right) captured along with the certificate available after posting the images (Left).



73, AA9WP



Ozaukee Radio Club Minutes of Membership Meeting: 1/12/2022

de: Ken W9GA, Secretary

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat, W9JI. At that time various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat W9JI officially initiated the meeting at 7:32 PM, as introductions were recognized when members checked into the meeting, a go-around was not conducted. A few comments were then made; The Key-up #2 event will be happening this coming weekend [Jan 14-23]; Fred W9KEY has made available a contest worksheet; Bill W9MXQ mentions that he can process corrections for newsletter items.

Program:

The January meeting has always been when the elections for officers and board members has been conducted, but due to the short time needed for this business, Pat W9JI put together a sort trivia 'contest' for the membership to enjoy. This trivia test covered historical notes such as the origin of the term HAM; DX, 73, Wouff-Hong, and others. He also dropped in some interesting historical facts about the early days of the ORC from 1964.

Election process and results:

Tom W9IPR [chair] then presented the slate of officers for the 2022 calendar year as follows:

President	Pat Volkmann, W9JI	Incumbent
First Vice President	Ben Evans, K9UZ	Incumbent
Second Vice President	Bill Greaves, K9GN	New in Office
Repeater Vice President	Gregg Lengling, W9DHI	Incumbent
Secretary	Ken Boston, W9GA	Incumbent
Treasurer	Gary Bargholz, N9UUR	Incumbent

Tom also called for any further nominees from the floor, but as there were none made, Stan WB9RQR moved that the slate be accepted as provided; Bill W9MXQ 2nd the motion, and a hand count of the votes was taken, and the motion carried, and the slate was voted into office.

Committee reports:

Repeater: Gregg W9DHI reported the repeater system is fine, but that he has been busy with medical issues in the family.

Treasurer: Gary N9UUR recapped the 2021 financial hi-lites, consolidating into one bank, and added that the audit committee [K9QLP, K9DJT, KD9FZK] had made a successful audit of the books. The December treasurers' report was accepted; motion made by W9MXQ, 2nd by W9DHI, and carried.

Secretary: Ken W9GA reported the December 2021 minutes had been posted; K9GN moved, WB9RQR 2nd, motion to accept carried.

Scholarship/STEM: Tom W9IPR presented a detailed report on the recent activities of the fund, which included some historical detail [started 1997]; the earlier involvement of FAR to administer the disbursement, and subsequent transfer to the ARRL; 23 recipients of a scholarship so far; including KD9JNT [member]; donations continue from club members; silent auctions for donations in hand will be starting soon; the STEM local fund is flush with over \$14K in hand; Tom is always looking for members who would like to participate in the Scholarship/STEM program.

OLD business: None

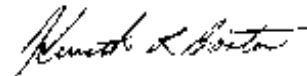
NEW business: Jim K9QLP reported that he and the committee had carried out a successful audit of the books just recently, via Zoom. Some uncashed checks were resolved, and anonymous donations [field day] were reported. The results are available to the membership, contact Jim.

Adjournment: WB9RQR moved to adjourn, K9QLP 2nd, motion carried; time ending was 9:00 PM.

There were 33 attendees.

Following the meeting breakout rooms covering any general topics; were opened.

Respectfully submitted,



Kenneth Boston W9GA, Secretary

Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

February – Gary Sutcliffe, W9XT – Antenna Basics

March – Chuck Curran, W9KR - Hickok tube testers

April – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

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

ORC Meeting Agenda

February 9, 2022

1. 7:15 – 7:30 PM – Check-In and Introductions
2. 7:30 PM Call to Order:
President Pat Volkmann (W9JI)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Presentation: Antenna Basics,
Gary Sutcliffe, W9XT
5. President's Update:
Pat Volkmann (W9JI)
6. 1st VP Report:
Ben Evans (K9UZ)
7. 2nd VP Report:
Bill Greaves (K9GN)
8. Repeater VP Report:
Gregg Lengling (W9DHI)
9. Secretary's Report:
Ken Boston (W9GA)
10. Treasurer's Report:
Gary Bargholz (N9UUR)
11. Committee Reports
12. OLD BUSINESS
13. NEW BUSINESS
14. Adjournment

Meeting Note:

Until the club decides it's safe to hold in-person meetings again, we will be holding the meetings via the Zoom Videoconferencing platform on the same evening and time as we had the in-person meetings. President Pat Volkmann will email sign-in info, W9JI via the ORC remailer usually about an hour before the start of the meeting.

**Next ORC Meeting via Zoom
9 February 2022**

7:15-7:30 PM – Check-In

7:30 PM – Meeting Begins

The Ozaukee Radio Club presents its 42nd Annual Spring Indoor
Amateur Radio, Electronics & Computer



SWAPFEST



Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)

featuring TOWER ELECTRONICS!

Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI

Talk-in: 146.97 – PL 127.3



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 Facebook.com/orcwi

www.ozaukeeradioclub.org

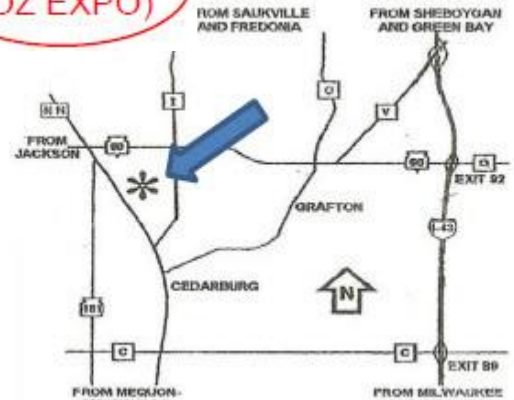


Table Spaces \$10 (All Tables are 6 ft)
Buy 1 Ticket & 1 Table... just \$15!

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

Email: swapfest@ozaukeeradioclub.org

For Advance Tickets, send check with self-addressed stamped **Business-Size Envelope** to:
 Tom Trethewey, KC9ONY – W69N905 Evergreen Ct N, #202, Cedarburg WI 53012
Admission Tickets just \$5 (Please make checks payable to ORC)

Company Name: _____ Phone# _____
 Contact Person: _____ Call Sign: _____
 Address: _____ e-mail: _____
 City: _____ State: _____ Zip: _____
 No. of Tickets: _____ X \$5 = _____ Electricity: Yes (Add \$5) _____ No _____
 No. of Tables: _____ X \$10 = _____ Total Amount Enclosed: _____

(For Official Use Only)

Ticket(s) # _____ Table(s) # _____ Init: _____

Date: _____ Time: _____ Vendor Entrance Used (Circle one): **1** **2** **3**



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

Facebook: facebook.com/orcwi

Volume XXXIV

March 2022

Number 3

From the President

de Pat Volkmann, W9JI



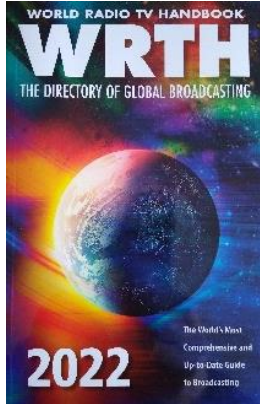
Covid numbers continue to drop and mask requirements are going away in most areas. At the February meeting, members were polled on their preference for future meetings. The result was 90% in favor of resuming in person meetings. This was confirmed by a follow up survey sent to all Club members.

There was also interest expressed in continuing the Zoom meeting in parallel with regular Club meetings. Some members don't live in the area, some don't drive at night and others prefer Zoom for watching the presentation. A Technical Committee, chaired by Gregg Lengling W9DHI, was formed to determine what equipment was needed to run a hybrid Zoom meeting from the Senior Center. The committee has made excellent progress and we are ready to test the setup. That test won't occur in time for the March meeting, so we are aiming for April to resume the meetings. I'll keep you up to date with developments.

It's award time, once again. Awards allow Club members to recognize the contributions and provide recognition to their fellow members. The two big ones are the Turkey Award and Ham of the Year. There are also a number of other awards, all of which are listed on the Club website in the Bylaws section. Take a look at the list and send your nominations to Ken Boston W9GA.

Congratulations to Kevin Steers, K9VIN, on being the 100th member for 2022! A big thank you to our Treasurer, Gary Bargholz N9UUR, for his work in reminding all of us to renew our Club membership. If you still haven't renewed, or want to join the ORC, you can do so very easily through the ORC website.

Word was received of the passing of Gary Becker, N9SBG (SK), on February 4, 2022. The Club has sent a condolence card to Gary's family.



The *World Radio TV Handbook* (WRTH) has been around for many years. This directory is a global listing of AM, FM, TV, and Shortwave stations, along with broadcast schedules. The publisher has said “Having produced this book for the past 24 years, we are very sorry to announce that *WRTH 2022* will be the final edition of *World Radio TV Handbook* produced and published by WRTH Publications.” While once a mainstay for shortwave listeners, the printed references have been replaced by Internet based directories. Not having seen the *WRTH* for many years I decided to get a copy of the last issue. *WRTH* still contains lots of good information, but I have to agree that it’s much easier to look it up on the Internet.

See you at the meeting.

Pat Volkman, W9JI

A Message from the Editor Newsletter Table of Contents

de Bill Shadid, W9MXQ

The Newsletter Header – at the top of page 1, has evolved a bit. There are three changes of note. Do you see them?

1. The ARRL Special Service Club Logo has been updated to show the latest version. Thanks to Tom Trethewey, KC9ONY, for bringing this to my attention.
2. The Editor’s contact email address has been revised.
3. Wording for proper credit to our authors and the Newsletter has been revised.

Look for an excellent personal experience article by Tom Ruhlmann, W9IPR. He chronicles his ham radio and professional life. It is interesting and shows a kind of article that many of you could write. Contact me for details.

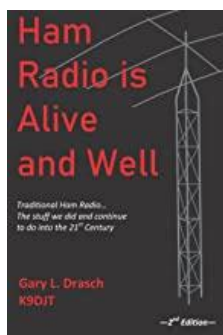
Check out Gary Sutcliffe, W9XT, as his always interesting “On The Air” column mentions upcoming events – including details of the Wisconsin QSO Party. How does that connect to Ozaukee Radio Club? Read Gary’s article!!



The Editor’s Red Lamy Safari Editing Pen – Ready to Go!

Here are the Table of Contents/Previews of this month’s Newsletter Edition . . .

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29	Ken Boston, W9GA: Secretary's Report Minutes of the 9 February 2022 Meeting
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33	Ozaukee Radio Club Spring Swapfest Flyer Just a reminder – Spring is coming!!!



NEW BOOK about Amateur Radio

The Second Edition of *Ham Radio is Alive and Well*, by fellow ORC Member, Gary Drasch, K9DJT, is now in print. Check under the title or search under “Gary Drasch” on AMAZON.COM for details. There will be a more formal review of the book, written by this Editor, in the April Edition of the Ozaukee Radio Club Newsletter. Meanwhile, congratulations to one of our own!! My copy arrives next week.

Onward To the Newsletter

Volunteering – A little goes a long way.

**de: Tom Trethewey, KC9ONY
Chairman, ORC Spring Swapfest 2022**

When asking for volunteers at meetings, most often there is dead silence. Not even crickets could be heard. This happens with a lot of clubs and organizations. But you know, it takes volunteers to make a club successful. None of our officers are paid, they are all volunteers. They like our club and want to see it thrive or even grow into something better than we have now.

I volunteered to be the Chairman of the Spring Swapfest. Unfortunately, it had to be cancelled two years in a row. This year, it will be happening. For those that might not know, the Swapfest is not only a fundraiser for the club, but a gathering of amateur radio operators to buy and sell their equipment, as well as see old friends and make new friends. It's a way to promote our club. Some of the proceeds of the Swapfest go toward maintaining our repeaters and help support our ARRL Field Day activities.

I will need some volunteers to help setup, run the Swapfest, and teardown afterward. This year, the Swapfest is on Saturday, April 30, 2022. Setup starts on Friday, April 20, 2022, in the afternoon, usually around 1 pm. Doors open Saturday morning for vendors at 6 AM, and the general public at 8 AM. Grand prize will be drawn at Noon, and then teardown starts.

So, I'll need some help with:

Hauling tables to and from the barn.

Setting up and taking down signs.

Manning the vendor entrance doors.

Manning the ticket table at the buyer's entrance.

Monitoring the 146.97 MHz repeater for talk-in. (Can be done from your home.)

Manning the prize table where the ticket drum is located.

Helping with refreshments.

I miss Nels WA9JOB/SK in more ways than one. He always enjoyed manning the buyers entrance ticket table!

As you can see, it takes volunteers to make the Swapfest successful. Please consider volunteering for the Swapfest this year. You can contact me through the club roster or repeaters.

A little goes a long way.

A JOURNEY FROM NOVICE TO EXTRA and A CAREER

de Tom Ruhlmann, W9IPR



As a kid in Atchison KS, I always wanted to be a pilot and a doctor. However, when I went to Maur Hill Boys High School (locally referred to as the reform school) I discovered the intrigue of amateur radio. I among others was introduced to amateur radio in 1951 by our science teacher Fr. Augustine. He had a Hallicrafters SX28 and a rack of military surplus equipment running a full gallon (1 KW) on CW and AM. The sun spots were plentiful during those years and allowed for world-wide communica-

tions.

There were 5 of us who were fascinated, and we studied the theory and code for the novice license, and we were allowed to use a shed next to the gym for a club house. Initially we modified a Zenith console radio with short wave bands to copy code and then Father provided a Howard shortwave receiver so we could copy distinguishable code on the air. That was great but also important since a novice license allowed you to only operate CW and then it expired in 1 year. At that time, you had to take the test at an FCC office. The closest office was in Kansas City, so John Vollmer and I took our first train and cab ride to take our Novice exam which included code at 5 words per minute. We both passed (I was N0ITI) and that started new careers.

My first receiver was a “home brew” regenerative receiver using a single 3A4 vacuum tube. The transmitter was also home brew and used a single 6L6 vacuum tube. I must have made a few contacts because it sustained my interest and in 1952, we again took the train to the Kansas City FCC office where we passed the General class theory and code test at 13 words per minute.

Now I was a real “HAM” (W0ITI) and saved enough money to buy a Bretting 12 from the 1930’s and through various trades obtained a Navy surplus BA-12 Bendix transmitter. This is a picture of my attic bedroom station. The receiver was eventually replaced by a Hallicrafters S-40B.



Bretting 12 Receiver



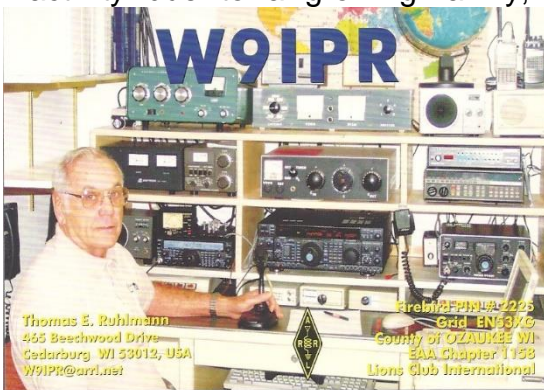
Bendix BA-12 Transmitter



Then it was off to collage to earn an engineering degree and during that time my mother earned her license (K0ANA), and my brother John earned his ticket (W3CWV) while in the air force then returned home with a real station; a Heathkit DX100 transmitter and National NC300 receiver.

I got my engineering degree and married my wife Pat in 1960. There was a long a pause in my amateur radio activity as we moved to Wisconsin, Texas, Arizona and back to Wisconsin with AC Spark

Plug/Delco Electronics with the Titan II missile and Main Battle Tank programs. While living in South Milwaukee I got back into amateur radio using my brother's old station and then earned my Advanced Class license. There was another long pause in radio activity due to a growing family, the



change in employment to Globe Union/JCI, the technology of transceivers and solid-state electronics and our move here to Cedarburg. Here I joined the ORC and bought a used Kenwood TS940. The DX bug bit me and I graduated to a Yaesu FT1000MP and eventually I restored a Heathkit SB200 amplifier. Then I got the extra Class License since 20 words per minute was no longer required and it allowed extra operating frequencies. This naturally led to my eventual retirement with my present Yaesu FTdx-5000 and Ameritron AL-572 amplifier and a host of test equipment and "good stuff", trips to Dayton, a DXCC-100 certificate and many new friends. As you can see, over the years there has been a notable change in the hair line. What's next? Pat says I need to get rid of some of the "good stuff."

Editor Note: I added pictures on the previous page of the Bretting 12 Receiver – from the Western Carolina Radio Museum, And the Bendix Military Surplus BA-12 Transmitter – a picture from the internet.

THE COMPUTER CORNER

No. 288: Let There Be Light (Revisited)

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

I alluded to the topic in #286, Let There Be Light, but it really needs to be expanded. Why? To underline the fact that incandescent light bulbs have largely reached the end of their useful lives. It now just does not make sense to purchase them, from either a financial or environmental point of view. Of course, this is my personal opinion, but remember that I was the “light bulb guy” at a hardware store for over 25 years. And I still am the lamp fixture repair guy there, which gives me some additional insight into the issues that make this change to modern technology now worthwhile.

Let’s start with a basic 100-watt light bulb. I have on my desk a package of four 100-watt equivalent LED (Light Emitting Diode) light bulbs. They are A-19 bulbs with an E-26 base, simply meaning that they are roughly the size and shape of 100-watt incandescent bulbs and screw into the same style socket. The pack of four 100-watt equivalent bulbs are now on sale (mid-January 2022) at Hahn Mequon Ace Hardware for \$1.00, plus tax, or 25¢ plus tax for each light bulb. If you prefer less light output, for the same price you can get four 60-watt equivalent bulbs or four 75-watt equivalent bulbs.

The 100-watt LED bulbs I purchased put out daylight-equivalent light (cool white) at about 5000 K, about 1600 lumens. A side issue: You can also purchase LED bulbs which put out a warmer color light, more similar to soft-white incandescent bulbs, if you or your family members object to bright white light (though personally I find bright white much better for both reading and fine work in the workshop than soft whites).

Although they are 100-watt replacements, these bulbs actually draw only 15 watts of power. They are giving you 100 watts worth of light but using 85% less power. So, you are paying 85% less on your light bill.

What about life expectancy? For example, how long will the 100-watt equivalent LED model last? If you burn one for an average of 3 hours per day, it is rated to last 25,000 hours or just under 23 years (though they are fully warranted for 5 years from the date of purchase).

You may have heard that LED bulbs can cause interference with radios. This might have been true when they first came out, but no longer. Modern LED bulbs must comply with Part 15 of the FCC rules – “they may not cause harmful interference and must accept any interference received, including interference that may cause undesired operation”. I can assure you that any bulb flaky in this respect, or one that dies prematurely, will be replaced free if you bought it at Hahn Mequon Ace.

More rather amazing specs: these LED bulbs will reliably operate in ambient temperatures from -4 to +104 °F, and even in enclosed or recessed fixtures, and even in damp

locations. They also work with LED-compatible controls and dimmers over the range of 100% down to 10%.

There is one more important attribute that needs closer attention. Because LED bulbs generally convert much more energy into light (and much less energy into heat), bulb sockets and switches are stressed much less than those that must control incandescent bulbs. I have yet to find a burned-up socket that was controlling LED bulbs. All of the burned sockets I have had to replace during lighting fixture repairs (many hundreds of sockets over the years) were burned out by controlling high-heat-generating incandescent bulbs.

So, there you have it. I defy you to find a 100-watt incandescent bulb that matches anything like the specifications outlined above. Save yourself energy bucks, lighting fixture repair bill bucks, and the bother of changing light bulbs so often by converting to LED light bulbs. Use your furnace to heat your home, not your light bulbs. All this just makes good sense. Happy Computing.

Realities of Ham Radio Life

de: Anonymous

With sadness I want to announce that after 30 plus years of Ham Radio, I am posting this with heavy heart. I love Ham Radio and everything that comes with it, but I am officially making a change in 2022! This is taking up too much of my time. I'm struggling to keep up with the everyday chores of cooking, cleaning, and maintaining my home, so something has to give. I have decided to get rid of all my gear.

Below is a list of what's available. Serious inquiries only, and please don't insult me with low offers. Thanks for reading and understanding...

1. Vacuum Cleaner
2. Dustpan and Broom
3. Mop and Bucket
4. Lawn Mower
5. Leaf Blower
6. Washing Machine and Dryer
7. Iron
8. And anything more that helps buy more Ham Radio Equipment.

73 and DX

A CALL FOR NOMINATIONS FOR AWARDS: 2022

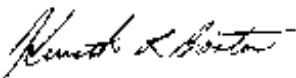
de Ken Boston, W9GA

I want to invite all of the members to consider picking a nominee for this years "Ham of the year" and also "Turkey of the year." These annual awards are the major awards issued by our club, and both have a physical trophy that travels from year to year to the individuals who win them. The Ham of The Year goes to a member who has made significant contributions to the hobby, and to the ongoing activities of the ORC, and can be awarded multiple times to any one member. The Turkey of The Year is awarded to a member who has been found to 'cheer up' the membership, and provide a little comic relief to the folks, and can be awarded only once to any specific member.

Due to a major computer problem here, I currently do not have the full list of the past recipients of these two awards; however, if you check on the club webpage, and open the pdf of the newsletters for 2021, and page forward to page 31 and 32 you will see the full lists there. Add Pat, W9JI, as the 2021 Ham of The Year, and Don, K9MOI, as the 2021 Turkey of the Year and you can see who the lucky winners have been. I should have the computer issue resolved shortly, and plan to post the list also on the reflector as a text file for your reference.

In addition to the two main awards, I will be looking for nominees for any of the other awards that we issue on a yearly basis. The full list is in the bylaws posted to the website under Policy and Procedure #8. These awards include Public Service; Radio Art; Communication tech skills and International Goodwill. Also listed are many "of the year" awards such as meeting program, committee, club project, operator, trainer, technical project, contester, and club service. Pat, as president, also can make any award[s] that he identifies.

Please consider your choices and email me directly. You can contact me on the reflector with a message to mail you a return if you don't have my direct email.



Kenneth Boston W9GA

Email: kboston6@wi.rr.com

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 Weather Spotter Training and Season

de: Don Zank AA9WP, OZARES Emergency Coordinator, aa9wp@arrl.net



I was planning to open this article up talking about how spring is approaching because baseball spring training was taking place, however the owners and players are tied up in a lockout. So, I will just continue on without them and just note that the NASCAR season is starting, the Wisconsin QSO party is coming up March 13 along with the start of daylight-saving time and that is a sure sign of spring.

The meteorological spring weather season may have already started before you read this. For weather forecasters, the date of March 1 is the start of meteorological spring, while for the rest of us, the spring season, or more formally astronomical spring, begins at the vernal equinox, occurring this year on March 20.

The spring season brings changing weather conditions and with the changes comes an increase in severe weather activity. Weather spotting and providing severe weather reports, be it thunderstorms, tornadoes, lightning, high winds, extreme rain, hail, or flooding, has been and remains an important activity for amateur radio. The severe weather reports provided by weather spotters and amateur radio operators furnish the much-needed ground conditions needed by the Milwaukee National Weather Service, NWS, office in Sullivan. The reports provide ground proof for the forecasters, who may suspect what the weather conditions may be, but are unable to determine from their radar data.

It is important for weather spotters to maintain their skills for observing and reporting severe weather. The skills and abilities can be kept up by taking on-line courses and from books such as the ARRL book Storm Spotting and Amateur Radio by Mike Corey, W5MPC and Victor Morris, AH6WX. Of course, another great learning opportunity is the weather spotter training course offered by the Milwaukee NWS office. This year the local weather spotter training class will be offered on April 19, between 6:30 pm and 8:30 pm, at the Ozaukee Pavilion on the Fair Grounds. Registration is required before attending so please check out their website: <https://www.weather.gov/mkx/spotter-schedule>. And if for some reason, this is not a good time please review other available classes listed on the website.

Yes, returning to live in-person training sessions. And hopefully the Office in Sullivan will be open to non-weather official personnel later this spring. The classes have been held virtually the past two years. Weather spotter reports have been relayed to the office the past two years by using social media such as Twitter and Facebook. While the point of weather spotter is providing accurate and timely reports to the office, the typing of

information on the smartphone does not provide the same satisfaction as keying up the mic on the rig.

The Sullivan Committee, or SULCOM, headed by Tom Kucharski, W9TJK has worked with the local office to create a team of internal operators that receive and relay severe weather reports to office staff, and external groups, such as OZARES and weather spotting organizations like the Midwest Severe Storm Tracking group, <https://midwestsstrc.org/>, who provide the severe weather reports.

A standard reporting format has been created that allows for quick delivery and recording of the event.

Who: Radio call sign or private citizen.

What: The reported weather conditions of tornadoes, rotating wall clouds, hail, high winds, flooding etc.

When: Time of activity given in local time. A critical factor in providing reports. Quick and accurate information is required at the office. Reports after five or more minutes lose their usefulness.

Where: The location or direction of the activity. An important point to remember is that tornadoes or rotating wall clouds will, hopefully, not be at the observers location. So, the observations direction and estimated distance must be provided in the report. Local observations can be reported with a street address; longitude and latitude; or distance from a major intersection. Providing the county is very helpful as the weather office is responsible for twenty counties in southeast Wisconsin.

OZARES criteria for activation requires a severe weather warning to be issued. However, we will normally have a stand by net activated when severe weather is roughly a county distance away. This allows everyone time to check on their families and prepare for severe weather but also be ready at the radio when the convective weather arrives in Ozaukee. All amateur radio operators are encouraged to participate in the severe weather nets. We request to keep all radio activity down to the minimum, check into and out of the net and to use the guidance provided in the Severe Weather Reporting Criteria. Hopefully, there will be additional training opportunities this spring and summer, normally the last Tuesday of the month, to practice providing severe weather reports to the office. The practice helps keep skills sharp, test communication equipment and get to know the people working in the office.

Hope to see you at the April Severe Weather training. If you have further questions, please let me know by email or ask them at the training session. On the following page is the Severe/Convective Weather Report form we use. Looking forward to a safe spring weather season.

Severe/Convective Weather Report

Who _____

What (circle ONE below and complete other details as indicated)

<p>1. Tornado or Waterspout <i>circle one</i></p> <p>2. Funnel Cloud</p> <p>3. Rotating Wall Cloud</p>	→ Looking																	
<p>4. Severe Damage <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">tree branches greater than 3" dia. snapped, trees uprooted</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 40%;">downed power lines</td> <td style="width: 10%; text-align: center;">_____</td> </tr> <tr> <td>any structural damage to buildings (includes roof damage)</td> <td style="text-align: center;">_____</td> <td>crop damage</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>bent, snapped or collapsed light poles or traffic lights</td> <td style="text-align: center;">_____</td> <td>sink holes</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>cave-ins and mud slides</td> <td style="text-align: center;">_____</td> <td></td> <td></td> </tr> </table>			tree branches greater than 3" dia. snapped, trees uprooted	_____	downed power lines	_____	any structural damage to buildings (includes roof damage)	_____	crop damage	_____	bent, snapped or collapsed light poles or traffic lights	_____	sink holes	_____	cave-ins and mud slides	_____		
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bent, snapped or collapsed light poles or traffic lights	_____	sink holes	_____															
cave-ins and mud slides	_____																	
<p>5. Severe Winds – 58 mph or greater: Speed _____ circle if <i>measured</i> or <i>estimated</i></p>																		
<p>6. Severe Hail - 1 inch or greater: Size _____ circle if <i>measured</i> or <i>estimated</i></p>																		
<p>7. Severe Flooding <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">water over river banks or dams</td> <td style="width: 10%; text-align: center;">_____</td> <td style="width: 40%;">roads, bridges or railroads washed out</td> <td style="width: 10%; text-align: center;">_____</td> </tr> <tr> <td>impassable or closed roads</td> <td style="text-align: center;">_____</td> <td>water out of banks that causes property damage</td> <td style="text-align: center;">_____</td> </tr> </table>			water over river banks or dams	_____	roads, bridges or railroads washed out	_____	impassable or closed roads	_____	water out of banks that causes property damage	_____								
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impassable or closed roads	_____	water out of banks that causes property damage	_____															
<p>8. Minor Hail – 3/4 inch to 7/8 inch: Size _____ circle if <i>measured</i> or <i>estimated</i></p>																		
<p>9. Minor Damage <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">any cosmetic damage to buildings & vehicles</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td>tree branches less than 3" dia. snapped causing power line damage or cosmetic damage to buildings & vehicles</td> <td style="text-align: center;">_____</td> </tr> </table>			any cosmetic damage to buildings & vehicles	_____	tree branches less than 3" dia. snapped causing power line damage or cosmetic damage to buildings & vehicles	_____												
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<p>10. Minor Flooding <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;">non-life-threatening / non-damaging water over curb</td> <td style="width: 20%; text-align: center;">_____</td> </tr> <tr> <td>water out of banks but confined to low lands and bottom lands (not impacting buildings)</td> <td style="text-align: center;">_____</td> </tr> <tr> <td>water on the roads</td> <td style="text-align: center;">_____</td> </tr> </table>			non-life-threatening / non-damaging water over curb	_____	water out of banks but confined to low lands and bottom lands (not impacting buildings)	_____	water on the roads	_____										
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water out of banks but confined to low lands and bottom lands (not impacting buildings)	_____																	
water on the roads	_____																	
<p>11. Visibility - less than 1/2 mile: Distance _____ due to precip ___ fog ___ blowing dirt ___ smoke _____</p>																		
<p>12. Rainfall - equal to or exceeding 1" per hour measured over at least 15 minutes <small>(i. e., at a rate greater than 1/4 inch in 15 minutes)</small></p> <p>Measurement _____ in (between) _____ minutes (start/end time)</p>																		
<p>13. Minor Winds 40-57 MPH: Speed _____ circle if <i>measured</i> or <i>estimated</i></p>																		

When _____

Where Address _____ Reference/ _____
Distance/Direction _____ City/ _____
Lat/Long _____ Intersection _____ County _____

Time at Office _____

SulCom

Rev. 7

11 March 2017

Vintage Magazine Cover Art

de Pat Volkmann, W9JI



Our cover this month is from the March 1927 issue of **Radio Mechanics**¹, an M. B. Sleeper publication. Radio Mechanics was one of dozens of publications in the 1920s that focused on building your own radio equipment. Only a handful of issues are known to have survived. Milton Blake Sleeper was well known in 1927 as a prolific designer of radio circuits and author of numerous books and articles².

Sleeper was a co-designer of the “Pilot Wasp” receiver in the late 1920s. The Wasp was a kit and was described as “their first really popular Shortwave receiver kit”³. Sleeper was a life-long friend of Major Edwin Armstrong, the inventor of the regenerative and superheterodyne receivers and FM radio.

Sleeper was active with Armstrong in lobbying the FCC for favorable FM regulations during 1940s, but without success. Sleeper started several popular FM and audio hi-fi magazines over the course of his career. His last venture was *Hi-Fi Music at Home*, a newsletter for kit builders.

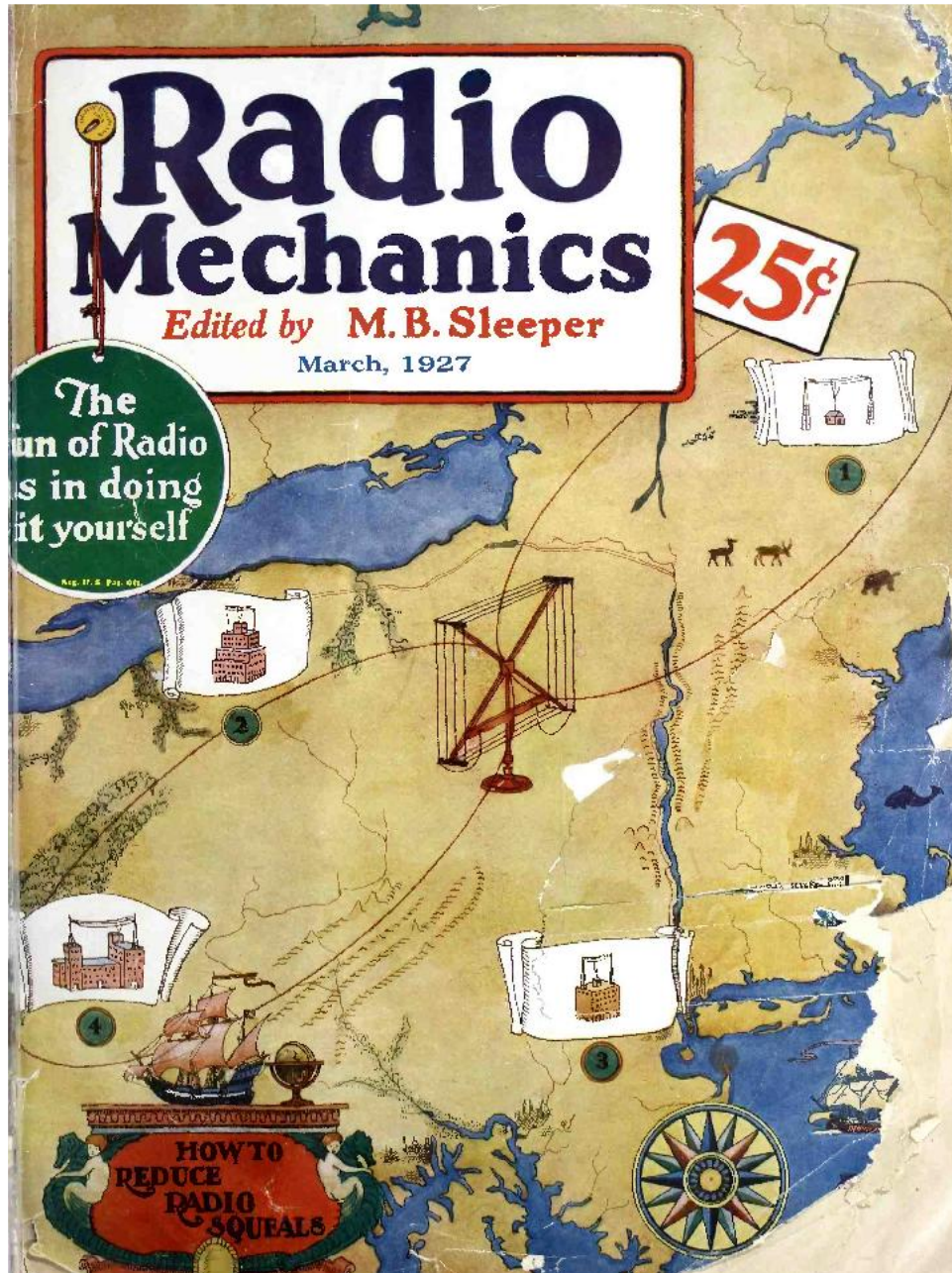
The cover, illustrated by Howard V. Brown, shows four radio stations positioned around a directional antenna. The lobes of the antenna pattern fall on two of the stations. The cover caption, “How to Reduce Radio Squeals,” does not match up to any article in this issue. Instead, it illustrates an approach to interference reduction that is still very much in use today – the use of a directional antenna. The antenna pictured on this cover is a directional loop that is commonly used with radio receivers and can be seen in many period photos.

This issue of **Radio Mechanics** offers seven receiver designs, each with a detailed description, circuit diagram, parts list, photographs, and layout drawings. All of the radios were intended to be built by the hobbyist in the “kitchen table workshop.” One of the famous designs of this time was the Browning-Drake receiver. As with any brand name, there were many who copied the circuit. There is an interesting article by G. H. Browning laying out the “official” Browning-Drake receiver design⁴. This is an attempt to dispel what Browning describes as “misunderstandings from new names,” referring to the many circuits claiming to be improved Browning-Drake designs. Sleeper’s editorial on improving society by encouraging youngsters to take up radio as a hobby is a relevant and worthwhile read.

Radio Mechanics is a construction magazine that contains more practical and well thought out designs than is typical of this period. The articles address the how-to concerns of the hobbyist but are not aimed at the beginner. No doubt, hams would have found much useful homebrew information in this publication⁵.

NOTES:

1. You can find a PDF of this issue and others at https://worldradiohistory.com/Radio_Mechanics.htm
2. Ziesmann, J. K. (n.d.). *Milton B Sleeper*. Milton Sleeper - A Brief Biography. Retrieved March 2, 2022, from <https://worldradiohistory.com/Archive-FM-Magazine/MiltonSleeperBio.htm>
3. Rogers, H. (n.d.). *Pre-War Receivers*. Pre-WWII Ham Gear. Retrieved March 2, 2022, from <https://www.radioblvd.com/Pre-WWII%20Ham%20Gear.htm>
4. Browning and Drake developed the first high efficiency RF transformer. <http://antiqueradios.org/gazette/bd1.htm>
5. I'm interested in your comments on this article. Please contact me at w9ji@arrl.org



Radio Mechanics – March 1927

Vintage Amateur Radio

de Bill Shadid, W9MXQ8



Previously, I penned an article on the Drake L-4 and L-4B Linear Amplifiers. That was followed by what became a much more detailed article about the Drake L7 and L75 Amplifiers. Because of that, I have decided to author an additional article providing more detailed information concerning Drake's original L-4 and its successor, the upgraded and expanded L-4B.

While I have a1n L7 Linear Amplifier that I purchased brand new in the early 1980's that has served me very well, I have always felt that the L-4B was the superior amplifier. It built on the well thought out original L-4 and added conveniences that were also included in the L7 and L75 amplifiers of later years, The most notable shortcoming in the L-4 and L-4B is the lack of coverage of the 160-meter band. That feature alone made the L7 and L75 popular. My own late model L-4B came a few years ago from a ham in Illinois. It is a great performer.

Coverage of the WARC Bands (30, 17, and 12 meters) was openly possible in the L7 and L75 products but was just as possible in the L-4 and L-4B¹.

To refresh your memory, here are the L-4 and L-4B (and Power Supply) pictures:



Drake L-4 Linear Amplifier
WB4HFN



Drake L-4B Linear Amplifier
W9MXQ



L4-PS HV Power Supply Views (Front and Back)

W9MXQ

The L-4 and L-4B, distinguish themselves with their robust cooling system as compared to the L7 and L75. While Drake, in the L7 and L75, used a large fan blowing horizontally across a raised pair of 3-500z finals (one 3-500z in the L75), the L-4 and L-4B used a pressurized lower chassis with pressure created by a squirrel cage fan drawing air from the back of the amplifier, into the lower chassis, and out via chimney ducting around the tubes. Review this Drake L-4B interior view to see the fan installation in a top view:



**Drake L-4B Linear Amplifier (Representative of the L-4 also)
Interior View – Front Panel at the Top of the Picture**

WB4HFN

At the center is the Plate Tune Capacitor with the Tank Coils to the left. The two 3-500z finals are at the right rear – showing the glass chimneys enclosing them. The blower motor assembly is at the bottom of the picture – blue in color. Lower left shows the filament transformer, partially shown. The Plate Choke, with its red windings, is shown just to the left of the final tubes. At the top right you can see the shield enclosures for the front panel meters.

Because of some control location differences in the L-4 and L-4B Linear Amplifiers, the back panel of the two radios was somewhat different.

The L-4 rear panel included items missing from the L-4B. For one, there is no Relative Power Level adjustment on the L-4B as it has true reading watt meters (300 and 3,000-watt scales) rather than a relative power readout. The L-4 rear panel also has an ALC

Level adjustment that was moved to the front panel on the L-4B. Check the two rear panel views for details.



Drake L-4 Linear Amplifier – Rear Panel View

WB4HFN



Drake L-4B Linear Amplifier – Rear Panel View

WB4HFN

A review of the two rear panels shows the Squirrel Cage Blower input in the center of both panels – the blower is the same in both models. The L-4 Amplifier (top of the two views) shows the Relative Output Adjust control just to the left of the blower intake. The ALC Threshold Adjustment is at the lower right on the L-4 rear panel – to the left of the AGC input connector. That connector is a phono jack connector for the ALC connection from the driving transmitter/transceiver.

The unique connector PTT connection (engaging the amplifier) is on the L-4 to the right of the Power/Control connector and second from the lower left on the L-4B.

The two SO-239 connectors in the bottom center of both amplifiers are the RF Output (left) and the RF Input (right). That layout is common to both amplifiers.

Both amplifiers have the exceptionally large Cinch, eight-pin plus key stud, Power and Control lead connector. This connects to the separate L4-PS Power Supply unit using the fixed cable from the power supply chassis. That single cable splits close to the amplifier chassis end and includes the heavily insulated high voltage lead that terminates in a Millen High Voltage Connector. The connector to receive that line is on both amplifiers to the right of the blower input.

Now take a look at a bottom-view of the interior of the L-4B Linear Amplifier (fairly representative of both the L-4 and L-4B models).



**Drake L-4B Linear Amplifier – Bottom Interior View
Front Panel to the Right**

Internet Picture – No Identity Given

At the top of the picture, you can see the two sockets for the 3-500z final amplifier tubes². Check out the silver-plated copper strap used to interconnect the filament leads in parallel between the tubes and the filament choke (reddish colored wound choke in about the middle of the picture). Note also that the top strap extends to the right into the compartment holding the tuning slugs for the input coils (ensuring a good match to the exciter looking for a 50 to 70-ohm load)³.

See the brass high-voltage interlock leaf arm (on a phenolic board) between the left side and the left tube socket. That shorts the high voltage to ground if the top cover is removed.

Below the reddish filament choke you can see the feed through capacitors bringing filament voltage to the tubes. These leads feed from the feed-through capacitors back to the transformer – passing the transmit/receive relay to the left as they travel to the transformer on the lower left-hand corner. To the right of the transformer, you can see the terminal strip used to setup the transformer primary between 120 VAC and 240 VAC. In the L-4, L-4B, and L7 Amplifiers, the 120 VAC and 240 VAC selection must be made in BOTH the amplifier and the power supply chassis. Being a single chassis, this separate chassis arrangement is not required in the L75 Amplifier.

At just above left center you can see the output of the blower that is used to pressurize the under chassis of the amplifier. This air would exit around the tube sockets which are sub-mounted below the chassis, on spacers to allow air to escape around the base of the tube. In flow, the air would go past the seal at the base of the tube to keep it relatively cool. This seal, visible as a black circle at the middle of both tube sockets, is the final vacuum draw down point for the tube manufacturing process and is a weak spot for most vacuum tubes. The air then enters glass chimneys for each tube – visible in the top views of the chassis – channeling air along the hot glass envelope of the tube, keeping it properly cooled.

WARNING: Do not power up any high-power amplifier with the blower or fan inoperative. This may allow enough heat to develop in the tubes to cause them to fail – even if merely in standby condition. If you do not see or hear the blower or fan operating – or feel that it is operating but running slowly – turn off power immediately to correct the problem⁴.

On both the L-4 and L-4B one could find straight sided chimneys – similar to a Coleman™ gas lantern design or a design that had a top edge that helped direct cooling air to the plate caps of the tubes (Eimac's standard design). Arguments exist to which is best, but Drake did use cooling fins on their plate caps, so they likely felt that the more expensive Eimac chimneys were not necessary. I am not sure that this debate will be settled!!

Just below the center right area of the underside of the chassis, the load capacitor is shown. It is a four-section variable. Below that location – to the lower right – there is vis-

ible the individual components of the ALC Threshold circuitry. To the right of that there is just visible – mounted to the front panel – the switch assembly for Power and Mode switching. These switches – as supplied by Drake – are extremely rare. Treat them very carefully. They sometimes become available in different configurations and with some effort can be converted for use in these amplifiers.

Finally, I draw your attention to potentially troublesome part of the L-4 and L-4B Linear Amplifiers. If you look at the mechanical layout you will note that the band switching for the input and the plate circuitry are not in common (as they are on the L7 and L75 Linear Amplifiers. Looking at the Input Tuned Circuit slug tuned coils, you can see a switch shaft going to the right through the chassis wall but not through the front panel. This shaft terminates at a cog wheel with a plastic “key chain” winding around it. This plastic chain goes to a similar cog wheel on the plate bandswitch. The bandswitch on the front panel is in a different location.

EXTRA NOTE: I must say here that while the L-4 and L-4B are similar in layout, I do not actually have an L-4 top or under chassis picture for reference. I cannot be 100% sure of the exact layout. If you have such pictures, I would like to see them and include them in my library. Contact me at W9MXQ@TWC.com if you have them.

As a note from this owner of both the L-4B and L7 Linear Amplifiers. I am very watchful of the power cable coming from the L4-PS (or L7-PS) to the amplifier chassis. This appears to me to be a custom-made cable that Drake had made to include the lower-level power, filament primary, and control leads. Plus, included is a heavily insulated high voltage lead in the same cable jacket. In appearance, the high voltage lead appears as RG-8 coaxial cable with the outer jacket removed. So, you see a very thick, translucent insulation over a heavy gauge conductor. Likely it is more than just modified coaxial cable; but it is worthy of inspection any time you decide to move the amplifier and/or the power supply.

Be aware of the high voltage in these amplifiers. They can kill you – INSTANTLY and SILENTLY. Today’s amateur operators are not well conditioned for high voltage in radios. However, at the same time, high voltage is always present in vintage radios. Be respectful of the potential death dealing voltages present – DO NOT by-pass the interlocks that prevent high voltage from flowing when the cabinets are open. Also be aware, that while the L-4 and L-4B RF Cabinets are fully interlocked for protection, no such protection exists with the L4-PS Power Supply. So, I include here two of my favorite reminders applying to any work with vintage radios using high voltage:



Melodramatic you say? I say, not nearly dramatic enough!! There is not a second chance at the 3,000 volts present in these amplifiers. You will be dead⁵.

In a future article I will cover the failures, foibles, preventative maintenance, and repairs of all these quality products.

Ron Baker, WB4HFN, has kindly allowed me to use pictures from his fine website (<http://www.wb4hfn.com>) as a source of pictures for my articles relating to the products of the R. L. Drake Company. As with any article, suppliers of pictures and concepts deserve credit for their invaluable work. While Ron has offered his picture resource for my use, his call letters will always grace his contributions to my articles. I am indebted to many as sources – always credited – for these 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.

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:

¹ Coverage of the WARC Bands (30, 17, and 12 meters) may require some retuning of the input circuits – as covered in the Drake Operating Manual for the L-4 and L-4B Amplifiers. While covered, power limitations on the 30-meter band make the amplifier's use impractical.

² These tubes can vary in type and brand:

- In the Drake L-4 Linear Amplifier, they can be:
 - Eimac 3-400z (most common)
 - Amperex 8163
- In the Drake L-4B Linear Amplifier, they can be:
 - Eimac 3-500z (most common) or 3-400z
 - Amperex 8802/3-500z or 8163

³ This 50 to 70-ohm load makes the Drake L-4 and L-4B (as well as the L7 and L75) linear amplifiers ideally suited to modern solid-state transceivers – and all earlier Drake transmitters and transceivers.

⁴ In any restoration of a long idle linear amplifier, make sure that the fan is working to full rotation before any attempt to apply power. I generally separate the wiring to the fan and run it alone to determine good operation as a first step in any restoration.

⁵ **“How much current does it take to kill someone?”** “The answer is very little. A current of as little as 0.007 amps (7mA) across the heart for three seconds is enough to kill. 0.1 amps (100mA) passing through the body will almost certainly be fatal.” “As a rough rule of thumb, more than fifty volts is sufficient to drive a potentially lethal current through the body.” In the SSB Mode, the Drake L-4 or L-4B produces 3,000 volts 700mA. In the CW Mode these amplifiers produce 2,100 volts at over 500mA.

https://www.metroid.net.au/engineering/knowledge_center/fatal-electric-shock-what-voltage-causes-death/

⁶ Product specifications for the Drake L-4 and L-4B models shown come from their respective Instruction Manuals – all of which exist in my files. Most Drake manuals are available on-line for downloading. I download Drake manuals from Ron Baker, WB4HFN, at: <http://www.wb4hfn.com/DRAKE/DrakeManuals.htm>.

On The Air!

de Gary Sutcliffe, W9XT



Wisconsin QSO Party

If it is March, it is time for the Wisconsin QSO Party. I have reminded you to mark Sunday, March 13, on your calendars. I hope you did.

We won the club plaque in 2020 but were a few entries shy of winning it last year, coming in second place to the club that sponsors the QSO Party.

It starts at 1800 UTC, which is 1:00 PM Sunday afternoon. Note that Daylight Savings starts that day. You can and should read the full rules are at:

https://www.warac.org/wqp/wiqp_rules.htm

The WiQP allows just about every band and mode from 160 meters to 70 cm. The exceptions are FT8/FT4, the use of repeaters, and VHF calling frequencies. The rules have suggested frequencies for all bands. So, every ORC member with a license and a radio can contribute to the score.

If you can operate HF, the best plan is to switch between 80, 40, and 20 meters. The multipliers are states, Canadian provinces, and of course, Wisconsin counties. You want to work as many of each as possible. You will work the more distant states on 20 meters, and with improving sunspot numbers, 15 meters might be worth a quick check or two but don't spend too much time there. Your goal on these bands is to work multipliers, not fill your log with California stations.

You will work the Wisconsin counties mostly on 40 and 80 meters. The bands go long early, so don't wait too long to get down there. I rarely spend more than 30 minutes on a given band/mode. I move around to get stations as they move around and changes in propagation. Don't forget. You can work a station again on different bands and modes on the same band. Also, you can work a mobile station again when they move to a new county. Many counties are only activated by mobile stations.

Keep in mind that ops in other states are looking for us. It is the one contest where we are the rare stations! So, call CQ a lot. You will get the pileups. The State QSO Party Challenge has created a lot of interest in the state QSO parties. There may be more out of state entries than in state participants. Very few out of state operators will call "CQ Wisconsin." If the rest don't hear you calling CQ, you won't work them.

On phone non-contesters who will answer your CQ to help you out. Thank them for calling in. While working that station, there are probably 2-3 more listening, deciding if they should call you. Being friendly helps to draw them in.

Did you know there is a special plaque for the top VHF station? It is sponsored by the Badger Contesters, a group of VHF+ oriented operators promoting contesting on the VHF bands. A 500-point minimum score is required to qualify for the plaque. Most likely, it will be a mobile station that wins the plaque. Mobile stations can contact everyone again once they move into a new county, a big advantage in QSO totals. They also get an extra 500 points for every county (outside their home county) they make at least 12 contacts. Are there any ORC members interested in taking a shot at this award?

One problem with VHF on contests like this is that they can get slow after the initial rush. Check back often. If you don't hear anyone, make a few CQs. If you work a station and can operate other bands, don't be shy about asking them to QSY for another contact.

I suggest the ORC has some VHF activity times. I think 1:00, 4:00, and 7:00 PM would be good times. Get on at the start because the activity is always highest then. If you have limited time, try to get back on at 4:00 and again at 7:00 PM. Members who operate mainly HF may want to check their VHF radios at those times.

Don't consult with other members about what time and frequencies you will be on in advance. That goes against the spirit of schedules. Just show up whenever you can, and if you are not able to put in much time, try to hit one or more of these times.,

Logs are due by March 27. Be sure to send them in on time. Also, make sure the summary shows the Ozaukee Radio Club as your club. Use the full name, not just ORC.

Working new DXCC countries

Gary, N9UUR, sent an email to a couple of us who are active DXers. Gary was excited because he worked South Korea (HL). That is a pretty good catch. Despite being a developed country, they have relatively few active hams on HF. It is common for me to miss this multiplier in DX contests even though I might work dozens of Japanese stations, indicating good propagation to that part of the world.

Gary was also asking how to work Indonesia. This one is tougher. The path is more difficult. The country has plenty of hams, but most are only active on VHF. I gave him a few pointers.

That got me thinking. How does a new DX'er work new countries? The first 100 or so come pretty quickly if you are active. They start to slow down after that.

The first thing is to get on the air often and to vary your times and bands. Propagation will vary based on the time of the day. Being active at different times and bands spread out the areas you hit, and times when those hams there are likely to be at their radios. In general, 20 meters and up follow the sun. One or both sides will be in daylight or within an hour or two of sunset/sunrise. The lower bands are best when both stations are in darkness.

Local sunrise and sunset times, plus or minus an hour or so, are also great times to pick up new DX. Low bands signals often follow the Grey Line. The Grey Line is the circle of twilight around the planet. This circle changes over the course of a year, and there might only be a few weeks where a target location is in twilight at the same time as us.

Of course, there are exceptions, and there are some interesting openings outside of the usual times. These openings can be to some pretty rare locations, so don't be afraid to check bands that "should" be closed. Give out a few CQs while you are there. Many years ago, I woke up at 2:00 AM and could not get back to sleep, so I turned on the radio. The 15-meter band was open to India, one of the toughest paths at any time. The band should have been closed for hours.

Also, consider local times at the other end. The band may be open, but if it is 2:00 AM on a weeknight there, activity will be low. Weekday working hours will have fewer stations active. Friday in the Middle East is like our Sunday and may have increased activity.

What if you want to contact a specific country or region? You might have a big gap in that region, or maybe a DXpedition is coming up. Some programs and websites will let you know when the band is open to the various parts of the world. One good site is VOACAP.

<https://www.voacap.com/hf/>

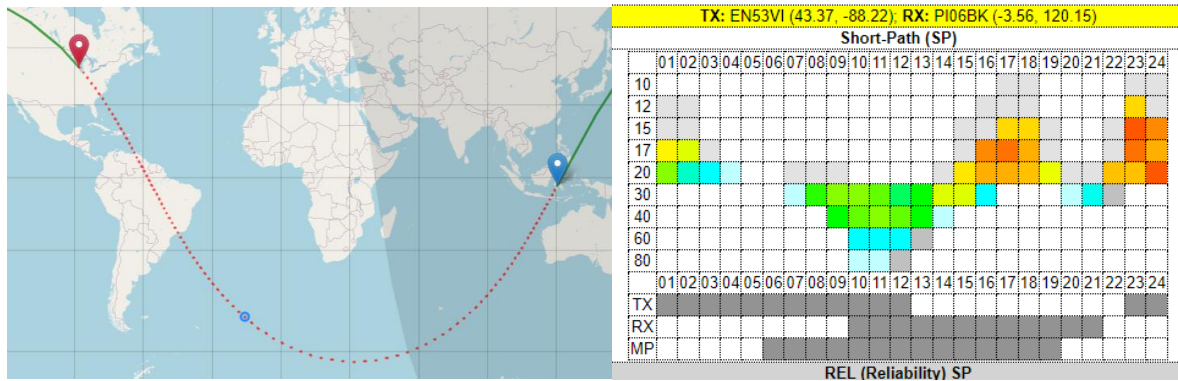
VOACAP has a lot of features, and reading the manual is suggested. You can move the pins between any two spots as a quick start. Below the map are many options for picking bands, showing Grey Line, etc.

The graphics below show the path between Wisconsin and Indonesia selected and a band-by-band breakdown of the best times to make a contact between those locations. The best shots are when the boxes are filled in with orange.

Note that these are predictions. If you hover your cursor over a box, it will tell you the percentage of days this path will be open. For example, the 15-meter opening at 2300 has a 94% chance of being open. It is sort of like the weather forecast for rain.

The box shown is for the short path. Sometimes there are paths open from the opposite direction, the long path. Another pretty good time to work Indonesia is around 1300 UTC on 15 meters. Sometimes the long path is better than any short path openings.

N9UUR says now that he found the right time and bands, he now has five YB stations in the log! Way to go, Gary!



Path map and propagation forecast WI to YB. Curtesy VOACAP Online

QSO Today Virtual Ham Expo

There are two online events of interest to hams this month. The first is the QSO Today Virtual Ham Expo, March 12 and 13. This is the fourth running of this event. As usual, there are over 60 presentations on many aspects of the hobby. Some are sure to be of interest to you.

I will be giving a talk titled "*Antennas – The Third Dimension.*" It discusses how antenna take-off angles are as important and maybe more important than the horizontal pattern. I also go into what affects the take-off angles of different antenna types. The time for my presentation is 10:00 AM (CDT) on Sunday, March 13.

There are also manufacturers exhibiting at the Expo. Slinger, Wisconsin's largest ham radio manufacturer, Unified Microsystems, exhibited in the past but will not be this time. One reason is to allow me to put a full-time effort into the Wisconsin QSO Party. If you register, and a talk you want to see is during the QSO Party, don't worry. You can go back and watch recordings of the presentations for 30 days after the event.

The QSO Today Expo is not a free event. Registration is \$10.00 before March 7. It goes up to \$13.50 after that.

<https://www.qsotodayhamexpo.com/>

HamSCI Workshop 2022: The Weather Connection

HamSCI is an organization of scientific researchers and ham operators working together to better understand the ionosphere and radio propagation. They have a couple of exciting projects in the works, including developing low-cost space weather stations that participating hams can set up and contribute to science.

They have an annual meeting. However, like most events the last two years, they went to a virtual event during COVID. I sat in on both, and they were fascinating. This year, they are meeting in person in Huntsville, AL, but it is a hybrid event, so you can still attend via the Internet.

In the past, some of the talks were at high scientific levels, but many were at ham levels. The nice thing about virtual attendance is you can quickly come and go according to your schedule and interests.

This is a free event. Registration for virtual attendance will be up in early March.
<https://hamsci.org/hamsci2022>

Contests

Contests start to taper off in March and April. But, of course, the big one is the Wisconsin QSO Party covered at the start of this column.

The other big one is CQ's WPX Phone contest. This one is where everyone works everyone. You give a signal report and a serial number starting with #1 for your first contact. The multipliers are the call sign prefix (W9, K9, N9, WT9, etc.). This is a good contest if your call does not start with W9. Points are based on distance and band. Check the rules for details.

W9XT's contest picks for March and early April 2022					
Name	Start	Length	Bands	Mode	Link
WI QSO Party	18:00 March 13	7 hours	160- UHF	CW/Phone/Digital	https://www.warac.org/wqp/wiqp_rules.htm
CQ WPX Phone	00:00 March 26-27	48 Work 36 max	160 + HF	SSB	cqwp.com/rules.htm

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

DX

TL8AA from the Central African Republic is a good one. This seven-operator Italian team will have four stations set up. I'm looking forward to this one as I need it on several bands and digital.

W9XT's DXpedition picks for March and early April 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Central African Rep.	March 27 – April 9	TL8AA (TL8ZZ FT8)	HF	C/S/D	http://www.i2ysb.com/idt/
Aland Island	April 1-9	OH0EG	HF + 160	C/S/D	

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

The Aland Island operation is being put on by a small group of mostly German hams. In addition, there will be a group from Poland later in April using the same call sign.

There are several single operator DXpeditions in March. I usually don't mention them because many are vacations with a radio along for downtimes. Catching them is pretty much hit or miss.

That wraps up March. In case it escaped you, the **WiQP is Sunday afternoon, March 13**. Be sure to get on and contribute to the ORC club score.



In the above article from Gary, W9XT, you saw references to working mobile in the Wisconsin QSO Party. Is it my error or is this an Ozaukee Radio Club member preparing to go mobile in the upcoming 2022 Event?

Editor's Note

Good Stuff – For Sale!!

(Donated by the Nels Harvey family to the SCHOLARSHIP/STEM Fund)

1. RF Wattmeter, 120 Watts - AN/URM-120 w/TS-1285 (2 thru 250 MHz)	\$100
2. HP 200CD Audio Generator	\$40
3. HP 400D VTVM	\$40
4. RCA VTVM	\$25
5. EICO VTVM	\$15
6. Precision VTVM	\$20
7. EICO signal generator	\$59
8. EICO signal tracer	\$45
9. Heathkit Grid Dip Meter	\$20
10. Precision CB26 C-R Bridge	\$5
11. Techtronic's 7613 Spectrum Analyzer (tube type)	\$50
12. Techtronic's 465 Dual Trace Oscilloscope w/Manuals and Stand	\$75
13. Bird Dummy Load Model DA 412A/U Estimated 2 Kw and UHF (Navy Surplus)	\$75
14. Handy 36 R-C Substitution Box	\$5
15. Bell & Howell Oscilloscope (Tube Type)	\$10
16. Oscilloscope Portable Stands (Sloped/Shelf and Wheels - 3 Available)	\$5
17. Variac - 7 Ampere	\$15

For Information and Purchase

Contact Tom Ruhlmann, W9IPR, at 262-844-6331

Ozaukee Radio Club Minutes of Membership Meeting 2/09/2022

de: Ken, W9GA, Secretary

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat, W9JI. At that time various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat, W9JI, officially initiated the meeting at 7:31 PM, as introductions were recognized when members checked into the meeting, a go-around was not conducted. Pat marked the passing [SK] of two of our members: Jerry, KC9WUI, and Gary, N9SBG.

Program:

Gary, W9XT, presented a program on Antenna basics, covering many of the basic principles of antenna physics and simple designs. Concepts covered were Resistance/Reactance, impedance at resonance, $\frac{1}{2}$ wave dipole, $\frac{1}{4}$ wave vertical and Yagi beam antennas. Then practical applications were discussed, such as antenna height, gain and directional characteristics, plus matching to a coax cable, and the use of baluns.

Committee Reports:

Repeater: Gregg, W9DHI, reported that all seems OK, and that the Tuesday night nets were operating fine through the system.

Treasurer: Gary, N9UUR, reported little activity, the 2021 books now closed. There are currently 115 paid members, and 15 members from last year who have not renewed yet. The January treasurers' report was accepted; motion made by WB9RQR, 2nd by W9DHI, and carried.

Secretary: Ken, W9GA, reported the January 2022 minutes have been posted; W9MXQ moved, WB9RQR 2nd, motion to accept carried.

Scholarship/STEM: Tom, W9IPR, has not yet had anyone volunteer for the STEM committee.

OLD business: So far, W9GA, has received 5 logs for the Key-up activity. The budget for 2022-23 was introduced and briefly discussed. STEM program is to be included in the budget process. Fred, W9KEY, inquired into the \$500 repeater expense cited in the budget. Gregg, W9DHI, moved, Jim, K9QLP, 2nd to accept, motion carried.

NEW business: Information on the yearly awards will be included in the upcoming newsletter. A new committee was created to research and provide streaming capability for the in-person meetings, which can then be broadcast on Zoom. Gregg, W9DHI, and Tom, KC9ONY, are current members of this committee.

Pat, W9JI, presented a short poll for the members in the Zoom call to vote on in-person meetings. 21 persons participated:

Attend meetings In-person; Yes	52%
Attend meetings In-person; With Conditions	38%
Attend meetings In-person; No	10%

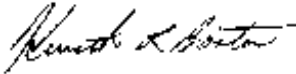
[Further questions addressing the conditions for attending showed interest in certain requirements such as masking and having been vaccinated.]

Some discussion also occurred regarding reserving space at the senior center and reserving the park for Field Day 2022.

Adjournment: Gary, N9UUR, moved to adjourn, Bill, W9MXQ, 2nd, motion carried; time ending was 9:28 PM. There were 36 attendees.

Following the meeting breakout rooms covering any general topics; were opened.

Respectfully submitted,



Kenneth Boston, W9GA, Secretary

REMEMBER!!!

2022 Ozaukee Radio Club Spring Swapfest

**Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)
Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI**

**See the Ozaukee Radio Club Website for Details
Flyer is Inserted as the last page of this Newsletter.**

Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

March – Chuck Curran, W9KR - Hickok tube testers

April – Pat Volkmann W9JI – Refurbish a Classic Amp Ameritron AL1500

May – Open

June – Field Day

July – Field Day Member Reports

August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

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

ORC Meeting Agenda

March 9, 2022

- | | |
|--|---|
| <ol style="list-style-type: none">1. 7:15 – 7:30 PM – Check-In and Introductions2. 7:30 PM Call to Order:
President Pat Volkmann (W9JI)3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.4. Presentation: Hickok Tube Testers, Chuck Curran, W9KR5. President's Update:
Pat Volkmann (W9JI)6. 1st VP Report:
Ben Evans (K9UZ) | <ol style="list-style-type: none">7. 2nd VP Report:
Bill Greaves (K9GN)8. Repeater VP Report:
Gregg Lengling (W9DHI)9. Secretary's Report:
Ken Boston (W9GA)10. Treasurer's Report:
Gary Bargholz (N9UUR)11. Committee Reports12. OLD BUSINESS13. NEW BUSINESS14. Adjournment |
|--|---|

Meeting Note:

Until the club decides it's safe to hold in-person meetings again, we will be holding the meetings via the Zoom Videoconferencing platform on the same evening and time as we had the in-person meetings. President Pat Volkmann will email sign-in info, W9JI via the ORC remailer usually about an hour before the start of the meeting.

For more updated news concerning in-person meetings, please see the President's Message at the start of this Newsletter.

Next ORC Meeting
Planned Hybrid In-Person/Zoom Meeting
13 April 2022
Read President's Message, on Page 1

7:00 PM – Doors Open

7:15-7:30 PM – Zoom Check-In

7:30 PM – Meeting Begins

The Ozaukee Radio Club presents its 42nd Annual Spring Indoor
Amateur Radio, Electronics & Computer



SWAPFEST



Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)

featuring TOWER ELECTRONICS!

Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI

Talk-in: 146.97 – PL 127.3



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www.ozaukeeradioclub.org

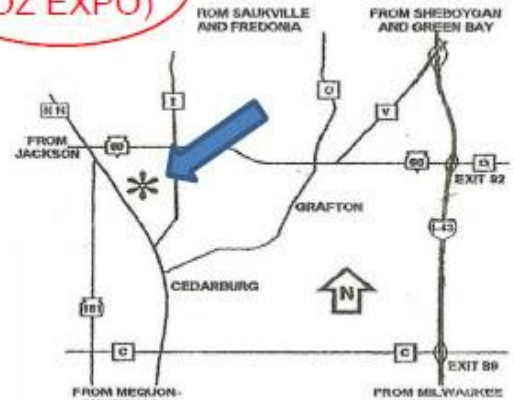


Table Spaces \$10 (All Tables are 6 ft)
Buy 1 Ticket & 1 Table... just \$15!

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

Email: swapfest@ozaukeeradioclub.org

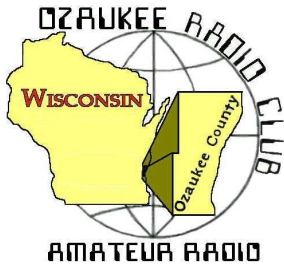
For Advance Tickets, send check with self-addressed stamped **Business-Size Envelope** to:
 Tom Trethewey, KC9ONY – W69N905 Evergreen Ct N, #202, Cedarburg WI 53012
Admission Tickets just \$5 (Please make checks payable to ORC)

Company Name: _____ Phone# _____
 Contact Person: _____ Call Sign: _____
 Address: _____ e-mail: _____
 City: _____ State: _____ Zip: _____
 No. of Tickets: _____ X \$5 = _____ Electricity: Yes (Add \$5) _____ No _____
 No. of Tables: _____ X \$10 = _____ Total Amount Enclosed: _____

(For Official Use Only)

Ticket(s) # _____ Table(s) # _____ Init: _____

Date: _____ Time: _____ Vendor Entrance Used (Circle one): **1** **2** **3**



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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Volume XXXIV

April 2022

Number 4

From the President

de Pat Volkmann, W9JI



Preparations have been completed for the resumption of in-person meetings at the Grafton Senior, starting with the April meeting. I joined the Technical Committee (Gregg W9DHI, Tom KC9ONY, Gary N9UUR) for a practice meeting at the Senior Center during March. We successfully ran a hybrid meeting, with a number of ORC members assisting in the Zoom audience. There was some chaos at first, but things quickly settled down. The new camera and microphone worked well, as reported by the Zoom attendees.

If you are planning on joining us at the Senior Center, just show up. The doors will open about 7 PM and the meeting will start at 7:30. Zoom invitations will be sent out the day of the meeting, just click the link to join. At the end of the meeting, I will hand off the Zoom controls to one of the co-hosts. This will allow the group to continue to chat on Zoom after the meeting, as we have been doing.

Stan tells me that he has plenty of donated items, so we will have an auction. Be sure to bring your money! If you are joining via Zoom, you must make arrangements with a friend in the room to bid for you. Your friend must they pay for the item and take it with them. Stan also tells me that he has LOTS of stuff, so DON'T bring anything to be auctioned off. Stan will let us know when it's OK to bring items for the auction again.

The Swapfest is coming up at the end of this month, on April 30th. This is an indoor event, so it will be held rain or shine. Tom, KC9ONY, has been busy getting things organized and spreading the word about the event. (See Tom's Swapfest Report in this Newsletter, page 4.) Like every event, there is a lot of preparation to be done. We always need volunteers to help with things both the day before and the day of the event. Watch the reflector for announcements asking for volunteers. Yes, we do need your help!

I'm looking forward to seeing everyone again, both at the Senior Center and in the Zoom meeting.

See you at the meeting.

Pat Volkmann, W9JI

A Message from the Editor Newsletter Table of Contents

de Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, right on Page 1, where he announces a return to in-person meetings. Do you remember how to find the Grafton Senior Center?

Check out Tom Trethewey, KC9ONY, on Page 4, as he talks about the upcoming ORC Spring Swapfest. Along with that, a copy of the Swapfest Flyer is the very last page of this month's Newsletter.

Get ready for spring weather in Wisconsin with Don Zank, AA9WP, on Page 7 as he talks about Weather Spotter Training. Ever wondered how to change your password in Linux? Well, Stan Kaplan, WB9RQR has your back, starting on Page 5. See Gary Sutcliffe, W9XT, as he outlines the coming month in his On The Air column on Page 22.

Whew!! There is a lot in here from a lot of authors this month – speaking of authors, check out a Book Announcement on Page 9, starring our resident book author, Gary Drasch, K8DJT, and the Second Edition of Ham Radio is Alive and Well.

Here are the Table of Contents/Previews of this month's Newsletter Edition . . .

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Coming Soon to a Newsletter Near You . . .



Two Collins 3-Series S-Line Stations back on the air at W9MXQ

Subject of an upcoming ORC Newsletter Vintage Amateur Radio Article Series

>> With the matching Collins 30L-1 Linear Amplifier <<

What are you working on? We are looking for and we accept radio stories and adventures for articles in the Ozaukee Radio Club Newsletter.

Contact Bill Shadid, Editor, at Newsletter@OzaukeeRadioClub.org

Need help to make your article jump off the page?

Contact Bill Shadid, Editor, at Newsletter@OzaukeeRadioClub.org

Onward To the Newsletter

The ORC Spring Swapfest is Back!

de Tom Trethewey, KC9ONY
Chairman, Spring Swapfest 2022
swapfest@ozaukeeradioclub.org

After a two-year absence due to the pandemic, the Ozaukee Radio Club's 42nd Spring Swapfest has returned! Once again, we will be at the Ascension Columbia St. Mary's Expo Center on the grounds of the Ozaukee County Fairgrounds in Cedarburg. Saturday, April 30, 2022. 8:00 AM to Noon.

I attended the Jefferson Hamfest on March 27, 2022. This was the first hamfest of the year since the West Allis Amateur Radio Club cancelled their Midwinter Swapfest normally held in January. The attendance was fantastic, perhaps due to pent up demand and folks wanted to finally get out. I'm hoping that our Swapfest will also have a good attendance.

This year, we are fortunate to have a special guest. John Kruk, N9UPC, National Sales Manager, Yaesu System Fusion Product Specialist, Amateur Division of Yaesu USA will have a table and indicated he will have items to display and discuss. If you are a Yaesu and/or Fusion fan, why not come on out and see John? While you are there, look around at the other tables and see if there is something you might need to purchase.

Need some adapter, coax, power cables, or antennas? Tower Electronics from Green Bay, WI will be joining us as they have for many, many years. Now's the time to get that item without having to order online.

As of this writing, there are plenty of tables and advanced tickets available. Past history indicates that many orders come in the last two weeks, with a large number of folks waiting until the week of the Swapfest. Don't wait, get your orders in now!

See the Swapfest Flyer – it is the last page of this Newsletter. Or use this link:
https://www.ozaukeeradioclub.org/downloads/fall-swapfest/2022_Fall_Swapfest_flyer.pdf

I will be at the April 13th meeting, the first in-person meeting in years. You can buy advance tickets and tables there as well. Advance tickets are Double Stub meaning you have an extra chance at winning a door prize or the grand prize.

Again, don't wait, get them now! If you can't make the Swapfest, please consider purchasing a ticket anyway, as this is a fundraiser for our club.

THE COMPUTER CORNER

No. 289: Changing the Password in Linux

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

wb9rqr@gmail.com

It is really easy to change your password in any version of Linux, and it is considered good practice to do so from time to time. Rather important, though, don't reuse passwords or rotate them. Just change them to something new each time and don't use an old password from one machine in another machine if you have several. Also note that Linux will not let you simply change case. If your password was Jim3linux it will balk at your attempt to change it to Jim3LINUX or JIM3linux. Jim44linux will, however, work as a valid change from Jim3linux. Make it at least 6 characters. All these caveats are aimed at making your new password unique and not easily guessed, even by someone who knows you, even if they knew your old password.

One other caution. Make sure you type carefully and write down your new password immediately. I admit to being cavalier about this once, and it at least cost me some time. I changed the password and promptly lost the slip of paper recording the new one. Furthermore, none of the permutations I tried seemed to work! There was no remedy but to re-install Linux in the machine. Fortunately, it was already a new installation, and no irreplaceable files were lost. Be careful to write down your changes! Also be cautious with typing in the intended case. Case does matter. An upper case 4 is a \$ while an upper case = sign is a + sign. The letter y is not the same as the letter Y!

To change the password, first open a terminal. In the latest versions of Linux Mint Cinnamon, just click on the tray icon labeled \$ _ and a terminal will open on your desktop. As shown below in the box, type in the word "passwd" (no quotes) directly after the ~\$ prompt and press the Enter key.

```
stan@LOROSH: ~$ passwd
Changing password for stan.
Current password:
New password:
Retype new password:
passwd: password updated successfully
stan@LOROSH: ~$
```

On a new line, **Changing password for** (user.) will appear, followed by a new prompt asking for **Current password:** on the next line. Type it in, followed by a press of the Enter key, *but note what you type will NOT echo to your screen*. If you typed the old (current) password correctly, a new prompt will appear: **New password:** Type in the new version and press Enter. Again, it will not echo to your screen. Another prompt will appear: **Retype the new password:** Repeat typing the new password exactly and press Enter. If your second typing of the new password was identical to the first and it is legal in every respect, the final prompt will show: **passwd: password updated successfully**.

Almost instantly, a new terminal prompt will appear on the next line indicating readiness to accept your new terminal command.

That is all there is to it. You can just type Exit or exit or EXIT followed by the Enter key to exit the process, or just click on the X box in the top right corner of the terminal box. Change your password at least once a year. But take it from me, record the new password on paper immediately, and do not lose your recording. Stash a copy in your safety deposit box! Happy Computing!

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 More Weather Spotter Training

de Don Zank AA9WP, OZARES Emergency Coordinator, aa9wp@arrl.net



Last month the topic was the Weather Spotting Training sessions being offered this spring by the Milwaukee National Weather Office. Again, the session for Ozaukee County will be on Tuesday, April 19 at 6:30 pm at the Pavilion located at the north end of the Ozaukee County Fairgrounds in Cedarburg.

If you cannot make this meeting or another or you just are a weather nerd there is a great website to learn about the many aspects of weather, storm spotting or other geoscience topics. This is the MetEd website and is part of the Comet® program University Corporation for Atmospheric Research (UCARS) community programs. The website URL is:

<https://www.meted.ucar.edu/index.php>

The courses are self-paced so low pressure. Training opportunities include SKYWARN® Spotter Training Course which is a basic introduction course to weather spotting. Role of the SKYWARN Spotter course will cover all types of weather that, since they are vital to the weather office, are reportable. These two courses cover the basics for weather spotting.

For a more in-depth dive into convective or thunderstorm weather, the severe weather conditions more common in Wisconsin, check out the SKYWARN Spotter Convective Weather Basics. One subject covered in this course is how to recognize various types of severe weather clouds. Cloud types that you would learn to recognize include towering anvils, overshooting tops, mammatus clouds, updrafts, and virga. An important aspect of the cloud training will cover on how to identify similar looking clouds or tornado-like clouds. Tornado-like clouds include dust devils, water spouts and funnel clouds.

Of course, keeping you and your family safe in severe weather is job one. In OZARES we do not do storm chasing. Chasing storms, especially at night, is dangerous and a completely different subject. Recognizing and reporting severe weather conditions at your home or business location is more than sufficient to provide the weather office with ground truth or confirmation of weather conditions. The MetEd program offers a course in keeping safe during severe weather entitled, what else, Spotter Safety. The course covers the ACES concept. ACES stands for **A**wareness, **C**ommunication, **E**scape Routes, and **S**afety Zones.

The MetEd site provides training courses on many other weather topics besides weather spotting. Subjects for the courses range from basic understanding of weather,

aviation weather, fire weather, climate, hydrology, and flooding, and understanding radar and radar signatures. The length of time required to complete a class may range from less of an hour to 24 hours and some of the University Support courses are open ended.

So, if you are interested in weather, please check out the MetEd website. The courses come at ham's favorite price of \$0.00. Just your time and efforts.

Although this is a month late for their March Madness volunteer recruitment program, CoCoRaHS, the Community Collaborative Rain, Hail and Snow Network organization, <https://www.cocorahs.org/> is looking for volunteers to provide weather reports. Reports are measurement of the precipitation types of rain, snow fall and hail. The reports are submitted on their website every morning.

Some simple equipment is needed, such as a ruler to measure snow fall and size of hail stones. A rain gauge to measure rain fall, costs about \$48, is preferred for accurate measurements.

Check out the cocorahs.org site above or <https://www.weather.gov/mkx/cocorahs2022> for more information.

Emergency Communications Nostalgia

de: Bill Shadid, W9MXQ



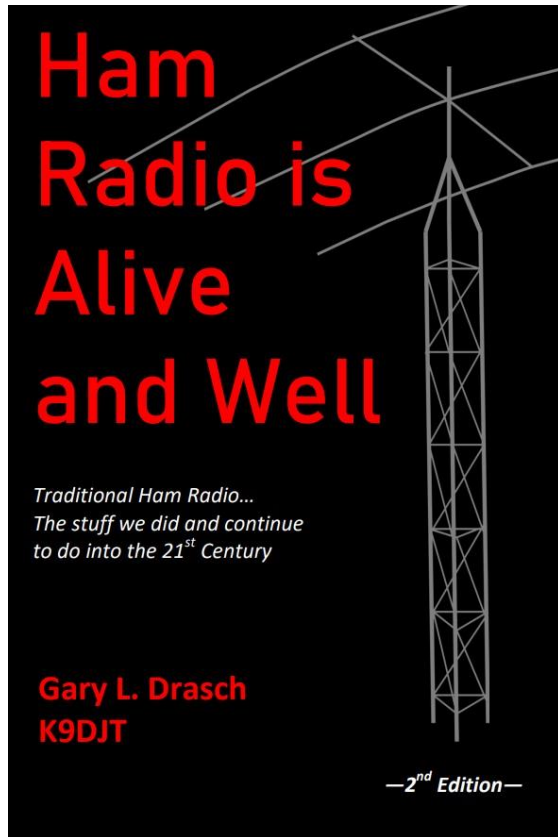
Gonset Communicator III. 2M AM Transceiver (actually, more properly called a Transmitter – Receiver as there were no common components other than the power supply and cabinet.

This unit, or one like it, was used by W9MXQ (then WA9MXQ) for mobile emergency communications with the Central Illinois Radio Club, Bloomington/Normal, Illinois, in 1965.

Anyone remember when it was required to monitor Conelrad while operating on the air? Remember Conelrad (CD) marks on your radio AM Dial? See Page 29.

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and W9MXQ

Book Announcement – Ham Radio is Alive and Well, 2nd Edition
de Bill Shadid, W9MXQ – as discussed with the Author, Gary Drasch, K9DJT



It may be of interest to those who know Gary Drasch, K9DJT, that he has released the second edition of *Ham Radio is Alive and Well*. He refers to his book as an informational story. As many know, Gary obtained his license at the age of 12 and remained active until life got in the way. Although he no longer operated HF, he always made sure to renew his General class license and operated mobile VHF-UHF during the latter part of his career as a sales engineer. Beyond that, he actually thought the hobby died. Well, we all know that didn't happen, and when Gary discovered it was still alive, he wrote about it. Gary not only shares his personal story and journey back into the hobby but also explains how it evolved from the 1960s to now and even adds some tidbits of ham radio history along the way. There's even a chapter on shack heaters! The informational side of his story explains how new technology is now intertwined with most stations along with internet links on how to do it. And that's the main reason for the writing.

He's added things relating to the latest weak signal modes like FT8, MSK144, Q65, and chasing Rox (meteor-scatter). He also discusses other things to do like hunting six-meter grids for the Fred Fish Memorial Award and the role of the "Rover" and "Grid-peditions." I even learned I can do Slow Scan TV (SSTV) by using a software program and a PC connected to my radio. Ham Radio Speak (a glossary) has been updated with several additional terms, one being "Alligator." How about your own Vector Network Analyzer for antenna and transmission line work? Yes, as Gary relates, it's pretty amazing what has taken place in the last few years.



Gary reminded me that the second edition is just that—a second edition. It's basically a refresh of what he wrote almost five years ago with about a ten percent change of content. Statistics have been updated, links are either new or confirmed to still work, and grammar and spelling have been checked using a PC program. What was good before is now great!

Vintage Magazine Cover Art

de Pat Volkmann, W9JI



Our cover this month is from the April 1925 issue of *The Experimenter*¹, a Hugo Gernsback publication. As we have discovered in previous issues of this column, Gernsback was a prolific entrepreneur in the world of book and magazine publishing, along with helping to establish the science fiction genre². The *Experimenter* was an evolution of Gernsback's previous magazine, *Practical Electrics*, and in just a few years would become *Amazing Stories*³.

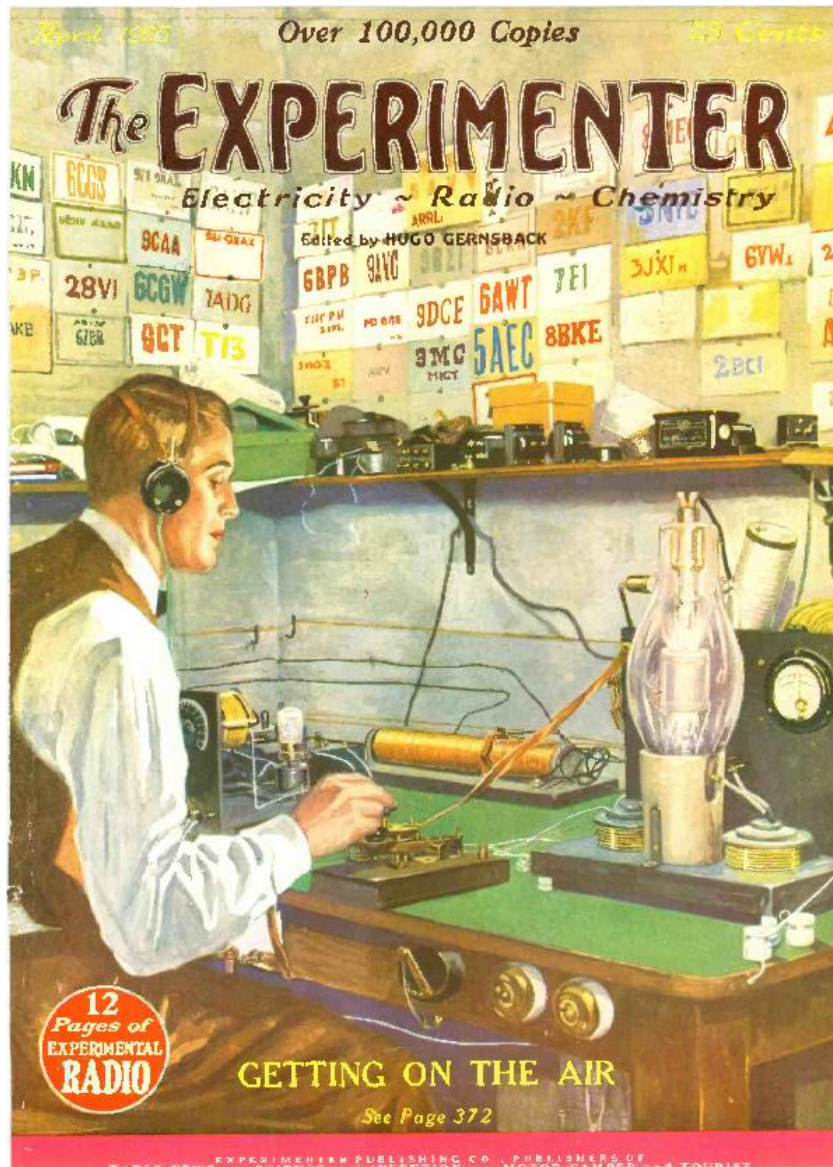
The theme of this issue is "Getting On The Air" and the ham on the cover is doing just that. We see a man pounding away on a telegraph key about a foot from a gigantic transmitting tube. The tube has a slight purple glow with sparks and a flash of light coming from the structure in the center. This is some high-power rig! The shack is littered with typical radio apparatus much of which can't quite be identified.

Unlike most cover art, this is an illustration of a real ham station. In the "Getting on the Air" article on page 372, Mr. Gernsback offers this description:

"We are pleased to present in connection with this short-wave series our cover illustration of a well-known amateur short-wave station. This is amateur station 3BQ, Bon Hill, Victoria, Australia, which has worked many U.S.A. stations. The transmitter is supplied with 1500 volts through an electrolytic rectifier consisting of 104 jars. The tube is a Philips Z4 operated at a normal plate current of 100 milliamperes. The remarkable work accomplished by this station and many similar stations throughout the world should stimulate the interest of our readers in amateur radio."

According to the Wireless Institute of Australia, 3BQ was the first Australian station to work an American ham, making contact with 6AHP in California on 87 meters⁴. The card shown from 6AWT may have been from Bart Molinari of San Francisco. Molinari was the 1924 Hoover Cup winner and, in 1925, Molinari was the first US ham to work Japan. 3BQ and 6AWT could certainly have worked each other.

While this issue of the magazine has a detailed article on building a two-tube regenerative receiver, there was no information on construction of a transmitter. The content of the magazine is wide ranging, including articles on chemistry, magnetism, Ohm's law, wireless power transmission and numerous experiments that can be conducted in the home laboratory. There is also an April Fool's article entitled "Some Speculation on Ether" by Philomath.



The Experimenter – April 1924

NOTES:

1. You can find a PDF of this issue and others at: https://worldradiohistory.com/The_Experimenter.htm
2. Britannica, Editors of Encyclopedia. Hugo Gernsback. Encyclopedia Britannica. <https://www.britannica.com/biography/Hugo-Gernsback>
3. THE EXPERIMENTER: Gernsback Publication starting in 1920. (n.d.). Retrieved April 6, 2022, from https://worldradiohistory.com/The_Experimenter.htm
4. Howden, M. (2014, January). Post World War 1 Amateur Radio. Retrieved April 2022, from www.wia.org.au
5. Codella, C, W2PA, (2021, June 2). DX Records and Shortwave Reflections. Ham radio history. Retrieved April 6, 2022, from <http://w2pa.net/HRH/dx-records-and-shortwave-reflections/>
6. I'm interested in your comments on this article. Please contact me at w9ji@arrl.org

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Many months ago, I did an article on the National Radio Company, Inc., 1964 top line station. That included a beautiful NCX-5 Transceiver, VX-501 Remote VFO, NCX-A AC Power Supply/Speaker Console, NCL-2000 Linear Amplifier, and the HRO-500 Receiver. Subsequent articles took individual pieces of that station and provided additional details. Missing from those detail articles has been what is the cornerstone product in the group, the National HRO-500 VLF and HF Receiver.

The National HRO-500 was part of a limited and elite group of radios focused on both the amateur and commercial market in the late 1960's and into the 1970's. The only two in the same market at the same time and with at least some reference to the amateur radio market were the Collins 51S-1 (sold from 1959 to 1975) and the National HRO-500 (sold from 1964 to 1972). The HRO-500 is the subject of this article.



National HRO-500 Receiver

W9MXQ Collection

To be sure, Racal, Eddystone, Rhode & Schwartz, Mackay Marine, and others sold radios of this caliber, in this period, but they never seriously addressed the amateur radio market. (Not to mention having a price range beyond the expensive Collins and National products.)

The HRO-500 was made in five production groups with the first production (National Production Lot Series 75) in 1964 and the last being (National Production Lot Series 140) in 1972. This information comes from Jose Gavila, EG5AGV, who goes on with the details of these builds by time period:

National HRO-500 Production Series by Year	
Series	Year
75	1964
88	1966
102	1967
122	Uncertain
140	1972

EA5AGV

It has always been known to me (but supported by comments from EA5AGV) that some of the early (Series 75) HRO-500 radios had problems that were addressed as the first series was produced. The radio in my personal collection is a Series 122 unit so well beyond that time period.

Early HRO-500 Receivers had a crank on the main tuning knob as shown here:



Early HRO-500 with Crank Type Main Tuning Knob

RJ4F Collection

I have used HRO-500 Receivers with the crank dial. It was intended to give the users a convenient way to make large excursions. Later HRO-500 Receivers removed the crank and replaced it with a machined aluminum dial behind the main dial that allowed extra fast excursions. This is similar to the main plastic tuning knob and rear extra fast aluminum tuning knob on the Swan 350, 500, and 700 series Transceivers as well as the

600-R/RC Receivers and 600-T Transmitters. I must add that as an appreciator of this radio's design, I do like the looks of the crank even if it is a bit inconvenient to use.

Let's review some of the radio's specifications. In keeping with marketing at the time, the radio is fairly large and is built like a vacuum tube radio even though it is 100% solid-state. (Well, all solid state except for the pilot lamps!) The pilot lamps draw the majority of power used by the receiver. Here is a review of power consumption:

HRO-500 Power Consumption - Using the Internal Power Supply		
Status:	At Audio Power Level of:	Power Consumption:
Pilot Lamps "ON" (Receiver Running)	50 milliwatts	8 Watts
	2 watts	15 Watts
Pilot Lamps "OFF" (Receiver Running)	50 milliwatts	2.4 Watts
	2 watts	9 Watts

The above is an untechnical review but at the time, high power consumption of vacuum tube radios vs low power of solid-state circuits was often talked about. Obviously, the radio looked better with the lamps on!! Just to be clear, there was a power savings over the HRO-500's predecessor, the HRO-60. That tube receiver drew 115 watts in operation.

The physical characteristics of this low power consumption receiver of the day is 7-5/8" x 16-1/2" x 12-3/4" (HWD). It weighed 32 pounds. It has an internal power supply that ran from a 117/234 VAC or 12 VDC feed.

The radio had sensitivity specifications typical of the day with a rating of 1.0uV for 10 dB S/N. That sounds insensitive for us today. My own tests with my HRO-500 for this article found that any signal I could hear on my Yaesu FTdx-101MP that I could copy on the HRO. In most cases, with equal clarity. Selectivity was particularly good for the day with crystal filter bandwidths built in for 500, 2500, 5000, and 8000 cycles (Hz). Shape factor of the 2500 filter was 2.5:1 – a specification that is respectable today.

In keeping with the HRO-500's period of manufacture, it is built like a vacuum tube radio. It included dozens of germanium transistors and many diodes.



W9MXQ

Note that all transistors not mounted to the chassis as a heat sink (Like Q-20 at the upper left corner of the picture to the left) were mounted in sockets (like Q-23 and Q-12 to the right). Today this presents problems with corrosion in so many unsoldered, low current, connections in the radio's signal path.

All the devices in the radio have become difficult to find in today's world. Ironically, while none of the solid-state devices are easily sourced today, virtually all previous National HRO Receivers, clear back into the 1930's, can have any tube sourced and used as a replacement in the old radio. Just one of the many "blessings" of modern technology!

One significant upgrade with the HRO-500 (over earlier HRO receivers) was direct frequency readout. While it was much improved on the immediate predecessor radios (the HRO-50 and HRO-60 models), the HRO-500 was even more direct and simple to read. It was more accurate, too, and was quite linear across its 500 kHz range on each band. Given that the readout remained mechanical it is a tribute to National Radio Company's engineering staff that they managed a system that accommodate a linear mechanism with nearly as linear control of the VFO. Let's look at an example of setting and reading frequency on the HRO-500 dial. For this example, we will be tuning the receiver to a frequency of 7.253.0 KC (kHz). But, before we start, I want to mention that tuning the HRO-500 is different than most radios of the day – and certainly different from what we do today. Once learned, it is straight forward – but it is a bit different from the Collins, Drake, Hallicrafters, Hammarlund, and Swan radios of the day. It is even different from other National radios. Of course, it is understood that the tuning process of any previous HRO series receiver could be referenced in the same way.

Let's do this in steps.

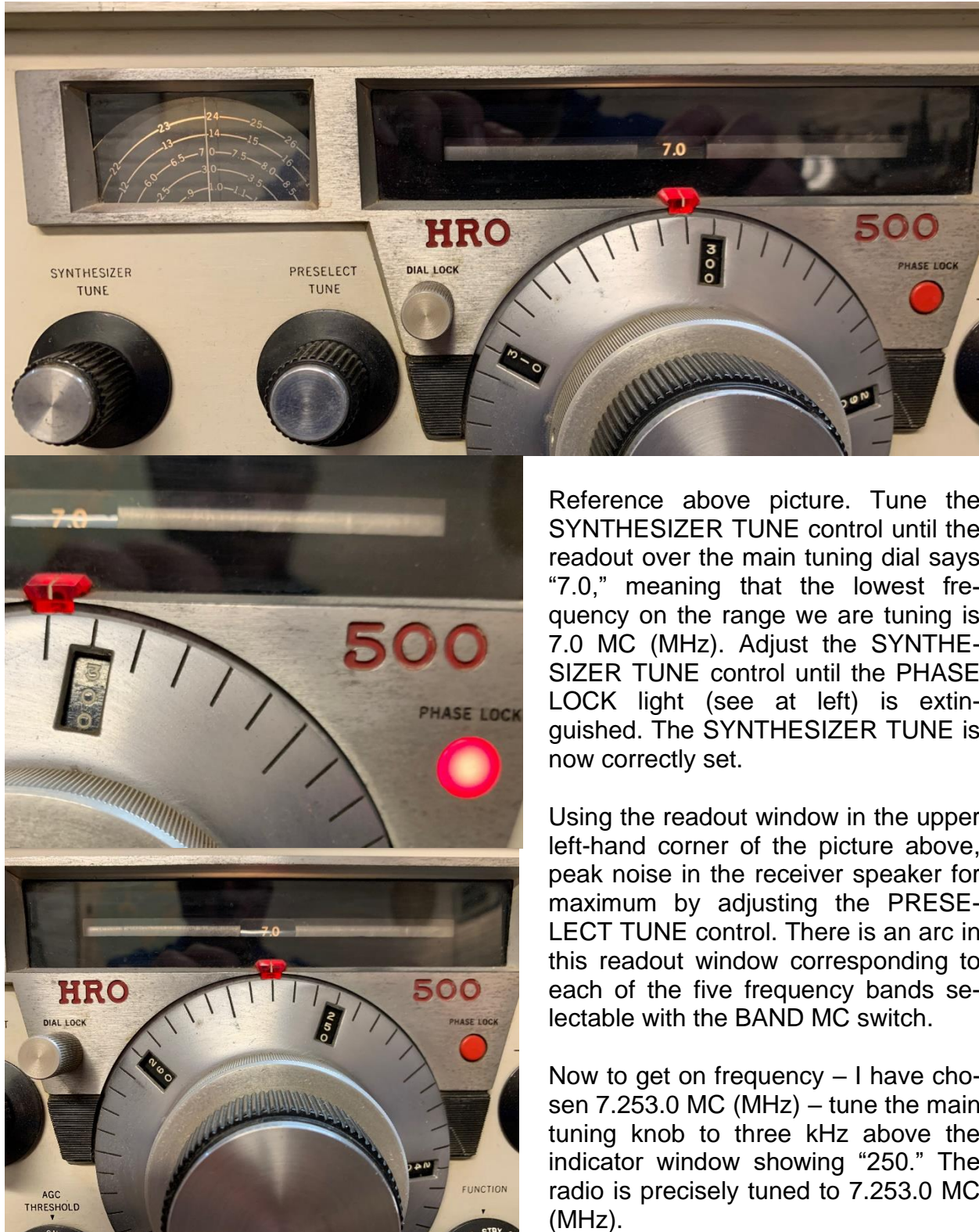
Step 1: Set the bandswitch (BAND MC) to the range that includes the 7.00 MC (MHz) band:



W9MXQ

Note the "BAND MC" switch – lower center in this picture – lower left-hand corner of the Front Panel. In this example the selection is "4.0-10" – which includes the frequency we want to tune.

Step 2: Set the SYNTHESIZER TUNE control:



Three Pictures - W9MXQ

Reference above picture. Tune the SYNTHESIZER TUNE control until the readout over the main tuning dial says "7.0," meaning that the lowest frequency on the range we are tuning is 7.0 MC (MHz). Adjust the SYNTHESIZER TUNE control until the PHASE LOCK light (see at left) is extinguished. The SYNTHESIZER TUNE is now correctly set.

Using the readout window in the upper left-hand corner of the picture above, peak noise in the receiver speaker for maximum by adjusting the PRESELECT TUNE control. There is an arc in this readout window corresponding to each of the five frequency bands selectable with the BAND MC switch.

Now to get on frequency – I have chosen 7.253.0 MC (MHz) – tune the main tuning knob to three kHz above the indicator window showing "250." The radio is precisely tuned to 7.253.0 MC (MHz).

The synthesizer in the HRO-500 takes the place of the heterodyne crystals used in other superheterodyne receivers of the day. In the case of the HRO-500 this amounts to heterodyne frequencies allowing coverage, in 500 KC (kHz) band segments from 5 KC (kHz) to 30 MC (MHz). That is the equivalent of sixty (60) crystals that would do the same work as this synthesizer – with comparable stability. At the time, the HRO-500's one notable competitor – the General Coverage Collins 51S-1 HF Receiver, did the work of the National's Synthesizer using individual crystals. The Collins 51S-1 operated in 1.0 mc (MHz) ranges for a total of thirty crystals.

When you use a radio in what I call the Laboratory Grade¹, the concept of just “tuning the bands” can become a bit less convenient than the usual SWL or Ham Radio Receiver. But, in my judgement, the HRO-500 is easier to use than the Collins 51S-1, mentioned as one of its competitors in the ham radio field.

There were certainly features in the HRO-500 that were not available in most other top line radios of the day. One is Passband Tuning (reference the PASSBAND TUNE control (right hand center knob on the front panel). This allowed adjustment of the signal through the crystal filter passband of the radio. It also allowed selection on SSB of Upper or Lower Sideband (USB or LSB). The radios that offered this feature were most Drake receivers, starting in 1957 with the 1-A in 1957 and continuing with all top line Drake Receivers right through the last R-8B in 2005. (This feature was oddly absent in the Drake 2-C Receiver.) Collins offered this feature on the 75A-4 then dropped it on the S-Line radios – only returning it with their last ham radio transceiver, the KWM-380. In my opinion, this may well be the single most effective method of fighting QRM on the ham bands.

Another feature of note was rejection tuning (REJECTION TUNE). See the control below (to the left of the PASSBAND TUNE). This feature allowed to specific noise or tones to be notched out of the passband. It is used as a Notch Filter as found on some other radios of the day. Rejection Tuning, as such, was a significant feature on the second version of the Collins S-Line Receivers, starting with the 75S-3.



W9MXQ

For reference – see this upper right-hand quadrant of the HRO-500 Front Panel. This shows the location of the PASSBAND TUNE, and the REJECTION TUNE controls.

Users of Drake radios will find the operation of Passband Tuning to be like what is offered here by National in this receiver.

National offered features in the HRO-500 to play to a wide variety of customers. Many features were not offered at the time on radios focused only on amateur radio. For instance, there was an extensive array of options to remote control many features of the radio. For instance, the radio could be adapted, via rear panel connections, to remote control AF and RF Gain. There were also systems to remotely control AGC and the BFO. Much of this tied to laboratory and/or commercial shipboard use of the radio. Detector stage output was available to feed all manner of special mode decoding. As one would expect, the radio could be muted for use with a companion transmitter. Muting the radio was flexible enough to allow the process to be handled by a contact closure to ground or an application of muting voltage from the transmitter, or control system, to the receiver.

There were two major options that National sold with the HRO-500. One was the HRO-500-TS Speaker Console, and the other was the LF-10 Preselector. They are shown here:



This is a front view of the HRO-500-TS Speaker Console for the HRO-500 Receiver. It is the same height as the receiver and matched it in color.

There is little contrast in colors in this front view, but construction is the same as – and matches – the radio.

The strip along the bottom edge says, “National Radio Company.”

W8ZR Collection



**The National LF-10 Preselector
for HRO-500 Operation below 500 kc (kHz)**

W8ZR Collection

The LF-10 Preselector allowed for high sensitivity receive below 500 kc (kHz) on the HRO-500 Receiver. As delivered, the HRO-500 had a documented specification of 25 uV sensitivity below 500 kc (kHz) so serious use of the radio at those frequencies required the use of a front-end amplifier. This was similar to the performance of the Hal-

licrafters SX-117 Receiver on VLF frequencies. The SX-117 required the Hallicrafters HA-10 Low Frequency Tuner/Preselector to be useful at such frequencies. (I must add here that while there is a similarity in concept – the LF-10 / HRO-500 combination far exceeded the performance of the HA-10 / SX-117 on those VLF (Very Low Frequency) bands. The HA-10 had no active devices – it merely provided front end tuned circuits. The LF-10 was a complex unit with active devices in the signal path. (There was a later, LF-10A, unit as well – but I have no information on any extra features, if any, included.)

The particular HRO-500 used for this article has some history. Before arriving with me, it was refurbished and sold to my long-time friend, article collaborator, and article proof-reader, Bob Bailey, W9DYQ. The restorer and seller for this radio was Maximilian Fuchs, of Maximilian Associates, on Swampscott, Massachusetts. Fuchs had been an employee of National Radio at the time of its closure in the early 1990's. Apparently, he purchased considerable inventory of National amateur radio product and parts at the time of the final closing. For many years he advertised his parts for and complete HRO-500 Receivers and the National NCL-2000 Linear Amplifiers. He had other product parts as well – plus documentation on popular products back into the 1930's.

There was at least one successor to the HRO-500 – but it never reached the amateur radio market. That was the HRO-600 that, after a run since 1935, removed the famous PW Dial so recognizable as the main tuning dial on every HRO receiver from the original HRO to the last HRO-500.



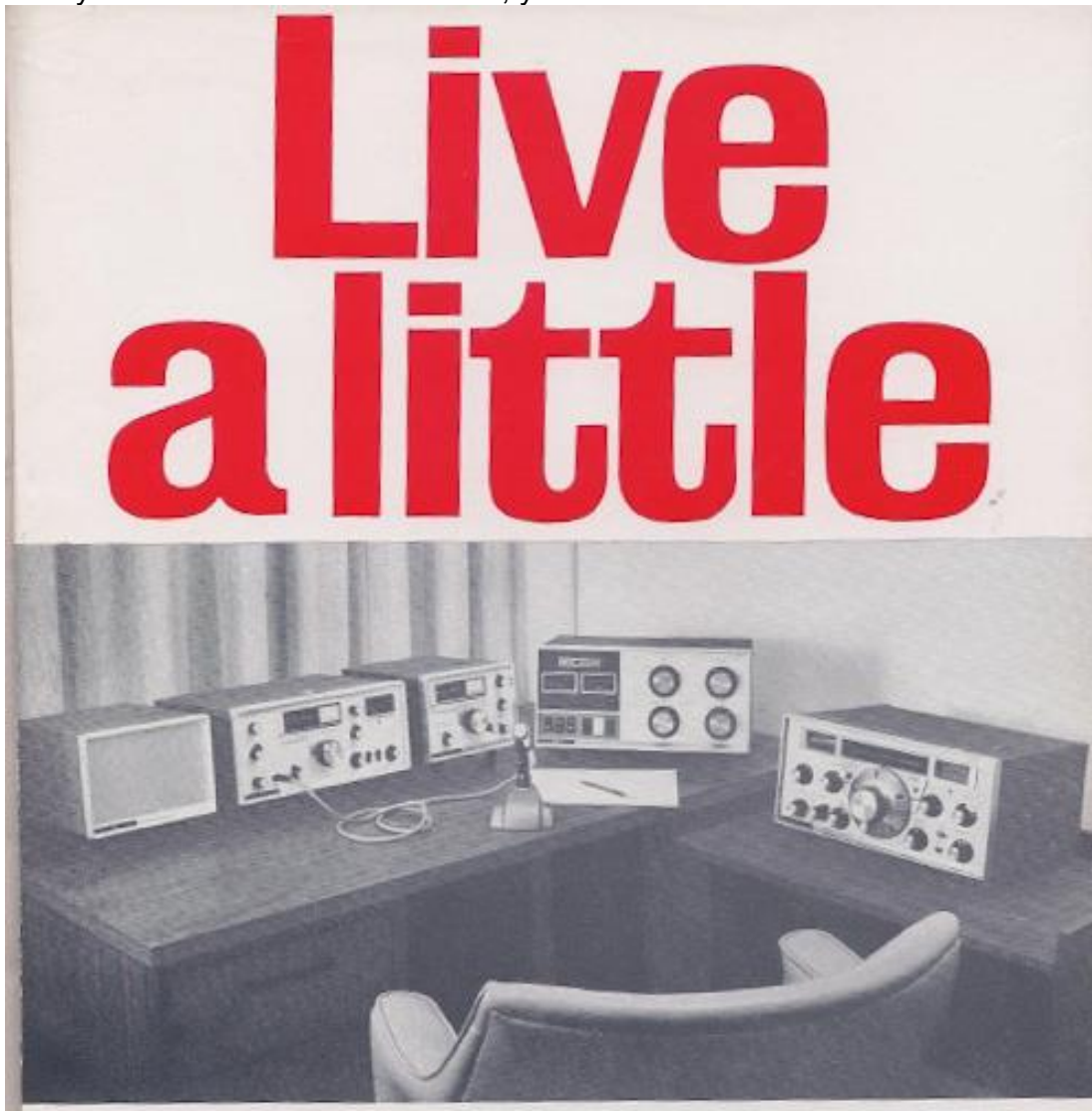
National HRO-600 Receiver – about 1970

W8ZR Collection

The tuning knob and readout were part of a center panel modular insert. Other systems could be substituted to control frequency in other ways. Perhaps the HRO-600 can be part of a future article.

I cannot close this article without showing some sales and marketing advertisements from National Radio Company during the sales cycle of the HRO-500 Receiver and its stablemates.

First is my favorite – National fan or not, you wanted to sit in that chair!!



1964 Display Advertisement – National Radio Company

QST Magazine

Inside Back Cover – December 1964

The group shown is part for part in the collection at W9MXQ – including that collectable Electro-Voice 664 Microphone and Base. Late in 1964, at the time of this advertisement, the National Radio equipment items and their list prices were:

NCX-A Power Supply/Speaker	\$110	NCL-2000 HF Linear Amplifier	\$585
NCX-5 HF Transceiver (80-10)	\$585	HRO-500 HF Receiver	\$1295
VX-501 Remote VFO	\$225		

To give you an idea how things changed, check part of a brochure and prices from National in 1976 (effective 1 May 1976). The brochure shows two of the products listed in the above advertisement (among other products National was selling at the time):

NCL-2000

Linear Amplifier. A full 10 Db gain. 20 watts in 2000 watts out. Can be driven with one watt. Continuous duty design utilizes two 8122 ceramic tetrode output tubes, designed for both AM and SSB operation. The industry standard for 12 years. Thousands in use all over the world.



Price: \$1,200

HRO-500



The ultimate short wave receiver. This synthesized (phase lock loop) receiver incorporates all facilities for AM, Single Side Band (SSB), and CW reception in all frequencies from the bottom of the very low frequency band (VLF) to the top of the high frequency band (HF). National's "dead accurate" dial means no searching for transmissions. Dial up the frequency and it's there: aeronautical, marine, CB, amateur, military, etc. Continuous coverage.

Price: \$3,000

PRICES EFFECTIVE MAY 1, 1976 AND SUBJECT TO CHANGE WITHOUT NOTICE

**National Radio Company, Inc.
Published Brochure**

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

NOTES AND COMMENTS:

¹ Radios noted as Laboratory Grade references their focus on experimental and research use – perhaps, but not necessarily, used for fixed frequency use or for monitoring of RF data. Such receivers are not necessarily designed for use in tuning a wide variety of different frequencies but still possessing the ability to work anywhere in a wide spectrum.

© W9MXQ

On The Air!

de Gary Sutcliffe, W9XT



They say March comes in like a lion and goes out like a lamb. This year it seemed backward as we had some of our best weather of the year earlier in March. Space weather also went out like a lion with a series of solar flares and Coronal Mass Ejections (CME), bursts of plasma ejected from the sun. These clouds of charged particles travel to earth, get caught in the earth's magnetic field, and mess up propagation. We even had a "cannibal CME" where a second CME overtook an earlier but slower one.

While the flares and CMEs meant some poor conditions in late March and early April, conditions were pretty amazing before then. The combination of more sunspots and the ability of FT8 to dig deep into the noise than traditional modes, CW and SSB, has produced some really nice contacts into the challenging path to Asia. Even bands as high as 15 meters have been open until at least 10:30 PM local time into Japan.

One thing that I find interesting since the time we had good conditions during the sunspot cycle 24 to China is the number of Chinese stations on the air. One night I had as many as three BY stations at a time answering my CQs. I probably worked more BY stations in the last month than in the previous 50 years in ham radio.

I didn't work any BY stations 50 years ago. Ham radio was not allowed in China until the mid-1980s. The first station on the air was the club station BY1PK in Beijing. A couple of years after BY1PK first went on the air, I was in China on business and managed to arrange an invitation to BY1PK, but a snafu caused me to miss it. I knew a Canadian ham had visited a few months earlier and was allowed to operate, but no US hams had yet, as far as I knew.

The bands 30 meters through 15 meters have been incredible into Asia in recent weeks. The early morning hours have been good on 30, followed later in the morning by 20 meters, while 15 meters is best around sunset and later.

Wisconsin QSO Party

Participation in the WiQP by club members was light. The WiQP website shows 446 logs received. I recognized ORC member calls AA9WP, K9DJT, K9QLP, N9UUR, W9KEY, WT9Q, plus my entry. I hope there are a few more.

Based on scores I know about, although we had more points than last year, we did not beat the winning total of last year's event won by the West Allis club. However, their big gun did not operate this year, so we might have slipped by to claim the club competition. If so, we should be receiving a nice plaque this summer.

6 Meters Spring Conditions

The spring sporadic E (Es) season will be starting later this month or early May. This propagation mode is believed to be caused by wind shear ionizing metal atoms from meteors. The electrons freed from the atoms refract signals back to earth out to distances of about 1300 miles. These openings can last from a few seconds to hours. Under the right conditions, we can get multiple ionized regions, and multi-hop contacts to other continents are possible.

There have been a few tantalizing tastes of another mode on 6 meters. It is Trans-Equatorial (TE). The ionization level from the sun is higher near the equator. Sometimes the maximum usable frequency (MUF) can reach VHF levels. It can create a chordal path where a signal reaches the F layer. Instead of being refracted back to the ground, it goes horizontally until it reaches the F layer on the other side of the equator. From there it is refracted back down.

PSKReporter has been showing stations in the US working into South America. Unfortunately, the line north usually seems to stop around the middle of Illinois. One day, we had stations around the Illinois state line, stations around Minneapolis, up in Door County, and Michigan calling stations in Chile. It looked as if someone had placed a Faraday cage around SE Wisconsin with nothing heard.

Other times we would get a single decode every 10 minutes or so. Another time Gary, K9DJT, and I called a strong CE2 for over 10 minutes. He would work another station from time to time but mostly CQ'ed in our faces until he faded out.

TE will not get to latitudes this high. The stations north of the very southern states probably had an Es opening they used to get into the TE mode. The isolated decodes we got here every ten or fifteen minutes were probably off a random meteor trail to couple into the TE. We make contacts using more than one propagation mode more often than we realize.

Another VHF event to get ready for is the first major meteor shower of the year, the Lyrids, peaking around April 22-23. Hardcore meteor jockey Gary, K9DJT, says the meteor conditions have already started to improve after the winter doldrums.

Contests

The next couple of months is quiet on the contest front. April is a big month for state QSO parties, with NE, NM, TX, ND, GA, MI, and FL scheduled. I don't have any recommendations for big contests.

DX

The April DX scene started on a sour note. The DXpedition to the Central African Republic, TL8AA, had to be postponed. An outbreak of meningitis limited travel in that country. This DXpedition is now scheduled for November 1-30.

A group of Australian hams will activate Norfolk Island under the call sign VK9NT April 14-25. This island used to be pretty easy to work with an active resident ham but has been less common in recent years.

Another Pacific Island operation around that time is to the Austral Islands. A group of mainly US hams will activate TX5N from April 15-28.

Far from the warm tropical islands of the Pacific Ocean is an activation at Svalbard. This is a big operation with five stations using the call sign JW0Z. Svalbard is north of Europe. Being cold and very isolated, it is the site of the Global Seed Vault. Seeds are stored there to preserve the genetic diversity of food crops in the case of a worldwide disaster.

Aland Islands is not super rare, but a group of Polish ops will be there at the end of April. This has been announced as a digital-only operation with the call sign OH0EG.

W9XT's DXpedition picks for April and early May 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Norfolk Is.	Apr. 14-25	VK9NT	HF	C/S/D	
Austral Is	Apr. 14-28	TX5N	HF+ 160	C/S/D	
Svalbard	Apr. 19-26	JW0Z	HF	C/S/D	
Aland Is	Apr. 22-29	OH0EG	80-15	D	

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

That wraps up this month. Don't forget the ORC Spring Swapfest on April 30!

Good Stuff – For Sale!!

(Donated by the Nels Harvey family to the STEM Fund)

1. Hustler 5-BTV (10 thru 80 Meter) Vertical Antenna	\$160.00
2. 2 M Cushcraft Ringo Ranger Vertical Antenna	\$20.00
3. 6 M Cushcraft Ringo Ranger Vertical Antenna	\$30.00
4. 70 CM Cushcraft Ringo Ranger Vertical Antenna	\$20.00
5. 70 CM Cushcraft Ringo Ranger Vertical Antenna w/Counterpoise	\$30.00
6. Diamond X-200 Dual Band (2 M & 70 CM) Vertical Antenna	\$40.00
7. Yaesu Screwdriver Antenna on an Indoor Base	\$70.00
8. Kenwood TM-V7 Mobile 2 M & 70 CM FM Transceiver	\$90.00
9. Tektronix 465 100MHz Dual Trace Oscilloscope w/Mobile Stand	\$65.00
10. Oscilloscope Mobile Stands	\$7.00
11. 120 VAC Primary "Variac," 7 Ampere	\$10.00
12. RCA VTVM	\$20.00
13. EICO VTVM	\$10.00
14. EICO Signal Generator	\$35.00
15. Hewlett Packard HP-200CD Audio Generator	\$35.00
16. Astron 35 Ampere Power Supply (Transformer Type)	\$40.00
17. Gessy 20 Ampere Power Supply (Transformer Type)	\$20.00
18. Vista 10 Ampere Power Supply (Transformer Type)	\$10.00
19. Tripp Lite Line Stabilizer	\$10.00
20. Bell & Howell Oscilloscope	\$10.00

For Purchase or Best Offer

Contact Tom Ruhlmann, W9IPR

Home Phone: 262-377-6945

Mobile Phone: 262-844-6331

Key-Up #2 Results: Ozaukee Radio Club – January 2022 de Ken Boston W9GA

There were 5 submissions total for this running of the exercise:

Station	Contacts	Points
Fred, W9KEY	70	176
Tom, KC9ONY	70	176
Pat, W9JI	15	45
Bill, K9GN	14	40
Gary, N9UUR	13	39

There was a tie for the most points scored between Fred W9KEY and Tom KC9ONY. Certificates will be forthcoming for those who submitted their log sheets.

Ozaukee Radio Club Minutes of Membership Meeting 3/09/2022

de: Ken, W9GA, Secretary

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat W9JI. At that time various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat W9JI officially initiated the meeting at 7:33 PM, as introductions were recognized when members checked into the meeting, a go-around was not conducted. Bill W9MXQ mentioned that he will be tied up evenings for the next few months, and will be missing meetings, but will be available days; W9XT reminded all of the upcoming WI QSO party on March 13; and W9XT reminded folks of the upcoming QSO TODAY virtual swap meet.

Program:

The program was a detailed history of refurbishing a group of Hickok tube testers presented by Chuck W9KR. He first obtained a Superior TV-11, with some problems, and fixed it up, but felt he needed a better tester, due to the Superior being only an emissions tester. He acquired a Hickok 752, which was a full mutual conductance tester, and refurbished this tester. Later, a Hickok 539C was acquired, and was also refurbished for good operation and appearance. Chuck finished by going through the trials and travails of reconditioning a Hallicrafters SX-62A shortwave receiver.

Committee reports:

2nd VP: Bill K9GN reported that ham license classes will resume soon; running on Saturdays at 9AM to noon, details to follow.

Repeater: Gregg W9DHI mentioned a minor problem concerning a blown fuse, which was repaired.

Treasurer: Gary N9UUR is pleased to report that we now have 101 paid members, putting us over budget, and that the club is now under contract for the meeting room in the senior center. The March treasurers' report was accepted; motion made by WB9RQR 2nd by W9KR, and carried.

Secretary: Ken W9GA reported the March 2021 minutes will be posted; AB9ON moved, WT9Q 2nd, motion to accept and carried.

Scholarship/STEM: Tom W9IPR will be adding a 'for sale' listing of scholarship items in the newsletter; and has had Bill K9GN join the committee.

Tech/streaming: The group has tested the streaming system at the meeting facility [senior center] and all appears ready to perform a Zoom instance at the upcoming meeting. Note: we will not be running an auction at this first meeting back at the senior center.

OLD business: W9GA has not correctly reviewed the Key-up logs and asked for some participants to resend logs; Nominations for Awards will be cut-off the end of March, while several nominations have been received, more input is requested.

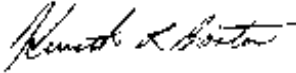
NEW business: The field day site for summer 2022 is reserved, and the spring swapfest is due to happen this spring at the end of April; see KC9ONY for tickets and reservations.

Adjournment: WB9RQR moved to adjourn, W9DHI 2nd, motion carried; time ending was 9:04 PM.

There were 35 attendees.

Following the meeting breakout rooms covering any general topics; were opened.

Respectfully submitted,

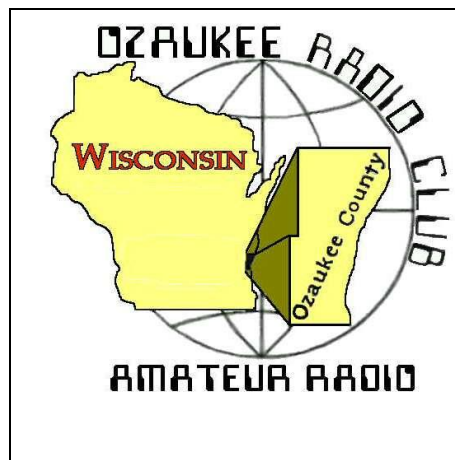


Kenneth Boston, W9GA, Secretary

REMEMBER!!!

2022 Ozaukee Radio Club Spring Swapfest
See Swapfest Article – This Newsletter, Page 4
Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)
Columbia St. Mary’s Center – W67N890 Washington Ave., Cedarburg, WI

See the Ozaukee Radio Club Website for Details
Flyer is Inserted as the last page of this Newsletter.



Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

April – Pat Volkmann W9JI – Refurbishing a Classic Amp Ameritron AL1500
May – Carl Luetzelschwab, K9LA – Latest Update on Solar Cycle 25
June – Field Day
July – Field Day Member Reports
August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures
September - Open

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

ORC Meeting Agenda

April 13, 2022

- | | |
|--|--|
| 1. 7:15 – 7:30 PM – Check-In and Introductions | 7. 2 nd VP Report:
Bill Greaves (K9GN) |
| 2. 7:30 PM Call to Order:
President Pat Volkmann (W9JI) | 8. Repeater VP Report:
Gregg Lengling (W9DHI) |
| 3. Announcements, Bragging Rights,
Show & Tell, Upcoming Events, etc. | 9. Secretary's Report:
Ken Boston (W9GA) |
| 4. Presentation: Pat Volkmann W9JI –
Refurbishing a Classic Amp
Ameritron AL1500 | 10. Treasurer's Report:
Gary Bargholz (N9UUR) |
| 5. President's Update:
Pat Volkmann (W9JI) | 11. Committee Reports |
| 6. 1 st VP Report:
Ben Evans (K9UZ) | 12. OLD BUSINESS |
| | 13. NEW BUSINESS |
| | 14. Adjournment |



1951 to 1963

**Conelrad, "Control of Electromagnetic Radiation"
Replaced by the Emergency Broadcast System in 1963**

**Next ORC Meeting
Planned Hybrid In-Person/Zoom Meeting
11 May 2022**

7:00 PM – Doors Open

7:15-7:30 PM – Zoom Check-In

7:30 PM – Meeting Begins

The Ozaukee Radio Club presents its 42nd Annual Spring Indoor
Amateur Radio, Electronics & Computer



SWAPFEST



Saturday, April 30, 2022 – 8 AM to 12 PM (Setup begins at 6 AM)

featuring TOWER ELECTRONICS!

Columbia St. Mary's Center – W67N890 Washington Ave., Cedarburg, WI

Talk-in: 146.97 – PL 127.3



Like us on
 Facebook.com/orcwi

www.ozaukeeradioclub.org

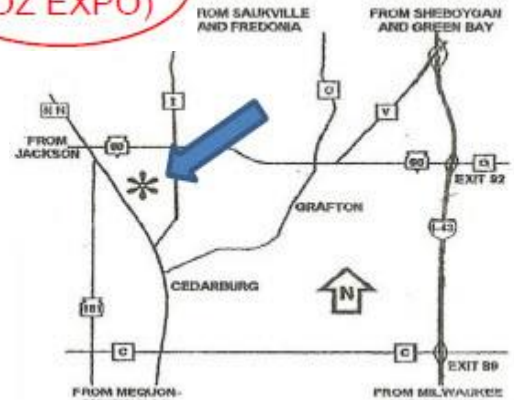


Table Spaces \$10 (All Tables are 6 ft)
Buy 1 Ticket & 1 Table... just \$15!

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

Email: swapfest@ozaukeeradioclub.org

For Advance Tickets, send check with self-addressed stamped **Business-Size Envelope** to:
 Tom Trethewey, KC9ONY – W69N905 Evergreen Ct N, #202, Cedarburg WI 53012
Admission Tickets just \$5 (Please make checks payable to ORC)

Company Name: _____ Phone# _____
 Contact Person: _____ Call Sign: _____
 Address: _____ e-mail: _____
 City: _____ State: _____ Zip: _____
 No. of Tickets: _____ X \$5 = _____ Electricity: Yes (Add \$5) _____ No _____
 No. of Tables: _____ X \$10 = _____ Total Amount Enclosed: _____

(For Official Use Only)

Ticket(s) # _____ Table(s) # _____ Init: _____

Date: _____ Time: _____ Vendor Entrance Used (Circle one): **1** **2** **3**



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

Facebook: facebook.com/orcwi

Volume XXXV

May 2022

Number 5

From the President

de Pat Volkman, W9JI



The April meeting was our first in-person meeting in about 2 years. We ran the April meeting as a hybrid, combining the live meeting with Zoom. There were some computer issues at the start of the meeting, but the Technical Committee got everything working in short order. I didn't know what to expect for attendance. We had more people at the Senior Center that were on Zoom. The auction was very lively, with Stan selling a lot of (really good) items in about 15 minutes. I expect we will continue with the hybrid meetings for now.

If you are planning to join us at the Senior Center, just show up. The doors will open about 7 PM and the meeting will start at 7:30. Zoom invitations will be sent out the day of the meeting, just click the link to join. At the end of the meeting, I will hand off the Zoom controls to one of the co-hosts. This will allow the group to continue to chat on Zoom after the meeting, as we have been doing.

The Spring Swapfest was held on April 30th. The weather wasn't very good, with a cool rainy Saturday. The indoor venue is really nice when the weather isn't cooperating. The crowd was good as were table and ticket sales numbers. The Scholarship Committee sales were remarkable – we left the Swapfest with half of what we brought! Thanks to everyone who helped out and special thanks to Tom Trethewey KC9ONY for organizing the event. You did a great job Tom!

The Swapfest was also the first time that I met some of our members that I had only seen on Zoom. The face-to-face meeting is always nice, with a chance to see you in person. One suggestion for future events - wear your Club name tag! It helps to let everyone know who you are and what club you belong to. If you don't have a nametag, contact Gary Drasch K9DJT at gary.drasch@k9dit.com. Gary takes care of ordering all the

Club swag, including shirts, hats, and jackets. All the gear is very good quality, and you can show off your callsign.

At the April meeting I showed some recent work that I had done on my Ameritron AL-1500 amplifier. This month, I am working on getting an Alpha 78 linear amplifier going again. The Alpha 78 was produced in the early 80s and uses three Eimac 8874 triodes and covers 160 through 10 meters. I'll provide an update as things progress.



I'm looking forward to seeing everyone again, both at the Senior Center and in the Zoom meeting.

See you at the meeting.

Pat Volkmann W9JI

A Message from the Editor Newsletter Table of Contents de Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, right on Page 1. Pat discusses the successful Spring Swapfest and his latest project at the W9JI shack.

Speaking of the Swapfest, check out Tom Trethewey, KC9ONY, in the very first article on the agenda this month. Tom gives his initial take on the Spring Swapfest. Tom, as most us know, served as the 2022 Spring Swapfest Chairman. Or better said, "The Very Successful 2022 Spring Swapfest Chairman!!"

Want to do a good deed for the widow of a former ORC member? Check out Stan Kaplan, WB9RQR's note on page 6. Want to know about Annual Awards within our ranks? Check Ken Boston, W9GA, when he delivers the results of the 2021 Awards Program – on Page 5.

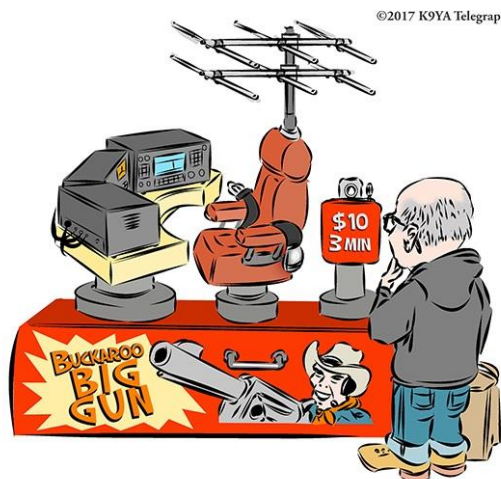
Great regular articles, too from Don Zank, AA9WP, on the latest in ARES and Gary Sutcliffe, W9XT, on Contesting and DX. For Gary, W9XT, notice his separate page on coming operating events that can be printed out and kept on the operating desk. Watch for the always interesting Computer Corner article from Stan Kaplan, WB9RQR. If I may make humble mention, see my article this month on the Drake R7 / R7A HF Receiver.

There is too much to comment on this month!! But I offer a sincere thank you to the members of our club who felt compelled to compliment the Newsletter and this Editor for an Annual Club Award. I enjoy it – and like that you like it!! But I never forget that I am

nothing without an outstanding list of talented authors who are every bit as excited about our Newsletter as the Editor!!

Here are the Table of Contents/Previews of this month's Newsletter Edition . . .

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5	Ken Boston, W9GA: Ozaukee Radio Club: 2022 Awards Recipients Ham of the Year, Turkey of the Year, and more . . .
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20	Gary Sutcliffe, W9XT: On the Air! Solar Activity and Band Conditions, Meteor Showers, Lunar Eclipse, New Digital Contest, DX, Armed Forces Day Cross-Band Test
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_____ **Onward To the Newsletter** _____

The ORC Spring Swapfest 2022 Finally Happened!

de Tom Trethewey, KC9ONY
Chairman, Spring Swapfest 2022
swapfest@ozaukeeclub.org

Back in January of 2020, I volunteered to be the Chairman of the Ozaukee Radio Club's annual Spring Swapfest. Little did I know it would be another two years before we could actually have the event, due to the COVID pandemic.

The Spring Swapfest finally happened on Saturday, April 30, 2022. It went really well, and I received positive feedback during and after the event.

We had 86 advance tickets, and 243 tickets sold at the door. This year, though not well advertised in advance, we were allowing in kids 12 and under free with a paid adult. I forgot to have the door cashier tally the kids but saw quite a few. So, I would say we had well over 340 in total attendance!

Cub Scout Pack 586 brought a lot of enthusiasm and food and seemed to be selling very well. Their Facebook page shows the totals of all their sales. See their Facebook page for the results and some pics of the selling area:

<https://www.facebook.com/Cub-Scout-Pack-586-447292295334209/>

Jill, KB9PZF, and Scott, KB9AMM, with Tower Electronics, brought their huge setup as our main commercial vendor. All kinds of parts, adapters, and antennas could be purchased. In addition, they brought us 16 six-foot tables for us to use, thus not having to go out and rent tables to bring in to sell. Thank you, Tower Electronics!

Gregg, W9DHI, contacted Icom and Yaesu to see if they had some promotional items to give away. John Kruk, N9UPC, who is the National Sales Manager, Amateur Radio Division of Yaesu USA responded. He said, why don't I just come down and display some radios and talk about WIRES-X? Sure, why not! When I looked over at his booth, he seemed to always be talking to someone. It was great to have a worldwide commercial vendor to display their product. Thank you, John!

We also had Tom KA9KJE, the Emergency Coordinator for Racine and Kenosha, WI as well as District Emergency Coordinator for Southeast WI. He was representing RKARES.org and had an AREDN Mesh Network display.

Our very own Don AA9WP, Emergency Coordinator for OZARES was also presenting a demonstration of WINLINK. I saw several folks interested in his display as well.

Tom KG9EE, Assistant Section Manager for the ARRL in Wisconsin had a booth where one could join or renew their membership right at the Swapfest.

We had some fantastic gift certificates and door prizes from the ARRL, Bioenno Power, DX Engineering, Easy Way Ham Books, N3FJP Software, Tower Electronics, Unified Microsystems, and West Mountain Engineering.

Thank you sponsors!

Thank you so much to the volunteers I had this year. Gregg, W9DHI, Chuck, KC9YEP, Fred W9KEY, Jeananne, N9VSV, Gary, N9UUR, Loren, N9ENR, Jim, K9QLP, John, WA9KNY, John, W9FAD, Pat W9JI, Mark, KD9NOO, Tom W9IPR, and Bill, K9GN, for helping out. Sorry if I forgot a name or two, let me know.

Among the comments received, there were a few negatives. While we can't please everyone, there were mistakes I admit making, or things about which I didn't think. I'm making a list, as I'd like to improve for next year. Feel free to send me your comments and suggestions via email. I'm going to start much earlier in looking (arm twisting?) for volunteers to help out, too.

Save the date for next year, Saturday, May 6, 2023

Ozaukee Radio Club: 2022 Awards Recipients

de: Ken Boston, W9GA, Awards Chair

The results of the balloting and nominations for the Ham of the Year and Turkey of the Year are presented below:

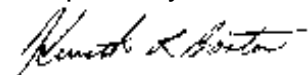
Ham of the year: N9UUR Gary Bargholz
Turkey of the Year: KC9YEP Chuck Meyer

IN ADDITION: The following category awards were earned:

Program of the Year: WH6ZZ Mike Schultz – "Marconi Trans-Pacific wireless site"
Committee of the Year: W9MXQ Bill Shadid - Newsletter

Most of these recipients were clear winners, and one was mentioned repeatedly, with no clear category other than, "This person deserves some kind of reward." [Newsletter]

Respectfully submitted,



Kenneth Boston W9GA, awards chair:

GET A TOWER OR ANTENNA AND DO A GOOD DEED

de Stan Kaplan, WB9RQR

Some years ago, a fellow named Gary Becker (N9SBG) lived in Mequon with his wife, Barbara, and their son. He also had a business there (plumbing), and Gary was a long-time active member of the Ozaukee Radio Club. His son grew up and left to start his own family. Later, Gary had a stroke, was confined to a wheelchair, and pretty much curtailed his ham activities because the stroke impaired his speech as well as his mobility, though he maintained an interest in the hobby and monitored many nets. Several years later he died. His wife Barb continued to live and is still living in their Mequon house.

Barb called me the other day, and she would like to be divested of their antennas and tower. She has a tower in the yard with antenna, and there are several more antennas mounted on their garage, in their attic, and so on. She is not a ham and cannot really describe any of them adequately.

This might be an excellent opportunity for you to get one or more of these for your own use (at a reasonable price) while helping out the widow of one of our members. Call Barb at (262) 241-5488 to arrange and discuss your eyeball evaluation and possible offer for one or more items. **Be sure** to identify yourself as an ORC member. If you later see something you like, be prepared to give her a reasonable offer based on your knowledge. She is not in the process of moving, so time is not a critical factor, but jump on it now to prevent someone else from "scooping" you.



**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!

THE COMPUTER CORNER

No. 290: How Close Are Your Measurements?

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

How close to what? When you measure a voltage in a circuit, for example, if your VOM reports 2.56 VDC (DC volts), what does that mean? If you next measure it at a nearby connection on the other side of a solder joint and it measures 2.53 VDC, what does that mean? That the joint is a bad solder joint and there is a 0.9 VDC drop in the joint? Or your meter needs a new internal battery, and it is rapidly losing accuracy? What is accuracy? Or is it that your meter is simply off a bit when you make repeated measurements. Maybe its measurements are not very precise. What does precise (precision) mean? Shouldn't it read exactly the same thing each time you measure?

Let me give you another example. I purchased two indoor/outdoor thermometers not long ago. These are little square battery powered gadgets that you place outside somewhere, and they transmit a signal to another little square battery powered receiver that sits inside your house. The inside gadget receives a signal from the outside box, converts it to temperature and displays the result on a little screen on its face. It also displays the "indoor temperature" the temperature that the inside gadget senses. So, the inside gadget displays two temperatures – inside and outside. They are not very expensive – on the order of less than \$15 for a set of two – a remote sensor box for outside and another receiver box for inside with its reporting display of indoor and outdoor temperature, with a pair of AAA batteries for each of the two. For less than \$30 you can have four (two sets), and park one outdoor sensor in your front yard and a second sensor in your back yard. Shouldn't the two temperatures be the same at these two sites? Well, that is another bag of worms, because studies have clearly shown that the microclimate in two places such as a front yard and a back yard can vary quite a bit. Think of winds, for example, and how air currents can be affected by buildings such as your house. Let's not get off on that tangent – back to precision and accuracy and such.

Anyway, I was curious, so I put one set of two boxes (outdoor and indoor) on my dining room table 4 inches from each other, followed by a special mercury thermometer. Because I was trained as a biomedical scientist and had need, often, to measure temperature for some of the experiments I was doing over the years, I had in my possession (even 27 years after retiring) a couple of glass mercury thermometers that were verified by what used to be called then the National Bureau of Standards. So that mercury standard is what I trusted as my absolute standard. On the other side of the Mercury Standard were the two little boxes of unit 2. Take a look at the results, rounded to the nearest whole degrees Fahrenheit in the following table.

DAY AND TIME	UNIT 1 OUTSIDE	UNIT 1 INSIDE	MERCURY STANDARD	UNIT 2 OUTSIDE	UNIT 2 INSIDE
5:00 p.m., 18 Aug	80	78	81	78	79
7:30 a.m., 19 Aug	77	76	77	77	76
5:00 p.m., 19 Aug	81	82	83	82	82
7:30 a.m., 20 Aug	77	77	79	77	77
7:30 a.m., 22 Aug	76	76	77	77	76

As you can see, the first day (an hour after unpacking and setting up) they were off by as much as 3 °F, while the next morning they were off from the standard mercury glass thermometer by not more than 1 °F. During the ensuing days, all the little boxes were within 2 °F of the value shown by the standard mercury glass thermometer. Not too bad.

But the point of all this is twofold, accuracy versus precision. First, consider accuracy. Accuracy is how close a measurement is to the true value. In this case, the true value is my glass mercury standard thermometer, whose accuracy can be traced back to the National Bureau of Standards. Unless this sealed glass thermometer has been damaged in some way (there is no evidence of this), it is certainly accurate to within one degree (F). But what about that 25.6 VDC measurement you made that was described in the first paragraph of this article? Guess what? It could just as easily have been 24.6 VDC true value, or truly 26.7 VDC for that matter. Unless you can compare a measurement with some sort of standard, the value reported by your measuring instrument is suspect. You have no way of deciding if it is accurate. For a few bucks, you can build a gadget that will generate voltages that are accurate to 1%. A nice way to check up on your electronic VOM.

Second, is precision. Precision is how close repeated measurements, under the same conditions, are to each other. If I had measured the temperature on my dining room table and it was 77 °F, then I measured it again 1 second later, and again after another second, and so on (if nobody opened a door or started a vacuum cleaner and the furnace did not go on) if all the measurements were 77 °F, we could say the measurements were reasonably precise.

But precision and accuracy are independent of one another. It is possible to be very precise but not very accurate. It is also said to be possible to be accurate without being precise. Think about that for a while. Happy Computing!

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 AA9WP, OZARES Emergency Coordinator, aa9wp@arrl.net



The April article covered additional weather spotter and education training that is available for the public, weather nerds and the interested amateur radio operator. In April I attended the Sheboygan County Weather Spotter Training course, given by Mark Kavinsky, Senior Forecaster and Kevin Wagner, forecaster from the Milwaukee National Weather Office. They both emphasized the importance of weather spotter reports for the office to confirm on the ground weather activity. Amateur Radio was mentioned quite often as a viable source for providing severe weather reports to the office. Unfortunately, Sheboygan County is lacking a focused group of amateur radio operators to do weather spotting at this time. The following week

Mark and Rebecca Hansen, forecaster, provided the Ozaukee County weather spotting class. Fortunately, we had a great turnout of nine amateurs at this class.

The importance of Amateur Radio mentioned by the National Weather Office makes for an interesting comparison with an on-going discussion in the SEC-EmComm Groups.io group. The topic of interest is *How to Keep Amateur Radio Relevant*. The discussion has been lively with over 90 messages addressing the topic.

The topic got kicked off by recognizing how large Emergency Operation Centers that exist at the state and in large city levels have extensive equipment available for emergency communications. The large emergency operation groups have VoIP or voice over internet phones, communication trucks, trunked systems, 700 MHz and 800 MHz interoperability channels, FirstNet, and satellite phones. Then toss in Cell on Wheels (COWS) or Cell on Light Trucks (COLTS) portable cellular phone systems that can quickly respond to restore cell phone service.

So, Michael, KM5BOR asked “My tax dollars help pay for all of this and its very impressive when you see these trucks and operation centers. That said the poor ham radio operator can’t compete with their government bank accounts. What do they need us for? What services can we provide as amateurs to the professionals? I have a few ideas, but I want to learn more and am trying to get everyone to think.”

Does “When all else fails” makes sense in light of the extensive amount of emergency communication equipment available to the states and local governments?

Well, as you can imagine, the question generated quite a conversation. From my take the replies break down into three general themes.

Many of the first replies noted that not everyone lives in large cities or near well supplied emergency operation centers. The small communities will need communication support,

and quickly, if they are hit with any disaster, be it a tornado, an earthquake or, as in many Western states, wildfires. There are many locations now where cell phone service is non-existent or very intermittent during normal times. Any and all communication support will be vital during these emergencies.

Of course, being amateur radio aficionados, learning new modes of operation and continually improving seemed to be the second most popular reply. Expanding, then improving communication skills and abilities, with various modes will help amateur radio maintain its relevancy. This means having the knowledge to use land mobile radio (LMR) frequencies where radio interoperability is needed. This knowledge is found in the Auxiliary Emergency Communications (AUXCOM) program. The state of Colorado has implemented an AUXCOM program because, as stated in their bill “a uniformly trained and credentialed unit of communication volunteers available for disaster response” would “materially assist emergency preparedness and disaster response efforts across the state. While maintaining their traditional roles as Amateur Radio operators, many of these volunteers assist with the establishment and maintenance of communication facilities, assist with programming public safety radios during emergencies, and act as radio operators on public safety channels.”

Acquiring the skills for the AUXCOM role can be found in the State of Wisconsin Training Management System, <https://www.trainingwisconsin.org/>, Auxiliary Communication Workshop. As stated in their description, the 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.”

Lastly, and I think the factor that can play the biggest role in keeping amateur radio relevant, is having visibility with our served agencies and their having confidence in our abilities and knowledge of emergency communication procedures. From past participation in ICS training classes amateur radio is an unknown asset for many of the participants. The image of an older uncle or the neighbor down the block is what many think about when amateur radio is mentioned.

But this is the most difficult task as well.

By creating and running real-world exercises that involve our served agencies, amateur radio for emergency services can create awareness and build its relevancy. Then an after-action review is vital to see what needs to be improved and what went well. But the creation of an effective exercise depends upon two important factors.

One is that the planning for the exercise demands a great amount of time and effort. The second, is that the participants need to be well trained and knowledgeable. And that requires a great amount of time and effort. Which sounds like a great topic for next month’s article.

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Many of the people of this string of articles know that while I am a collector of most items in history for amateur radio, my real focus is from the about 1955 until the early 1980's. So, at one end of my level of interest we have the Collins 75A-4 Receiver and KWS-1 Transmitter – see my column in the October 2017 issue of this Newsletter. The end of my range of interest is perhaps in the 1980's when Drake discontinued the TR7A and TR5 Transceivers. These two Drake radios were covered in the May, June, and July 2019 plus the November 2019 Newsletters for the TR7/TR7A and the April 2020 Newsletters for the TR5 Transceivers.

While I like virtually all of the radios of that time, it is important that you know that my favorites in this period are, primarily, Hallicrafters – followed closely by Drake. Close behind – almost too close to quantify, are Collins, National, Swan/Cubic, and Hammarlund. That all said, these companies dominated the amateur radio marketplace during the years of my primary interest. This month stays in that framework with a look at a longtime favorite of mine – owned new in the 1970's, lost in a trade in the 1980's, and now returned to my collection after a 20-year search for just the right one. This month chronicles the Drake R7 and R7A HF Communications Receiver.



Drake R7 HF Communications Receiver
This one – made in 1980

R7 Version in the W9MXQ Collection

Fellow Drake aficionados will immediately notice a family resemblance to the popular TR7 Transceiver. That is no mistake. Keep reading and you will see them come together and provide a better understanding for that look-alike appearance. Careful attention

to the layout, however, shows some differences in actual controls and purpose for what appear to be similar controls.

Let's stop right here for a moment and clear up a Drake detail – a review of the difference between a TR7 and a TR7A Transceiver and similarly, the difference between an R7 and an R7A Receiver. Primarily the “A” suffix was a marketing idea – not a technical change.

For the R7 vs R7A Receiver and the TR7 vs TR7A Transceiver, check this chart shows the differences: (Some differences relate only to the TR7 vs TR7A)

- The Optional SL-500 500 Hz CW Filter that could be added to the TR7 was standard in the TR7A. The R7 and R7A had the same difference – the addition of a standard SL-500 CW Filter as standard equipment.
- The Optional NB-7 Noise Blanker that could be added to the TR7 was standard in the TR7A. Similarly, the NB7A Noise Blanker was optional in the R7 but was standard equipment in the R7A.
- There was an internal receiver protection circuit (Drake called it “Lightning Protection” in their product brochure) added to the front end of the TR7A that was available as an internal option in the TR7¹. With the R7A, there was no such added receiver front end protection added but Drake offered the optional (external) RP700 Receiver Protector for both R7 and R7A Receivers.
- The “B” selectivity position in the TR7 was connected to an open slot on the filter board. (That board came populated from Drake with only the 2.3 kHz SSB Filter.). On the TR7A, in addition to the SL-500 filter mentioned above, the “B” position had a jumper installed that allowed the use of the radio's roofing filter to act as an AM filter of about 9 kHz². This same feature was added to the R7A in the 4 kHz selectivity position.
- There was an unmarked spare phone connector on the rear panel of the TR7. This connector was marked “TX” on the TR7A and was a parallel connection with the microphone input. Being a transmitter related addition, this change did not apply to the R7 or R7A. Similarly, the AUX7 Board was standard in the TR7A – not the R7A.

Operationally, there was no difference between the TR7 or R7 compared to the TR7A or R7A products. All changes were in the form of options made standard. The wired-in front end receiver protection could be added. The parallel connection to the rear panel of microphone audio was a common modification made by hams setting up Phone Patch or AFSK installations.

The R7 Receiver was a very capable 0 to 30 MHz Receiver (yes, that lowest frequency is zero!). My experience with the R7 Receiver shows it operating well on the 2200 Meter (135 kHz) and the 630 Meter (472 kHz) Bands. I have copied data transmissions on both bands in the winter months (January and February 2022) shortly after the receiver arrived.

When this radio was reviewed in the January 1980 Edition of **QST Magazine**, they were quick to point out, “not just another “*super-duper signal scooper.*” They referenced the radio as being at home in the ham shack or the laboratory. The list of available options was impressive and was befitting a radio of its caliber and price class. Options varied little from the introduction of the R7 model until the last production R7A model. Look at this options list as available at introduction:

Options List – Drake R7 and R7A Receiver		
Option Item	R7 Receiver	R7A Receiver
MS7 Speaker	Optional	Optional
SL300 – 300Hz CW Filter	Optional	Optional
SL500 – 500 Hz CW Filter	Optional	Standard
SL1800 – 1800 Hz SSB/RTTY Filter	Optional	Optional
SL4000 – 4000 Hz AM Filter	Optional	Optional
SL6000 – 6000 Hz AM Filter	Optional	Optional
Gimmick Jumper for 9000 Hz AM	Not Documented	Standard
NB7A – Noise Blanker	Optional	Standard
AUX7 – Range Program/Fixed Board	Optional	Optional
R7/TR7 – R7 to TR7 Interface Cable	Optional	Optional
R7 Service/Schematic Book	Optional	Optional
RP700 Receiver Protector	Optional	Optional
LA7 Line Amplifier	Optional	Optional

The Drake R7 that is the subject of this review is equipped with the MS7, the SL300, the SL500, the SL1800, and SL4000, the NB7A, the AUX7, the R7/TR7 Cable, the R7 Service/Schematic Book, and the LA7 Line Amplifier.



Together in Operation
Drake TR7A Transceiver, Drake R7 Receiver, Drake MS7 Speaker
W9MXQ Collection

Note the similar, but not identical, layout of the TR7A and the R7. Check here for the rather complex antenna feed switch on the right center area of the R7 front panel.

On the next page, look at the two-color system for identifying the antenna feed location by switch setting. When you read the information, remember that the legends on the dial relate to the rear panel connectors of the same name.



W9MXQ

Switch positions relate to the antenna ports (MAIN, ALTERNATE, and CONVERTER) on the rear panel of the Receiver. For the most part, this rather complicated system can be left as shown to the left so the R7 Receiver and the associated TR7 Transceiver are using the same antenna. Depending on your station setup, you can have the TR7 and R7 using different antennas, selectable with this switch and depending on connections to the ports on the rear panel. This setup is very flexible but also confusing to the new user – due primarily to that flexibility!

The Drake TR7 Transceiver, along with its successor TR7A, as well as the R7 and R7A Receivers took advantage of what was unique technology in their day, up-conversion i-f systems. The i-f frequencies were as follows in their triple conversion scheme:

- First i-f: 48.05 MHz -
- Second i-f: 5.645 MHz
- Third i-f: 50 kHz

Keep in mind that the Drake TR7 Transceiver is dual conversation while the R7 adds the third i-f at 50 kHz. While the TR7 uses a pretty traditional envelope detector for AM, the R7 uses a Synchro-Phase™ (Drake Trademark) Detector that is analogous to the better-known Synchronous Detector. It is similar to the detector used in the Racal 6790 Receiver³. The Racal 6790 puts the R7 in good company. The strength of this detector is very evident when listening to AM Broadcast (North American Broadcast Band, International Shortwave Broadcast, or good old AM contacts on amateur radio). My most recent experience in using a Synchronous Detectors on AM Mode was on the Yaesu FT-1000MP Mark V.

Image Rejection was rated at 80 dB down per Drake published literature at the time for the R7. Dynamic Range as published in ARRL Laboratory tests for the QST Magazine review mentioned previously are as follows:

Drake R7 Receiver Dynamic Range – Worst Case Band of 80 Meters		
Preamp Activated		
Noise Floor	Blocking	IMD
-139 dBm	112 dB	91 dB
Preamp Not Activated		
Noise Floor	Blocking	IMD
-133 dBm	>120 dB	100 dB

Image rejection and strong signal handling performance are the result of the up-conversion design of the circuit, according to Drake's promise in selling this receiver, as well as the similarly designed TR7 Transceiver.

The Preamp mentioned above provides an approximate 10 dB gain across the spectrum. I find it generally unnecessary for my use. It does not seem to overload the receiver in any situation that I have used the feature.

In operation as a vintage radio, the stability of the PTO (VFO) in the R7 is good after about a 15-minute warm-up. The R7, and the TR7, for that matter, seem able to copy W1AW Code Practice without touching the dial after about 15 minutes from power up.

Special Note: Careful attention to alignment, signal path integrity (that is, clean contacts!!) throughout the signal path, and a reasonable warmup period does a lot to insure signal stability. This is especially true in vintage radios where free running oscillators – such as the very well designed VFO in all of the Drake radios – are common. Remember, these radios are not running sophisticated, TCXO based, frequency control circuitry. My attention to alignment and clear signal path in these old radios show.

A nice feature of the R7 Receiver is the Notch Filter – a feature highly revered in the R-4 Series Receivers (R-4, R-4A, R-4B, and R-4C). The traditional Drake Passband Tuning is a mainstay feature of the R7 – and is as effective here as it is in the TR7 and all those earlier R-4 series receivers. (Passband Tuning was also present on the 1-A, 2-A, and 2-B Drake receivers – but conspicuously absent on the 2-C Receiver.)

The R7 does an excellent job connected to the TR7 as a pair for station use. To operate in transceive and provide for proper receiver muting on transceive, the Drake Model 1548 R7/TR7 Interface Cable Kit is required. Those, of course, are no longer available from Drake but they are easy to make with two male 15-pin Cinch Jones Plugs and a circuit widely available on the internet⁴. While not as clear cut in making decisions on which VFO is in control, it is possible to decide to use either the TR7 or the R7 VFO to control the transmit frequency. It is not a single switch setting (it involves two switches) so not as simple as on later radios that usually had a single switch dedicated to the process.

Like the TR7, in theory the R7 was available without the DR7 Digital Readout. My brochure covering the R7 is later in its sales life and by that time the "optional" had been removed from the marketing documentation. I suspect that few, if any at all, R7 Receivers were actually sold without the digital readout. The same holds true of the TR7 but in that case I have actually seen TR7 Transceivers with no DR7 Digital Readout board installed. Whether such occurrences were due to the DR7 being defective and removed or perhaps never installed remains a mystery.

Drake published a bound Service Manual for the R7 Receiver. I was fortunate to have found one of those, in the original blue binder, with a complete set of what appear to be

pages of little or no past use – and certainly no abuse. Schematics were not included with the Operating Manual, so any service to the radio required the Service Manual that included such documentation. Also required are the Extender Boards to gain access to adjustment and test points on the boards. The Extender Board Kit for the TR7 Transceiver suffices for the service of the R7 Receiver. The Service Manuals are available as reprints from several sources⁵.

A word of caution to a user of the R7 interconnected with a TR7 in today's world. An oddity of the R7's design is that it includes its own Receiver Incremental Tuning (RIT) control. Be advised that when the R7 VFO is being used to control the TR7 Transmit Frequency, the RIT function in the receiver is disabled. Check the R7 Manual for details in section 3.2. It would seem that this is when the control SHOULD be engaged. When the TR7 and R7 are each controlling their own frequency the use of the control, which would in that mode be available, would be redundant.

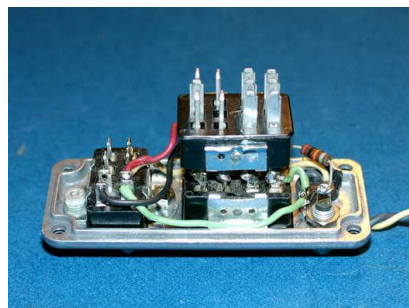
The Digital Readout system in the R7 is useable as a 150 MHz frequency counter. This counter function is engaged with the COUNT button on the front panel of the receiver and connected using the rear panel EX COUNT phono connector.

Late in the life cycle of both the R7 and TR7, Drake supplanted their R7 Remote VFO with a high stability R75 Digital Remote VFO. Like with the RV7 VFO, the RV75 could be brought into the frequency control path by engaging it in TR7 use then using the R7 Receiver under TR7 control – that is, the RV75 is controlling frequency on the TR7 and subsequently the TR7 setup is controlling operating frequency of the R7. As a note from this TR7/R7 station operator, I do not use the RV75 except when running alone with the TR7 Transceiver (that is, the R7 is not connected). I find that the TR7 and R7 VFO's are just as stable as the RV75 for my use on SSB and CW, if as described before, the TR7 and R7 are merely allowed to warm up for 15 minutes.

There is a way to directly connect the RV75 Remote VFO to the R7 Receiver in an adapter Drake made for this purpose late in the production of amateur radio equipment. This involved a Drake Model 1544 Adapter. It reversed the process mentioned above where the RV75 is introduced via the TR7. A clone of this virtually unobtainable adapter (today) is documented on the internet⁶. Here is a picture of the original Drake product and the clone from WB6SSW⁶.



Drake 1544 Original Adapter
WB6SSW



Partly Disassembled 1544 Clone
WB6SSW

Be aware of the fixed frequency (crystal control) limitations as WB6SSW describes them. Like me, I think you will find the limitations of the clone unimportant in today's world.

Special Note: In the 1980's, when I had a different TR7A and R7A combination, I built my own clone of the 1544 Cable. Instead of the box that mounted to the back of the R7/R7A housing the connectors and electronics, I used a separate mini-chassis and handled the connectors with dongle arrangements that plugged into the radio and accepted connections from my RV75 Digital Remote VFO. It worked perfectly. But, alas, the arrangement was confusing with three VFO's (R7A, TR7A, and RV75) and was soon abandoned.

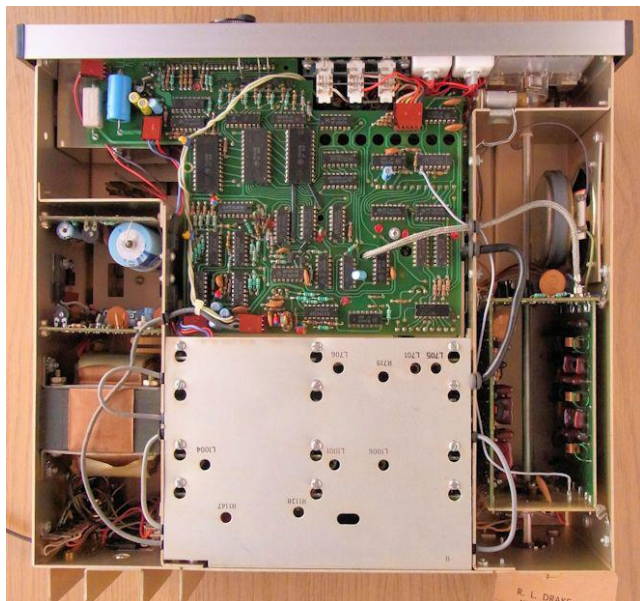
Now a bit of information on band selection on the R7. Look at this illustration and text:



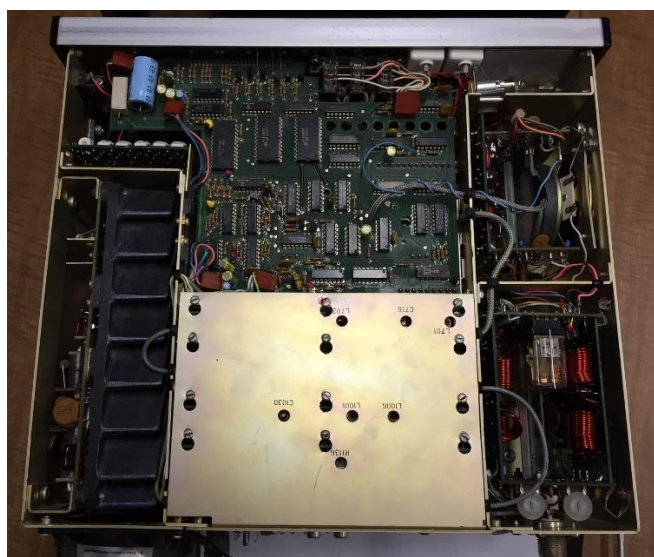
The Drake R7 Receiver has a somewhat odd method to cover the entire HF spectrum with a bandswitch that pretty much switches the traditional amateur radio bands. The 500 kHz bands across the spectrum center on the amateur allocations. Notice to the left that the bandswitch is in the 21 MHz position to cover 21.0 to 21.5 MHz. Pressing the UP or DOWN buttons on the upper center part of the front panel (between the meter and the digital readout) moves the band coverage to a higher or lower 500 kHz portion of the spectrum. Note the yellow color second ring of numbers below the white band positions. Pressing the UP or DOWN buttons allows coverage to be selectable from 15.0 to 22 MHz.

As mentioned earlier in this article, the R7 Receiver in this article has the optional AUX7 Range Program/Fixed Frequency Board installed. While very simplified for explanation, it contains sockets for up to eight immediately selectable 500 kHz ranges in the HF spectrum. The bandswitch needs to be in the correct range position for the module selected. My own AUX7 has range modules to cover the 60-, 30-, 17-, and 12-meter WARC bands. For them to work, the bandswitch would need to be in the 5, 14, 21, and 28.5 positions, respectively.

One last item is to see the difference in interior views of the R7 Receiver and TR7 Transceiver. It further shows the similarities of layout and the way the same mechanical design is used.



R7 Receiver – Front Panel at Top
W9MXQ



TR7 Transceiver – Front Panel at Top
W9MXQ

The interior layout of the Drake R7 Receiver (upper picture at the left) and the Drake TR7 Transceiver (lower picture at the left) is a study of items that are identical or remarkably similar rather than what is different.

Notice the transmitter power amplifier at the lower left side of the TR7. In the R7 that is taken up by the interior power supply. (Recall that the PS7 Power Supply is separate for the TR7 Transceiver.)

The center and upper left areas of the two radios are nearly identical with the majority of the area taken up by the DR7 Digital Readout board. The shielded circuit board area is similar but the hole pattern in the shields is different in a few places. (Not all of the boards are identical.)

The area to the right on both units carries the speaker, toward the radio front (upper right in the pictures). The heavy transmit bandpass filters are absent in the R7 Receiver but present in the TR7 Transceiver.

As already mentioned, the front panels of the two radios are similar – but definitely not identical.

The Drake R7 Receiver that is with me, shown on the first page of this article, was procured from one of the most well-known and capable technicians still doing active repair and alignment focused only on Drake Radios⁷. Finding this R7 is the culmination of a nearly twenty-year search for the right radio. As we collectors often ask each other, “Is the finding up to the wanting?” In this case, the answer is “yes.” The smooth performance of the R7 somewhat runs in contrast to the sometimes-harsh sounding TR7. I cannot quantify that statement. After all, what collector can quantify what he/she likes about the sound of a radio? My only statement is, “I know it when I hear 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.

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a bit more than a proofreader as he often adds commentary that makes it into the article. Bob and I both own several models of Drake equipment – so our discussions focus on what we experience rather than what we read about using these radios.

Credits and Comments:

¹ It has always been my understanding that this internal receiver front end protection circuit could be added as a field modification or as something that could be added with a return to Drake's Service Department. At the time, Drake offered an external protection circuit that they called the Model 3506 RP-700 Receiver Protector.

² The location of this, so called, 9 kHz filter was at the place where an optional SL-4000 (4kHz) or SL-6000 (6kHz) filter could be installed. This "feature" was simply a 470k, 2-watt, resistor connected in place of the optional filter. The 9kHz was good but the skirt was relatively wide – and it did not outperform the SL-4000 or SL-6000 filters. For in the clear AM Stations, it was a capable addition. (Obviously the 470k Resistor does not need to be 2-watt unit. It is that rating because the diameter of the leads allows comfortable insertion directly into the open slots in the crystal filter socket.)

³ This information and the comparison between Drake's Synchro-Phase and Synchronous Detectors come from Peter Gianakopoulos, KE9OA. Reference his article in Google Groups: <https://groups.google.com/g/rec.radio.shortwave/c/2mKDSEMaYH4>

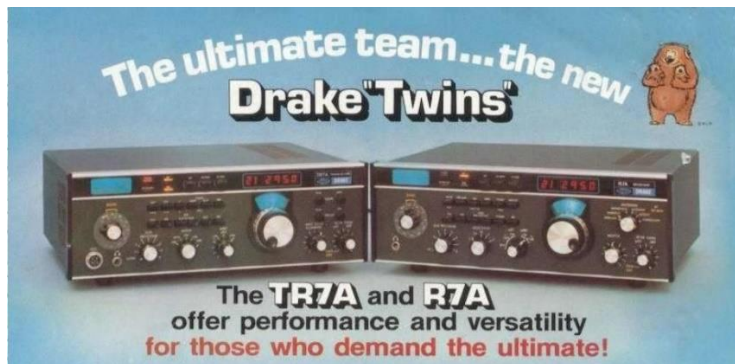
⁴ For details on making a clone of the R7/TR7 Interface Cable Kit, go to this site for a schematic: <http://dl7maj.de/TR7-R7-cable.pdf>. My cable did not come from this schematic – so I cannot testify to its accuracy. A close study of the pinouts on the R7 and TR7 should be more than adequate for most amateur operators to make the cable. It is my understanding that Ron Baker, WB4HFN, makes a clone of the R7/TR7 Interface Cable Kit. Contact him at (<http://www.WB4HFN.com>) for details.

⁵ Before I found an original Drake Service Manual for the R7 Receiver I had purchased one from the Manual Man. <https://manualman.com>. Others may well have the same manual but Manual Man has some of the best reproduction manuals I have ever seen.

⁶ This is WB6SSW - http://www.emmitsfixitshop.com/Projects_Drake_adapter.html

⁷ This radio repair and alignment technician is Ron Baker, WB4HFN. I am pleased to call him my friend. By Ron's permission, I use pictures of Drake radios from his website <http://www.wb4hfn.com/DRAKE/DrakePageHome.htm> when I do not possess the required unit in my own collection. As I do with all other people's pictures and text, I always credit them when their material is used. Ron is also mentioned in Note 4, above.

© W9MXQ



Drake Advertising Brochure from 1981

On The Air!

de Gary Sutcliffe, W9XT



It is May, and the sun is shining, flowers are in bloom, and the air is filled with the sound of lawn mowers. Well, maybe not. Cold and rain are the rule of the day. On the rare days it is not raining, and you can leave the parka indoors, it has been way too windy to do much, at least not anything having to do with antennas and towers. Well, maybe in a few weeks.

So, with the lousy weather, we might as well be in the warm shack heating up the airwaves.

Solar Activity and the bands

The sun has been very active the last several weeks. We have had lots of sunspots, but unfortunately, many of those sunspots cause flares and CMEs (coronal mass ejections). For a while, it seemed we got one every couple of days.

Many were X-class, the strongest of the classes. We get C class flares regularly, but those don't have much effect. M class flares are less common, and the larger M class flares can affect propagation. An X class is going to cause us problems. The scale is logarithmic, so each level is 10X the strength of the next lower one.

X1 flares have been common, and a few X2 bursts happened in the latter part of April. When we get one of those, there can be a radio blackout on the sunlight side of the planet. We have had a couple of radio blackouts, but some happened during our night and didn't affect us. The blackouts occurred in other parts of the world.

These blackouts, often called SID (sudden Ionospheric Disruption), happen quickly. You might be in a QSO, and suddenly the band goes dead. More than once I experienced one and thought there was a problem with my radio or antenna.

The reason for the blackout is X-rays from the flares cause intense ionization of the D layer. The D layer forms from solar UV light during the day and disappears at night. It is why we can only hear local AM broadcast stations during the day. The D layer absorbs low frequency signals, limiting us to ground wave. This also limits distances on 160 and 80 meters and 40 to some extent. At night, the free electrons recombine with the ions, and low frequencies pass through the D layer to reach the F layers, allowing long distance communications.

X-rays from a flare super ionize the D layer, and absorption goes up through the higher HF bands. The blackout can last a couple of hours before normal propagation resumes. Unfortunately, it does not end with that. We have had solar flux levels in the 160 level. That typically results in excellent HF DX conditions with openings well after sunset to distant locations on the higher HF bands. But flares also send a stream of particles. If

they are aimed at us, they get here in 1-3 days, depending on how fast they travel. This disrupts our geomagnetic field and degrades propagation, especially on polar paths. The results can be with us for several days. When you get a new flare every day or two, just when things start to improve, the next one arrives.

The A and K indices represent the state of the geomagnetic field. Lower numbers are best. The K index is a measurement at a single location and is updated every three hours. If it is 3 or above, conditions will be disrupted. The A index is a global average for the past 24 hours. Once it gets up around 6 or 8, conditions will generally be poor.



There were good conditions on the higher HF bands between the bad periods. Fred, W9KEY, has been working on his 10 Meter DXCC. Gary, K9DJT has added a lot of new 10- and 12-meter countries to his DXCC totals. I have been active on 10 meters for decades and only need a few on that band. DXpeditions will be required for most of them, but I have picked up a few new ones on 12 meters.

Most of Fred's operations have been on FT8. Fred finds the PSKReporter website very valuable. www.pskreporter.info/pskmap.html

You can go to this site and set up your band of interest. It will show a map of the world with stations reporting and the stations they hear plotted with lines between them. It is a great way to see if the band is open to areas of interest.

Fred likes the configurability of the site. He sometimes sets it up so that it only reports stations hearing him. Filtering is all done in a line near the top. Fred relates a time when he was trying to work a station in Georgia, the former Soviet Republic, not the state. The DX had a good signal, but Fred could not work him. PSKReporter showed that no stations in the area were hearing him.

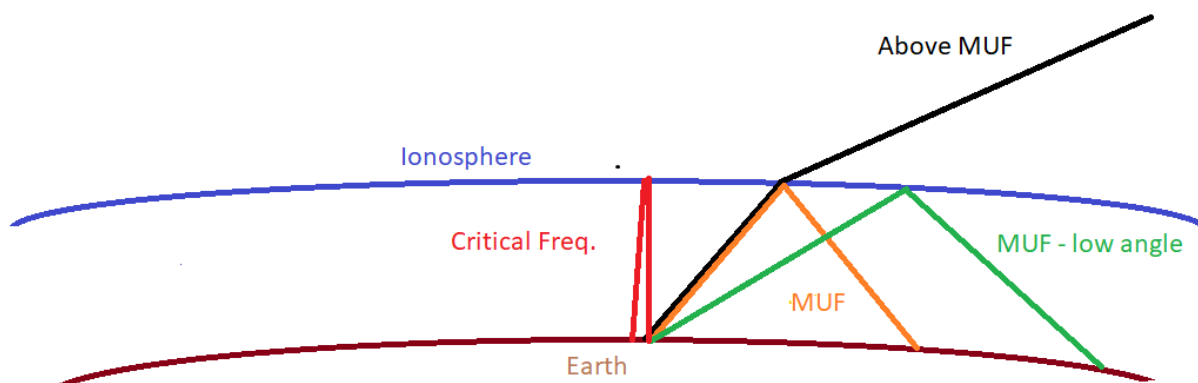
One-way propagation has been a controversial topic for years. Some hams claimed it existed, and some said it did not. However, sites like PSKReporter give pretty good evidence that it does exist. A given station might not hear you because of local noise or some other issue, but if many stations in a region do not hear you, but you can hear them, you become a believer.

If you want to contribute to the PSKReporter site with stations you are hearing, you can go into the WJST File | Settings | Reporting tabs to enable it. It will send a list of stations decoded every sequence.

Gary, N9UUR, has also been active on the digital modes. Gary says he has mic fright, so he concentrates on the digital modes. I believe he has completed WAS on 80-10 meters and needs a few more on 160 and 6 meters, including Hawaii. Hawaii was the last one I worked on my 6-meter WAS. It took me a couple of years to finally work it after getting the first 49.

With a lot of stuff already worked on FT8, Gary is shifting to FT4. FT4 does not dig weak signals out of the noise as well as FT8, but it is twice as fast. I don't understand why, when a band is open, and you can't find a clear frequency, why more stations don't go to FT4. Gary has FT4 WAS on 40 and 20 meters but has a tough time working states on the higher bands.

The higher bands require more ionization than the lower bands to refract the signals back to earth. This is because you need high angle signals to work short distances (red line in the diagram). But if you are transmitting above the maximum useable frequency (MUF), the signals just go out into space like the black line in the diagram. If the take-off angle is low, the signal does not have to be bent as much to come back to the ground, as is shown in the green path. But the hop distance is very long. Essentially, the higher



the angle, the higher the ionization needed for a given frequency.

The sporadic E (Es) season will be starting shortly. I have been talking about it on 6 meters a lot in this column because that is often the only propagation mode available on the band.

Those wanting to work closer states on the higher HF bands should be spending their time looking for Es openings. They can appear at just about any time of the day. They might last for a few minutes or many hours and can cover tiny areas or broad regions. Sporadic E will happen more often on the higher HF bands than it does on 6 meters.

Gary, N9UUR, also noted he came from a VHF and satellite perspective before getting active on HF. He was into working grid squares and has carried that interest to HF. He is using a free program called GridTracker. <https://gridtracker.org/grid-tracker/>



GridTracker eavesdrops on WSJT, and Gary has it linked to Aether, an older Mac logging program. This notifies him when a new grid pops up and keeps track of those already worked.

Meteor showers

Last month I mentioned the Lyrids meteor shower in April. Gary, K9DJT, was very active during the Lyrids. Gary reports that he joins a group that meets

just about every morning to work each other via meteor scatter, but others show up during the showers. Gary made 51 contacts during the shower. He worked Wyoming and Maryland for new grids on 2M, and Maryland was also a new state on the band.

There were a couple of rover stations on for the shower. One was hitting a couple of grids in New Mexico that he needed, but he could not make a contact. More distant contacts are more difficult. Gary hopes to catch them this summer on Es.

I was concentrating on 2 meters during it for new grids, but there weren't many meteors when I was on, and I didn't work anyone.

The Eta Aquarids is the next shower, peaking May 6-7 but will continue until the end of the month. The Eta Aquarids are debris from Halley's Comet.

Disturbed geomagnetic fields caused by solar flares and CMEs can cause auroras that create a propagation mode on the 6- and 2-meter bands. CW signals sound like a buzz

saw, and SSB signals get distorted, maybe to the point of being unintelligible. I caught a short 6M opening one night in April during one of the very disturbed periods. I worked a station in northern Wisconsin and heard a station north of Minneapolis calling a station in Montana.

Activity was very light. Maybe too many 6-meter ops are only watching the FT8 frequency. The aurora phase distortion makes the digital modes useless. Slower speed CW is usually the best mode for auroras.

It is not a radio event, but there will be a lunar eclipse on the evening of May 15-16. It will start at about 9:30 PM our time. Totality will begin at about 10:30, and it will end at 12:55. This lunar eclipse is special because it will be in totality for 24 minutes. This will be the longest one of the century.

Upcoming contests and the new ARRL FT8 contest

There is a new ARRL contest for FT8 enthusiasts. For a couple of years, they added FT8 and FT4 as allowed modes in the RTTY Roundup. This was unpopular with many contesters, so the ARRL made a separate contest for FT8 and returned RTTY as the only mode for the RTTY Roundup. That was a good move in my opinion. The new contest debuts on June 4. One interesting thing is this contest covers 160-10 meters, but also 6 meters. Early June is prime Sporadic E season. Those wanting to finish some of the closer states on 10 and 15 meters for their digital WAS might also want to check this one out. Complete rules at <https://contests.arrl.org/ContestRules/Digital-Rules.pdf>

This is a new contest and has some special rules and suggestions. Be sure to read them if you plan to operate it. Also, consider that if you win your class, you, by definition, set the record!

The big contest in May is the CQ WPX CW contest. The idea is to work everyone, and call sign prefixes are the multipliers. I discussed the phone version in the March newsletter. QSO point scoring is complex, so I suggest you read the rules if you plan to operate. The downside of this contest is that it is the Memorial Day weekend. I find it hard to spend a nice spring holiday weekend inside on the radio. But the way it is going, it may be more like a December 160 meter contest outside.

DX

An operation to the Andaman Islands came up without much notice. It went on the air on May 2. I usually don't go into details on operations by a single ham. Many of those are vacations or work-related operations, and ham radio is fit in between other activities. Activity is often very limited, and we don't have propagation when they operate. This one is a serious operation by YL2GM using the call sign VU4W. I have worked him several times on his previous trips to rare locations.

The Andaman Islands is a tough one to work. First of all, the path is challenging from Wisconsin. Second, it is difficult for foreigners to get permission to operate from this is-

land owned by India. There have been some operations, but they have not been very serious for the most part. I only worked it once on 20-meter SSB way back in 1987.

So far, I have seen him on 17-meter FT8, but the world is calling him, with Europe and Japan getting most of the contacts. He seems to be working CW on one band while operating FT8 on another band.

VOACAP predicts the best time to work VU4W will be in the afternoon on 20 and 17 meters. It should peak around 6:00-8:00 PM local time on 17 meters, with 15 and maybe 12 meters on some days. Note this is the definition of a polar path, and if the solar disturbances continue, it could be a washout. So far, we have had three Class M or larger solar flares just on May 4.

Kyrgyzstan has not been very common for several years but has recently become more active. Perhaps part of it is better propagation. Two Russian hams will be signing EX/home calls May 9-14.

Several hams are going to The Gambia in western Africa from May 22 to June 8. They will be on 10, 15, and 20 meters.

Armed Forces Day Cross-Band Test

Hams are allowed to contact US military stations cross band for Armed Forces Day each year. Armed Forces Day is May 21, but the interoperability test is a week earlier, on May 14, to avoid the Hamvention® conflict. They will be transmitting outside the ham bands and announce what ham frequency they are listening.

This is a fun event if you have never done it before. Check out the website for participating stations, frequencies, and times. Most of the operation will be on USB, but some RTTY and CW will occur.

<https://www.dodmars.org/mars-comex-information-website/armed-forces-day>

Wrap up

I had a request to put the contest and DX tables next to each other so that they can be printed on a single sheet and placed next to the calendar in the shack. So, they will now appear together at the end of my column.

That wraps up May. Don't forget that Field Day is not that far away!

<http://www.arrl.org/field-day>

Contest and DX Tables follow on the next page – as a printable, standalone document:

W9XT Contest and DX Calendar

W9XT's contest picks for May and early June 2022					
Name	Start	Length	Bands	Mode	Link
CQ WPX	00:00 May 28	48, work 36 max	160 + HF	CW	cqwp.com/rules.htm
International Digital Contest	1800Z June 4	30 hours, operate 24 max	160, HF, 6	FT4/8	https://contests.arrl.org/ContestRules/Digital-Rules.pdf

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT). HF = 80, 40, 20, 15, 10 Meters

W9XT's DXpedition picks for May and early June 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Andaman Is	May 2-16	VU4W	160 + HF	C/S/D	https://www.lral.lv/vu4w/
Kyrgyzstan	May 9-14	EX/R5AF, EX/R4FCN	40-10M	C/S/D	
Armed Forces Day	May 14	Various	Various	Mostly USB	https://www.dodmars.org/mars-comex-information-website/armed-forces-day
The Gambia	May 22- June 8	C5C	10, 15, 20	C/S/D	

Modes: C = CW, S = SSB, D = Digital (may include RTTY) HF = 80-10 Meters including WARC

User Notes:

Ozaukee Radio Club Minutes of Membership Meeting. 4/13/2022

de: Ken W9GA, secretary

At long last the ORC meeting returned to the senior center for the first in-person meeting to be held since the COVID pandemic had closed groups gathering for in-person participation. In addition, the technical committee has brought gear to the meeting to support adding a zoom component to the meeting, which was employed by several members who joined in over the internet.

ORC President Pat W9JI officially initiated the meeting at 7:33 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance but were not addressed individually. After some initial conversation regarding the upcoming Swapfest, some trouble was encountered with the online zoom hookup, and associated computer. W9JI called for a break, and the meeting resumed in earnest at 8:05PM. Commentary included an announcement that Tom KC9ONY had tickets for sale; and Tom W9IPR commented on his use of HRD and his items for sale in a silent auction.

Program:

The program was given by Pat W9JI on updating and renovating an Ameritron AL1500 RF power amplifier. This amplifier was bought used in 2001 and was used for a time, then put aside on the shelf for many years. Pat brought the amp out of retirement and proceeded to update the HV power supply and filter capacitor bank, using one of the W7RY circuit boards as an update. He also found a few modifications that would allow the cooling fan to run with less noise heard from the amp. Other minor updates were added, and Pat fielded a few questions from some of the attendees.

Scholarship Auction:

Stan, WB9RQR held a rather extensive auction, with a ton of items that were offered and sold at our first auction in a long time

Committee reports:

2nd VP: Bill K9GN talked about the need for food items to be provided at the upcoming Swapfest, with a mention of the boy scouts possibly filling that need. Soda and coffee supplies were also discussed briefly.

Repeater: No report this meeting

Treasurer: Gary N9UUR noted that the auction generated \$109.00, and that the scholarship fund is at \$32,891.00. The April treasurers' report was accepted; motion made by KC9FZK 2nd by W9QLP and carried.

Secretary: Ken W9GA reported the April 2022 minutes will be posted; N9VSV moved, WB9AZH 2nd, motion to accept and carried.

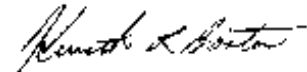
Scholarship/STEM: Tom W9IPR is offering for sale from a list of items from Nels WA9JOB's estate; anyone is encouraged to make a 'reasonable' offer on any item listed if they are not happy with the listed price. Tom also needs help at the barn loading scholarship items for the Swapfest.

OLD business: It was announced that a General class radio course will be starting up on May 7, at W9IPR's location. W9GA announced the winners of the Ham and Turkey of the year, and winners of a couple of additional awards

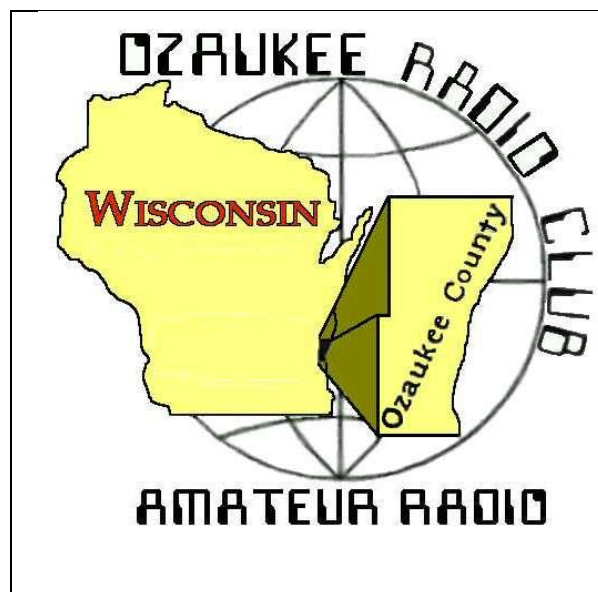
NEW business: There was no new business

Adjournment: WB9RQR moved to adjourn, WB9AZH 2nd, motion carried; time ending was 9:08 PM. There were 22 in-person attendees, 16 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

May – Carl Luetzelschwab, K9LA – Latest Update on Solar Cycle 25

June – Ken W9GA – Field Day and

Michael WH6ZZ – Everything you Wanted to Know About JS-8, Michael WH6ZZ

July – Field Day Member Reports

August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

September - Open

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

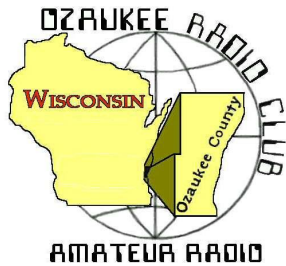
ORC Meeting Agenda

May 11, 2022

- | | |
|---|--|
| 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 Volkmann (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: Carl Luetzelschwab,
K9LA – Latest Update on
Solar Cycle 25 | 9. Secretary's Report:
Ken Boston (W9GA) |
| 5. President's Update:
Pat Volkmann (W9JI) | 10. Treasurer's Report:
Gary Bargholz (N9UUR) |
| | 11. Committee Reports |
| | 12. OLD BUSINESS |
| | 13. NEW BUSINESS |
| | 14. Adjournment |

**Next ORC Meeting
Planned Hybrid In-Person/Zoom Meeting
11 May 2022**

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



The *ORC* Newsletter



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Web site: www.ozaukeeradioclub.org

Facebook: facebook.com/orcwi

Volume XXXVI

June 2022

Number 6

From the President

de Pat Volkman, W9JI



Well, it's June now but it seems like it was December just yesterday! The cold wet spring just wouldn't go away and then things changed overnight. The dandelions are up, my apple trees have bloomed, the June bugs are flying into my yard light and when I mowed the lawn today it was 82 degrees. Time to start the antenna work the I have been putting off.

The in-person meetings will continue for now. Attendance was very good at the May meeting both on Zoom and at the Senior Center. Technical problems were still present, but no show stoppers. Everyone seemed to have a good time, especially during the auction. Stan WB9RQR really went through a lot of stuff, including spools of coax, an HF rig, and a robot!

A special thanks to Bill Shadid W9MXQ for running the Zoom portion of the May meeting. The hybrid meetings have some complications to them, and not only on the technical side. One thing that has been difficult for me to do is to split my attention between the people in the room and the people on Zoom. Bill took care of greeting everyone as they joined the meeting, which was especially helpful with our guest speaker Karl Luetzelschwab K9LA. Carl joined us via Zoom and gave his presentation on Cycle 25, propagation, and antennas.

I would also like to point out how many people it takes to run a hybrid meeting. The Zoom meeting has several co-hosts to help run things. We are usually helped by Gary W9XT, Bill W9MXQ and Peter W0NG. At the Senior Center we have Gregg W9DHI, Tom KC9ONY and Gary N9UUR – these guys act as the “producers” for our meeting and make sure all the technical stuff works correctly. Please take a moment to thank these folks for their efforts in making the meeting experience a great one for all of us.



Last month I mentioned that I was working on an Alpha 78 linear amplifier. This amp sat unused for many years. I started with checking the filter caps in the high voltage supply. Everything tested good and the power supply came up with no problems. This amp has a modular design which allows the power supply and control board to be unplugged for servicing. A minor repair was needed in the power on timer circuit. I put the amp through its paces and got good power

output on all the bands. I am trying to try track down an intermittent high voltage breakdown problem. That modular construction helps when it's time to take things apart.

See you at the meeting.

Pat Volkmann, W9JI

A Message from the Editor Newsletter Table of Contents

de Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, right on Page 1. Pat discusses the integration of hybrid in-person plus Zoom™ meeting production. Pat also talks more about his most recent shack project.

Take a look at the first of what I hope are several upcoming articles on the 2022 Dayton Hamvention. This one, is from fellow ORC Member, and Past President, Kevin Steers, K9VIN. Pay attention to Kevin's pictures and see if the one I liked the best was also your pick!!

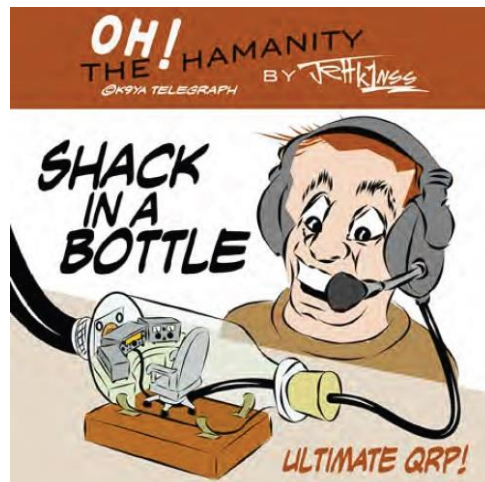
Don't forget the great regular column articles, too, from Don Zank, AA9WP, in his Ozaukee County ARES Column, Stan Kaplan, WB9RQR, in his Computer Corner Column, Bill Shadid, W9MXQ (your Editor) in his Vintage Amateur Radio Column, and Gary Sutcliffe, W9XT, in his "On the Air," Column- complete with a separate page that can be printed out with Contest and DXpedition schedules for the coming weeks. Thumbnails of each (and more) appear on the next page.

Be sure to read the Minutes of our last meeting as submitted by our Club Secretary, Ken Boston, W9GA.

Watch for a Special Announcement on Page 29!!!

Here are the Table of Contents/Previews of this month's Newsletter Edition . . .

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5	Bill Shadid, W9MXQ: Only at Dayton
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Onward To the Newsletter

Dayton Hamvention Reunion Update

de: Kevin Steers, K9VIN



Living in northern Wisconsin made for a very long drive to Dayton. I left at 5:00 a.m., dropping off my daughter in Cedarburg before continuing the 10-hour drive to Zenia, OH. Then the grim realization that I also lost an hour due to a time zone change. As in the past, Dayton is my chance to catch up with my best friend from high school, and the rest of the Cherrylanders from Traverse City MI. Low and behold, the night before my departure, Brian delivered the bad news. He had Covid, and could not attend, and I tried to be polite as possible telling him that I really didn't care 😊 I was hell bent to get back to the old tradition.

146.52 was quite active by hams on the pilgrimage and especially through Chicago where a number of base stations knew Thursday and Friday would be a target rich environment. This is the point where my 2M microphone dropped into a glass of water. I had to resort to an HT while I field dressed the mic, and sun dried it on my dash for a couple of hours.

ARRL Events is an App that I downloaded, and it helped me find people/things, and also pinged me reminders of the forums, which helped me remember/attend two forums I had interest in. It even had a feature that it could ping another attendee for a meetup.



I anticipated, and was successful in running into fellow ORC members, Tom KC9ONY, Loren N9ENR, and Steve W9MCU from LeFrog, as well as Gary Drasch K9DJT, Bill AC9JV, and Lyle WE9R. I tried to find Gary W9XT, only to hear that he did not have a booth/stall this year.

I believe there were nearly 30K people in attendance, and at one point a ham skydived 4 times nearby, operating parachute mobile

on 4 different bands.



It was pretty cool seeing a number of ham radio YouTubers in person, also.

I put on about 10K steps each day scouring the grounds for baubles I might need, though I have no idea of what 70% of the equipment is!

The food selection was on par with a good state fair, however we bring our own, so as to save the 30-minute wait at the peak meal times.

I mainly bought antenna wire, guy rope, and other jewelry for my upcoming balun projects. I was introduced to a nanoVNA and purchased one upon my return home.

Only at Dayton

de: Bill Shadid, W9MXQ



The Hilberling PT-8000A HF+6 Transceiver
13,690 Euro (US\$14,790) – Available in Four Different Colors!!



The Hilberling HPA-8000B-54 HF+6 Linear Amplifier
5,490 Euro (US\$5,900) – Not Sure of Color Selections.

© Hilberling-USA

THE COMPUTER CORNER

No. 291: Updates – Win vs Linux

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

I routinely update a lot of computers. To be specific, 11, as summarized in Table 1 below. Five are Linux Mint Cinnamon 20.3 (“Una”) and six are Windows 10. Of the Linux machines, one is not mine and is off-site. Of the Win machines, two are not mine and are off-site. Of the six Win10 machines, half are desktops and half are laptops. Of the Linux machines, three are laptops and two are desktops.

Table 1

SYSTEM	TOTAL	LAPTOPS	DESKTOPS	OFF-SITE
Linux Mint 20.3	5	3	2	1
Windows 10	6	3	3	2

I present this detail to emphasize that I really do routinely update a fair number of machines, of different styles, and have a pretty good feel for working with the update process in two major OS (Operating Systems). So, when later I reflect that the Windows update process frustrates me, it is with a fair view of the update process in general.

Good record keeping is essential, and I have recorded the updates on all 11 machines under my control for some time. Below in Table 2 are the number of updates performed by me during the first three months of 2022, in the two Operating Systems.

Table 2

2022	Linux 20.3	Windows 10
January	8	5
February	12	4
March	13	3
Total	33	12
Average	11	4

Clearly, Linux had almost three times the number of updates as Win10, but that does not tell nearly the whole story. Granted, the next comments are my personal opinion, but it seems to me that Linux has more updates because more new improvements are coming out, when compared with Win10. Win10 seems to me to be instituting more bug corrections than Linux. Don't forget that Linux has hundreds (if not thousands) of

writers making new changes to the OS all the time, while Microsoft has a limited number of paid staff working on Win10.

There is another difference. Microsoft updates take forever to install, including the necessity for you to wait while it slowly tics off “10% installed ... 20% installed and so on. Often, when it gets to 100% installed, it stays there for several frustrating minutes until it is really done and moves on. On top of that, if a reboot is required, the reboot process is really slow. It will count up in percentage finished until it gets to 30%. Then it will reboot the machine and start counting again from 30% to 100%, typically with another delay at 100%. It is sloooow and frustrating!

Linux, on the other hand, updates in much smaller “chunks”, informing you what is happening at each step, and it goes much faster than a typical Microsoft update. You can even expand a window to show more of the processes that are chugging along during the update, should you wish to see what is going on. If a reboot is required, it happens as quickly as any normal system restart. There is no dragging out of the process, as is the case with Windows, where a post-update reboot may take several more minutes than a regular reboot. In Linux, you are not left with the feeling that the update process is never-ending.

These observations are made from experiences with both desktops and laptops, with fast machines and with slow. Am I biased? You bet, but I think for good reason. Updating of systems, though necessary, interferes with your efficiency. It takes time and therefore reduces your productivity. Updates should be as quick and painless as is possible! Linux beats Windows hands down. Happy Computing!



Computers in the Ham Shack – AB4D

OZARES: Ozaukee Amateur Radio Emergency Services **de: Don Zank, AA9WP, OZARES Emergency Coordinator**



The topic in the May issue was about how to keep amateur radio relevant. The subject came up on the SEC-Emcomm Group page on Googlegroups.io and generated, and still does, many replies and comments. The topic was raised as emergency government departments and private communication businesses have hardened their communication equipment. They have implemented newer technologies that, being mobile or portable, allow quick replacement of failed communication systems and equipment.

The end of the article suggested that real world exercises and drills provides the amateur radio community an opportunity to demonstrate their unique abilities and skills. This is especially true if the served agencies are involved in the exercises.

Before continuing there was an interesting segment on Michael Martens, KB9VBR, *Ham Radio Q&A* YouTube program back in January. A listener asked a question: Is Ham radio a Hobby or a Service? There was a fascinating discussion among Michael, Joe Schoebel, KD9CJX, and Dave White KZ9V. You can see the whole segment, just a little over 13 minutes. at https://www.youtube.com/watch?v=92KWDM_g0EI

During the discussion Michael ran a poll among the viewers with the following result. The of voters totaled 34 with 94% voting for hobby and 5% voting for service. Many of the comments on the segment mentioned that amateur radio was both; being a hobby that, when called upon, is able to provide a service.

And, of course, from the FCC regulations of Part 97 subpart A the emphasis is on service.

§ 97.1 Basis and purpose.

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

(a) Recognition and enhancement of the value of the amateur service to the public as a voluntary noncommercial communication service, particularly with respect to providing emergency communications.

Anyway, back to planning an amateur radio emergency exercises.

How to start with planning and putting together an effective exercise?

A good place to start is with FEMA. The Federal Emergency Management Agency, FEMA, has established the National Standard Exercise Curriculum (NSEC) and it provides a “Unified curricula in exercise program management, design, development, conduct, evaluation, and improvement planning.” <https://training.fema.gov/programs/nsec/>

Level 1 is for beginners starting with IS-120 Introduction to Exercises. IS-210 is the basics course. Level 2 is the Intermediate Level with the K/L0146 Homeland Security Exercise and Evaluation Program (HSEEP). Level 2 will get into the meat and potatoes of exercises. Understanding and determining the priorities, scope, risks, and capabilities that should be tested in an exercise. Finally, after the exercise, how to evaluate the results and create an effective corrective action plan.

The remaining levels, Level-3 Advanced and Level-4 Master, are aimed at experienced, one to three years of exercise design and direction.

The ARRL ARES® program recommends that ARRL Level3 leadership positions complete HSEEP training for Levels 1 and 2.

Learning from others is always another very good way to learn. Gordon Gibby, KX4Z, has been working with the North Florida Amateur Radio Club <https://www.qsl.net/nf4rc/> has been a great advocate and creator of effective exercises. Gordon, starting in 2018, has published several books covering training exercises and their after-action review. All are available on Amazon at very reasonable prices.

The North Florida Club’s 2017 exercise had 11, in 2018 it was bumped up to 55 participants and their latest, Whirlwind Boom 2021, had 85 participants. Nice growth over four years.

The subject matter in the books cover more than just exercises. He trained members soldering techniques and then the skill to assemble sound card isolators. From there it was on the learning and using WINLINK. Solar power projects, portable antennas, repeater control and WIFI bulletin system for shelters and go-boxes. If you have an opportunity a highly suggest checking out some of his books and topics. It is interesting reading. You can also go to the North Florida Amateur Radio club website for articles.

Gibby follows the Homeland Security HSEEP guidelines for developing and operating exercises. The exercises are constructed with specific goals to be tested and outcomes expected. The After-Action Plans are extensive, some close to 80 pages long, with pictures and results, good and bad. The plans wrap up with improvement plans for the next exercise.

OK, so after taking courses from Homeland Security and reviewing the lessons-learned of others where does the OZARES group go from here?

Well at the start of the year the members put together a list of goals and skill sets to learn. Operating mobile/portable was near the top of the list. Setting up antennas and operating stations using- emergency power was also included. Perfect. Some of the skills that should be practiced in an exercise. Learning how to use ICS forms, pass messages and operate as a net control station are other skills that must be practiced to achieve competency.

But throwing all this into an exercise has a greater probability of causing frustration than success. So, the plan is to do some of the exercises during our regularly scheduled practice nets. Roland, KB9TMB, and Joe, KD9RAW, have already practiced setting up and using a portable VHF antenna has already. Competency and skills can best be developed step by step.

On the first weekend of October is ARRL's S.E.T or Simulated Emergency Test. An opportunity for amateur radio emergency groups to test their capabilities and exercise with served agencies. Normally our planning starts two weeks before the S.E.T. and only a few skill sets are exercised. This year OZARES is starting to plan now so we can effectively practice our skill sets.

If we can demonstrate our abilities, skills and knowledge in a competent and professional manner then amateur radio emergency services can maintain relevancy. It will take work and commitment, but our group is ready for the challenge.



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)

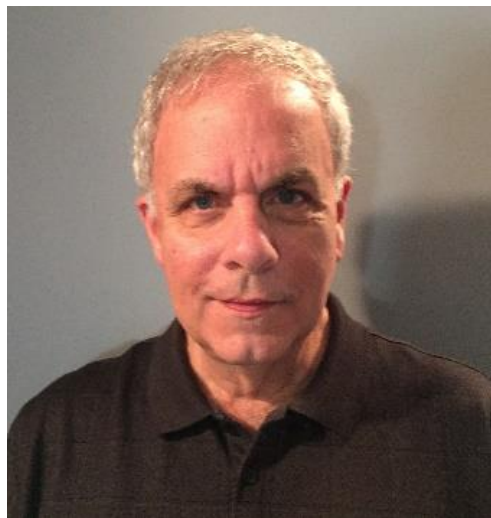


A Timeless Classic
The Hallicrafters SX-100 Mark 1B – Vintage 1955 – 1961

W9MXQ Collection

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Sometime ago, I wrote on the early Hallicrafters response to the ground breaking Collins S-Line. In fact, many manufacturers did the same thing in both competition for the 75S-1 Receiver and 32S-1 Receiver/Transmitter pair and/or the KWM-2 Transceiver. Hallicrafters perhaps did the most complete job in this undertaking with the SX-117 Receiver and HT-44 Transmitter pair and the SR-150 Transceiver. Both also competed with a matching desktop Linear Amplifier with the Collins 30L-1 and the Hallicrafters HT-45. These complete stations have been covered previously¹ in complete setup form but not so much in terms of the individual workhouse of any such setup – the receivers.

To start, we will chronicle the Hallicrafters SX-117 Ham Band HF Receiver that also doubles as an HF Communications Receiver.



Hallicrafters SX-117 HF Communications Receiver

W9MXQ Collection

The SX-117 dates from 1962, about three years after the main competition, the Collins 75S-1, but only about a year after the Collins 75S-3 (1961) that had a feature set most like the features of the SX-117. Collins had turned the amateur radio market upside down with the introduction of the S-Line and KWM-2². Hallicrafters was not blind to this trend toward a smaller footprint for the ham station – as evidenced by their very limited

production FPM-200 HF SSB/CW Transceiver from the 1950's that had a footprint only slightly larger than the much higher volume SR-150 HF Transceiver.

What was really different in the Hallicrafters SX-117 over the design of the Collins 75S-(x) series receivers was all in the i-f filter stage. Where Collins used their mechanical filters (at 455 kHz), Hallicrafters used more traditional tuned circuit, discrete component i-f filters (at 50.75 kHz). The net result was an extremely pleasant sound to the ear but also a much more limited filtering of the spectrum bandwidth being heard. Compare these bandwidth measurements³.

RADIO	-6dB BAND-WIDTH	-60dB BAND-WIDTH	SHAPE FACTOR
Hallicrafters SX-117	2.5 kHz	11 kHz	4.4:1
Collins 75S-(x)*	2.1 kHz	4.2 kHz	2:1

(x)* - the Collins 75S-1, 75S-3, and 75S-3B used the same i-f Filters

Shape Factor is a measure of bandwidth effectiveness. The smaller the radio the more effective the filter is in keeping out adjacent signals – keeping them attenuated above and below the 6 dB bandwidth. So, at 60 dB down, the Mechanical Filter in the Collins Receiver is more than twice as effective. But, at the same time the sound of the Hallicrafters receiver is less restricted and therefore more pleasant to the ears of the listener. That said, the very good shape factor of the Collins receivers mentioned is the reason that the Collins radios are effective even on today's more crowded bands.

The tuned circuit bandwidth filters in the SX-117 Receiver came standard in three widths. Those included the 5 kHz position, a 2.5 kHz position, and a 500 Hz position. These other bandwidths were similarly broad at the -60 dB bandwidth measurement. Below are the three bandwidths (repeating the above comparison entry for the Hallicrafters in the 2.5 kHz position):

Hallicrafters SX-117	-6dB BAND-WIDTH	-60dB BAND-WIDTH	SHAPE FACTOR
5.0 kHz Position	5.0 kHz	13 kHz	2.6:1
2.5 kHz Position	2.5 kHz	11 kHz	4.4:1
0.5 Hz Position	500 Hz	3 kHz	3:1

You can find the control to access BANDWIDTH in a control by that name at the lower right-hand corner of the SX-117 Front Panel.

SX-117 was not the only receiver on the market using tuned circuit bandwidth filters. They were actually, at that time, the more dominant circuitry. The highly respected, and big brother electronically, Hallicrafters SX-115 used the same system³. Radios like the National NC-303, the Hammarlund HQ-110A and HQ-170A, and the Hallicrafters SX-111 and SX-101A used similar i-f bandwidth control. However, Collins 75S series with

their mechanical filters and Heathkit in their SB-300 series with their crystal filters were receivers using more sophisticated and effective circuitry. Again remember, more effective at the time (and now) but not necessarily better sounding.

A not so well remembered feature of the Hallicrafters SX-117 Receiver was its ability to be a Communications Receiver – as opposed to a ham bands only receiver. This feature was shared by the competing Collins 75S Series Receivers and only slightly better documented. The SX-117 could cover from roughly 85 kHz to 30 MHz in 500 kHz segments. The limitation was that only four switched 500 kHz segments could be accommodated at any one time – since the CRYSTAL SELECTOR switch (left center on the front panel) had only four positions (plus a position that accessed the regular ham radio bands. Coverage from 85 kHz to 3.5 MHz required the external HA-10 Preselector for proper operation.



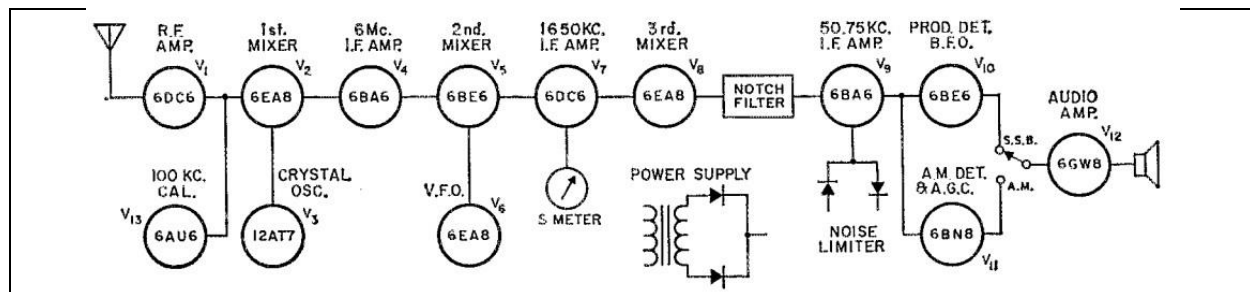
Hallicrafters HA-10 LF/MF Tuner

W9MXQ Collection

The little HA-10 was designed to sit on top of the SX-117. See it in a picture of the SX-117 and her associated station mate units in a picture toward the end of this article.

The SX-117 Receiver ushered the way for more compact desktop radios that the market first saw with the Collins S-Line. The SX-117 was an impressively compact mechanical design. The package was in a 7-3/4" x 15" x 14-1/2" (HWD) package that weighed only 18-1/2 pounds. Its AC power supply (105-125 VAC@70 watts) was internal. As was typical of the day, exact performance specifications were very conservative in printed documentation – showing a receiver performance of “less than 1/2 microvolt.” Reality in comparison (subjective, I have to say) against modern radios show it to be the equal of modern radios in sensitivity. In the QST Review of the Hallicrafters SX-117⁴,

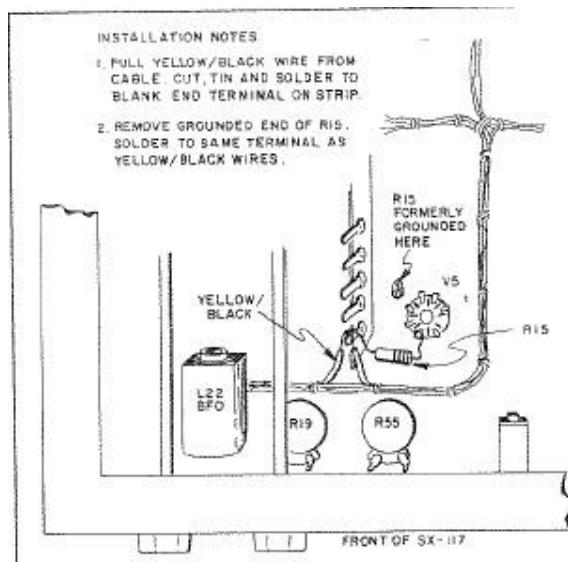
A Block Diagram of the SX-117 appeared in the aforementioned QST Review:



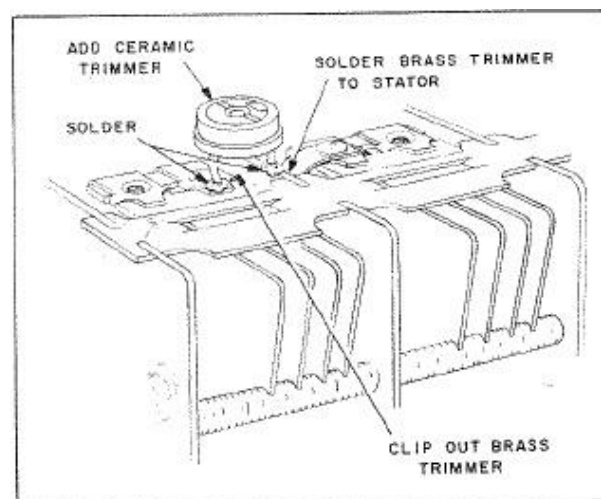
The triple conversion design of the SX-117 is evident here. The presence of the Notch Filter in the SX-117 design is an interference tool that remains appropriate even on today's bands. By the time of the SX-117, the Product Detector, as shown in the block diagram was becoming universal in SSB receivers. The SX-117 was no exception. I can say as well that the radios smooth AGC is a pleasure to use on SSB and even on CW. (Purists of the time, and yet today, tend to use manipulation of the RF Gain control and rely less on the internal AGC.)

Hallicrafters designed the SX-117 to have an operating partner in the form of the look-alike HT-44 Transmitter. In reality, the HT-44 lagged the 1962 release of SX-117 by about a year. The SX-117 was in production from 1962-1966 while the HT-44 was in production from 1963-1965⁵. The reason for the delay of the complete "system" is the subject of a lot of conjecture in 2022 as this is written – some 60 years ago by now. But one thing that is evident to an early buyer of the SX-117 was that there had to be some reason for the VFO OUTPUT and CRYSTAL OSCILLATOR OUTPUT connectors on the rear panel. The previously mentioned 1963 review in *QST Magazine* identified the connectors but failed to even guess at their potential use. When the HT-44 did appear on the market, there were some important modifications necessary to the SX-117 to make things work properly. That is to say, they would work but the results would be less than satisfactory in terms of stability. Who knows when Hallicrafters first noticed the flaw in the SX-117 that needed to be corrected?

The modifications to the SX-117 Receiver were pretty straight forward other than some soldering difficulties for the ceramic trimmer in the right view, below. Details were on pages 14 and 15 of the Hallicrafters Operating and Service Instructions for the HT-44 Transmitter. These changes were incorporated into SX-117 Receiver production units after serial numbers shown in the illustrations taken from the HT-44 Manual.



R15 Cathode Resistor modification for V5 in SX-117 Receivers before Serial Number 117001.



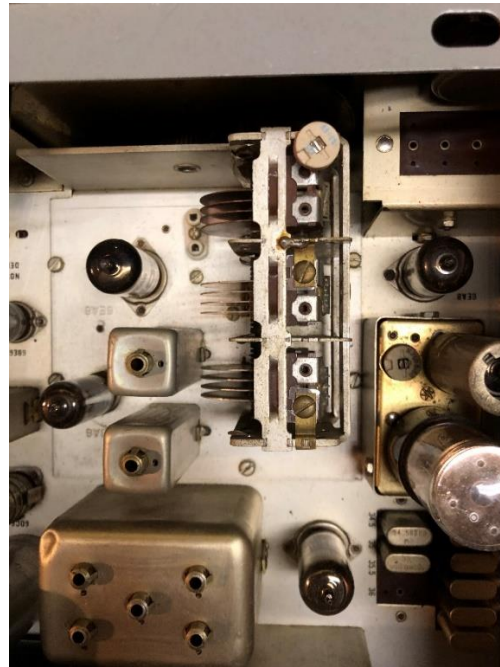
Ceramic Trimmer modification for SX-117 Receivers before Serial Number 117004.

The cathode resistor modification is merely moving the existing R15 (470 Ohm) from ground to the muting line to improve receiver cut-off in transmit. This presumably is an effective modification whether using the HT-44 Transmitter or some other model. The other modification was noted as optional. That is, as time has told us, not the case. This was an essential modification to stabilize the SX-117 Receiver and was necessary for any use of the receiver – especially with today’s fixation for signal stability. Instructions further stated to “Contact Hallicrafters’ Service Department, 4401 West Fifth Avenue, Chicago 24, Illinois, for the replacement VFO Trimmer.” Good luck with that! Here are some pictures from Bob, W9DYQ, showing the before and after view of the trimmer installation: (Actually, these are two different SX-117 Receivers – one without the modification and another with it completed.)



**Unmodified VFO Capacitor
with Original Trimmer**

W9DYQ Collection



**Modified VFO Capacitor
with new Trimmer**

W9DYQ Collection



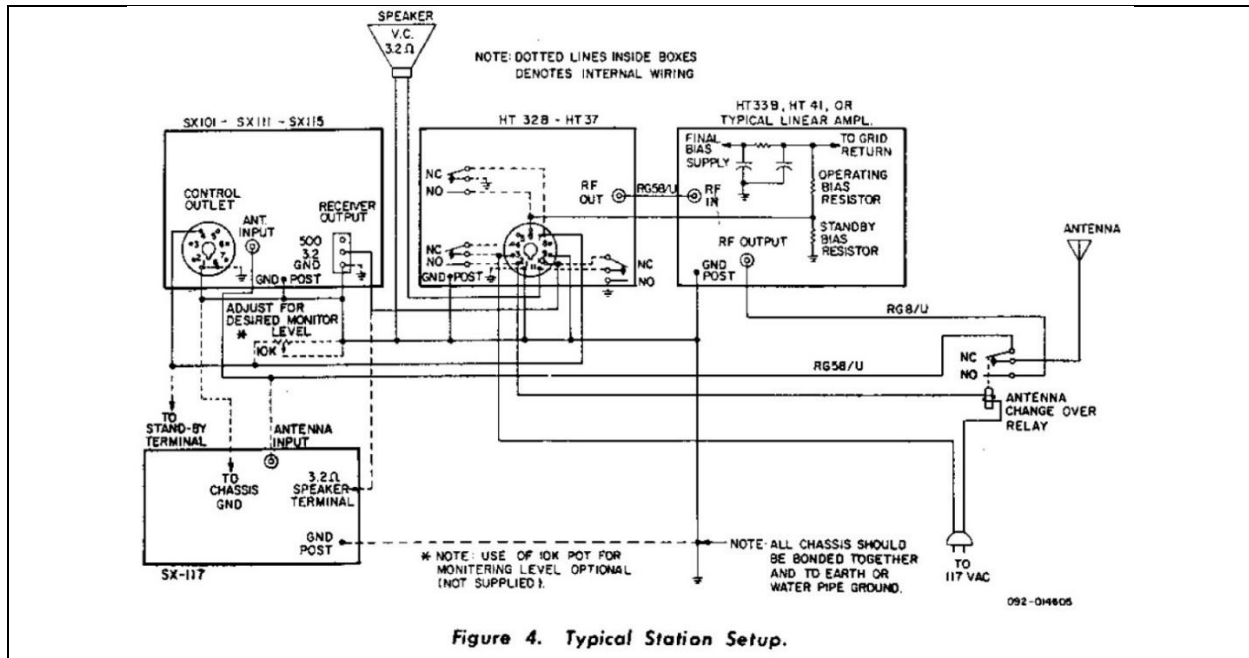
Notice in this closer view that the brass clip – that was the original compression trimmer – has been removed in the process of adding the new trimmer. The trimmer was supplied by Hallicrafters to customers.

The SX-117 Receiver at W9MXQ had this later version Trimmer Capacitor installed when manufactured. That trimmer is not called out anywhere. W9DYQ feels, and I agree that 5-25 pf is likely a correct range.

W9DYQ Collection

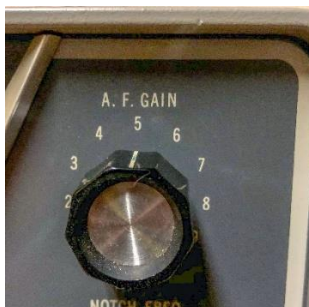
Connecting the SX-117 to the outside world – like a transmitter, for instance – was an interesting and somewhat frustrating experience if you used the Receiver’s Operating

and Service Manual to identify connection points. Check this illustration from Page 5, Figure 4, of that manual:



Notice the SX-117 was added almost as an afterthought below the predecessor (except for the SX-115) Receivers. And, as if that was not enough, my SX-117 manual – from very late in the life cycle of the radio – still completely fails to mention the matching HT-44 Transmitter or the HT-45 Linear Amplifier. But rest assured, even though never covered in the SX-117 Operating and Service Manual, it was more than adequately covered in the HT-44 Operating and Service Manual.

One point to be made relates to panel lettering and striping on the SX-117 (and HT-44). Just for some reference to original and later production colors on the front panel silk-screen for the SX-117 Receiver (and HT-44 Transmitter), check the early SX-117 at W9DYQ (left) and the later model HT-44 at W9DYQ (right). The lettering and stripes were light gray on the early radios but bright white on the later units. Notice the slightly bolder font on later lettering.



W9DYQ Collection



W9DYQ Collection

The “Hallicrafters Twins”



Left to Right

HT-45 Linear Amplifier, HT-44 Transmitter, SX-117 Receiver
The PS-150-120 Power Supply Speaker is between the HT-44 and SX-117.

The microphone is an Astatic D-104.

The HA-8 “Splatter Guard” is atop the HT-44.

The HA-1 Electronic Keyer is atop the PS-150-120.

The Vibroplex VibroKeyer is wired to the HA-1.

The HA-10 LF/MF Tuner is on top of the SX-117.

W9MXQ Collection

In the above picture you can clearly see the bright white trim stripes and lettering on the SX-117 and HT-44 at W9MXQ. However, you will notice the light gray trim stripes and lettering on the HT-45 Linear Amplifier, denoting its earlier manufacturing date.

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

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a bit more than a proofreader as he often adds commentary that makes it into the article. Bob and I both own numerous pieces of our mutual favorite in ham radio, Hallicrafters. Many comments herein are subject to opinions that W9DYQ and I hold in this very interesting manufacturer. Hallicrafters was, after all, in Illinois, the state where we both were raised. The complete SX-117, HT-44, and HT-45 Station, with all accessories, are among the oldest members of my collection. I was fortunate to have been friends with one of the engineers at Hallicrafters who was involved in the design of the product line (long an SK, now). Bob, W9DYQ, has two of the “Hallicrafters Twins,” as we call them. Bob has the predecessor to the HT-45 Linear Amplifier, the Radio Industries “Loudenboomer.” Technically they differ only in cabinetry.

Credits and Comments:

¹ Here is the related article breakdown in the Ozaukee Radio Club Newsletter for the original S-Line/KWM-2 and subsequent Hallicrafters competitors . . .

- <https://www.ozaukeeradioclub.org/index.php/newsletters> :
 - Collins S-Line Receiver and Transmitter – December 2017
 - Collins KWM-2 Transceiver – January 2018
 - Hallicrafters SR-150 Transceiver – February 2018
 - Hallicrafters SX-117/HT-44 Receiver and Transmitter – March 2018
(This one was more focused in general on the SX-117/HT-44 station)
 - Hallicrafters HT-45 Linear Amplifier – April 2018
 - Collins 30L-1 Linear Amplifier – subject for a future article

No one other than Hallicrafters and Heathkit in the amateur radio market so completely duplicated the Collins S-Line/KWM-2 concept – in a nearly identical product line.

² There is some confusion here – the Collins KWM-2 is actually a part of the S-Line product but is often held up separately. The KWM-2 is very similar to a Collins 75S-1 Receiver and 32S-1 Transmitter put into a single cabinet. That is an opinion shared by this author and by Bob, W9DYQ, a fellow Collins Collector. Your opinions on that subject may differ and we both know that the actual process was a bit more complicated than this mere statement!

³ The much touted at the time, and now, receiver in the same time frame was the Hallicrafters SX-115. Much circuitry was common with the SX-117. The SX-115 is the subject of a future article.

⁴ The review of the SX-117 Receiver appeared in the May 1963 issue of **QST Magazine**.

⁵ The sources for my introduction and production dates are as follows:

Communications Receivers, the Vacuum Tube Era 1932-1981,
Raymond Moore, 4th Edition ©1997
Transmitters – Exciters & Power Amplifiers 1930-1980,
Raymond Moore, 1st Edition ©1996
Radios by Hallicrafters,
Chuck Dachis, 1999 Revision, ©1999

⁶ A detailed review of the Hallicrafters HT-44 Transmitter (and some of its idiosyncrasies) is the subject of a soon to be authored article.

© W9MXQ



Hallicrafters Big Iron

Hallicrafters Advertising from 1961

On The Air!

de Gary Sutcliffe, W9XT



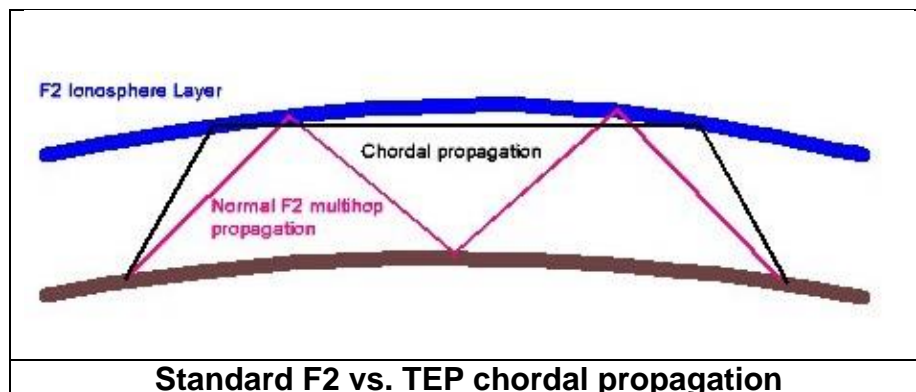
The big June event is, of course, Field Day. Barring something exceptional, this will be my 52nd consecutive time operating it. It starts early afternoon on Saturday, June 25, and runs for 24 hours. Set up will begin on Friday.

Even if you don't plan to operate, consider helping set up on Friday or Saturday morning, and tear down on Sunday afternoon. Although our operation is much smaller than it was several years ago, we are getting older, and extra help is appreciated. Part of the June meeting will be dedicated to FD planning.

VHF activity

The 6-meter sporadic E (Es) opened up nicely in May. We have not had a lot of double hop to the western states, and I have not heard any European stations yet. However, we did have a few openings to South America. I picked up Argentina, Chile, and Uruguay for new countries on the band. Openings to South America often use a mode called Trans Equatorial Propagation (TEP).

On HF, most of the propagation is via the F layer. Signals go to the F layer and get refracted back to earth some distance away. Often it reflects back up, and we get a second hop, and maybe more. TEP is a bit different. The ionization is higher near the equator. Sometimes it will be able to refract signals at 50 MHz or more, but not enough to go back to the earth. So, the signal moves horizontally until it hits the F layer again. This might happen a few times before it finally gets back to the earth. This is called chordal propagation. Chordal propagation is shown as the black line in the drawing compared to expected F2 propagation in red.



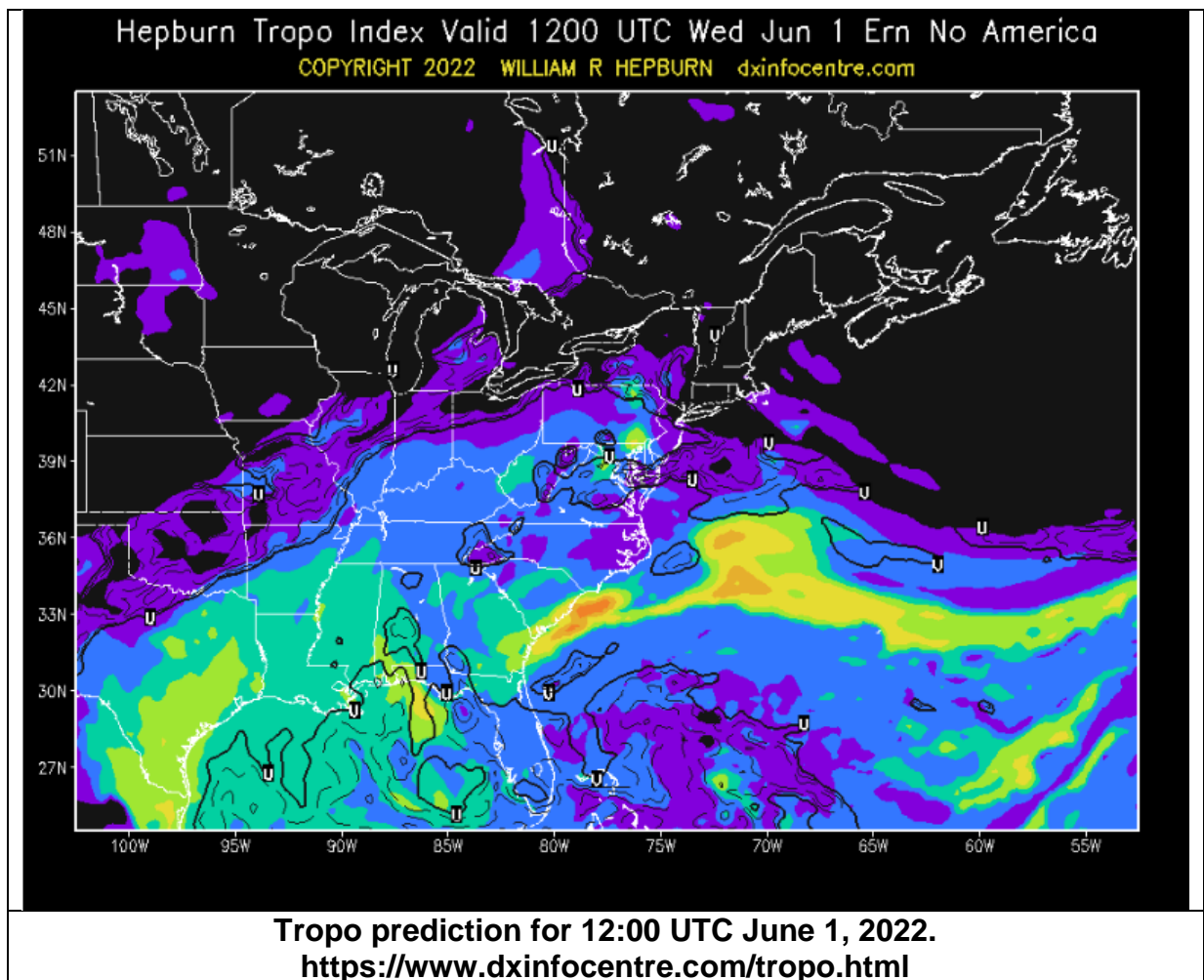
Unfortunately, we are too far north to couple into TEP directly. However, sometimes we can use another propagation mode to get to the Gulf region to take advantage of any TEP. There have been other times when I got a single

decode of a South American station. That was probably due to a meteor burst providing the first leg of the trip.

During the Memorial Day weekend, we had a bit of excitement on 2 meters with some tropospheric bending. This happens when we get a temperature inversion. The interface of the warmer air over the cooler air can refract VHF and UHF signals back to earth. Inversions usually happen in the morning and are more common in late summer and early fall. I heard or worked every call district except W6 and W7 over that weekend on 2 meters. What really surprised me was Memorial Day. It was very windy that day, and wind usually disrupts any inversions.

There is a great website that has tropo prediction maps. The map below shows the prediction for the morning of June 1. We are not likely to have tropo enhancement that morning, but stations further south might have some.

If you are interested in VHF and higher frequency weak signal work, the Central States VHF Society annual conference is July 22-23. The location of the conference varies. This year it is in La Crosse, WI. I usually attend if it is Wisconsin or a surrounding state.



The event has talks, a banquet, pre-amp noise figure measurements, antenna range testing, a mini swap fest, etc. It also has family events. More information is available at <https://www.csvhfs.org/>

Ken, W9GA, is one of the organizers of this event and will be giving one of the presentations. He can fill you in on the event.

WIQP

The results from the Wisconsin QSO Party held back in March are released. The ORC won the club competition! We will be getting a lovely plaque in a couple of months. ORC members submitting scores were AA9WP, K9DJT, K9QLP, KD9TRX, N9UUR, W9KEY, W9XT, and WT9Q. Full results can be found at: <http://mail.warac.org/wqp/2022/results2022.pdf>.

Dayton

The Hamvention® was held in May after a two-year hiatus due to COVID. There were quite a few ORC members in attendance. I went down with ORC members Gary, K9DJT, and Bill, AC9JV, along with Lyle, WE9R. It was a good time. We spent Thursday at the Air Force Museum. We missed a fair amount despite getting there when they opened and staying until almost closing time. A special treat was a low-level flyover by a B2 as we left the building.



B2 flyover at Dayton. WE9R photo

sistor I use has a 99-week lead time!

There were not a lot of new products from the vendors at the Hamvention. I'm sure a big part of it was due to slowed down product development during COVID and the inability to get electronic components. That has been a big problem, in case you have not heard. Many radios and other equipment have been out of stock for months. Some components I use for Unified Microsystems products are out of stock until well into 2023. I just got a notice that a part promised to ship in June will now be mid-September. One re-

At least one of the vendors I wanted to see had a booth but was a no-show. The flea market had a lot of empty slots. I'm sure the cost of gas kept some attendees away.

In a first for me, I only bought one thing! Usually, I bring back a bag of treasures. I picked up an SDR receiver I had been looking at for a while. There was a special Dayton price on it. W9KEY reported he bought a LiFePO4 battery. Fred plans to use it for portable operations this summer.

Contests

June contesting is dominated by three ARRL contests.

There will be a brand new ARRL contest starting shortly after you get this newsletter if it is published on schedule. This is the ARRL International Digital Contest, and it was covered last month. The time was chosen for good Es propagation on the higher HF bands and 6 meters. Technicians are allowed data privileges on 10 meters, so this would be a good chance for Techs who have never experienced the band. It will also be an excellent chance to work some grids for the 6-meter VUCC award. Since it is a new contest, you need to read the rules. Note that they have a range of suggested frequencies to avoid overcrowding the standard FT8 frequencies. There are only QRP and low power (100W) categories. Turn off the amps. There are also separate categories for single op one radio and single op two radios (SO2R). I never saw that before.

The ARRL June VHF Contest is the weekend of June 11-13. Of the three VHF events put on by the ARRL, the June event is by far the best in most years. This is due to likely Es propagation on 6M. Rates can be really high if 6 meters opens up. A lot of the operation will be on FT8. Remember to go to CW or SSB if the signals are strong. When you start seeing FT8 signals stronger than +00 or so, it is time to check the other modes.

You can work stations much faster than FT8 with CW or phone. In past years, the FT8 frequencies were so crowded it was difficult to complete FT8 contacts due to QRM. If conditions are not up to supporting CW or SSB, but FT8 signals are strong, give FT4 a try. You can make contacts much faster on FT4, although you won't work as many weak stations.

Finally, there is Field Day, already mentioned. Again, there are new rules this year, so be sure to read them ahead of time if you are participating.

The first contest in July is the IARU HF World Contest. This is a contest that you work everyone. The rules are complex, so read them before if you have not done this before. Note that the exchange is the ITU zone, not the CQ zone used in CQ sponsored contests. We are in zone 8. Unfortunately, the South Milwaukee Swapfest is the same Saturday as this contest.

DX

DX was a bit light in May. The most exciting May DXpedition was to the Andaman Islands, using the call sign VU4W. Despite being essentially a one-man operation, the QSO totals were over 33,000. Unfortunately, we didn't have good propagation. Fred,

W9KEY, mentioned he had no luck. He was also frustrated with the “pirates,” stations who falsely used the DX station’s call.

I didn’t work them either. We really didn’t have good propagation on one of the most challenging paths. I only know of two stations in the state that worked them. They were on 17-meter FT8 and 15-meter CW.

One DXpedition that I missed on my radar is to the Island of Rotuma, near Fiji, with the call sign 3D2RRR. They came on in late May and will be active until June 5. Gary, N9UUR reports trying to work them. I was able to work them on 20- and 12-meter FT8 for a new digital country. I hope to pick them up on 160 meters, the last band I need that one.

Information on 3D3RRR seems a bit sparse. When they are using FT8, they said they will always use F/H mode. Sometimes they are working in the regular FT8 frequencies among the regular users. Typically, DXpeditions using F/H move to a clear frequency.

I am not aware of any big DXpeditions in June. The Japanese Island of Ogasawara seems to be a popular destination this month. There are four different operations scheduled. The first one is on now until June 19 by JD1BOW. JD1BMH will be on June 18-26. JD1AJD will be June 24-July 6, emphasizing 6 meters for Europe and North America. Wrapping up the month, JD1/JR3DVL will be on June 30 – July 8, also concentrating on 6 meters. Ogasawara on 6 meters would be a great catch. Openings to that part of the world on 6 meters are most likely to occur in our late afternoons.

Thanks to N9URR and W9KEY for updates on their operating activities for May. If you worked something interesting in June, send me an email, and I will try to include it in my column. Better yet, write an article and send it to Bill, W9MXQ!

That wraps up June. See you at Field Day!

Please see the next page – with monthly Contest and DXpedition picks for the month of June and early July. Print this page separately and keep it next to your radio.

W9XT Monthly Contest and DXpedition Picks for June and Early July

W9XT's contest picks for June and early July 2022					
Name	Start	Length	Bands	Mode	Link
International Digital Contest	1800Z June 4	30 hours, operate 24 max	160, HF, 6	FT4/8	https://contests.arrl.org/ContestRules/Digital-Rules.pdf
ARRL June VHF Contest	1800Z June 11	30 hours	6 & up	CW, SSB, Digital	http://www.arrl.org/june-vhf
ARRL Field Day	1800Z June 25	24 hours	160, HF, VHF	CW, SSB, Digital	http://www.arrl.org/field-day-rules
IARU	1200Z July 9	24 hours	HF	CW, SSB	https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT).
 HF = 80, 40, 20, 15, 10 Meters

W9XT's DXpedition picks for June and early July 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Rotuma	May 24-June 5	3D2RRR	HF	D, C, S?	https://www.dx-world.net/3d2rrr-rotuma/
Ogasawara	June-July	Several	HF + 6	D/C/S	See text above

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

Ozaukee Radio Club Minutes of Membership Meeting. 5/11/2022

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 meeting at 7:31 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance but were not addressed individually. Initial comments included an announcement that ORC was now a member of the Maxim Society [ARRL affiliated] with a framed photo of Hiram Percy Maxim supplied to ORC. [due to our donations into the scholarship fund, located at ARRL] W9IPR has indicated that there is little interest at this time in a license class, but that he is available when interest peaks up.

Program:

The program was given by Carl Luetzelschwab K9LA, on cycle 25 and Field Day. Carl started by giving the members a brief biography of his career, and Ham accomplishments. He then gave us a short overview of the new cycle, and where we are with propagation developments of this cycle, which seems to be developing much like the last cycle. Carl mentions that HF should improve over the next several years, with some possibility that 6-meter openings may occur at peak times. He then reviewed good antenna choices for FD 2022, and what propagation may be present during the event.

Scholarship Auction:

Stan, WB9RQR held the usual auction, several items were sold.

Committee reports:

2nd VP: Bill K9GN congratulated those members who helped with the recent Swapfest.

Repeater: Gregg W9DHI reports that the Germantown remote site took a lightning hit, and that the Rx is down; repairs are currently in progress.

Treasurer: Gary N9UUR reports that the Swapfest went very well, with a profit of \$1328 generated by ticket/table sales; and that the FD site at Pleasant Valley has been paid. Auction proceeds from tonight's auction were \$138. The May treasurers' report was accepted; motion made by K9QLP 2nd by W9IPR and carried.

Secretary: Ken W9GA reported the May 2022 minutes are to be posted; with some minor corrections noted by WB9RQR; a motion to accept was made by N9VSV, then WB9AZH 2nd, and motion carried.

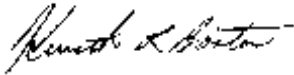
Scholarship/STEM: Tom W9IPR is looking for volunteers to aid in moving the S.T.E.M. program along; with an eye to taking the program to the Cedarburg school system.

OLD business: The hamfest summary included overall ticket sales of 324 total, with attendees from Wisconsin and Illinois. The ARRL gift certificates were awarded to N9UUR, N9ENR and K9QLP.

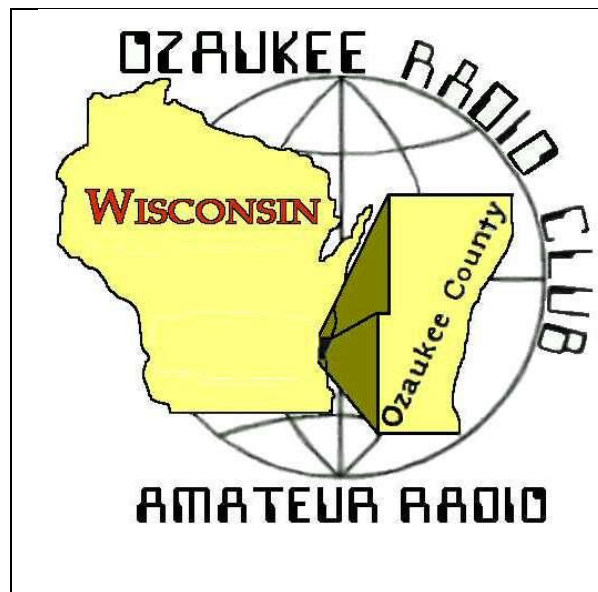
NEW business: Gregg W9DHI is looking for volunteers to help with the technical committee, specifically to be available to help in streaming the meeting on Zoom. He also mentioned that the club would need to invest in a new laptop computer for streaming. W9DHI put this need into a motion that would authorize the club to spend \$500 on a new computer; WB9RQR 2nd and the motion was carried by the members. Fred, W9KEY, reported on the WI QSO party; in which it was presented that ORC appears to have come in 1st in the club category, with 8 members having participated.

Adjournment: WB9RQR moved to adjourn, K9GN 2nd, motion carried; time ending was 9:37 PM. There were 28 in-person attendees, 13 Zoom attendees.

Respectfully submitted.



Kenneth Boston W9GA, secretary



Upcoming ORC Monthly Meeting Programs

de Pat Volkmann, W9JI

June – Ken W9GA – Field Day and

Michael WH6ZZ – Everything you Wanted to Know About JS-8, Michael WH6ZZ

July – Field Day Member Reports

August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

September - Open

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

ORC Meeting Agenda

June 8, 2022

- | | |
|--|--|
| 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 Volkmann (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. Presentations:
>> Ken, W9GA, Field Day
>> Michael, WH6AA, Everything You
Wanted to Know About JS-8 | 9. Secretary's Report:
Ken Boston (W9GA) |
| 5. President's Update:
Pat Volkmann (W9JI) | 10. Treasurer's Report:
Gary Bargholz (N9UUR) |
| | 11. Committee Reports |
| | 12. OLD BUSINESS |
| | 13. NEW BUSINESS |
| | 14. Adjournment |

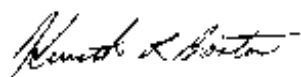
ANNOUNCING!!!!!!!

Ozaukee Radio Club Annual Field Day Exercise June 25-26, 2022

Pleasant Valley Nature Park
[Pleasant Valley Road; just East of County I]

Once again, the intrepid operators and interested members 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.

ORC members are invited to participate and enjoy the camaraderie of this event; details to be presented at the June meeting on Wednesday the 8th.



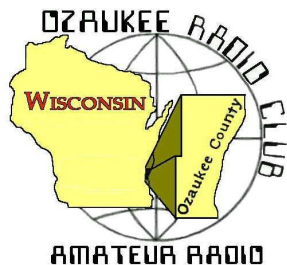
Ken Boston W9GA,
Field Day Chairperson



**Next Month's ORC Meeting
Planned Hybrid In-Person/Zoom Meeting
13 July 2022**

**Program
"Field Day – Member's Reports"**

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

Facebook: facebook.com/orcwi

Volume XXXVII

July 2022

Number 7

From the President

de Pat Volkmann, W9JI



Field Day 2022 featured a bit of everything that makes Field Day fun, with the exception of thunderstorms! There was some rain, high temperatures, oppressive humidity and of course, lots of mosquitos. None of these deterred the ORC or the many visitors that came to the Field Day site. With over 2800 QSOs and a score over 8,300 points, radio operations were not hindered by the bugs or the rain.

Pleasant Valley Park is a great site for Field Day. The park is popular with people for walking and biking on the trails. The good weather brought people to the park over the weekend, with 47 visitors signing the log. I had the opportunity to talk with a number of people and explain what we were doing at the park. In addition to the many visitors several local officials

dropped in, which adds to our bonus points for the weekend.

Gary Bargholz N9UUR wrote up the ORC Field Day entry, along with a summary of the weekend's activity. Gary and Field Day Committee Chair Ken Boston W9GA will talk about Field Day and share the results with everyone at the July meeting. Watch for a detailed Field Day article in next month's ORC newsletter.

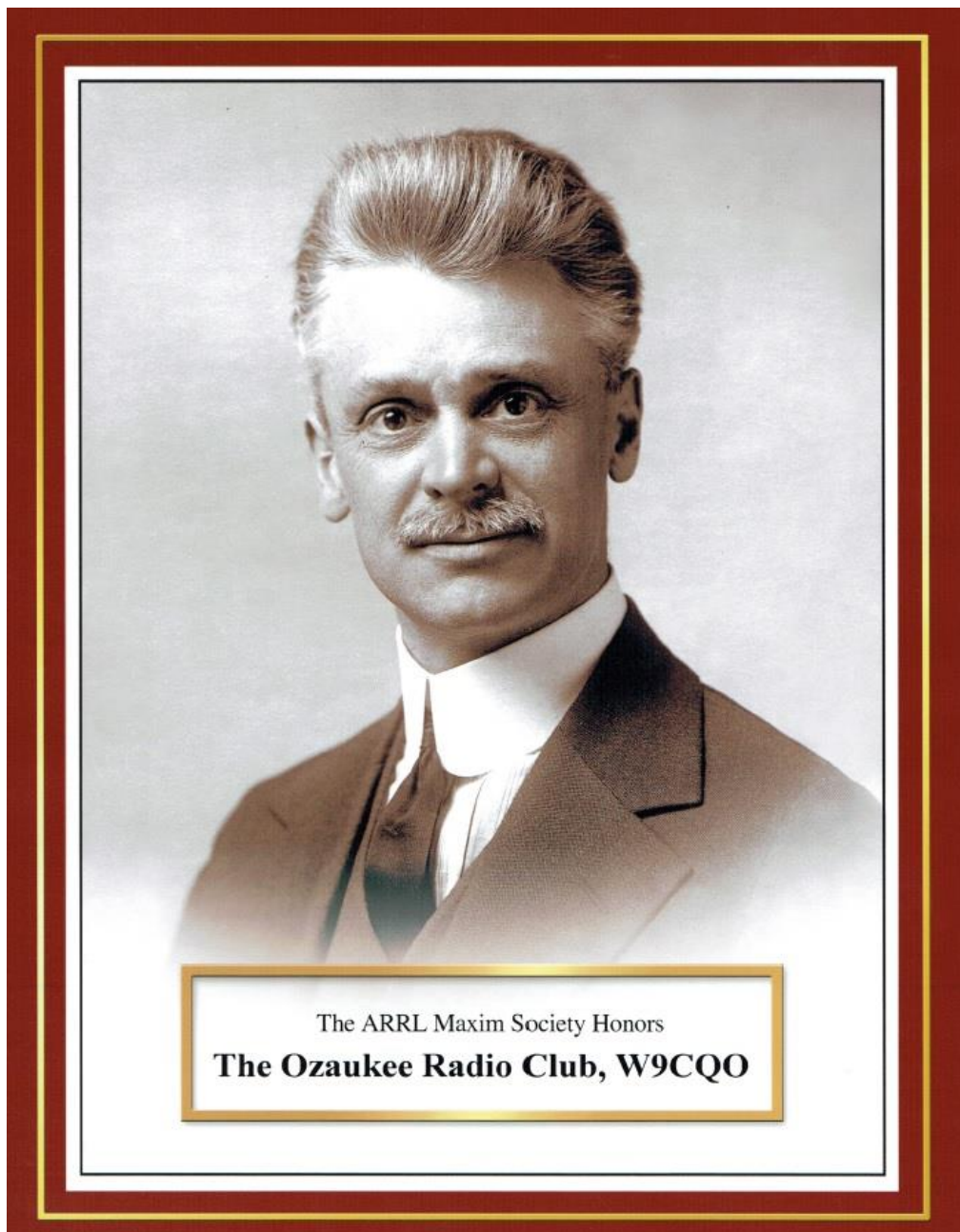
Those who were at the Field Day site know that my time there was limited. My daughter was expecting a baby to be born at any time and I needed to ready to leave on short notice. The baby just missed Field Day, being born early Monday morning. Mother and baby are doing well. We welcome Henry McCarthy into our family and expect he will be present at future Field Days.

The Ozaukee Radio Club has run a very successful scholarship program for many years. Several years ago, the program was turned over to the American Radio Relay League to become part of the League's scholarship program. The ARRL recognized this effort through the inclusion of the Ozaukee Radio Club as the 338th member of the

ARRL Maxim Society. We received a nice plaque featuring a portrait of Hiram Percy Maxim and a letter from David Minster, NA2AA, CEO of the ARRL. You will find both the letter and plaque in this edition of the newsletter on this page, and the next.

See you at the meeting.

Pat Volkmann, W9JI



The Plaque recognizing the Ozaukee Radio Club as the 338th member of the ARRL Maxim Society



ARRL HEADQUARTERS

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April 28, 2022

The Ozaukee Radio Club, W9CQO
ATTN: Pat Volkmann, W9JI
W4534 County Road H
Fredonia, WI 53021

Dear Friends,

On behalf of the ARRL Board of Directors, I am honored to welcome you as the 338th member of the ARRL Maxim Society in the Ambassador Level. After many years of generous support, you have achieved membership in this distinctive and important club, which recognizes ARRL's most charitable members.

Your substantial contributions over the years have significantly enabled ARRL in continuing to advance the art, science and enjoyment of Amateur Radio. We are humbled by your generosity and will continue to provide support and services for all ham radio enthusiasts.

Again, congratulations in reaching this significant milestone – and thank you for being an invaluable part of the ARRL family.

73,

David A. Minster, NA2AA
Chief Executive Officer

OFFICERS

Rick Roderick, K5UR
President

David Minster, NA2AA
CEO & Secretary

Michael Raisbeck, K1TWF
First Vice President

Diane Middleton, W2DLM
Chief Financial Officer

Bob Vallio, W6RGG
Second Vice President

Rick Niswander, K7GM
Treasurer

Rodney Stafford, W6ROD
International Affairs Vice President

**The Letter acknowledging the Ozaukee Radio Club as the
338th member of the ARRL Maxim Society**

A Message from the Editor Newsletter Table of Contents

de: Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. Pat talks about Field Day 2022, the welcoming of his new grandson, and the honor bestowed upon Ozaukee Radio Club in becoming the 338th Member of the exclusive ARRL Maxim Society,

Leadoff article this month is from past ORC President, Kevin Steers, K9VIN, as he talks about his journey to obtaining the Amateur Extra License.

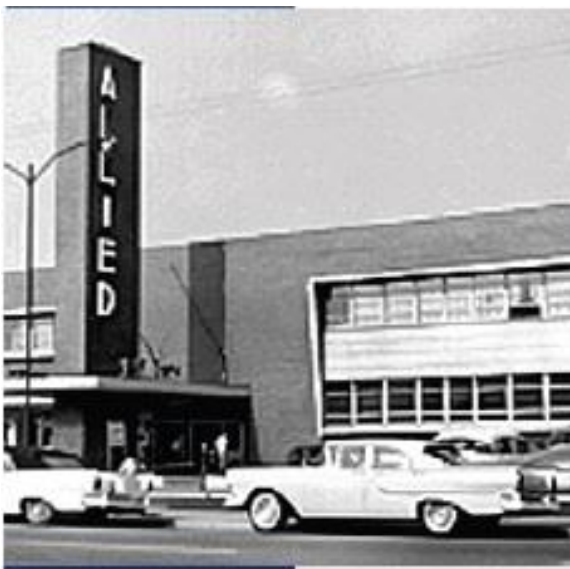
Our regular Ozaukee Country Amateur Radio Emergency Coordinator (ARES EC, Don Zank, AA9WP, has taken the month off and his slot is filled by ARES EC, Vic Schier, WT9Q (our fellow ORC Member). Vic is EC of Washington County, our neighbor to the west and home to many ORC Members. Stan Kaplan, WB9RQR, in his Computer Corner Column, Bill Shadid, W9MXQ (your Editor) in his Vintage Amateur Radio Column, and Gary Sutcliffe, W9XT, in his "On the Air," Column. Don't miss snapshots of the 2022 ORC Field Day from Peter Chow, WØNG.

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4	Bill Shadid, W9MXQ: A Message from the Editor This Month's Table of Contents
6	Kevin Steers, K9VIN: Extra, Extra – My Road to Extra Class
8	Stan Kaplan, WB9RQR: Computer Corner No. 292: Searching – Where is that file....word...on my computer???
10	Vic Shier, WT9Q: Washington County ARES A Brief Visit Next Door
11	Bill Shadid, W9MXQ: Vintage Amateur Radio The Hallicrafters HT-44 Transmitter
22	Gary Sutcliffe, W9XT: On the Air! FD comments, VHF, POTA, 13 Colonies, Radio Balloon Launch, It's a small world, Contests, DX
29	Ken Boston, W9GA: Secretary's Report Minutes of the 8 June 2022, Meeting
31	Peter Chow, WØNG Snapshots of the 2022 ORC Field Day Full Field Day Article appears in the August Newsletter
33	Pat Volkmann, W9JI: Upcoming ORC Monthly Meeting Programs Creating a Presentation for Club Meetings & This Month's Agenda



Allied Radio Knight Kit
The primo R-100 Short Wave Receiver from the 1950's
Ham Radio dreams from Junior High School Days

Allied Radio Catalog



Allied Radio
100 North Western Avenue,
Chicago, Illinois

© 2022 K9YA Telegraph

Lots of neat stuff inside. But the coolest place was in the back of the store. "The Ham Shack, as it was called." The place to see those magic names like Collins, Hallicrafters, National, Hammarlund, Barker & Williamson, Gonset, and many more. And to walk out with my first radio, a Knight-Kit Space Spanner Receiver Kit – complete with the Optional Cabinet. It is still in my shack and says, "1957," all over again!! One of two big events in 1957 for me – that radio and Sputnik was launched. Those were my priorities, in that order.

W9MXQ

Onward To the Newsletter

My Road to Extra Class

de: Kevin Steers, K9VIN



60 days before Dayton, I pinged my friend and warned him that I was ordering the Extra Class materials, in hopes to take the test at Dayton, for free. What I received was simply the question/answer pool book. No Bueno. I intended to learn the material, and not memorize 600+ questions, blindly.

I stumbled upon Ham Radio 2.0 on YouTube. Jason recorded a Zoom class and published the 9 classes online. These video classes were each 2-3 hours long. It was a Texas radio club that put on the class. Every other night, after Lily went to bed, I would watch one class. It was a bit frustrating as the presenters were not trained in public speaking, etc., and there was occasional unrelated storytelling, so I would fast forward through sections until I could see they were back on topic. They had us sketching circuits, etc. and explained the theory behind much of the content. The last half of each

class was reviewing the question pool. When they showed the question, the answer was highlighted, so I actually averted my eyes, followed along in my book, covering the answer to challenge myself.

I then used a flashcard feature on a web site to hammer through questions, in mass, and it would tell you immediately if you were right or wrong. There are apps that will also randomly give you a test, to help you understand how close you are to breaking the 74% passing requirement. When I got one wrong, it was back to the book to bone up on the theory.

On Friday of Dayton, I helped with setup, and then showed my roomie, Xavier, around the Hamvention, including the racetrack, vendor booth area, and inside each building. Around 2:15 I ambled over, nervously, to the Church where the tests are administered. The doors were locked. They test from 9-2 each day.

After a very long day, and after a few cold 706's, I grew incredibly frustrated as I realized I needed my FRN number to take my test; oh, and I also needed a copy of my license. Thankfully Xavier kept a cool head and played around with the FRN website. Low and behold, Xavier had a FRN number that he had forgotten about and was able to navigate the site to help find mine. My corporate laptop was not allowing Captcha, which was all of my problems apparently. Xavier is in the electronics field and tests RF stuff. Xavier is not a Ham and had never opened a Tech book.

The next morning when I went to the test, Xavier tagged along, and I said Hey you have an FRN, you should sit for your Technician license, on a lark.

I registered, got my materials, and entertained them with my mustache along the way. I nervously took my scratch paper, writing down all 6 or 7 mathematical functions that I thought I would need. I finished in about 20 minutes and waited nervously. Two questions stumped me, and I research that I had guessed right on them, while I waited. Interestingly, I never referred to my mathematical functions 😊 Not only did I pass, but Xavier did also!! Apparently, he got all the Regulation questions wrong 😊 though, as expected. I congratulated him and headed for the door. He said, um, I am going to sit for the General. WTH! He failed miserably, as expected.

I have no electronics background, folks. If I can do it, so can you! Just follow my recipe.



A phenomenal crowd appeared at the testing site right after word got out that Kevin passed his Extra Exam

THE COMPUTER CORNER

No. 292: I'm Searching for ...

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

You'd think it would be easy to find a good search tool. I had a heck of a time, and it took many months before I found what I wanted.

I wanted a tool that would find words in documents or document titles, but just on my computer, not throughout the world. Where did I put that file where I, or someone else, described in the title a thingamabob using the word *scary* or *Scary* or *SCARY*? Where did I or the ORC Secretary talk about a *tuner* being sold in the auction? I went through a number of purported search tools that I could install on my machine and forget about until needed, and one that would not use megabytes of memory or space on the hard drive or be in my face when I did not need it. I found one and would like to share.

It's called EVERYTHING, and it has been around for quite a while. The first public release was in Mar 2005. Since that time, it has been updated regularly, and the last recorded update I could find was in mid-Dec 2021. Copyright 2021 by Voidtools, it is free (without restriction) software so long as the copyright notice and permissions are furnished with the software. So, we are dealing with the best kind of freeware that exists – really free.

The easiest place to get EVERYTHING is from the website of the company that provides it. Going there also lets you select just what you want, as well as help files and other goodies. You can also read about the company's position on a freeware offering and such, and they note that the software has won many awards. The company URL is: <https://www.voidtools.com>, and the author is David Carpenter. You probably want to download the 64-bit file, which will be (after you download it):

Everything-1.4.1.1015.x64-Setup.exe (1.72 MB)

It would also be useful if you downloaded the offline help file, Everything.chm.zip, only 1183 KB in size. Unzip it and a double click should show you the interior of the file, which explains all you might want to know.

Basically, EVERYTHING does an index of all files and folders on your machine, which it uses then to search for what you want. It indexes 120,000 items (roughly the size of a new Windows 10 installation) in about a single second and does 1 million files/folders in a minute. It does not do a new index each time you use it, just an update, so that helps to make it incredibly fast. It does the index updates when you are not using it or anything else (like between each keystroke if you are typing a document!). It does not drag on your memory or other resources. And yes, it can also do a content search of your files and folders, but that will take longer since it is a slower process.

So, to summarize, EVERYTHING has useful attributes that make it a winner:

- A small installation file.
- A clean, simple user interface.
- Quick file indexing and quick searching.
- Quick startup (practically instantaneous after you click the icon).
- Minimal resource usage and a small database on disk.
- Real-time updating.

If you have a better search tool, let me know, and perhaps I will use it and write about it!
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)
-

Editor's Note:

When Don Zank, AA9WB, advised that he would be off line for the Newsletter this month, I thought it might be a good idea to prevail upon our fellow ORC Member, Vic Shier, WT9Q, to talk about his position as Emergency Coordinator (EC) for Washington County, Wisconsin. While the Ozaukee Radio Club hails from Ozaukee Country, we have a lot of members to the west in Washington County. Vic is also a member of two Washington County clubs – the Washington County Amateur Radio Club and the Wisconsin Amateur Radio Club. It is from these organizations that he draws most of his ARES membership.

ARES in Washington County

de: Vic Schier, WT9Q



Did you know that Washington County has an ARES group? We do.

We have functioning radios in three Hospitals, the Washington County Sheriff's Office (EOC), and the Germantown Police Department. Five of those radios are programmed with identical frequencies and the last one will be programmed soon. Many of our members have also programmed their personal radios using the same frequency list.

We hold weekly nets on the KC9PVD repeater 147.21 at 8:15. The net often includes training exercises. We also hold severe weather nets when weather threatens. The repeater is in a great location, on a high tower with a multi-bay antenna. It has good coverage throughout the county.

There is additional information on our website at:

<http://www.washares.com/>

Please consider joining the Washington County ARES group if you live in the county. I am the current EC, and you can contact me for more information at:

VicWT9Q@gmail.com

Vintage Amateur Radio

de: Bill Shadid, W9MXQ



Last month, we did a more detailed analysis of the Hallicrafters SX-117¹ than had been done in an earlier installment that included the entire SX-117/HT-44 Station² – that is, the original “Hallicrafters Twins,” as they are known. Moving from there we need to do a more in-depth review of the matching HT-44 HF Transmitter. While very experienced, since the 1930’s, in making transmitters, this was Hallicrafters’ first move into a transmitter capable of operating in transceive partnership with a matching receiver. That receiver, of course, was the SX-117.

In designing a product line, such as these “Twins,” it becomes necessary to design matching VFO and heterodyne oscillators that match perfectly between Receiver and Transmitter. Collins Radio Company, whose S-Line/KWM-2 radios were the target competition, did just that with identical VFO and heterodyne oscillators in the related receivers, transmitters, and transceivers. Hallicrafters, at this point in time – about 1963 – was not prepared to do this in quite the same way. While the HT-44 had a transmitter type VFO, the equivalent VFO in the SX-117 was quite different – and therefore had to be made compatible.

To start, here is a picture of the HT-44 Transmitter. It takes a careful eye to see the slight differences in this front panel as compared to that of the matching SX-117 Receiver from last month.



Hallicrafters HT-44 HF Transmitter

W9MXQ Collection

The very subtle difference in the HT-44 Front Panel (as compared to the SX-117) is the lower left and lower right controls (OPERATION and DRIVER TUNING controls, respectively, are offset outward by 0.250 inches. As a former Material Management professional, I would assume that back in 1963 that Hallicrafters design engineering, manufacturing engineering, and materials control had some serious conversations about that necessity. Many trim parts were common between these units (and others in the line) but not these two front panels.

The HT-44 was a well-designed transmitter with 200 watts input on SSB (PEP), CW, and AM (PEP). Power output was specified as 100 to 130 watts PEP on SSB, 100 watts DC on CW, and 25 to 30 watts carrier on AM (100 watts PEP output). AND, unlike many of its direct competitors, AM on the HT-44 was double sideband (DSB) with carrier, not SSB with carrier. While being like its competition in the lack of high-level AM modulation, the HT-44 could give a good accounting itself on the mode.

The HT-44 used a pair of 6DQ5 Pentodes in the final amplifier. These tubes were considered television sweep tubes by RCA in their Receiving Tube Manuals, but they worked well in this transmitter application. And, they had a standard octal socket. That was easier to use and access than the Compactron sockets used by many other television horizontal-sweep tubes. As to durability, my HT-44 has its original Hallicrafters branded 6DQ5 tubes installed and still putting out full power – even on ten-meters.



The Compactron base sweep tubes were first introduced by General Electric in 1961, according to an article on the tube type on Wikipedia. The matching Compactron socket accommodated the special base for these tubes that mimicked the through the glass pins used on miniature vacuum tubes of the day.

Picture – Wikipedia



The Octal base tube (like on the 6DQ5) was like this illustration (these are not 6DQ5's but the look is similar). Note the extra production step of soldering the wires from the glass envelope into the plug pins. Not to be forgotten is the additional cost of the plug itself. However, also look at the superior mechanical isolation of the connector from the glass envelope.

Picture – W9MXQ

The release date of the HT-44 is generally thought to be in 1962 – but it seems also correct that initial units had issues in transceive with the SX-117 Receiver¹. Early advertising for the SX-117 Receiver – supposedly introduced at the same time – was absent any message about the HT-44. As it turned out, the issues encountered with pairing the two radios was not with the HT-44 Transmitter but with the already announced SX-117 Receiver. This was covered last month in the review of that Receiver. Not to repeat the issues but essentially, they dealt with VFO Stability when using the Receiver to control Transmitter frequency. Also, there a correctable issue with complete receiver cut-off when transmitting. That second issue – receiver cut-off – would presumably be an issue with using the SX-117 together with the HT-44 and also when using the SX-117 alone with some other – perhaps non-Hallicrafters - transmitter. Details of SX-117 modifications are in the HT-44 manual. To my knowledge, they never appeared in the SX-117 documentation.

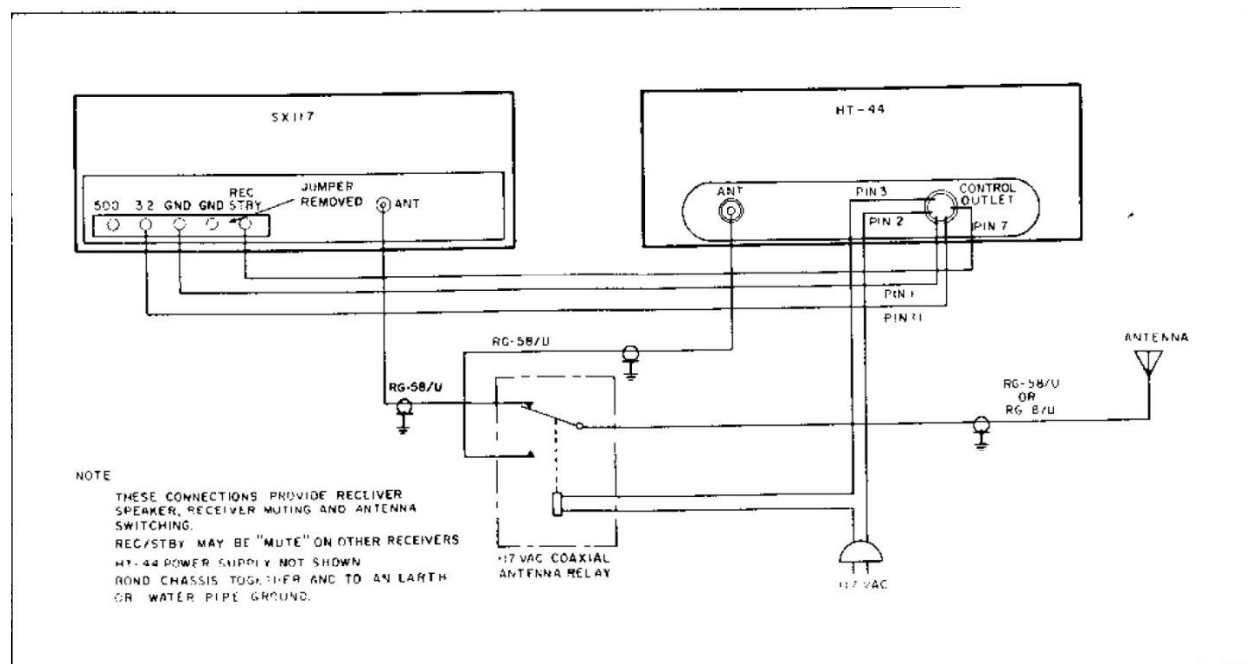
The HT-44 Transmitter was a very late transmitter for its time that used the phasing method of generating single sideband (SSB) signals. This article is not a comparison of the various methods available to generate SSB – many well written articles appear on the internet on this subject. Suffice it to say that the phasing method has some advantages in cost and also in the fact that AM signals were DSB with carrier – not SSB with carrier. While this low level of AM modulation is not up to the standards of plate modulated AM signals of the day, it was at least true to form in that both sidebands appeared in the signal output. Remember, in the early to mid-1960's when the HT-44 was marketed, SSB was a major part of ham radio. However, AM signals were still plentiful, if not in the majority. So, AM performance was a factor for many in buying a radio.

Phasing tended to be a bit broader in bandwidth than their crystal filter generated signals. This was reality but not a given for the circuit as a general statement. The wider bandwidth today provides a somewhat more pleasing signal that often generates compliments on the air of “great audio.” Actually, many crystal filter generated SSB signals of the day could be similar in that they were using 2.7 or even 3.0 kHz filters – compared to later use of narrower 2.1 or 2.5 kHz filters.

Phasing SSB generation tended to be a bit unstable and as such most transmitters of the time had a Carrier Balance control on the front panel used occasionally to “null out” or “minimize” carrier present. One would reduce microphone gain to zero, go into transmit, and watch the RF output meter while adjusting Carrier Balance for zero, or minimum, signal level. This was often two controls that were alternatively adjusted to minimize carrier. If you were using an old Hallicrafters HT-37 Transmitter, one of the Central Electronics transmitters, Gonset GSB-101 Transmitter, or others, the adjustment would be made between, or even during, QSO's. The HT-44 changed all of that. Hallicrafters had conquered the stability issues with Phasing SSB Generation and actually had the carrier balance

Unlike the SX-117 Operations Manual, the HT-44 Operations Manual clearly called out the specific interconnection between the two units. Perhaps in a reverse of attitude on the subject, Hallicrafters did not include specific installation instructions with any receive-

er other than the SX-117. Perhaps that was tied to the ability of the HT-44 to be setup to transceiver with the SX-117 – something not possible with a different receiver. To be sure, however, many SX-117 and HT-44 Receivers and Transmitters were operated as separate units with other Hallicrafters as well as those from different manufacturers. Please, see the diagram, below for interconnection details.



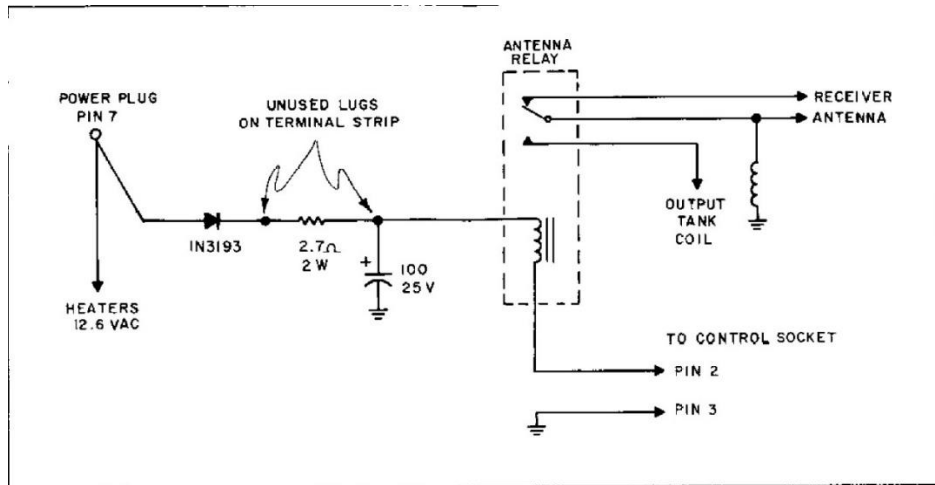
Interconnection Diagram – Hallicrafters SX-117 Receiver and HT-44 Transmitter
 Hallicrafters HT-44 Operations Manual

In addition, there was a separate Interconnection Diagram for including the matching Hallicrafters HT-45 Linear Amplifier in the setup. Also, radios like the Collins 32S-1 and 32S-3 Transmitters from this period included an internal transmit/receive switching relay. The HT-44 Transmitter did not – and you will see in the above diagram that an external relay is recommended for such duty. Actually, while never a part of the HT-44 as it came from the factory, Hallicrafters did provide instructions (but not a kit of parts) for a field retrofit of an internal antenna switching relay in the HT-44.

The addition of the internal transmit/receive relay was covered on pages 29 and 30 of the HT-44 Operations Manual. It is shown on the next page. But one note is that the relay and the components are mounted within the confines of the tank circuit compartment on the underside of the transmitter – basically just under the final amplifier tubes. Be aware that the diode shown must work in the presence of an RF field. I was not so lucky in my first attempt but when later finding and using the recommended RCA 1N3193 diode the problems vanished. Also, the recommended Potter and Brumfield (P&B) KT11D Relay, 12 VDC coil, may be hard to find. Friends have used an equivalent to this so called "Postage Stamp Relay" from Radio Shack™ and elsewhere.

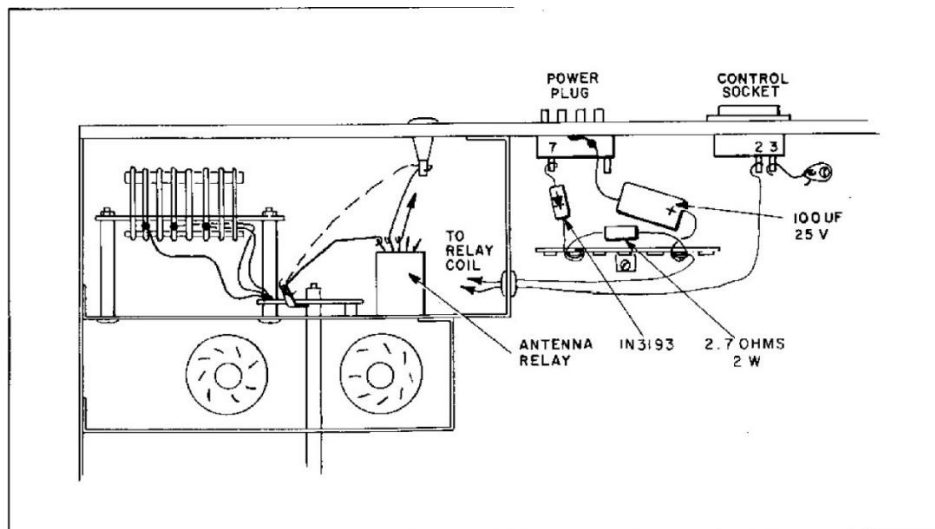
This was a popular modification on the HT-44, so it is a good idea to look for an installation done by a previous owner if you find and acquire one of these transmitters. If you find it installed, confirm good operation of the relay, the diode, and the electrolytic capacitor.

Since this could be handy in similar installations for other transmitters, I am showing the illustrations from the HT-44 Operations Manual in this article (below). I am also showing the installation in my own HT-44 Transmitter via an internal picture from that radio. I have added this same circuit to several Hallicrafters HT-32 series and HT-37 Transmitters over the years. Also note that the HT-44 has a pre-punched set of holes to mount an SO-239 connector for RF Output – to replace the standard phono socket from the factory. It is a shame that Collins with the 32S-1/32S-3 Transmitters and Heathkit with the SB-400/SB-401 Transmitters did not provide for the addition of an SO-239.



Partial Schematic. Showing Relay Installation

Hallicrafters HT-44 Operations Manual



Partial View of HT-44. Showing Relay Installation

Hallicrafters HT-44 Operations Manual

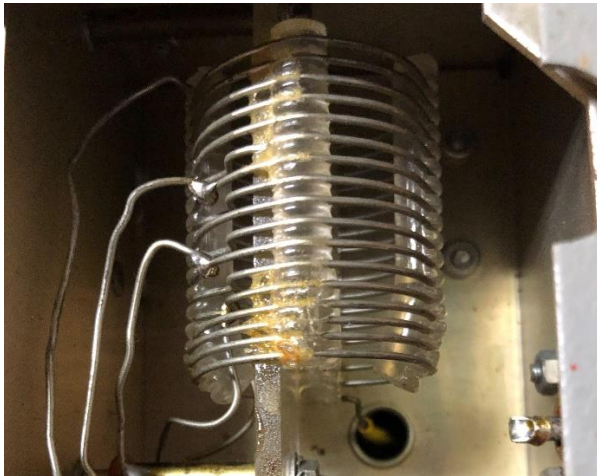


W9MXQ

You can see the relay installed in this picture at the left – just above left-center. The power for activating the relay on transmit come from outside the RF Tank Coil Compartment. Lead dress is not critical but keep lines short and separated from items nearby. Do not mount the diode, resistor, or the electrolytic capacitor inside the RF Tank Coil compartment. This is as indicated in the line drawing illustration from the sketch just above.

In my installation, that relay is mounted by its plastic cover, upside down, to the chassis with Cyanoacrylate Adhesive (Super Glue™).

While you are looking inside that RF compartment where the internal transmit/receive relay is added, take a look at the tank coil. An area of some concern in these transmitters related to them being as much as 60 years old at the time of writing this article. That same RF compartment contains the tank coil for the final amplifier. It seems easy to find HT-44 Transmitters with the coil assembly distorted from softening plastic insulation. See below some illustrations showing a coil that has seen no distortion and one that has . . .



W9DYQ



W9MXQ

In the left picture, see the distortion toward the bottom of the Tank coil – absent in the picture on the right in an HT-44 that is as delivered. W9MXQ and W9DYQ have three HT-44 Transmitters between us with both of W9DYQ's transmitters showing similar heat related distortion. So far, W9DYQ has not noticed operating issues due to the distortion. Some conjecture from us both is shown further down in the text.

At this place in time, it is difficult to tell for sure what happened to cause the distortion of the plastic of the tank coil. Does it mean that the area inside that compartment became too warm, did RF heat the plastic form, or was it perhaps an SWR related that caused

the coil to become warm? W9DYQ and I have mulled this topic over the years, and it is our opinion that the HT-44 final amplifier pi-network, being very narrow in tuning range, was perhaps subjected to higher than ideal SWR conditions – which caused the heating. Also, the very simple metering circuit that was merely “Output Power.” Tune for Maximum RF Output – what could be easier? If neutralization was off, the peak RF output might be far removed from the plate current dip – causing excessive heating of the coil and also damage to the final amplifier tubes. Like so many things in old radios – some things just have an unknown history.

I must add that there work around was a way to read plate current on the HT-44 Transmitter – and also plate voltage – using the same process used to determine bias current in the amplifier tubes. Those of you familiar with vacuum tube amplifiers such as used in transmitters of this design must have wondered in the above paragraph about a total lack of ability to read plate current – and you would be correct! To set the required 100 mA bias on the tubes, one must access two terminal points inside accessory PS-150-120 AC Power Supply/Speaker Console. There are two terminals there that are on either end of a resistor in series with the plate voltage supply. The resistor provides for the reading of plate current by measuring voltage across the resistor – a 10-ohm, 1 watt resistor. In this arrangement, a voltmeter reads DC current of 100 mA per volt on the meter’s scale. So, the bias potentiometer on the back panel of the PS-150-120 Power Supply/Speaker Console is set so that the meter that is attached across the resistor reads 1 volt DC – meaning a reading of 100 mA. It them would be just as appropriate to have a meter across that resistor that reads 0-5 volts, which would mean 0 to 500 mA. If neutralization is correct on the final amplifier, the meter should show a pronounced dip at about 3.5 to 4 volts DC (meaning 350 to 400 mA). The exact reading would depend on how much the voltage drops under load. The two terminals inside the PS-150-120 are red and blue – the positive voltage probe goes to the red terminal and the negative voltage probe goes to the blue terminal. Either of those terminals to ground with a voltmeter would indicate the plate voltage. That would ideally be a voltmeter capable of reading the specification 575 volts from the plate supply, plus about 50% more (minimum) for range safety on the meter – a 900 or 1000 VDC range would be about right. That said, no common voltmeter has leads that are safe for that voltage – so be sure that you know what you are doing. This is not a place for that \$9.00 DVM you found at Harbor Freight™ or, perhaps worse, at a hamfest. So, here is my standard warning:



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



A nice feature of the HT-44 Transmitter when used with the SX-117 Receiver when connected for potential transceive operation was a switch on the back of the transmitter that allowed the heterodyne crystals in the receiver to be used in the transmitter. This worked in transceive or separate receiver/transmitter operation. This was not, at the same time, unique to Hallicrafters. Collins S-Line and Heathkit SB-Line radios had the same feature.

Bob, W9DYQ, my partner in radio collecting, is the current holder of that call. His father, Ted, now a SK, is the original W9DYQ. Ted and I both had the Hallicrafters Twins (SX-117 and HT-44) plus the HT-45 Linear Amplifier. Actually, Ted's "HT-45" was the earlier version – see further along in the article. We built an outboard voltmeter and ammeter set in a custom designed cabinet that we designed, built, and named the Monitor Console. Both Ted's and mine still exist – one in Bob's shack and one in mine. One caution here, however. The use of that metering method has some risk. The 10-ohm, 1 watt, metering resistor can also be thought of as a fuse link in the high voltage circuit. If it would open, very high current would pass through the voltmeter. Hindsight being 20-20, perhaps we never should have thought of that as a permanent installation. That said, most ammeters in radios have similar risk – just be careful and make sure that voltage never reaches you in a component failure⁴.

Hallicrafters continued their use of a feature they called "AALC." This is an abbreviation for "Amplified Automatic Level Control." All of us are familiar today with Automatic Level Control (ALC) as a function of feeding a voltage back to the final amplifier of the radio to reduce power as the amplifier approaches saturation and begins to produce distortion in the output signal. Today we go so far as to feed ALC voltage back from a linear amplifier to cut back drive as the external amplifier reaches saturation. Hallicrafters, and perhaps others at the time, amplified this signal (hence the term, "Amplified" Automatic Level Control, or AALC) to allow a small amount of compression in the process that resulted in a higher average power output. In the block diagram, below, you can see this AALC amplifier as a function of V7B, a 6EA8 tube that offers a DC cutoff voltage to the final amplifiers (V16 and V17). This circuitry predates today's speech processors.

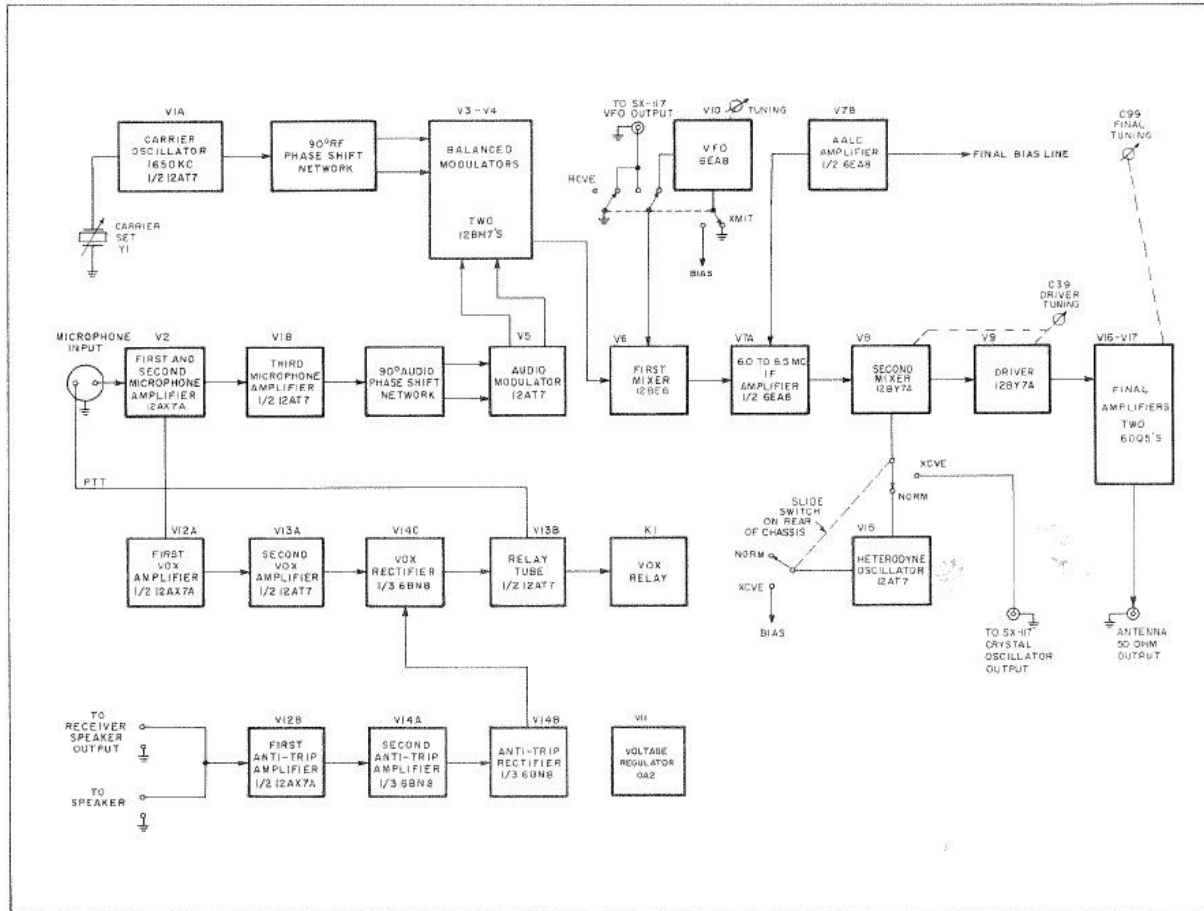
What once was – but is no more . . .
The Home of Hallicrafters Past and now empty



In 1965
600 Hicks Road, Rolling Meadows, Illinois



Recent Photo of the Structure



Hallicrafters HT-44 Transmitter Block Diagram

Hallicrafters HT-44 Operations and Service Manual

Like most all setups of the day, the HT-44 Transmitter offered VOX and PTT operation on Phone (SSB and AM) and semi-break-in with adjustable delay for all modes using VOX. ("Semi-break-in" refers to closing the key to enter transmit with the "delay" determining how long the radio stays in transmit after the key is opened.) Like many radios of the day, one had to remember that to tune the transmitter the radio had to be in CW mode (a position on the FUNCTION front panel switch). Close the key to allow a carrier to be produced for tuning. The CW jack on the rear panel was normally closed so if a key was installed it had to be closed for the transmitter to function. With no key inserted, the radio will immediately go into transmit when that mode is selected.

I do not want to bore you, but since this is a part of a system, I am repeating the picture of the HT-44, with its partners the SX-117 Receiver and HT-45 Linear Amplifier – with their matching accessories. This picture appeared last month with the SX-117 Receiver.

The “Hallicrafters Twins”



**Left to Right
HT-45 Linear Amplifier, HT-44 Transmitter, SX-117 Receiver
Shown with all available home station accessories of the day.**

W9MXQ Collection

By the way, for you fellow Hallicrafters aficionados who read these articles, I have a little test for you. Can anyone tell me what is missing in the above picture? Hint: It is not a product – it is a trim item. It is a trim item that seems missing 90% of the time when the product is seen. Send your answer to W9MXQ@TWC.com. This picture – with the missing trim item – is the basis for my QSL Card. This station, setup as you see it, above, is in operation as I write this article.

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 our mutual favorite in ham radio, Hallicrafters. Many comments herein are subject to opinions that W9DYQ and I hold in this very interesting manufacturer. Hallicrafters was, after all, in Illinois, the state where we both were raised. A complete SX-117, HT-44, and HT-45 Station, with all accessories, are among the oldest members of my collection. I was fortunate to have been friends with one of the engineers at Hallicrafters who was involved in the design of the product line (long an SK, now). Bob, W9DYQ, has two of the “Hallicrafters Twins,” as we call them. One of Bob’s Hallicrafters Twins stations has the predecessor to the HT-45 Linear Amplifier, the Radio Industries “Loudenboomer.” (Bob inherited that set, mentioned earlier from his father.) Technically, the Hallicrafters and Radio Industries versions differ only in cabinetry and the way grounding is handled on the 3-400z amplifier tube⁴.

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 Reviewed in the previous month’s article. See <https://www.ozaukeeradioclub.org/index.php/newsletters> and look for the 2022 Archive.

² A less detailed overall review of the SX-117 and HT-44, together, appeared in the March 2018 edition of this Newsletter. See <https://www.ozaukeeradioclub.org/index.php/newsletters> and look for the 2018 Archive.

³ When choosing a meter for this kind of circuit, be very careful. Back when Ted, then W9DYQ, and I made the Monitor Console, we picked matching surplus, metal housing Phaostron meters. They looked great!! But there was a flaw in our application. Their original use had been in an application requiring that the metal cabinet of the meter be at ground – or, that the housing was connected to the negative terminal on the meter. Had we not gotten into the meter and corrected that internal jumper, the meter, and the associated Monitor cabinet, would have been at the same potential as the plate voltage!!

⁴ A complete article on the Hallicrafters HT-45 Linear Amplifier and its predecessor, the Radio Industries Loudenboomer Linear Amplifier appeared under my name in the April 2018 issue of this Newsletter. See <https://www.ozaukeeradioclub.org/index.php/newsletters> and look for the 2018 Archive.

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When you're No. 1, you have to try twice as hard

Every year for 31 years, Hallicrafters has engineered more high performance amateur radio equipment than any other manufacturer in the world. For the last 30, we've had to fight every inch of the way.

In 1933, we had less than a dozen competitors. In 1964 we have over two dozen (at last count). Naturally, they all want to be the leader.

Early in the game, we learned that staying ahead of the crowd would depend on two things: Dedication to the needs of *all* amateurs; and very superior, *progressive* engineering.

So it's no coincidence that our SR-150 and SR-160 amateur transceivers *alone* offer both Receiver Incremental Tuning and Amplified Automatic Level Control. Or that we manufacture 19 products to answer *any* amateur requirement, while our largest competitor makes fewer than half that number.

Visit Our Booth at the
1965 SSB Show
Slatter Hilton Hotel
Tues. March 23rd
12 Noon-9 P.M.

- HT-44 Transmitter
- SX-117 Receiver
- HT-45 Amplifier
- SR-150 Transceiver
- SX-122 G.C. Receiver

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Hallicrafters Print Advertisement from 1965 SX-117, HT-44, HT-45 Station

© W9MXQ

On The Air!

de: Gary Sutcliffe, W9XT



Field Day 2022 is history. I saw some preliminary results, and I think we did really well. Gary, N9UUR, will go into the details at the July meeting.

My main observation is that dropping to 3A was a good move. We had enough people to keep all the stations running. That was not always the case when we were in classes with more transmitters. All three stations had more contacts than last year. We had a solar flare Saturday afternoon, which caused poor conditions for several hours. So, more contacts with a flare is very good.

N9UUR did an amazing job on the satellites. The only disappointment was 6 meters. Jeananne, N9VSV, didn't make all that many contacts. Conditions on the band had been poor the previous week, and the poor propagation continued for the weekend. You can't work them if you don't have propagation, but Jeananne was a real trooper hanging in there just in case we got an opening.

The other great thing is we had some new blood operating. I hope they will be back for future Field Days.

VHF

Summer means VHF for me. I have been active on 6 meters the last few summers hoping to make DXCC someday. In between DX openings, I have been chasing grids for the FFMA award, where you need to contact each of the 488 grids in the continental USA on 6 meters. I came in with about 410 at the start of the season and have added about 20 more.

For some reason, most of the grid rovers who drive around and operate from the rarer grids are not going to the ones I need. We didn't have propagation when they went out to needed grids in the west.

There was an operation to grid EL28. That just covers the last islands on the western part of Key West. Getting permission to land on one of the islands is difficult. So, the guy went in a boat! Operating on a boat is allowed for FFMA, unlike most awards. What really worried me was he was there the Thursday before FD and over the weekend. We had bad conditions on Thursday. Nothing was happening Friday morning. I was packing up for Field Day when I got a text from another FFMA hunter that the band was opening. I was able to snag him just before I had to leave for FD setup. I was worried that I would be at FD when the band opened, and I would miss him. No one has been there for a few years.

The other two ORC members I know who are active in FFMA are Gary, K9DJT, and Ken, W9GA. I think Ken only needs about 10-20 more to finish it. Ken worked most of his grids in the past the hard way, on CW or SSB and paper QSLs. The digital modes and Logbook of the World make it much easier, although it is a very difficult award even with them.

While 6-meter Es has been disappointing, July is off to a good start with an excellent opening to Japan and a monster European opening just before the deadline for the newsletter.

Another fun part of VHF in the summer is tropospheric propagation. It happens when cold and warm fronts collide. Sometimes an inversion layer forms that allows VHF and higher frequency signals to propagate long distances. If there is a temperature change, and especially if you see fog in the morning, there is a good chance tropo could be happening.

On the morning of June 16, we had the start of that hot spell. I checked out 2-meter FT8. The band was open due south, and I worked stations all the way down to Alabama. I heard there was some good propagation on 432 MHz that day too. Tropo can go up into the microwave bands.

Last month I mentioned the Central States VHF Conference at the end of July. You still have a few days to register, but the hotel is filled. They have over 100 attendees, and Ken, W9GA, will be one of the speakers.

Parks On the Air

From time to time, I like to try something different. In late March I worked a few guys calling CQ POTA and decided to look into it. POTA stands for Parks On The Air. I had heard about POTA but didn't know a lot about it. I checked their website. <https://parksontheair.com/>

It is a nice site with a lot of information about the program for the beginner. POTA is where hams set up to operate from state and national parks, some trails, or national monuments. City and county parks don't count. That still leaves plenty to work. Wisconsin alone has 207 listed. A couple are even within walking distance of my house. Many other countries also participate in the program.

Signing up is easy and free, although, like most organizations, they are looking for contributions to defray costs. You do not have to upload your contacts. Instead, the stations operating from parks upload their logs, and you automatically get credit.

Awards are a big part of the program. There are a lot of them. You can see your awards and progress on other awards when you log in. I was surprised to see I had some awards the day after I signed up! It turns out contacts are retroactive. You can download award PDFs and print them if you want.

One thing that surprised me was the number of stations active. Now that warm weather has arrived, you might see spots for 60 or more on weekends at any given time.

POTA activity for May included almost 11,000 activations from 4,225 parks! This was from their monthly YouTube video update.

https://www.youtube.com/watch?v=5wNGA1gtZ_I&t=101s

POTA is a fun thing to do when nothing exciting is going on the bands. Even on weekdays, there are often a dozen or two stations on the air at any given time. Contacts are primarily CW, SSB, or FT8. Sometimes you will see someone on FT4 or even PSK31. You can work a given station once per day for credit as long as each contact is a change in band, mode, or park. FT8, FT4, PSK31, etc., all count as Digital.

I have been chasing POTA for a bit more than three months, and by the time you read this, I will have my 500 Parks hunted award. It is easy to pick up a half dozen on most days and 15-20 on weekends in not very much time.

Stenogyne Kanehoana



That
Gary Sutcliffe
W9XT

has submitted proof of working
400 unique reference areas
in the Parks on the Air program,
this certificate is hereby
presented in recognition of this
outstanding achievement.

Jason Johnston
Jason Johnston, W3AAX, POTA Coordinator

06/03/2022
Date

400 Hunter Award

Photo: David Eickhoff via Wiki Commons

Parks On The AIR award for working 400 different parks.

One POTA award that has been harder than expected is the Hunted US States. I still need to work North Dakota. Nothing unusual about North Dakota being the last state,

but my last states were all from W0 and were IA, NE, SD, and even MN. Part of the problem is the park activators tend to favor higher bands since the portable antennas are smaller and more efficient. Signals on these bands will tend to skip over nearby states. But for some reason, you don't even see many spots from these states.

Conversely, Wisconsin has a very active group of park activators. Wisconsin stations are hard to work sometimes because they are in the skip zone. Also, many of the stations are QRP.

I found the POTA activators to be very friendly. They really seem to appreciate you working them, even though they put in all the effort. When you work the park, activators give them actual signal reports and your state. They want to know how well they are getting out.

The logs are processed every night. Sometimes it takes a week or more for logs to get through the system, and even if I have not worked any POTA stations, I usually find new credits daily.

Operating POTA is addicting. I check in daily to see my progress on the next awards. Bill, W9MXQ, has also gotten into POTA. He started because they were easy stations to find and work while testing out his extensive classic radio collection. As of this writing, he has already collected eight certificates.

While hunting parks is fun, I suspect actually activating them is where the real fun is. You see some ops who have made hundreds of activations from hundreds of parks. You see some guys that are on from the same park day after day. One nice thing about POTA is you can operate mobile and have an activation as long as you are inside the park boundaries. I hope to find time to build some portable antennas and activate a few this summer.

Fred, W9KEY, reported he finished his portable battery power supply. It uses a 50 AH LiFePO4 12 V battery. Fred hopes to use it in some portable park activations this summer.

13 Colonies Special Event

Every year during the first week of July, a group of operators get special calls and operate from the states representing the original 13 colonies of the United States. I always forget about it. Then I hear them on the air and see if I can work them all. I'm sorry I forgot about it and did not mention it in this column last month.

The 13 stations use the call signs K2A through K2H. There are "bonus" stations too. From England is GB13COL, and TM13COL is on from France. The other station is WM3PEN for William Penn.

Several other ORC members were planning on participating, including Bill, W9MXQ, Gary, N9UUR, Bill, AC9JV, and Fred, W9KEY.

I decided to see if I could work each of the 13 colony stations on CW, SSB, and digital, plus a contact with each of the three bonus stations. I mentioned this to Bill, who took it as a challenge to beat me. It took me a long time to work my last one, K2F, from Maryland on SSB. They didn't have anyone on SSB from there very much. Bill finished the 13 colonies before me and worked all the bonus stations. As of this writing, I still miss GB13COL and doubt I will work it. They don't seem very active.

Gary worked all 13 colonies, but I didn't hear how Fred did.

Balloon Crossband Repeater Launch

Tom, KC9ONY, has been posting about the Independence Amateur Radio Club's balloon launch on the club reflector. The launch has been delayed until July 16. Depending on the wind direction, we might be able to use the repeater. You can also track its progress on APRS.

Plans on this can always change. Check out the link for last-minute updates. <https://www.n0id.org/announcements>

Thanks for the heads up, Tom!

I have added another chart for the upcoming month or so. In addition to the contest and DXpedition charts, I am adding one for other operating activities. If you know of an event that might interest other ORC members, send me the information, and I will include it. Or you can write up a short article on it, and Bill, W9MXQ, would be happy to include it.

It's a small world

I was on 6 meters a couple of weeks ago. We had a good opening to the south, and I was calling CQ on FT8 to see what might turn up. I worked a few Texas stations and didn't think much about it. Then, a few hours later, I got an email from one of them. He said he was trying to get Worked All States on 6 Meters and looked me up on QRZ to see if I was a new state. He noticed my last name was his maternal grandmother's maiden name. After some email discussion, we found that his grandmother was my grandfather's sister! So, he is my second cousin I didn't know I had!

It also turned out we missed each other by a couple of years at the University of Wisconsin ham club, the Badger Amateur Radio Society, W9YT. We were both officers of the club during our respective times there. So, you never know who you might hook up with on the other end of the QSO!

Contests

The IARU HF World Championship contest was covered last month, but the newsletter should be out the day before. So, this is your final reminder.

The CQ VHF contest happens the third weekend of the month. This VHF contest only covers 6 and 2 meters. You can operate single band or all band. Exchange is your grid square. This contest has been generating a lot of interest over the last few years. If you have not operated this one, but operated the ARRL contests, be sure to read the rules. There are some differences, especially concerning spotting.

The North American QSO Party, RTTY, is the same weekend as the CQ VHF contest. This has been covered many times before. You work other stations in North America. The exchange is your name and state. The maximum power is 100 watts. The CW event is on August 7.

DX

A good one came in under my radar. 7Q7RU is on from Malawi by a group of Russian hams. They were in Africa last spring. At the end of their previous operation, they went to another country not announced initially. No guarantees they will do it again, but you never know.

VK5HZ will be on Macquarie Island for a few months on assignment. He will operate in his spare time. This is a pretty rare one, and DXpeditions to the island are not frequent. However, he has been active with nearly 4000 QSOs as of early July. I was able to snag him on 30-meter FT8 a few weeks ago at about 7:00 AM local time.

Another good operation will occur at the start of August from Rodrigues Island. I don't have a lot of info on this one, but a group of about five operators from Mauritius will be there running 100 watts.

That wraps up July! Stay cool!

.....

Please see the next page – with monthly Contest and DXpedition picks for the month of July and early August. Print that page separately and keep it next to your radio.

W9XT Monthly Contest and DXpedition Picks for July and Early August

W9XT's contest picks for July and early August 2022					
Name	Start	Length	Bands	Mode	Link
IARU	1200Z July 9	24 hours	HF	CW, SSB	https://contests.arrl.org/ContestRules/IARU-HF-Rules.pdf
CQ VHF	1800Z July 17	27 hours	6M, 2M		www.cqww-vhf.com/rules.htm
NAQP	1800Z July 17	12 work 10 max	HF	RTTY	www.ncjweb.com/naqp
NAQP	1800Z Aug 7	12 work 10 max	HF	CW	www.ncjweb.com/naqp

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

W9XT's DXpedition picks for July and early August 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Malawi	Until Aug 10	7Q5RU	HF	C/S/D	https://www.dx-world.net/7q5ru-malawi/
Macquarie I.	Now to Sept?	VK0MQ	HF	S/D	
Rodrigues I.	Aug 5-9	3B9?	HF	TBD	

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

W9XT's Operating Events for July and early August 2022					
Event	Dates	Call	Bands	Mode	Link/notes
IARC Balloon Launch	July 16	N0ID	2M- 70 CM	FM	https://www.n0id.org/announcements

Ozaukee Radio Club minutes of membership meeting. 6/8/2022

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 Pat W9JI officially initiated the meeting at 7:33 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance but were not addressed individually. Loren N9ENR had Swapfest fliers available; Chuck W9KR mentioned his latest radio rebuild activities with Collins gear; Gary N9UUR is having a ball on 17M FT8; Tom W9IPR has been playing with a long wire and tuner on the low bands.

Program:

Field Day 2022 was the subject this meeting, which led off with a brief overview of what the event is, some history, and the ORC participation in past years. After the PPT slides, an open floor discussion was held, Nate KC9TSO, Vic WT9Q, Vic WT9Q all participated and invited members to come out for the event and answered questions. Other members did elect to operate from home.

After a short break, the 50-50 lottery was conducted; Tony KD9RJI won \$18.

Scholarship Auction:

Stan, WB9RQR held the auction, several items were sold; including computer monitors and a couple computers setup with Linux.

Committee reports:

[there were no first or second VP reports]

Repeater: Gregg W9DHI says that the main route to the repeater site is closed, so access will be available by coming in from the west, and that some minor electrical items need attention.

Treasurer: Gary N9UUR has presented a new budget for the year, with an overall spending number of \$3700. The May treasurers' report was accepted; motion made by K9QLP 2nd by W9DHI and carried.

Secretary: Ken W9GA reported the May 2022 minutes are posted; a motion to accept was made by N9VSV, N9DRY 2nd, and motion carried.

Newsletter: Bill W9MXQ would like any updated info for the newsletter sent directly to him.

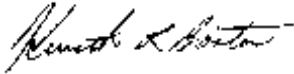
Scholarship/STEM: Tom W9IPR would like some help in collecting some of the scholarship fund donations from the barn to be conveyed to the Cedarburg recycling event to be held soon.

OLD business: No old business was presented

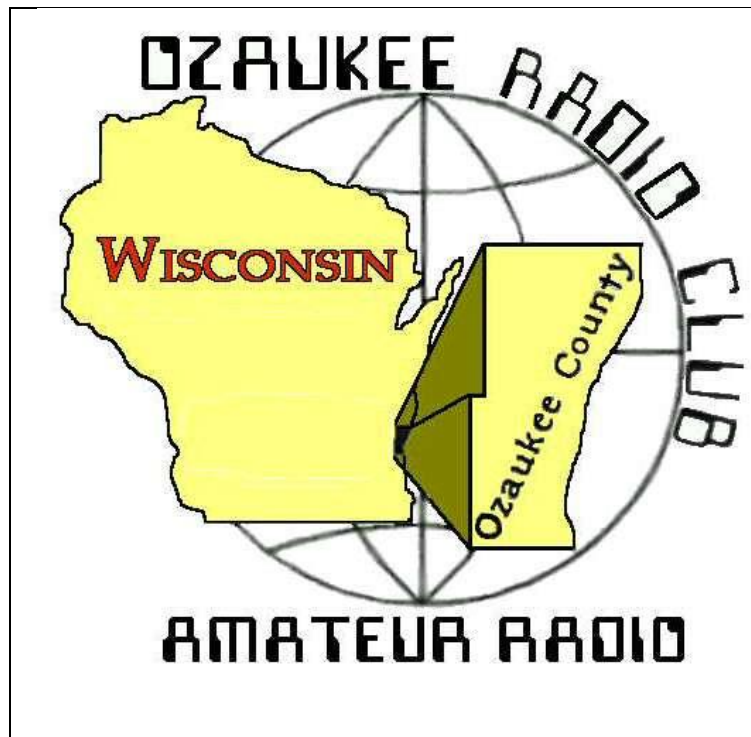
NEW business: Gregg W9DHI informed us that KC9WUI is now an SK, and much of his equipment has been given to the club, for sale, with proceeds to be split between the family and the club. A suggestion was made to give club nametags to new members, which will be taken up by the board.

Adjournment: WB9RQR moved to adjourn, KC9STO 2nd, motion carried; time ending was 8:45 PM. There were 26 in-person attendees, 16 Zoom attendees.

Respectfully submitted:



Kenneth Boston W9GA, Secretary:



Until Next Month – Snapshots of 2022 Field Day

Ozaukee Radio Club – W9CQO – via Peter, WØNG



Until Next Month – Snapshots of 2022 Field Day Ozaukee Radio Club – W9CQO – via Peter, WØNG



Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

July – Field Day Report: Gary N9UUR, Ken W9GA
and

Everything you Wanted to Know About JS-8 Michael WH6ZZ

August – Bill Shadid, W9MXQ - Drake Linear Amplifiers – Features and Failures

September - Open

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

ORC Meeting Agenda

June 8, 2022

- | | |
|---|--|
| 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 Volkmann (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. Presentations:
>> Gary N9UUR, and Ken, W9GA
Field Day Report
>> Michael, WH6AA, Everything You
Wanted to Know About JS-8 | 9. Secretary's Report:
Ken Boston (W9GA) |
| 5. President's Update:
Pat Volkmann (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
10 August 2022**

**Program
"Drake Linear Amplifiers"
"Features, Failures, & Fixes"
Bill Shadid, W9MXQ**

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

Facebook: facebook.com/orcwi

Volume XXXVII

August 2022

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

A Message from the Editor Newsletter Table of Contents

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

715 N. Dries Street, Saukville, WI 53080-1664 wb9rqr@gmail.com

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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E. F. Johnson Company – Viking Amateur Equipment



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

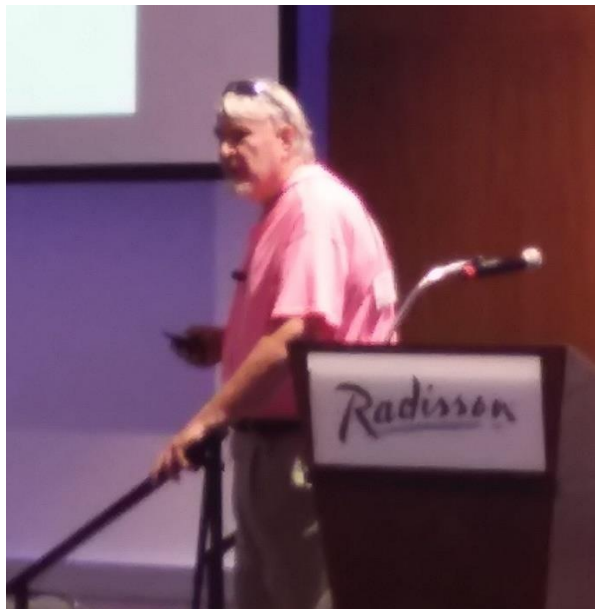
putting antennas right on the chip. Some clever hams figured out a way to adapt them to ham use.

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?



Please don't call it a TRANSCEIVER...

Some people don't like transceivers. Too much **compromise**, they claim... only **separate** transmitters and receivers can deliver really top-notch performance under all conditions...

Pretty hard to argue that point... UP UNTIL NOW!

BUT NOW... SIGNAL/ONE brings you the DELUXE INTEGRATED STATION...
... **more** performance than any transmitter/receiver combination
... **more** convenience than any transceiver
... **unprecedented versatility**

WHATEVER YOUR CHOICE IN THE PAST...

COMPARE IT POINT-BY-POINT with the NO-COMPROMISE CX7...

COMPARE the CX7 with any receiver for sensitivity, selectivity options, dynamic range, AGC merit, VFO smoothness, interference rejection...

COMPARE the CX7 with any transmitter for continuous power output in all modes, P.A. ruggedness, crisp audio punch, low distortion, instant CW break-in and spotting, quick band-change...

COMPARE the CX7 with any transceiver for total size and weight... the extreme flexibility of its dual-channel system... the convenience of its completely self-contained design...

CONSIDER the CX7's incomparable frequency coverage and readout precision... aerospace-bred excellence in engineering and craftsmanship... built-in "extras"... overall versatility...

signal/one
"It Speaks for Itself"
A Division of ECI (An NCR Subsidiary)

2200 Anvil Street N. • St. Petersburg, Florida 33710

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.

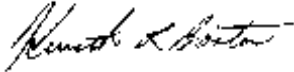
Scholarship/STEM: Tom W9IPR has accepted a donation by Ed, AA9W, who will be relocating to a condo in VA, to be close to family.

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.

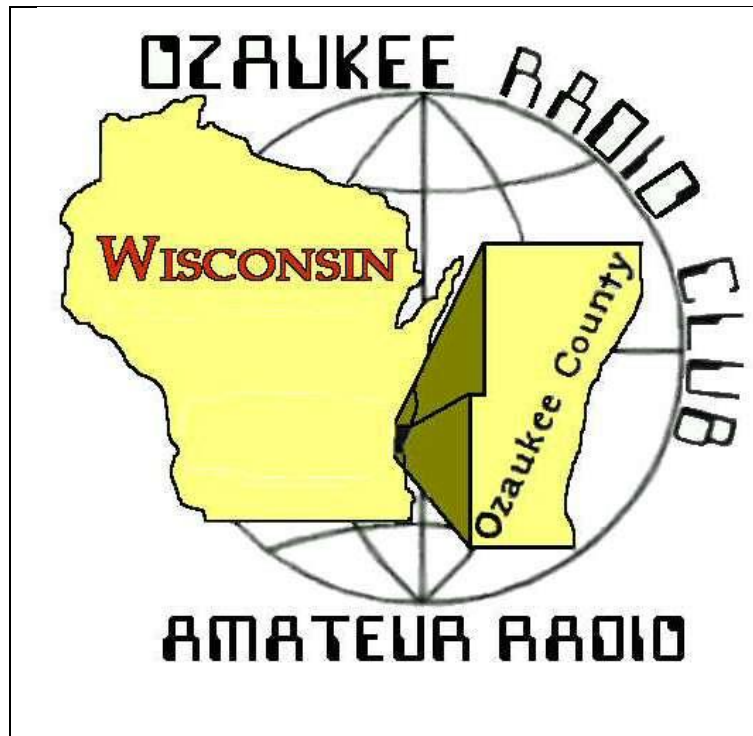
NEW business: Tom KC9ONY addressed the upcoming Lighthouse operating event. [8/19-8/21] where LeFrog and ORC combine to set up and operate. Tom is looking for assistance and some financial support from ORC. Ken W9GA mentioned the upcoming CSVHFs conference in LaCrosse. The scholarship \$2000 award was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



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

Facebook: facebook.com/orcwi

Volume XXXVIII

September 2022

Number 9

From the President

de Pat Volkmann, W9JI



August was a very slow month for me, at least with ham radio. My wife and I took a short vacation in northern Wisconsin, as we have done for many years. The “vacation” this year included lots of maintenance on our cabin and continuing to clean up after the storms earlier in the year. I usually spend some time on the air from that location, but not this year. The antenna came down over the summer, a combination of broken ropes and dead support trees. The storms and maintenance work over the last couple of years have left some very tall trees on either side of the clearing around the house. It is a perfect setup for a new wire antenna. I’m looking forward to getting back to the cabin this fall and getting that antenna put up.

Last month I asked you for some program ideas and got a couple of great suggestions, so I’ll ask again. We need programs for November and December. 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 besides a presentation? Send me those suggestions!

Elections are coming up in January, just a few months from now. 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.

The weather forecast for the Fall Swapfest (two days from when I'm writing this) looks great. By the time you read this we should know how things went. I'm looking forward to seeing many you and looking through all the piles of "good stuff" that appears at the Swapfests.

See you at the meeting.

Pat Volkmann W9JI

A Message from the Editor Newsletter Table of Contents

de: Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. Pay careful attention to Pat's request for programs. This is the tough side of leading a radio club (or any technical club) – the thing that is the most popular for members (programs at meetings) is also the hardest thing to do.

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 Ozaukee County EC, Don Zank, AA9WP pens are article on, "Ready or Not." This time on Receiving. Stan Kaplan, WB9RQR, talks about Dual Boot Computer Setup. Bill Shadid, W9MXQ, (your Editor) brings a bit of past experience to the table. And, Gary Sutcliffe, W9XT, talks about this months On the Air Activities – Contests, DX, and Special Events.

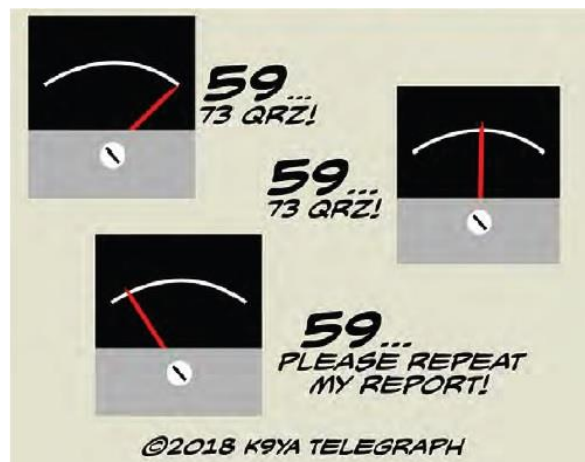
Nicely done this month are two member written articles. One is from Fred Schwierske, W9KEY, with results of the International Lighthouse / Lightship Weekend Special Event Station done by Ozaukee Radio Club, in cooperation with LEFROG Radio Club. The other is from Ken Boston, W9GA, with the results of the 2022 Ozaukee Radio Club ARRL Field Day Event.

Remember the Ozaukee Radio Club Fall Swapfest at Fireman's Park in Cedarburg, tomorrow, 10 September. Check Page 8 for more detail – and the Swapfest Flyer at the very end of this Newsletter.

I am always 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 or an upgrade, etc. Contact me for details at newsletter@ozaukeeradioclub.org

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Onward To the Newsletter

INTERNATIONAL LIGHTHOUSE / LIGHTSHIP WEEKEND

August 19 – 21, 2022

de: Fred Schwierske, W9KEY

Covid interrupted many activities during the past 2 years, including our participation in the annual International Lighthouse Lightship Weekend (ILLW). But things are slowly returning to normal and the LEFROG Radio Club and Ozaukee Radio Club organizations again joined forces to participate in this wonderful event, now celebrating its 25th year.



20 Meter Beam & 40 Meter Dipole Stations at the Port Washington, WI 1860 Lighthouse – ILLW 2022

Held on the 3rd full weekend in August, ILLW is one of the most popular international amateur radio events in existence today. Nearly 400 Lighthouses / Lightships were activated by Clubs this year. It is NOT a contest – there are very few rules, no prizes, no certificates, no power or antenna restrictions, and no cost to participate.

Rather (quoting their website), the “**concept of ILLW is to promote public awareness of lighthouses and lightships and their need for preservation and restoration, and at the same time to promote amateur radio and to foster International goodwill as well as remembering the dedication of those who served as lighthouse keepers.**”

In this spirit, the main rules clearly define what constitutes a valid historic Lighthouse structure and also stipulates the amateur radio station “**must be at, or directly adjacent to**” the light – with visible presence to passing public who may be visiting the lighthouse during the weekend. For more detail, see: <https://illw.net/>

Fully complying with both the intent and specific Event rules, we are most fortunate to have access to the nearby 1860 Light Station in Port Washington, Wisconsin. Located at 311 Johnson Street (up on the hill), this beautifully renovated structure overlooks the western shore of Lake Michigan and is operated as a museum during summer months by the Port Washington Historical Society. <https://www.pwhistory.org/1860-light-station> When contacted earlier this year, museum manager Patrick Curtiss and his volunteer staff offered their enthusiastic support and went out of their way to welcome us.

The Lighthouse event officially ran for 48 hours, starting 7:00 pm Friday evening. But to minimize impact on the quiet residential neighborhood, we decided to operate only Saturday & Sunday daylight hours:

Friday - Setup of 3 HF stations began early afternoon August 19, 2022 – including a 30-foot tower with tri-band beam for 20/15/10 meters, a 30-foot fiberglass mast supporting the far end of a 40-meter wire dipole, and a 3rd frequency agile, end fed multi-band vertical antenna. In addition, we set up a D-STAR station to hit the W9FRG B repeater (442.81875) to work 30C, 1C and other reflectors as noted on our DPLUS Dashboard page (B Module) at: <https://w9frg.dstargateway.org/>



Bill K9GN, Joe KD9RAW, & Gary W9XT
Working on the 30 Foot Tower

Radio equipment, power supplies, and logging computers for each of the 3 HF stations were to be protected by individual pop-up canopies located around the West (40m), North (20m), and East (15m) sides of the lighthouse. The museum kindly provided “shore power” for the event, eliminating need for generators and fuel.



Gary W9XT, Bill K9GN, Joe KD9RAW,
Fred W9KEY, Steve W9MCU, & Loren,
N9ENR Installing the 20 Meter Beam

Thanks to our skilled group of 10 volunteers, antennas were up by late Friday afternoon and Loren, N9ENR verified all were properly tuned for their respective bands. Having free time, we decided to perform a “radio check” with the 20-meter station. Since operations were not starting until early Saturday morning, our protective pop-up canopies had not been erected. During the second test QSO, I was surprised by a huge water drop crashing onto our Icom IC-7600 transceiver. Looking up, a dark overhead cloud spit out a second large drop - again smacking the radio - followed by many more!

Unfortunately, the Lighthouse was not open Friday, our shelters were not up, and only a tiny sliver of overhead roof near the back entrance offered any immediate protection. Everyone grabbed a piece of gear, found whatever cover they could (it was now raining hard) while frantically searching for umbrellas. I’m happy to report, the equipment survived, and everyone eventually dried out – but the weather sent us home earlier than expected.

Saturday dawned foggy, cool, and damp. Arriving at 7:00 am, one fully expected to see the lighthouse light shining and foghorn blaring. Popup canopies were erected, electronics unpacked, Club banners hung, and we were ready to operate by 8:00 am.

Nancy, KC9FZK and Stan, WB9RQR arrived early both Saturday & Sunday to bolster our 20-meter totals. But the bands were frustrating all day with stations sometimes



Nancy KC9FZK and Stan WB9RQR
Worked 20 Meters Saturday and Sunday

completely fading during the call sign exchange. 40 meters was tough going, too - and in spite of working hard, Joe, KD9RAW had no activity what-so-ever on 15 meters. We struggled with poor band conditions most of the day, thunder forced a short shut down mid-afternoon, and heavy late afternoon rains finally convinced us to simply give up and go home. In spite of the nasty conditions, we had 14 rugged participants / visitors check-in on Saturday. Everyone who wanted "seat time" had an opportunity to make contacts, but they probably got wet!

Highlighting that – Scoutmaster Joe Bettencourt, KD9RAW assisted Jake, KD9TRQ (a Scout who just earned his General ticket) to make his first HF contacts with his new license! Watching a new ham having an opportunity to operate a well-designed HF station for the first time, reinforces why we all enjoy Special Event and Field Day stations. All the construction effort immediately becomes worthwhile!



Mentor / Scout Leader Joe Bettencourt, KD9RAW (left) with new General license holder Jake KD9TRO at the mic. Jake made his first HF contacts during the 2022 Lighthouse Event!!

Sunday was even better. Although band conditions remained "dynamic", the weather situation improved. Occasional sunshine allowed both canopies and operators to dry out and overall, it was a very pleasant day. We again had 14 sign-in members / visitors, including several museum staff. Visitor log shows Dan Reed, K0DSC and wife Pam who just relocated from New Mexico; and well-known local hams Jerry, K9FI & Cherri Riedel, K9WOC who stopped by to chat. Sitting around talking with friends is a great part of ham radio – so difficult choices had to be made whenever an operating chair was vacated. But we kept the radios warm until 2:00 pm



Joe, KD9RAW at the End Fed Vertical
Battery Powered Portable Station

tear-down. Our efficient crew had the stations dismantled, trailer & vans packed, and everything safely stored away by dinner time.

So - - - now that I've complained about challenging band conditions and wet weather:
– How did we do??

- Total HF Stations Logged: 281
- Total Lighthouses Contacted: 12
- Total Daily Participants / Visitors: 42
- Total Unique Operators: 10

In closing - A special thanks to museum manager, Pat Curtiss and his dedicated volunteer staff of docent guides who devote their summer weekends to educating visitors on the historical significance of the Port Washington 1860 Light Station. Thanks also to Mr. Comer for kindly allowing access to his adjacent property for our equipment set up.



Nate KC9TSO & Joe KD9RAW struggle with 15-meter band conditions

And of course, none of this would have been possible without our enthusiastic core construction group, including Tom KC9ONY, Loren N9ENR, Will K9OO, Don K9MOI, (and Russ), and LEFROG Radio Club President, Steve W9MCU. Gary W9XT and Bill K9GN also assisted. A pre-event press kit was created and distributed by Markus, KD9UWG, and incoming QSL card requests will be handled by Mike, KD9GCN and Gary, K9DJT. Thanks to everyone who participated!!

What's Next? – We have already been invited back to the 1860 Light Station and look forward to possibly operating next year under protection of their new lifeboat display shelter. Construction is about to begin, with completion scheduled for early 2023.

If you were unable to attend this year – immediately mark your calendar for the 3rd full weekend in August (Friday 8/18 to Sunday 8/20), 2023. You too can have the opportunity to help assemble several state-of-the-art amateur radio stations, watch / learn from experienced operators, log contacts of your own, possibly work another lighthouse somewhere in the world, and maybe even get rained on (well, hopefully not).



Mike KD9GCN Logging Contacts on 20 Meters

53 Clubs have already registered for the 2023 Lighthouse event.

Do you want to participate next year?
If so, let me know.



Cherri K9WOC and Jerry K9FI Visiting
the 40 Meter Station

73, Fred Schwierske, W9KEY
fred.schwierske@gmail.com

Don't Forget!!!!

Message from Tom Ruhlmann, W9IPR

The 16th annual Ozaukee Radio Club outdoor Swapfest
will be held this Saturday, September 10th,
at Fireman's park in Cedarburg WI.
(That's Tomorrow!!!)

Great opportunity for sales from your trunk and bargains
galore. Hours are from 6 AM to noon and admission is
only \$5. Weather looks good but inside tables will be
available for \$10. For more information go to
<https://www.ozaukeeradioclub.org>
or check the flyer at the end of this Newsletter.

Hope to see you at Fireman's Park
for some great bargains.

Ozaukee Radio Club ARRL Field Day 2022

de: Ken W9GA, Field Day Chairperson

The American Radio Relay League, the predominant participation group in Amateur radio, did establish in the 1930's an exercise that would get the amateurs out into the public to 'showcase' their skills and expertise in providing communications to the community. They named this enterprise 'Field Day.' It has been a mainstay in the Amateur Radio world for many years and remains so even today. Thousands of amateurs and hundreds of clubs in the US and Canada participate every year in late June in this activity.

This last June 2022, the ORC once again placed 5 stations in a 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 a few 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 20meter+ phone; CW [all bands] and the VHF/SAT stations.



View of the park pavilion, our main tent, and one of the beam tower trailers.



CW [multiple bands] Tent: Mark KD9NOO and Vic WT9Q manning the key



20 Phone: Ken W9GA, in the main tent, alongside the PR table and the GOTA station



40-meter phone station: Nate KC9TSO and Bill K9GN operating



Satellite station: Gary N9UUR operating



VHF station [6 meters] with Jeananne N9VSV and Tom AA9XK



Emergency power supplied by a pair of generators, and our custom power distribution panel

With nearly 30 club members participating; operating, assembling stations, setting up and tearing down, cooking, stopping by and just generally pitching in; a great time was had by all.

This year 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 manned. In the past we had listed as either 4A or 5A; but kept finding that we didn't have sufficient operators to fully man the stations. Even at 3A this year, we managed to have a reasonable effort put forth on the bands, with a QSO count of 2847, which was in line with past efforts. 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 almost 10,000 points overall.

We all had fun, made lots of contacts, and had fairly good weather for the weekend, doing radio out in the park.

Now looking forward to a great effort for 2023, ALL are welcome!!

Kenneth Boston, W9GA,
Chairperson FD 2022



Signals from the Ether – It's what we do!!

THE COMPUTER CORNER

No. 294: How To Dual Boot – Win and Linux

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

This article will show you an *approach* to setting up a dual boot machine with Windows 10 and Linux. It should work for other versions of Windows as well as 10. I am writing it over a period of days during the installation on a desktop computer (yes, it will also work on a laptop).

I. Windows MUST BE INSTALLED FIRST! Don't even think about installing Linux first, because Microsoft's products do not play well with other operating systems and if Linux is on the hard drive first, it will be overwritten by Windows. Install Windows and get it running the way you like it, FIRST. Then install Linux and all will be well.

a. Decide on how much space to allocate for Windows and Linux. For example, if you have a 1 TB hard drive, you might want to allocate half to Windows and half to Linux. Thus, 500 GB is way more than enough for Linux and will do nicely for Windows as well.

b. Wipe the hard drive using disk wiping software such as free DBAN (Derik's Boot And Nuke) or other drive wiping software which you may find at our old friend, <https://www.majorgeeks.com/> or elsewhere. The aim here is to remove any malware or glitches from the drive, show up any errors in surfaces or logic and begin with a clean, empty slate. This is definitely best practice. When you are done wiping, there will be nothing on the drive, and that includes no partitions of any kind. It definitely will not boot at this stage!

c. Use EaseUS Partition Master Home Edition 16.5 (free, 2022 edition), available at Majorgeeks, or other some other partitioning software to partition the Windows half of the drive. Leave the Linux half unallocated. Make the part for Windows all NTFS, which is what Windows uses. If you like, make it just one big C: drive. What I suggest, however, is to make it three approximately equal partitions. Read on for at least 30 years of tried-and-true reasons.

1. C: for Windows itself and any software that absolutely insists on being installed on the C: drive (many programs try to do that, though most can be convinced not to do so).

2. D: for programs, such as DBAN, EaseUS Partition Master, drawing or graphics software, ham logging programs, or any of the myriad of programs you might wish to have, all isolated on the D: drive.

3. E: for stuff you create. Drawings, programs you write, documents you author, and so on. This makes it incredibly easy to back your stuff up. Just burn a CD once a month or so, with all the contents of the E: drive! You may eventually have enough stuff, so it won't fit on a CD, so just use a DVD. I promise, unless you are a professional pho-

tographer and have thousands of pictures, you will be over 100 years of age before you overrun the space on a DVD with your personal creations! It is not necessary to back up Windows or programs – you can always get these from disks or downloads or whatever. But you cannot afford to lose stuff you author, and once they are on CD or DVD, you are safe.

Now after partitioning is done, be careful. Take the time to double check the partitions to be sure that the unallocated half for Linux is still there. In the setup I am doing now for this article, I had Windows hog all of it for the C: drive, leaving no unallocated space for Linux, and it did this without notifying me or asking my permission. If necessary, redistribute the partitions the way you originally intended before you install Linux. You can use Windows itself for this purpose once it is installed, but better to use EaseUS because it will do what you tell it to do without any sneaky, underhanded shenanigans. Remember, Microsoft Windows is no friend of Linux, and it may do to you what it did to me. EaseUS will give you a list of partitions, and a graphic map showing all of them, which you can tweak (make smaller or larger) as you prefer. Your aim is to wind up with something close to this for a disk partition map of a 1 terabyte drive:

WIN C: NTFS 167 GB	WIN D: NTFS 167 GB	WIN E: NTFS 166 GB	UNALLOCATED (for LINUX installation) 500 GB
--------------------------	--------------------------	--------------------------	---

II. You can use EaseUS to rearrange drive letters as you wish to conform to the above. Or, you can just have a C: drive for Windows, which I claim is not ideal. Once you have something akin to the above, or at least a good chunk of unallocated space for Linux, you are ready to install it. Although there are many, many “distros” of Linux, I suggest Linux Mint Cinnamon (64-bit) 20.3 (“Una”). If you are familiar with Windows, this release will not present many learning curve changes. And it’s a snap to install. You just shove a Live DVD into the drive and reboot with it. After a bit, you will have Una’s desktop showing, and you can play with it as you wish. When ready to install, note the icon for **Install Linux Now** on the desktop and click it. The installation is smooth and easy and quite intuitive. Need that Live DVD for installation? Contact me to arrange to pick a free one up. And, by the way, Happy Computing!

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 AA9WP, OZARES Emergency Coordinator, aa9wp@arrl.net
Ready or Not on the Receiving Side



Last month's article discussed how to prepare for an emergency when you are away from home. You could be at a campsite, a state park, or visiting relatives and friends out of state. How could you use your amateur radio operating skills and knowledge to provide communication help?

Many practice or informal radio nets begin with the question, "Before we start the net, does anyone need the repeater or have any emergency traffic?" You can hear the sigh of relief from the net control station when nobody replies. But what if someone did reply? Imagine you are at home with the radio on in the background, monitoring the local repeater, or the national calling frequency, and you hear a ham asking for help. What do you do? Turn the squelch up? Change frequencies? Go mow the lawn? I did not think so. Hams tend to be a friendly and helpful bunch.

First, unlike last month, you have the advantage of operating from the friendly confines of your home station. You will be working in a less stressful situation.

Before you can provide any help, it would be best to determine the callers' location and type of issue.

Maybe he just needs directions to his destination. That should be simple. However, with all the new roads and housing developments in Ozaukee, it may not be. This could be a real learning experience.

What if it is a medical emergency and the caller is in the local area? Now, you need to keep a cool head, because there is a good chance the ham on the other end is not. You and the caller are going to work together to decide the correct course of action. Do you try and get the caller to a local medical facility? It could be difficult to provide directions to someone not familiar with the area. The best course of action may be to contact local emergency responders or 9-1-1. And, hopefully, the caller can provide a somewhat accurate location. APRS would be very helpful in this difficulty.

Now, how about more complex conditions? The caller is not in the local vicinity but somewhere in the state or a different state. He or she may be calling on the statewide WECOMM system or on a hf band.

Again, the location and type of issue would be the starting point.

If the caller is lost, providing directions to a local destination may or may not be possible. But you could give it a try. The best solution may be to locate a local repeater for the caller.

How about a medical emergency in another county or state? (You can assume that caller is using the radio because he has no cell phone coverage). Is the caller able to provide an accurate location such as a county or nearby city? From that information, it should be possible to locate emergency phone numbers via our friend Mr. Google. If an accurate location is not provided, say someone on a trail or off-road, estimating their location, while difficult, is not impossible. Any information the caller can provide, including the name of the state or county park, trail path, or where the car is parked, could help in determining their location.

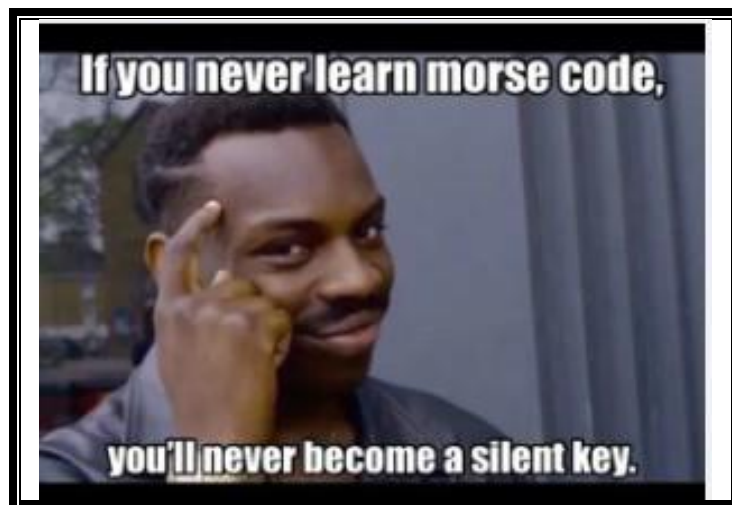
We could continue for a long time with various scenarios. Imagine a severe weather event that impacts both of you. Cell phone and internet services are not available. What courses of action are available?

Should you reach out to stations outside of the area? What would be the best mode and frequency to use?

What if there was a widespread power outage? Do you have emergency power available?

Flooding or wildfire emergencies may require you to evacuate. Are you ready?

Preparation, training, and knowledge of your equipment, communication modes, emergency power, and procedures are things to prepare before they are needed. So, you will be ready when you are the net control operator and someone calls asking for help.



Vintage Amateur Radio

de Bill Shadid, W9MXQ



Every once in a while, it is a good idea to share a few details of simple tricks learned over the years that can help keep a Vintage Amateur Radio – or an inventory of these interesting and challenging historic items – working and performing.

This month we will get into several subjects relating to things discovered over the years to make Vintage Amateur Radios work and perform better.

Replacement for Incandescent Pilot Lamps:

One of the first things that happens with a vintage radio is that one of the little light bulbs used to illuminate the frequency readout dial or the panel meter(s) is burned out. We refer to these as “lamps.” For most of us, we are referring to the #47, 6.3-volt, or the #1851, 12.6-volt, lamps that are common. The 6.3-volt or 12.6-volt operating voltage is not all that uncommon as it matches the voltage rating of most of the vacuum tubes in the radio. Some radios require such lamps to comfortably read the dial for determining frequency.

Finding suitable replacements for the common #47, #1851, or any of the other 2.5-volt, 5.0-volt, 6.3-volt, 12.6-volt, and more incandescent bulbs has become somewhat problematic. While suppliers from Asia exist and are plentiful at the present time, they lack the quality and consistency of the classic American bulbs from General Electric, Chicago Miniature, and others. The classic bulbs are available as new old stock (NOS) from the original manufacturers – but are becoming harder and harder to find. The Asian equivalent parts are inconsistent as to internal structure and can project objectionable shadows in the viewing area. The internal structure of a high-quality pilot lamp is consistent with the placement of the alignment pins in the base. The original radio manufacturers used this alignment to properly orientate the lamp mounting to provide a clear projection of light onto the panel – absent any shadowing from internal lamp parts.

A reasonably acceptable alternative to the classic incandescent lamp for use in radios comes in the form of LED Replacement Bulbs. I have found over time that the highest quality LED Replacement Bulbs come from a company called Titan Pinball. I have no association or connection with that company. However, in my opinion, they make a quality product. They can be found on eBay™ by doing a search (within eBay) for “Titan Pinball.” Look for “Warm White” color – or color temperature of about 2700-3000 Kelvin. That color target removes most of the harsh tones of the typical white LED. The light diffusion from the little LED bulbs is excellent.

Take a look at a comparison of a Titan Pinball LED Replacement Lamp and a traditional one from Chicago Miniature Lamp Company. The Titan Pinball product is a replacement for the 6.3-volt #47 Lamp. The Chicago Miniature Lamp Company lamp is an original #47 design.



Titan Pinball
LED #47 Lamp Replacement
W9MXQ Photo



Chicago Miniature Lamp Company
#47 Lamp
W9MXQ Photo

There is a nasty little secret when using LED Replacement Bulbs that can spell doom for your vintage radio. Occasionally, LED devices can fail to a short rather than an open circuit. Such a short on the filament line of the radio's power transformer can very quickly burn out the filament winding and significantly damage the radio. At the very least you must then find a replacement power transformer (almost unobtainium), have a custom transformer made (guess where that falls in price??!!), or find a suitable filament only transformer and install it in the radio. The failure of these devices to a short was unknown to me but came up in a discussion with a very well-respected radio technician who is a friend, Jeff Covelli, WA8SAJ. I believe this to be a very real potential problem.

To mitigate the dangers of damaging or destroying the power transformer of the radio, I urge you to follow WA8SAJ's suggestion and install a Pico Fuse¹ between the LED Replacement Lamps and the filament circuit of your radio. Only add this fuse in line with the LED lamps – not the overall filament circuit. I suggest a 0.5 ampere fuse here for two to four lamps.

Many old radios had a fuse in such voltage feeds. If not an actual fuse, some had a small loop of fuse wire that would melt and open in over current occurrences. Also, carefully check the filament line circuit diagram. This array of voltage and current distribution often is complicated and sometimes uses the current running the incandescent pilot lamps to provide adequate loading in places within the distribution. Only if the pilot lamps are directly across the filament winding of the transformer should LED lamps be considered. When in doubt, find a replacement incandescent pilot lamp!

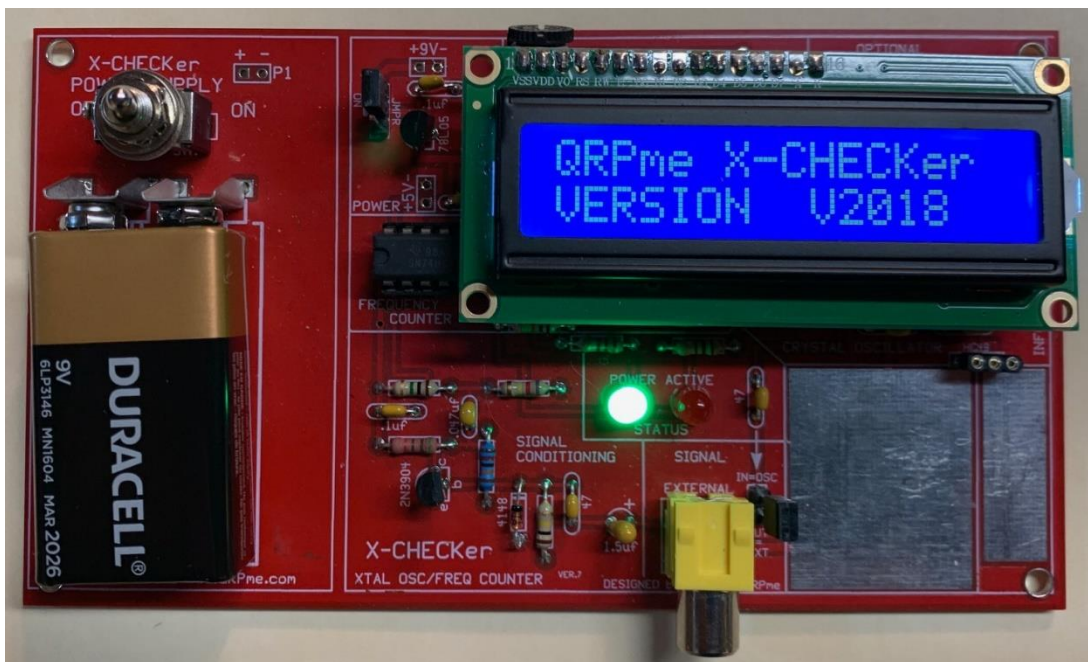
My personal use of LED Replacement Bulbs has run from quick adaptation to the idea and now back to refusing to use them. For this collector, the "look" of the best of the LED bulbs is not acceptable to my eye. While they truly do save energy, the savings in miniscule at best. So, I have put together what I consider a lifetime supply of high-quality new old stock (NOS) General Electric and Chicago Miniature Lamp Company

pilot lamps. Your preferences may differ and if the LED look is acceptable to you (and you protect the radio's power transformer) then this is a good way to go.

Checking Crystals:

As time goes on in restoring and using Vintage Amateur Radio equipment, we are finding that crystals are not a "forever device." They age and they sometimes become inoperative or move in frequency. In my collection of radio parts, I have crystals from the 1930's right up to crystals used for heterodyne band setting in radios from the 1980's. All groups share the same faults of being inoperative, off frequency (but probably within tolerance), off frequency to the point of being worthless, or oscillating right on (or very close to) posted operating frequency. It is good to check for crystal frequency accuracy before getting too far into the process of alignment.

So, okay, how does a restorer go about testing a crystal? I imagine there are all kinds of ways, but I used a small Crystal Activity Checker, called the "X-CHECKer." This little circuit board kit is available here: <http://qrpme.com/?p=product&id=Q17>



X-CHECKer Crystal Activity Checker from QRPme

W9MXQ Photo

Looking at the above picture – note the power toggle switch in the upper left-hand corner of the circuit board. You can also see the boot-up screen in the two-line LCD readout. The illuminated green LED indicates that power from the 9VDC battery (lower left corner of the board) is engaged, and the little checker is awaiting a crystal to check. The checking pads are located at the lower right-hand corner of the circuit board. See below for use of the device:



Checking a Crystal on the X-CHECKer

W9MXQ Photo

Holding the crystal in one's hand and touching its connection pins on the pads is all that is required to make a test on the X-CHECKer. The crystal shown is a 160-meter band range heterodyne crystal for a Drake R-4(x) series Receiver or a Drake T-4X(x) series Transmitter. The posted reading on the crystal body shows this to be a 12.6 MHz crystal. It shows itself to be oscillating at 12,601,400 Hz, or 12.601400 MHz. This is well within tolerance, and this is a good crystal.

Using the X-CHECKer requires some thought and checking of the design of the circuit. For instance, some are used in circuits that use frequency multiplication. In such cases it is to be remembered that the crystal will be marked by the factory to show its frequency in use – not necessarily the frequency for which it actually oscillates.

Let's take an example of what is presented in the previous paragraph. For 160-meters the Drake radios mentioned use a 12.6 MHz heterodyne crystal that works at its fundamental (12.6 MHz) frequency. This when mixed with other mixers in the radio nets a range of 1.5 to 2.0 MHz – which includes the 160-meter band. When the desired frequency range is 28.0 to 28.5 MHz, however, the crystal required is much higher in frequency. In this case, it is 39.1 MHz. That crystal value is too high for this kind of crystal, so the circuit takes the third harmonic of the crystal. So, 39.1 MHz divided by 3 would equal 13.033 MHz. The crystal I tested for that position in my Drake R-4C Receiver shows a reading of 13,025,730 Hz, or 13.02573 MHz. That is close enough for proper operation.

When I say, "close enough for proper operation," I mean that the difference in dial readout is easily accommodated by the mechanical dial adjustment on the R-4C Receiver.

Here is another picture of the X-CHECKer shown next to several of the kinds of crystals it can test.



QRPme X-CHECKer Device
Readout is indicating it is ready to test a crystal.

W9MXQ Photo

Shown above are four crystals. The one at the left is the 12.6 MHz 160-meter range crystal first mentioned above. The next from left is a range crystal from the Swan 100MXA Transceiver at W9MXQ. The large crystal, second from the right 7930.000 kHz crystal from WWII surplus. It oscillates at 7929.79 kHz, which is acceptable. The crystal at the right is an FT-243, WWII surplus crystal marked as 5950 kHz. It checks at 5949.24 kHz. Again, it is acceptable.

Another example is the crystal in a 1961 vintage Collins KWM-2 for the 7.2 to 7.4 MHz range. It is designed to operate at 10.355 MHz. The radio proved to be way out of range and even sluggish in working at all in that band position. When testing the crystal on the X-CHECKer, I found it to be operating at 10.400006 MHz. It was way off and needed to be replaced. Clearing that issue up before digging into other circuits in the radio is very beneficial.

I was made aware of the X-CHECKer from a good friend in the hobby. He is also a seller of vintage radio equipment².

Operating with Excessively High Primary AC Line Voltage:

Many radios built in the 1950's and even into the 1960's are designed to operate with 110 or 115 VAC as the primary supply voltage. These radios, operating today, see 120 to as much as 127 volts (personal experience) from the AC mains. As I write this, I am seeing 123 volts from my AC line monitor. That works well with my Yaesu FTdx-101MP that specifies 100 VAC to 200 VAC that is automatically accommodated. So, all is well with a current model radio.

This is much different as we move to older equipment. I find specifications to 110, 115, and 117 VAC as required power input from AC Mains. This tends not to apply to later vacuum tube radio equipment. For instance, the Drake R-4C Receiver, made up until about 1979 or 1980 specified 120 VAC – so it is relatively safe to use on today's AC Mains. The real problem collectable radios are the likes of the Collins S-Line Separates and the KWM-2 Transceivers using the 516F-2 AC Power Supply. It specifies, in my documentation, an AC Mains supply of 115 VAC.

These differences do not seem like much but a 6.3 VAC tube filament on a circuit design for a 115 VAC Primary will see over 6.8 volts at a 122 VAC primary. That will shorten the life of the tube. Similarly, the voltage developed by the power transformer for receiver and transmitter plate voltage will be increased to a point where they will stress the power supply components in the high voltage circuits.

Over the years, I had chosen to ignore this issue – that is, I ignored it until doing the math and understanding that in such delicate items as power amplifier tubes with their very narrow range of tolerance for over (or under) filament voltage for proper operation and tube life. The final straw for me was watching that my Collins KWS-1 Power Amplifier was significantly high in filament voltage on the 4CX250B finals and also generating enough extra plate voltage to compromise the filter components in the power supply. Equally, this was impacting many radios of that 1950's vintage Gold Dust Twins³ setup.

So much for the problem. How do we solve it? Actually, for the 110- to 120-volt side the solution is relatively simple with readily available equipment. Handling 220 VAC equipment is more involved and will be covered a bit later. For the 110- to 120-VAC items, I use an autotransformer (generally known as a Variac™ but this one is not a trademark Variac product). These are common on eBay and can come from Bulgaria, China, or

other offshore makers – all seem to look similar. The one I bought was sold on eBay, was brand new, beautifully made, and shipped from a warehouse in the United States. It was made in China and, from my experience, source by a company providing for good oversight of the manufacturing plant. Contact me (W9MXQ@TWC.com) for details.



Meter on the autotransformer ("Variac™) is reading voltage to the radio or device/load connected. Hard to read here but it is 110 VAC.

Meter on the AC Socket (on the right) is reading 122 VAC.

Shown at the top of the transformer is the voltage adjustment knob.

2000 VA Autotransformer – Variac™ Device

W9MXQ Photo

The pictured device runs cold with one of my Swan 550-watt 500cx or 750cw Transceivers, the Swan 600-watt 600-T/600-RC Transmitter/Receiver Twins. I set the secondary at about 110 volts. Output is sourced from the two outlets you see on the front of the autotransformer.

At W9MXQ, only current vintage equipment plus later vintage Drake and Cubic equipment operate without the autotransformer. The Drake and Cubic equipment are rated for 120 VAC – very close to the 123 VAC experienced here.

Now let's discuss a 220 VAC Circuit. If you can imagine the distribution of 220 VAC circuits in the United States and Canada you will note that it is not really 220 VAC – it is 110-0-110 (or, as it is here right now, more like 123-0-123 VAC. While a 0-240 VAC autotransformer would seem to work, they are intended for other locations, such as Europe. A single autotransformer will not work because in our installations (USA and Canada) we see the center-tap ground. So, rather than 0-240 volts, we like to see 120-0-120 VAC for our 240-volt AC installations. To accomplish what is needed, a user would have to have two of the above 0-140 VAC autotransformers in tandem – one on either side of the 120-0-120 circuit. While it is possible to combine two separate 0-120 VAC units, it is better using a single assembly where the two 0-120 VAC units are mechanically connected with a common rotating shaft and therefore always matched as to voltage setting.

At W9MXQ, I use a surplus General Radio W20G2 Dual Autotransformer 140-0-140 VAC to run Vintage Amateur Radio equipment requiring “220 VAC” primary. This includes the Collins KWS-1 Transmitter (1955 vintage), the Hallicrafters HT-45 Linear Amplifier (1963 vintage), and the National NCL-2000 Linear Amplifier (pre-1969 vintage). In all of these cases, the autotransformer is set to 110-0-110 VAC. The W20G2 Autotransformer will handle about 2,800 watts of power to the load.

Here are a couple of views of the General Radio W20G2 Autotransformer:



General Radio Dual W20G2 140-0-140 VAC Autotransformer
 Showing the two identical connection panels for the tandem 0-140 VAC autotransformers. Showing the top panel with the voltage control knob plus additional view of the mechanical construction.

W9MXQ Photos

This Autotransformer has recently been removed from service and is awaiting installation in a roller equipped floor cabinet.

In this dual configuration, each of the two separate transformers are linked by a common shaft and control knob.

The W20G2 140-0-140 VAC Autotransformer weighs about 45 pounds. It was sourced from the University of Iowa in a sale of excess laboratory assets several years ago. I found it via a lead from a fellow Collins collector. These, in surplus, cost about \$200.00 and then another \$100.00 to pack and ship. It appears to never have been used (but was sold as a “used, like new” unit). Note some missing screws on the connection panels. Those are part of my removed cable harness that I fabricated for installation with

the various radios. That cable and new connectors will be integrated into the new cabinet installation.

In closing this section, it is my suggestion that if your line voltage is close to 120-volts AC then you should be using an autotransformer with your vintage radios. If the radios are the vintage of later Drake models – then they are okay at current AC power voltage levels. I would, however, question the vintage of the AC-3 Power Supply (for the TR-3 Transceiver, the original R-4, R-4A, and R-4B Receivers and matching T-4X and T-4XB Transmitters (with early AC-4 Power Supplies). When in doubt, setup an autotransformer equipped circuit for using these radios. ANY, Hallicrafters radio should be using the autotransformer – and the same with Hammarlund, National, and others of the same period. Am I overly cautious? Probably. But being over cautious with Vintage Amateur Radios is always acceptable.

Cleaning Wrinkle Black Cabinets and Panels:

Many Vintage Amateur Radio pieces have cabinets that are painted with what is called Wrinkle Black Paint. Chemically, this paint is designed to have the top layer constrict a bit (I am not a chemist!!) when drying and thus provide an attractive finish that does not show finger marks and is remarkably durable. This is not to be confused with the smooth pebble texture finish found on many later Hallicrafters and Drake cabinets. Most will recognize this as the finish on virtually all Swan radio outer cabinets (top and sides). Going back into the 1930's through the 1950's, it was very common⁴.

This finish is very attractive but since it has pockets and folded over areas from the constriction of the drying paint, it tends to attract dirt from the hands when handled and generally grim from just being in the open air. Simple cleaning can actually make it look worse than when dirt first appears. While very durable, you must be very careful when cleaning it. Some cleaners, in my experience, such as Krud-Kutter™ tend to clean but at the same time can soften the paint – and allow damage when scrubbing the surface to remove dirt⁵.

For Wrinkle Paint cleaning I use one or the other of two products – 409™ or Fantastic™. I buy whichever one is the lowest price when I need to refill my supply. Spray the cleaner on the part and spread it around the surface with your fingers (unlike Krud-Kutter™, 409™ and Fantastic™ are safe to touch). After a few minutes, scrub all areas of the panel with a soft toothbrush (or similar soft bristle brush. Then rinse the part in water that is as mineral free as possible. I use Reverse Osmosis (RO) water for this purpose. You may need to repeat multiple times. The result is a very nearly brand new look. The key ingredient in my two favorite cleaners is ammonia. You can use household ammonia mixed in water (following the instructions on the ammonia container) but I dislike working around ammonia in its pure state, so I prefer the commercial cleaner version⁶.

There is another method – well known but not as preferred in my experience. These parts can react well to being run in a short cycle in the dishwasher. (Not the entire radio,

mind you!!) I have tried this method and found that it can begin to lift the paint in some cases. Those cases are likely tied to the original preparation of the metal for painting or even the actual paint mixture in spots. Be sure that the dishwasher is on a very short cycle, all heating is off, and water temperature is just slightly warm, at the highest. I experienced some bubbling of the paint that easily pressed back in place immediately after removal with no damage apparent once dry. I have never used this method again, however. It may work well – and maybe your dishwasher has more temperature control than mine.



A beautifully clean Swan 750cw HF Transceiver
After cleaning the top and sides with Fantastic™ Cleaner, scrubbing with a soft
bristle toothbrush, then flushing with water.
(Cover is removed for the process, of course!!)

W9MXQ

When flushing the final cleaned part with water, be sure to get collected water out of the areas where the metal is folded back onto itself to create a smooth edge. These folds collect water – and that can encourage rust. The thin steel of the Swan cabinets (typical of many of the time), are very susceptible to such damage.

Everybody has favorite tips they have mastered for the restoration and maintenance of vintage radios. Paint and finish seem always an issue as to aging components (off tolerance or failing crystals, resistors, and capacitors). Another area of concern with vintage radios is how to make them more able to deal with today's band crowding and the

noises that make their way into the speaker and headphones of today's operating. That will be one of several topics covered the next time I pen an article on operating and maintenance tips. Do you have a favorite fix or technique you would like presented? Let me know at the address in the next paragraph and I will include your thoughts, with proper credit to your work.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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 an article like this, it is good to have a second person review the process.

Credits and Comments:

¹ A Pico Fuse is an axial leaded subminiature fuse. They are similar in size to a resistor.

² My good friend and equipment seller is Mark Olson, KE9PQ, at Nationwide Radio & Eq. Sales LLC, Suamico, Wisconsin. He can be located at <https://ke9pq.com>

³ The Collins "Gold Dust Twins," as I have often mentioned are the Collins KWS-1 Transmitter, 75A-4 Receiver, and 270G-3 Speaker Console setup. They were called the "Gold Dust Twins" because of their high selling price back in 1955, when introduced.

⁴ Wrinkle Black Paint can also be known as Black Crackle Paint. As you come across this finish you should be aware of several finish appearances. Swan paint of this variety seems to have been unique – with the common variety found on military surplus equipment and several other amateur radio brands being of a more open texture than Swan.

⁵ I am a faithful user of Krud-Kutter™ for many areas of cleaning up old radios. However, be very careful with it as it will tend to remove silk screen lettering on radio chassis' and panels. It softens paint, as mentioned in the article.

⁶ Remember that ammonia or cleaners including ammonia can cloud clear plastic or Plexiglas™. These cleaners can ruin clear plastic covers over readouts, meter crystals/bezels, or other clear or shiny color opaque plastic parts. Beware!

© **W9MXQ**

Remember that these old radios are dangerous and unforgiving. High voltages that are way beyond the 12 VDC running today's radios. Keep your wits about you when you work with vacuum tube radios. Here are the scenarios:



Laugh Later



Laugh Never

On The Air!

de: Gary Sutcliffe, W9XT



HF conditions typically get better starting in September. As we approach the autumnal equinox, the days get shorter at a fast rate. We are losing just under three minutes per day. It adds up quickly. On September 1, we had 13 hours and 11 minutes of daylight. By the 14th, the day of our monthly meeting, we will be down to 12 hours and 33 minutes, 38 minutes less.

So have radio conditions gotten better? Well, not really. We have been getting a lot of solar flares. As I write this, on Labor Day, the A index is 64. You want it to be down around zero or low single digits.

We had a bit of excitement on August 29. The solar flux reached 252! We had been a bit over 100. It didn't reach 252 at the peak of the last solar cycle! But, it was an artifact of "corrupted data," as a later announcement indicated. There was a solar flare at the same instant they took the daily reading. It was sort of like measuring the light level in a dim room at the exact instant someone was taking a picture with a flash. Oh well.

International Lighthouse & Lightship Weekend

It sounds like the joint effort by the ORC and LEFROG Radio Club was a success. I stopped by on Friday to help set up and took the picture below. I understand Fred, W9KEY, has an article about it elsewhere in the newsletter. Be sure to check it out.



Lighthouse event set up. A 40 meter dipole was set up on the left.

SMC Fest

The Society of Midwest Contesters had its annual SMC Fest at the end of August. I am on the board of directors for this club and always attend this event, even though my 50th high school reunion was on the same day this year. Vic, WT9Q, went down with me.



Vic, WT9Q, receiving his LAA award for making 10,000 QSOs

DX University. This is an optional day for those learning the ropes of contesting or DXing. If you attend, you sign up for one or the other, but you can mix and match which presentations you want to attend. I will give my program, *Antennas, The Third Dimension*, on Friday afternoon. The talk is about the importance of matching the take-off angles of antennas for the type of operating you do.

Six Meter Grid Rovers

I talked about this a fair amount in the late spring and early summer during the sporadic E (Es) season. There is an award that Ken, W9GA, Gary, K9DJT, and I participate in, the Fred Fish

The SMC has an award for its members, the Lifetime Achievement Award. You earn the award by making 10,000 QSOs in specific contests. That is a lot of QSOs! Vic qualified last year, but he did it just after the cut-off for last year's presentation, so he had to wait almost a year to get his award.

Congratulations Vic!

W9DXCC

This event kicks off the fall radio season for me is W9DXCC. This year it is on September 17. It is a convention for DXers. The day is filled with talks about previous and upcoming DXpeditions, radio propagation forecasts, an update from the ARRL, and usually a technical talk.

There is a banquet on Saturday night. The banquet speaker is Tim Duffy, K3LR, who runs DX Engineering.

On Friday, September 16, the day before W9DXCC, they have Contest University and

Memorial Award (FFMA). Fred Fish, W5FF (SK), was the first person to work each of the 488 grids that contain land in the continental US.

It has become a difficult but popular award, with only 40 people achieving it. Most of them have been achieved in the last two years.

Besides the often-challenging propagation to some areas, many of these grids have few, if any, people living there, let alone active hams that operate 6 meters. In the DX world, DXpeditions fill the voids. On VHF, rover stations give us the rare ones. FFMA chasers owe a lot to the hams that go out and give us the rare grids, often at great personal expense and difficulty.

Gary, K9DJT, decided to give VHF roving a try. He outfitted a trailer with a tower and 6-meter beam. He gave it a test run to grid EN56 in late August with his friend Lyle, WE9R. This was a needed grid for me, putting me at 447 confirmed grids for the award.



K9DJT/R tower trailer ready to go.



K9DJT/R in operation



Gary, K9DJT/R operating 6 meters from EN56. He made 25 contacts in this operation.

Thanks Gary! I hope we see him out a lot next year during the Es season.

Pictures are courtesy of WE9R.

HRO Superfest

HRO will hold their Superfest on September 23-24. This is an excellent chance to meet with the manufacturers. At the bigger Hamfests, the lines to talk to the manufacturers are long, but here you often have a lot of time to chat and talk to them about their products.

Superfest is also the ARRL Central Division Convention, and they will have a table and ARRL representatives attending.

Wisconsin's largest ham radio manufacturer, Unified Microsystems, will have a booth showing my products. I will also be giving a talk titled *Receiving Antennas For All Yards*. It covers a variety of low band, low noise receive antennas from small loops to 1000'+ Beverage antennas. The forum schedule was not published at the time of this writing.

Contesting

I mentioned the Parks on The Air program a few months ago. I got into chasing parks, but I kind of got away from it during the 6-meter Es season, and I am stalled around 550 parks confirmed. The Fox Cities Amateur Radio Club is sponsoring an event to put Wisconsin parks on the air on September 17.

In addition to promoting Wisconsin parks and POTA, they are making a contest. There are several categories for park activators and home stations, both inside and outside of the state. Check out their website in the contest list. I just wish that they had not picked the W9DXCC weekend.

The ARRL September VHF contest starts on Saturday, September 10, at 1900 UTC. This gives plenty of time to hit the ORC Swapfest and get home for the start. Maybe you can try out that VHF purchase from the ORC Swapfest.

The exchange is your grid square. Work stations once per band, regardless of mode.

The September event usually does not have the Es propagation that the June event does. However, it sometimes has tropospheric propagation that can extend a thousand miles or more under really favorable conditions. Periods after a weather front passes through are good times to look for these conditions.

The California QSO Party starts October 1. This is probably the largest state QSO Party. It is not as good as the Wisconsin QSO Party of course, but I might be biased.

I usually try to put some time in as a shake-down for the station prior to the fall season. There is a lot of activity on this one. We work the California stations. Work once per band/mode. If the sunspots cooperate, we might have much more fun on the higher bands for the first time in years.

The multipliers are their counties. If you are unfamiliar with them, print off the county list and abbreviations from their website. If you have one of the top 20 out of state scores in the CQP, you win a bottle of wine! Talk about incentives!

DXpeditions

DXpedition activity is starting to pick up after a couple of years of being mostly shut down due to COVID. Some really good ones are planned for the end of 2022 and into 2023. Stay tuned.

Starting in September is an operation by a group of Argentina hams to San Andres Island. It is off the east coast of Nicaragua but is owned by Columbia. It should be an easy shot.

Svalbard is a group of islands way up in the Arctic Ocean owned by Norway. It may be best known for the Global Seed Vault, where seeds are stored inside a mountain as a post-apocalypse source of many varieties of plants. The natural cold will preserve them for many years.

A group of primarily American hams will activate the JW5E club station for a week this month. They plan to run three stations if propagation allows.

The Comoros Islands are in the Indian Ocean. It can be a tough path from here but improving sunspot activity may help us in early October. A large group of European operators will be heading that way. They even have a YouTube video!

<https://www.youtube.com/watch?v=fSPBmcAQW10>

That wraps up September. It really is a busy month for ham radio in the area. I hope to see you at many of the events.

W9XT's Contest, Operating, Special Event, and DXpedition Picks for September and early October 2022

W9XT's contest picks for September and early October 2022					
Name	Start	Length	Bands	Mode	Link
ARRL Sep-tember VHF	2:00 CDT Sep 10-11	6 hours	VHF	CW, SSB, Digital	https://contests.arrl.org/ContestRules/JanJunSep-VHF-Rules.pdf
WI Parks on the Air	1:00 PM CDT Sep 17	32 hours	HF, 6M, 2M	CW, SSB,FM	http://wipota.com/about/
California QSO Party	11:00 CDT Oct 1	30 hours	HF, 160M	CW, SSG	https://www.cqp.org/Rules.html

Dates/Times in local times. HF = 80, 40, 20, 15, 10 Meters

W9XT's DXpedition picks for September and early October 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
San Andres & Providencia	Sep 16-28	5K0T	HF + 6M	CS	
Svalbard	Sep 19-26	JW0A	HF + 160M	CSD	
Comoros	Oct 5-17	D60AE	HF 160M	CSD	

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

W9XT's operating & event picks for September and early October 2022					
Event	Dates	Call	Bands	Mode	Link/notes
ORC Fall Swap-fest	Sep10				https://ozaukeeclub.org/downloads/fall-swap-fest/2022_Fall_Swapfest_flyer.pdf
W9DXCC	Sep 16-17				https://w9dxcc.com
HRO Superfest	Sep 23-24				https://www.hamradio.com/locations.cfm?storeid=21
Radio Expo Hamfest	Sep 25				http://www.chicagofmclub.org/images/Radio_Expo_flyer_2022.pdf

Ozaukee Radio Club Minutes of Membership Meeting. 8/10/2022

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. The ORC was presented with a plaque for placing 1st place in the 2022 WI QSO party: presented by Chuck W9WLX and accepted by Gary W9XT for the club. Tom W9IPR reminded the membership of the upcoming hamfest and solicited further volunteers to help.

Program:

Bill, W9MXQ gave a presentation on the line of R L Drake Linear RF amplifiers. These amps were introduced in the late 1960s with the L-4 linear, meant to match the TR-4 transceiver and other Drake transmitters. The L-4B followed, using a pair of 3-500Z tubes. Late in the 70s saw the L7 and L75 introduced, to match the solid-state transceivers, the TR7 and TR5. Bill specified several details along the way that identified the particular models, as they evolved. He also revealed some failure modes in the models and added repair details.

Scholarship Auction:

Stan WB9RQR held a sort auction, with a small variety of parts and cables auctioned off.

Committee reports:

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

Treasurer: Gary N9UUR gave a short verbal report, listing the balances in all the accounts, and also a \$300 payout to assist the lighthouse event. The July treasurers' report was accepted in a motion made by W9DHI, with 2nd by W9GA, and carried.

Secretary: Ken W9GA reported the July 2022 minutes are posted; a motion to accept was made by KC9FZK, 2nd by N9VSV, and motion carried.

Scholarship/STEM: Tom W9IPR hoping to convene the STEM committee to consider some projects on the local level, with awards to be presented locally.

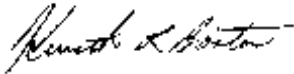
Tech committee: Greg W9DHI will be turning over the zoom meeting operation to Bill KD9HLN effective in September.

OLD business: Tom W9IPR added some further detail for the upcoming fall Swapfest.

NEW business: Fred W9KEY gave a sort rundown on the upcoming lighthouse event, with some of our members joining LEFROG Radio Club in activating the Port Washington lighthouse for 2 days in mid-August. He is seeking more volunteers for the event.

Adjournment: WB9RQR moved to adjourn, W9IPR 2nd, motion carried; time ending was 9:08 PM. There were 24 in-person attendees, 12 Zoom attendees.

Respectfully submitted,



Kenneth Boston, W9GA, Secretary:



Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- 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 Volkmann, 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 Volkmann (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: Dave Ellison W7UUU From the Ashes: Fire and Rebuilding the Ideal Ham Shack	9. Secretary's Report: Ken Boston (W9GA)
5. President's Update: Pat Volkmann (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
12 October 2022**

**Program
ARRL Wisconsin Section Manager
Jason Spetz KC9FXE**

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



ORC Regional Fall Swapfest



The Ozaukee Radio Club presents its 17th annual outdoor regional
Fall Amateur Radio and Hobby Swapfest

Saturday, September 10th, 2022

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 and sell your stuff or just browse & buy their stuff

Inside tables \$10 as available (5 for \$40) – ARRL and Commercial Vendors are typically inside



Go to

www.ozaukeeradioclub.org or

Facebook.com/orcwi

For more information call

262-421-6351

swapfest@ozaukeeradioclub.org



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

Facebook: facebook.com/orcwi

Volume XXXIX

October 2022

Number 10

From the President

de Pat Volkmann, W9JI



The Ozaukee Radio Club got its start in the mid-1960s in Port Washington. From the very start, the Club was well organized and kept detailed records of meetings and Club business. That tendency toward record keeping has persisted over the last 60 years and today there is quite a volume of paper documenting the Club's activities. Meeting minutes, membership records, receipts for all sorts of things, correspondence, and pictures. Lots of pictures. While it is interesting to thumb through all the boxes the question of how to sort and organize this archive arises.

The ORC has had a number of Club Historians over the years and those individuals have done a stellar job of collecting and preserving a record of what we have been doing. The collection of Club documents is now at the point where something new has to be done or we will be in danger of losing those records. The ORC needs a Club Historian who is willing to take on the challenge. Part of that challenge is to figure out how to convert the paper to a format that can be preserved and more easily accessed. If you are interested in working on such a project, please get in touch with me.



Coincidentally, the Internet Archive (archive.org) recently announced that they are starting a project to build an amateur radio and communications library. The Internet Archive site already has a huge collection of ham radio related books and magazines. From their announcement:

“Internet Archive has begun gathering content for the Digital Library of Amateur Radio and Communications (DLARC), which will be a massive online library of materials and collections related to amateur radio and early digital communications. The DLARC is funded by a significant grant from the Amateur Radio Digital Communications ([ARDC](http://www.aradc.org)),

a private foundation, to create a digital library that documents, preserves, and provides open access to the history of this community.”

I think that the results of this project are going to be very interesting. The Internet Archive is looking for material for their project. This may be one way to deal with the mass of documents that the ORC has on hand.

Several months ago, the ARRL recognized the contributions of the ORC Scholarship program through our induction into the Maxim Society. One of the benefits to the Club is a Maxim Society QSL card. The first batch of cards has arrived and here is what they look like.

W9CQO		Ozaukee Radio Club W68 N173 Evergreen Blvd Cedarburg, WI 53012 USA			
WI County					
Grid: EN63ag					
mikegharrington@hotmail.com					
		Confirming QSO with		Day	Month Year
UTC	MHz	2xMode	RST		
Maxim Society Member		CQ Zone 4 / ITU Zone 8		<input type="checkbox"/> PSE QSL	<input type="checkbox"/> TNX

W9CQO Maxim Society QSL Card

See you at the meeting.

Pat Volkmann W9JI

A Message from the Editor

Newsletter Table of Contents

de: Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. Pat mentions a critical position as the Ozaukee Radio Club, that of Club Historian. Along with many pieces of historical documentation on this fine club, might I draw your attention to perhaps often forgotten sources of historical information on ORC? You have only to access the <http://www.ozaukeeradioclub.org> website for access to Newsletters, published by the club, to as far back as 2002. And that leads to a question, the January 2002 edition of the Newsletter lists itself as being Volume XXI, Issue Number 1. So, for some future historian, where are the previous twenty volumes?

As the current editor of the Newsletter, I would be happy to accept hard copy issues from any of the volumes previous to XXI (21) to copy and digitize for our files. They would be gladly returned to you. Contact me at newsletter@ozaukeeradioclub.org for further details. If you have digital copies (PDF or most anything else) I would accept them as well for this project.

We have a very robust Newsletter with a solid core of monthly column writers. As noted in last month's regular meeting, I am looking for first person articles on your life in ham radio, an event you attended, or an event you led. Tim Ruhlmann, W9IPR, recently penned an excellent article on his life in ham radios – or perhaps better said, his life because of ham radio. This month I want to point out new writers during my tenure as Editor – from Jeananne Bargholz, N9VSV, where she writes about her work and the results with the ORC Table at the recent Ham Radio Outlet Superfest, here in Milwaukee. Also check out the article by Ray Totzke, W9KHH, on World War II Morale Radios – with emphasis on an E. H. Scott Receiver he owns. Do you need help in getting thoughts to paper (or keyboard!!)? Contact me at newsletter@ozaukeeradioclub.org.

Our regular Ozaukee Country Amateur Radio Emergency Coordinator Ozaukee County EC, Don Zank, AA9WP pens an article with a variety of short ARES related topics, including the recent Section Emergency Test. Stan Kaplan, WB9RQR, shows us how to find operating system version in Windows™. Other regular authors include Bill Shadid, W9MXQ, (your Editor) talking about the mysteries of tuning a dual-dial general-coverage receiver from the 1930's into the 1970's. Gary Sutcliffe, W9XT, brings us On the Air Activities – Contests, DX, and Special Events through October and into November. .

Last but not least, check out Minutes of the last meeting as provided by our club Secretary, Ken Boston, W9GA. Check the complete Table of Contents on the next page.

Ozaukee Radio Club Newsletter October 2022 – Table of Contents	
PAGE	DESCRIPTION
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3	Bill Shadid, W9MXQ: A Message from the Editor This Month's Table of Contents
5	Jeananne Bargholz, N9VSV Ozaukee Radio Club Table at the 2022 HRO Superfest
9	Ray Totske, W9KHH World War II Morale Radios – the E. H. Scott HLRM
13	Stan Kaplan, WB9RQR: Computer Corner No. 295: WINVER
14	Don Zank, AA9WT: Ozaukee County ARES Short Takes
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27	Gary Sutcliffe, W9XT: On the Air Activities! HF conditions, 10 meters, Pico Balloons, SET, DX, Contrasts
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Fall comes to Holy Hill, Washington County, Wisconsin

_____ **Onward To the Newsletter** _____

Ozaukee Radio Club Booth at Ham Radio Outlet Superfest 2022

de: Jeananne Bargholz, N9VSV

Friday and Saturday, 23 and 24 September 2022, marked the return of HRO Superfest. This event, with links back to the similarly named event developed by the old Amateur Electronic Supply store, returns after the Covid-19 Adventure.

ORC was setup, just like in the old days (pre Covid-19) in the garage area of the Ham Radio Outlet (HRO) facility on Good Hope Road. Our table featured a laptop running a slide show of a handful of Newsletters and alternately with a lots of ORC photographs. We also had a few Newsletters printed up for folks to page through if they wanted. The club has a new information Flier that was present. There were also business cards to hand out that showed our repeater frequencies, email address, website URL, and our social media addresses. Lastly, we offered "Save the Date" fliers for our Spring Swapfest. Oh, almost forgot, we also had Haribo Gummy Bears, LOL! (Editor note's – the Gummy's were well received with this booth visitor!!!)

In walking around our area of the facility, I found a good representative group of area organizations. I hope none are omitted but the group included:

- Ozaukee County, Racine County and Kenosha County ARES Groups
- Salvation Army
- American Red Cross
- MAARS (Milwaukee Area Amateur Radio Society)
- LEFROG
- Westside Radio Club
- SEWFARS (Southeastern Wisconsin FM Amateur Repeater Society)
- MRAC (Milwaukee Radio Amateurs' Club)
- GMDXA (Greater Milwaukee DX Association)
 - These folks provided QSL verification for ARRL awards (very cool)
- MRC (Milwaukee Repeater Club)

VE Testing took place and served 16 Applicants – mostly upgrades.

Some event statistics:

- 15 Tickets for Door Prizes were pulled on Friday.
- 42 Tickets for Door Prizes were pulled on Saturday
- One Ticket was pulled for the Grand Prize (a Yaesu FTdx-10 Transceiver)
 - Won by Dave Schornack, WØAH, Germantown, Wisconsin.
- N9VSV Note - My ticket was never pulled....bah! But, Joe Bettencourt, KD9RAW, won a door prize. It was a flashlight. I talked with one of the people running the raffle. They said all unclaimed prizes would be packed away for the next Superfest.

I noted these suppliers as I toured the large commercial area:

- ABR Cable
- ARRL (Held the ARRL Central Division Convention on Saturday.)
- Cable X-Perts
- COMPACtenna
- Icom
- Pulse Larsen
- RT Systems
- SDRplay
- Times Microwave
- Unified Microsystems (that guy looked familiar!!)
- West Mountain Radio
- Yaesu

Commercial exhibitors were down this year. From memory, it appeared that Kenwood, RadioWavz, Comet, MFJ, and some others were nowhere to be seen. Every time I walked out of the Club area, I was surprised with the lack of people in the commercial area. However, the raffle cage looked like maybe 200-300 tickets were inside. I spoke with an HRO Representative who said they were really busy out front both Friday and Saturday. Personally, I met a number of HAMS and was able to talk with old friends I'd lost touch with some 20 years ago.

Although sparse, the opportunity to connect – the comradery – was so very important. It was like we all had to fill in the gaps that COVID caused. We talked about future club endeavors. We reminisced and even shed a tear over silent keys. We embraced! I saw more hugs and handshakes than I noticed at recent Swapfests. It was a great gathering.

Forums on Saturday continued a tradition with Superfest since it started many years ago. Sadly, I wasn't able to sit in on any forums. Fortunately, all were recorded and are now on YouTube. Check out this link for access:

<https://youtube.com/playlist?list=PLRVMCH-SpmLu11ky9725foeqYBBhWyhm>

If your streaming player supports apps, access via the Ham Radio Outlook app as well.

Special kudos and thanks to the volunteers who took time to sit at the ORC table with me and sometimes in my place. They included Tom Ruhlmann, W9IPR, Joe Betten-court, KD9RAW, Vic Shier, WT9Q, and Gary Bargholz, N9UUR.

That's all! Glad all of you were there – it was good to see the real you!

Please check a selection of pictures on the following two pages . . .



ORC Booth
Don AA9WP, Fred W9KEY, Tom W9IPR



Clubs Area



ARRL Booth



Yaesu Booth



Icom Booth



Unified Microsystems Booth
Gary K9DJT, standing in for Gary W9XT

More pictures . . . next page . . .



LEFROG Booth
Loren Jentz, N9ENR



Salvation Army Booth



COMPACTenna Booth



ABR Industries Booth



Cable X-Perts Booth



West Mountain Radio Booth

World War II Morale Radios – the E. H. Scott HLRM

de: Ray Totske, W9KHH

It's 1942. The USA was at war with Germany and the other Axis powers. The US Navy and Merchant Marine were busy moving personnel and supplies to Europe.

There was a serious problem, an opposition to this troop and materiel movement. This opposition was the Deutsche Kriegsmarine, particularly the Ubootwaffe (U-Boat Force). Seems the U-Boats were tracking US ships readily despite US radio silence. No communications between ships or with shore stations on either side of the Atlantic.



U-Boat Operating in the Caribbean in 1942

[Pinterest](#)

With no transmissions receivers aboard ship were operating, listening to military traffic and entertainment programming for the ships' crews and personnel headed for combat duty. They couldn't leave Benny Goodman, Cab Calloway, Fred Allen, Jack Benny, and countless others behind. There they were on the radio keeping the men connected to the life they were leaving. They were the morale keepers.

The U-Boats were having a field day for some time until it was realized that the U-Boot radios were tracking the radiation from the receivers on the Navy and Merchant Marine ships.

A call went out for US radio manufacturers to produce receivers that did not radiate.

One of those manufacturers was the Scott Radio Laboratories of Chicago, Illinois. Several models were produced and supplied to the Navy and Merchant Marine during the war. Radiation could not be detected at a distance of twenty feet from the receiver. Ergo, no radiation for detection and position reckoning by the U-Boats. US shipping losses were diminished.

Scott receivers were also supplied to Great Lakes ships for morale purposes supporting crews that spent weeks and months on the sweet water seas moving iron ore, coal, and stone to the mills producing steel for the war effort.

After the war one of these receivers, a Scott Model SLRM, from a coal boat in Port Washington came into the hands of Bert Klopp, W9OFM (SK), radio operator at WAD, the Lorain Radio ship-to-shore station of Port Washington.



Scott Model SLRM Morale Receiver

W9KHH

The Scott SLRM received 540 kHz to 18 MHz in four bands. A twelve-tube sensitive receiver with four degrees of selectivity for AM reception. CW was limited to whatever the components allowed. One position. It also had provision for phonograph audio input. Since electrical conditions aboard ship varied it was designed as a 115-volt AC/DC radio. Isolation transformers were installed by Bert.



Close-Up Picture of the SLRM Main Readout Dial

W9KHH

In 1959 during Solar Cycle 19 I was using a 50 Mc to 7 Mc converter with a Hallicrafters S38C receiver. After discussion with Bert, he sold the Scott SLRM to me. Ah-h-h! Much better six-meter station.

Six meters at the time was a very active band locally in addition to F2, Sporadic E, Aurora propagation for hours daily. For the better equipped stations DX to Europe (a few stations had special privileges to operate six meters), Japan, and South Africa. For mere mortals we checked the forty-meter Canadian time station. If its signal was watery and garbled, we listened for fuzzy aurora signals with beams to the north. RST 53 to 59.

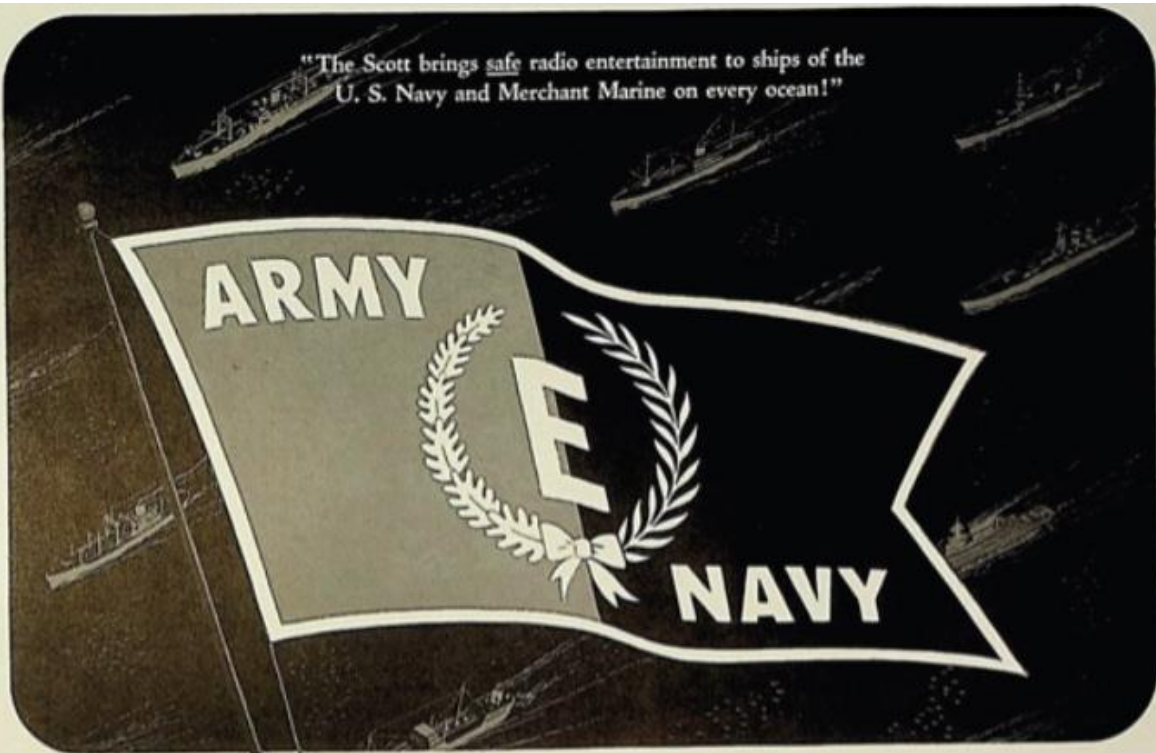
What an improvement with the Scott SLRM over the Hallicrafters S38C.

As a morale booster radio my Scott has served well. Assuming it was built during WW2, now approximately 75-80 years old it is still "boosting my morale." Providing AM reception of medium wave and shortwave broadcasts almost daily. It has never burped. No tubes or other components have been replaced. It could use a new power on/off switch. The external power strip takes care of that.

Pictured is the Scott SLRM in its operating position today. The red wire on the left side of the picture went to a BC-453 Q-Fiver for selectivity .

More info on Scott radios can be found with an internet search. The company lasted a couple years after the war's end before closing and joining Atwater-Kent, Radiola, and various variable condenser manufacturers in the radio history archives. An example of E. H. Scott advertising during World War II for their Low-Radiation Receivers follows . . .

"The Scott brings safe radio entertainment to ships of the U. S. Navy and Merchant Marine on every ocean!"



This banner shall be star-spangled!

Until this war is won . . . our efforts shall earn a brighter star at each six-month renewal period!

Only the few who have received this Army-Navy "E" Award will know how proud we are today. But we are prouder still of the heartfelt thanks of men-at-sea who listen throughout the world to the Scott Low-Radiation Receiver. Now, on ships of the U. S. Navy and Merchant Marine, they hear news and entertainment from home . . . *safe from detection by enemy subs and ships.* And we are humbly grateful that we were able to design this unique radio . . . to build vital Radar detecting devices . . . and to produce these instruments faster and faster for service in America's rapidly growing fleets.

To all of us—the technicians of the Scott Radio Laboratories—this flag is no mere symbol of past accomplishments. Instead, it is an inspiring battle standard now unfurled to lead us on to even greater achievements. And we shall build Scott Receivers and Radar equipment more swiftly still . . . so that as each renewal period arrives, "This 'E' Banner shall be Star-Spangled!"



SCOTT
Marine Model
LOW-RADIATION
RECEIVER

We regret that, due to present restrictions, the Scott Marine Model cannot be offered to individual purchasers.

E. H. SCOTT RADIO LABORATORIES, INC.
4419 RAVENSWOOD AVENUE, CHICAGO

SCOTT
FINE RADIO
RECEIVERS

World War II Era E. H. Scott Advertisement for another Low-Radiation Receiver

W9KHH

THE COMPUTER CORNER - No. 295: WINVER

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

Here is a very short article, but it definitely shows a bit of useful and somewhat interesting information you can easily reveal. Of course, there are several other ways to show WINVER as well, but this is really quick and easy.

In your tray, in the box labeled “Type here to search” (sometimes shown as just a magnifying glass until you hover over it), type winver, or WINVER, or WinVer (case doesn’t seem to matter) and hit the Enter key. A box will pop up with information, shown below from two different computers. On the left is my main desktop machine; on the right is my laptop. Both show the version of Win10 and the build, which are identical and the latest for this Operating System (OS) at the time these two were captured. The product license quoted is correct for my desktop (though I really do not know why it shows the two words “org name”), but it is not really correct for laptop. I must have gotten lazy when setting up the laptop (which, as an aside, is a dual-boot computer with Linux as the second OS).



Anyway, this is a quick and easy way to check on your version and build, to compare several computers, and to make sure you are up to date. Happy Computing!

OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, aa9wp@arri.net

Short Takes



The last weeks of September have been busy weeks for the OZARES group. In preparation for the Simulated Emergency Test, or S.E.T., held on October 1st, OZARES conducted two WINLINK classes on September 20 and 21. The classes were fashioned to help operators in Ozaukee and Washington County to setup their WINLINK packet software on their laptops and Signalink (or similar devices). The classes, held at Saukville Village Hall, were well attended and everyone learned something. A few of us learned how important the TX level setting on the Signalink is to get the system to work. Unfortunately, we still have a few that have not had much success. But we will keep at it.

Then, at the end of the week, and thanks to Jeananne, N9VSV, for the invite, OZARES joined with the ORC table at the Ham Radio Outlet Superfest. I enjoyed some interesting conversations with the gentlemen at the SATERN table, Tom and Loren at the LEFROG table, along with Dave, KD9JYL, at the Red Cross Table. Gary, K9DJT, informed me that the Greater Milwaukee DX Association, located directly across from our table, was holding a pool on how long the OZARES banner, held with duct tape, would stay up. That issue will be fixed, thanks to Joe, KD9RAW, who has offered to build a PVC banner holder for the club. All The presentations were interesting and informative, and it was nice to have them live on YouTube. The ARES discussion during the ARRL presentation stirred up some interesting comments and discussion.

Some good news is that our served agencies are reopening their doors. OZARES has reestablished relations with the Aurora Grafton Hospital, and we are in the process of working with Ascension St. Mary's Mequon. OZARES is looking forward to returning to quarterly tests with the two local hospitals, Ozaukee-Washington Public Health, and our two emergency operation centers. The National Weather Office in Sullivan has reopened so now when severe weather is in the area, we can submit real-time severe weather spotter reports.

On October 1, the S.E.T. was held and OZARES co-operated with the Washington County group to test communications. In Ozaukee County we had eight operators participate. Roland, KB9TMB, and Todd, KD9QLJ held down the fort at the Justice Center EOC. Dave, KD9JYL, and Joe, KD9RAW, worked at the hospitals. Scott, KC9IIZ, was on the Ozaukee County Sheriffs' boat near Lion's Den. And I worked from the Saukville Village Hall EOC. John, NO9X, and Alex, WB9X, worked from Sheboygan County as Aurora Hospital Sheboygan, virtual.

In Washington county, WASHARES, <http://www.washares.com/>, had nine stations checked in. Their served agencies include the Washington County EOC, the Menomonee Falls Hospital, West Bend Hospital, Hartford Hospital, and Germantown Police Department.

OZARES and WASHARES operators tested communications between respective repeaters and simplex channels.

We had success contacting the Sheriff's boat, maritime mobile, from Ozaukee and Sheboygan Counties.

Both groups used WINLINK to pass check-in and status messages between the EOC and the hospitals. The State Emergency Operations Center was open, and Roland and Todd established communications on the HF bands. The hospitals all passed reports to the State via WINLINK.

This was a very good exercise for OZARES and WASHARES. Both groups learned a great deal and a few things need to be fixed. I am looking forward to next year when we can try some different modes such as WINLINK peer-to-peer.

See you next month.

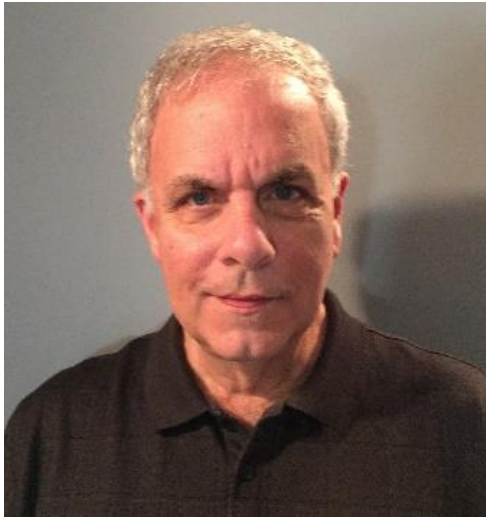
73,
Don, AA9WP for the OZARES group.

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



Do you remember the days of the vacuum tube general coverage receiver? I certainly remember. Back when I first of these radios (a Hallicrafters SX-110, new in 1963), I quickly had to learn how to tune it properly and get maximum readout accuracy on the ham radio bands. In those days, we were talking about the HF amateur bands of 80, 40, 20, 15, and 10 meters. The 160-meter band was usually not included – for reasons I will detail a bit later in this article. Sometimes the 11-meter band was included with the tuning of the 10-meter band. Look below at the SX-110 Receiver from the time when I was studying for my first ham radio license. It is still with me, today.



Hallicrafters SX-110 General Coverage Short Wave Receiver (1963)
W9MXQ Collection

For me to tune this receiver now is very easy. But when I first unpacked it in 1963 that was not the case. By the way, I can still recall the aroma of the freshly assembled electronics as the paper wrapper around the new receiver was removed!! Warming up the eight vacuum tubes only served to enhance that pleasant experience. And, due to good care all these years, it is still apparent when the tubes heat up as I write this article and listen to the radio's smooth vacuum tube audio.

Tuning was accomplished using one switch and two controls. These included the BAND SELECTOR Switch, the MAIN Tuning Control, and the BANDSPREAD Tuning Control. We are going to setup this receiver in this example to listen to 7.258 MCS (MHz). Those of you familiar with the bands know that this is the 40-meter, long time net called Mid-

CARS. Generally, depending on band conditions and location, they are available from early morning to mid-afternoon. They cater to mobile operators but are open to all. I use them frequently to check a radio that I have on the bench.

First, we setup the radio to receive on in the area of 40 meters, 7.000 to 7.300 MCS (MHz). To do that, turn the BAND SELECTOR SWITCH to position 3 on the dial as shown here:



Referencing the picture on the first page of the article, see that the BAND SELECTOR switch is the second switch from the left on the lower row of controls. Position 3 allows coverage on the radio from 4.6 to 13.0 MCS (MHz). Included in that range is the 40-meter ham band of 7.0 to 7.3 MCS (MHz).

W9MXQ Picture

Next, look directly above the BAND SELECTOR switch to the round readout dial to note the placement of the 7.0 MHz area on the dial:



See the band area on the second arc from the top and the red circle that I have added to identify the location.

Observe that there is a round marker at 7.4 MCS (MHz) on the dial. That round marker, or bulge in the line between 7.0 and 8.0 MCS (MHz) indicates a setpoint that is important in the next step of this process.

W9MXQ Picture

Next use the TUNING control to set the dial on the marker – as shown below.



Check the location of the readout indicator line (vertical white line that indicates the frequency). It is directly on the marker, or bulge, at 7.4 MCS (MHz).

W9MXQ Picture

Next, on the SX-110 Receiver, the large slide rule appearing BANDSPREAD readout and control come into play. See the picture below:



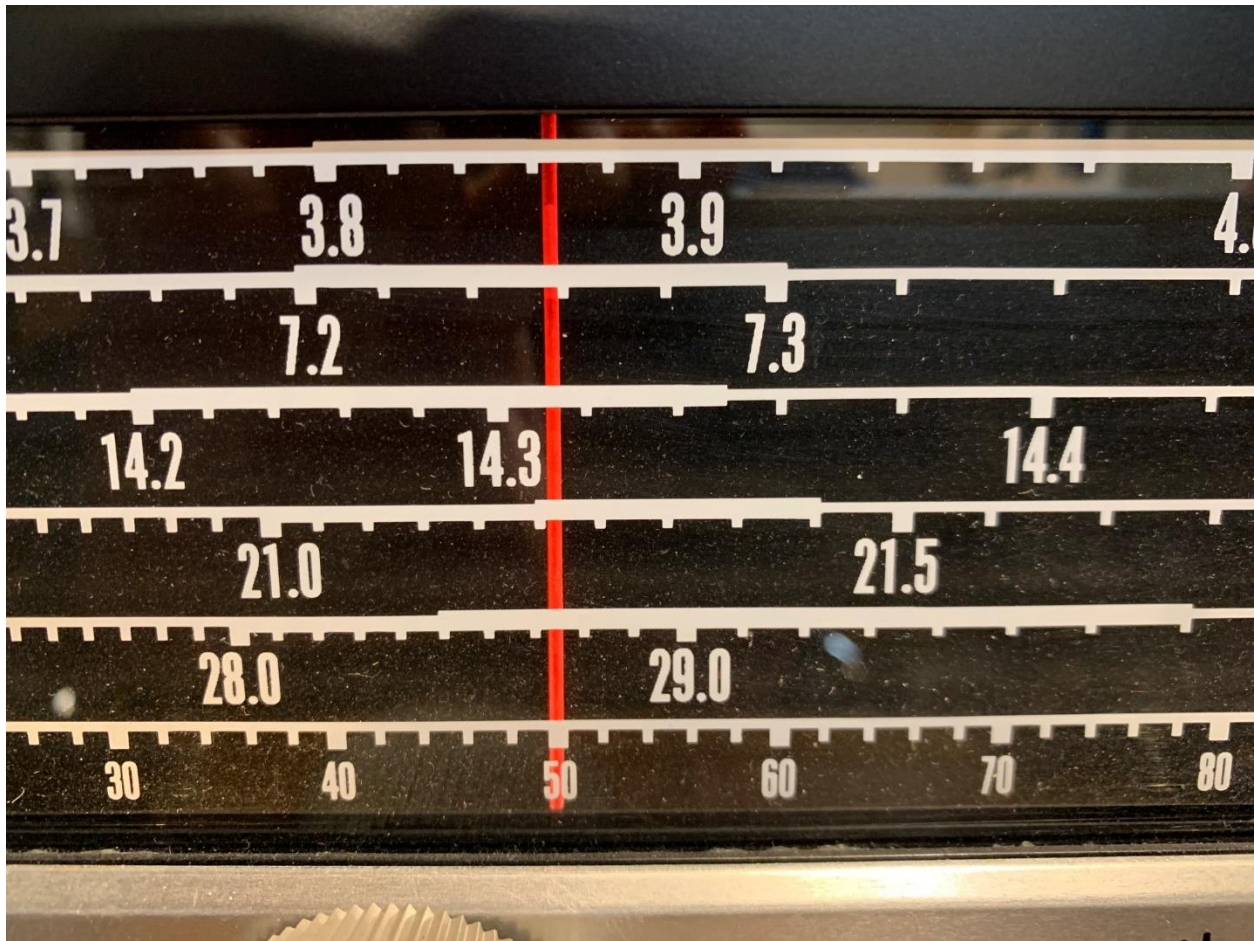
W9MXQ Picture

This is the bandsread readout panel on the SX-110. The BANDSPREAD tuning knob is below the center of the readout – clearly marked in the picture, above. Note for reference that the red dial pointer is all the way to the right (or as far as it will go) in this picture. This is how the Operating Manual for the SX-110 shows to always leave this readout when using the TUNING control. For our purposes in this article that is not important – but it IS IMPORTANT if you are operating the receiver with just the main TUNING control.

The bandsread for the previously mentioned 7.0 to 7.3 tuning range is shown as the second readout from the top with the callout “40M” (meaning “40-Meters”) on both ends of the dial in use.

Now move the dial (using the BANDSPREAD control) to where the dial pointer is within the range of the band (7.0 to 7.3) and listen for signals on the band.

Remember that I previously mentioned MidCARS? Here is how the dial looks when tuned to that popular net:



W9MXQ Picture

Here is the BANDSPREAD dial with the red indicator just below 7.260 MCS (MHz). It is actually tuned to MidCARS at 7.258.0 MCS (MHz). Not too precise you say? Welcome to the world before digital readout!! Precise readout was better and better with increasing level models. The SX-110 was a medium-priced radio. Lower priced models were somewhat less precise to accurately callout frequency – higher priced models were better. This is a bit of a generalization – and also tied to specific brands.

For reference, note that the actual readout line is above the frequency callout numbers on each band. So, how accurate is this indication of frequency, you might ask? Not too good, I might answer. This is covered in detail in a second article on this subject.

This process is repeated for each band on the SX-110. That is, for the 80, 40, 20, 15, and 10-meter bands. For other areas, one may set any frequency on the MAIN tuning just above the selected range then use the BANDSPREAD on its Logging Scale (bottom readout) of 0-100 to indicate relative frequency. Band to band, however, this is just a relative readout which in theory could be repeated when returning to the same range. Practically speaking, however, it is not a practical, or very accurate, statement. For instance, to tune 160 meters with this receiver, set the BAND SELECTOR to 2, the MAIN tuning to 1.8 MHz, with the BANDSPREAD set to the far right. Then tune to the left with

the BANDSPREAD to cover the 160-meter band. Frequency indicated on the BAND-SPREAD dial will be a reference, not actual.

Now we will look at some other examples – from other manufacturers. One such receiver is a model sought after to this day, the Hammarlund HQ-180 General Coverage HF Receiver.



**Hammarlund HQ-180 General Coverage Short Wave Receiver (1959)
Shown with Optional S-200 Speaker and GE Telecron™ Clock
W9MXQ Collection**

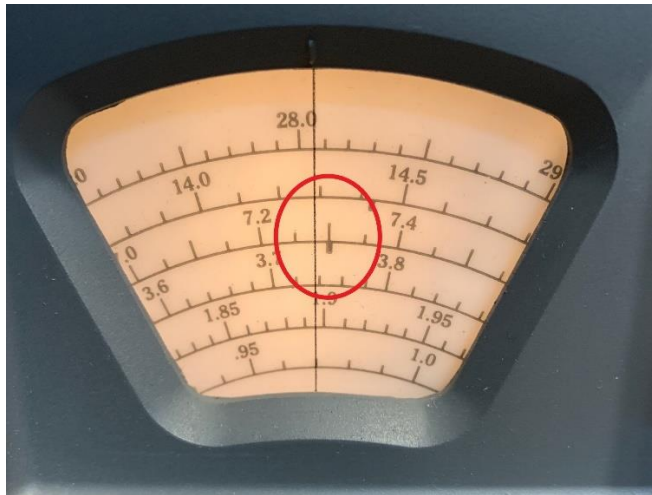
Relating to the Hallicrafters SX-110 Receiver previously discussed, we will use the same functional controls on the Hammarlund HQ-180 to find the same 7.258 MCS (MHz) for MidCARS. But the controls have slightly different names. To make the initial setup, we use the MAIN TUNING RANGE MCS switch in the lower center of the panel to set the tuning range, the MAIN TUNING control to set the main frequency, and the BAND SPREAD control to tune the selected band. As with the SX-110 we discussed above, we are again tuning the 40-meter band for MidCARS on 7.258 MCS (MHz). Note the front panel MAIN TUNING RANGE MCS on the HQ-180 references “MCS,” for Megacycles. Megacycles as a term for frequency was replaced by the current term “Hertz,” after Heinrich Rudolf Hertz (1857–1894). So, in the day of the HQ-180 we would be search for 7.258 MCS and today we search for 7.258 MHz. (I have used both terms in this article.) This new terminology was adopted by the General Conferences on Weights and Measures (CGPM) in 1960. As you might expect, hams tended to ignore the new reference for some years after it was adopted – present company included!

This radio carries the rather classic dual disk readout system so popular on many radios from Hammarlund, Hallicrafters, National, RME, and others that made radios from the 1930's until not that long ago. As in the case of the also popular scheme of a main tuning disk and a slide rule band spread dial (like the Hallicrafters SX-110), the design was to set up the main tuning to be at one end (top or bottom, depending on the model) and the do fine tuning of the particular band segment using the band spread control.



Hammarlund HQ-180 Front Panel – the lower center of the Front Panel (see above) for the TUNING RANGE MCS Control. We need the range 4 – 7.85 MCS (MHZ) to cover the 40-Meter band. (Remember, you see “MCS” on this Control – but you remember that today this is MHz.)

W9MXQ Picture



This is the left readout window (reference HQ-180 photo, above). This is the readout window connected to the MAIN TUNING Control. Marked here is the middle arc that includes the range we need. Note in the middle of the circle, the arc shows a bold mark, or bulge. Move the MAIN TUNING Control so that the indicator falls right on that bold mark, as in the picture just below this one.

W9MXQ Picture



As referenced above, note that the readout is now exactly over the bold mark on the arc between 7.2 and 7.4 on the dial. This indicates that the receiver is tuned to 7.3 MCS (MHz), which is the top of the 40-Meter band. We now need to move to the next picture and to start using the BAND SPREAD readout window and Control.

W9MXQ Picture



The next part of the process, like with the Hallicrafters SX-110 Receiver, is to move to the BAND SPREAD readout window – to the right of the S-Meter. On the readout window, you can see that I have tuned the receiver on 40-meters (third arc from the bottom to just below 7.26 MCS (MHz) in order to tune in MidCARS at 7.258 MCS (MHz).

W9MXQ Picture

As with the Hallicrafters SX-110, this process is repeated for each of the 80, 40, 20, 15, and 10-meter bands. Again, for other areas, one may set any frequency on the MAIN TUNING just above the selected range then use the BANDSPREAD on its Logging Scale (bottom readout) of 0-100 to indicate relative frequency. Also noted again, that band to band, this is just a relative readout which in theory could be repeated when returning to the same range. 160 meters is not on the BAND SPREAD on the HQ-180 so for a better tuning rate, the same process as on the Hallicrafters SX-110 is used here.

Bandspread (some spell it band spread and some as bandspread – I used it the way the particular receiver I am discussing used the word) was generally available but sometimes more useful than others. Here it is on a very low-priced receiver – as I bought and built with paper route money – in late 1954 or early 1955 while in the fifth grade. It was (and still is with me) the Allied Knight Kit Space Spanner – the original version, not the two-tone front panel version made later.



**Model S-243 Allied Knight-Kit Space Spanner Short-Wave Receiver
Tuned 6-17 MCS (MHz) Shortwave plus the Broadcast Band**

W9MXQ Collection



knight-kit
"SPACE SPANNER"
BAND SWITCHING
RECEIVER KIT

Model **\$15⁹⁵**
 S-243

Thrilling Short Wave and Broadcast

Famous 2-band AC-DC receiver in easy-to-build kit form at a very low price. Pulls in thrilling short-wave (6 to 17 mc) and standard broadcast. It's fun listening to amateur, aircraft, police and marine radio. Features highly sensitive regenerative circuit. Bandswitch selects broadcast or short wave. Has 4" PM speaker and beam-power output tube for plenty of volume; headphone connectors for weak signal listening; slide switch cuts out speaker. Uses 12AT7 regenerative detector and audio amplifier, 50C5 power output, 35W4 rectifier. Six controls: Bandsread; Main Tuning; Antenna Trimmer; Bandswitch; Regeneration; Audio Gain. Includes tubes and all parts. 7 x 10½ x 6". Shpg. wt. 4½ lbs.

Model S-243. "Space Spanner" Receiver Kit. Net only \$15.95
S-247. Matching Cabinet for above. 2 lbs. Net \$2.90

Knight-Kit Advertisement in Popular Electronics from 1954



The Space Spanner had the same two tuning controls as the "real radios" with MAIN TUNING and BANDSPREAD. With the two position to SW, for Shortwave. (Switch has SW or BC positions for Shortwave or Broadcast band.) Set the BANDSPREAD to "100" then tune the MAIN TUNING for the highest frequency above where you wanted to tune. Then rotate the BANDSPREAD downward to catch a variety of stations. Accuracy, you ask? Very little – just fun listening to a wider world when you are nine years old.

W9MXQ Picture

The idea of a reference kind of Band Spread on the SX-110 and the HQ-180, in addition to ham band individual readouts was handy for non-ham radio listening – such as in the active shortwave broadcast area at the top end and above our 40-meter band and also the band below 10 MHz WWV from about 9.5 to 10 MCS (MHz). However, the 0-100 logging scale alone was not unique to low priced radios like the Space Spanner. Hams were a major factor in marketing short wave receivers – but we were not the only market. Some very fine radios did not include specific Band Spread for hams even though the radio might be of professional or commercial grade.

As an example, here is a Hammarlund SP-200. These receivers, dating from back before World War II and after, (1939-1945) served in many critical military operations along with other famous radios of the day, such as the Hallicrafters SX-28 and the National HRO. The SP series from Hammarlund were nothing short of outstanding with a worthy reputation (much of which is lost to history except for collectors). The one below is owned by my friend Bob Bailey, W9DYQ. At least one other in the series is owned by another friend, Pat Volkmann, W9JI. Let's just say they live today with adoring fans of their fame. But let's see how the SP-200 does Band Spread.



Hammarlund SP-200 HF Receiver (1939)

W9DYQ Collection

The Band Spread on the SP-200 was designed for the varied uses of the radio by its military and commercial customers. So, even though greatly outclassing a radio like the Knight Kit Space Spanner in receiving capability, it shared exactly the process for using Band Spread as its later cousin, the lowly Space Spanner.

We will take a look at the two readout windows on the Hammarlund SP-200:



This is the MAIN TUNING dial – on the left side of the meter and band selector switch area. While difficult to see in this picture, the dial is tuned to 7.3 MCS (MHz). The arc you see is in its location because of the setting of the Band Selector switch covering this range of frequencies. The arc location on the readout changes according to what range is selected. You only see the range selected – with the others covered.

W9DYQ Picture



This is the BAND SPREAD dial – on the right side of the meter and band selector switch area. This dial is set on 100. Remember, the SP-200 does not have a Band Spread calibrated for the ham radio bands – it merely has a 0-100 Logging Scale. To use this scale, set it at “100” with the MAIN TUNING set at the top of the band for which you want to tune. In this case, the MAIN TUNING is set for 7.3 MCS (MHz) so the BAND SPREAD will tune downward in frequency as one adjusts the dial,

W9DYQ Picture

This has been a good review of the Main Tuning and Band Spread operating process for a cross section of vintage radios that ran from the 1930's until the 1970's when such radios began to be replaced by digitally tuned radios. Solid state radios, such as those available from Radio Shack™ (Realistic™) and Sony,™ and other Asian sources, did bridge the time of analog tuning (as shown in this article) to their later digital readout examples.

Before closing I want to comment, as promised, on why 160-meters was not included in Band Spread on the receivers in this article. In the days these radios were on the market, 160-meters in the United States was a confusing band due to its proximity **LORAN**, short for **L**ong **R**ange **N**avigation. That was a hyperbolic radio navigation system developed in the United States during World War II. During that time, the tiny, 200 kHz 160-meter band (1.8 to 2.0 MHz – just as it is now) was subdivided into four segments with each having different power levels (including zero power), depending on your location in the United States and the time of day. Quoting Wikipedia™ here, “Loran-A used two frequency bands, at 1.85 and 1.95 MHz. These same frequencies were used by radio amateurs in the amateur radio 160-meter band, and amateur operators were under strict rules to operate at reduced power levels to avoid interference; depending on their location and distance to the shore, U.S. operators were limited to maximums of 200 to 500 watts during the day and 50 to 200 watts at night.” To avoid interference, most transmitter manufacturers avoided the band. Receiver manufacturers almost never included 160-meters on the Band Spread of their General Coverage radios. More on this at:

<https://en.wikipedia.org/wiki/LORAN>

What remains is frequency accuracy – or, rather, the lack thereof. Stay tuned for a follow-up article on the subject of frequency dial accuracy, and how it can be attained, with these receivers.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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. Bob's Hammarlund SP-200 Receiver was one of the items covered in this article.

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On The Air Activities!

de Gary Sutcliffe, W9XT

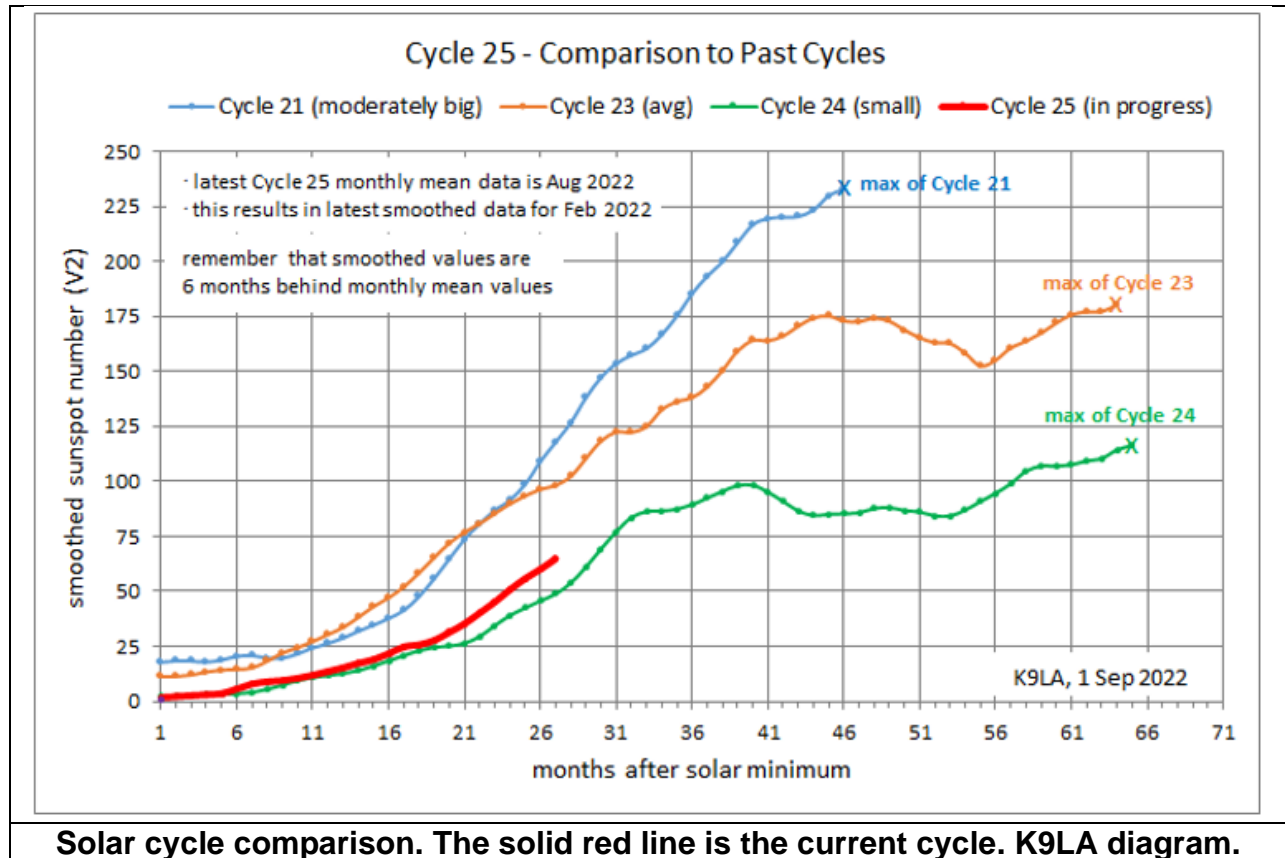


Wow! September sure was a busy month! We had the successful ORC Hamfest, and there was the HRO Superfest. I also went to the W9DXCC convention and was invited to speak at the Friday pre-convention event, DX University.

I hope October will allow for some much need outdoor antenna work and some time on the air.

HF Conditions

As we enter the autumn season, conditions on the higher HF bands continue to improve. This year we are getting more solar activity than we have seen in many years as Cycle 25 continues. This will be a welcome return for hams that have been licensed for many years. Newer hams will get to experience the fun that can be had on the higher bands when conditions are favorable.



Solar cycle comparison. The solid red line is the current cycle. K9LA diagram.

Cycle 24, the last one, was the smallest in our lifetimes. Hopefully, Cycle 25 will be much better. The chart above compares Cycle 24, an average cycle, and an above average cycle. The solid red line shows the progress of the current cycle. So far, it looks like this one will be better than the last one. Hopefully, the curve will accelerate and get

closer to an average cycle. The chart was kindly provided by propagation guru Carl Luetzelschwab, K9LA, our ARRL Central Division Director.

Many DXers consider October to be the best month of the year. Higher frequencies improve then, and the northern and southern hemispheres have approximately the same number of daylight hours, enhancing north-south communications.

10 Meters

Ten meters is my favorite band. During the 1990s, I had a stack of two 4 element Yagi's and spent most of my time on that band. When conditions are right, you can work the world with very little power. I once worked a guy in the Netherlands running 1/3 of a watt on SSB. Once, when I was back home visiting my parents, my dad, W9FRF (SK), took me out to his car parked in the driveway. He used a CB rig converted to 10M with a mobile whip antenna. We sat there working Japan with that. During a major DX contest, we can have wall-to-wall European SSB signals from 28.300 MHz to sometimes reaching up to 29.500 MHz. That is over 1 MHz of phone signals!

Newer hams probably don't believe this. They have been hearing mostly a dead band with some sporadic E openings in the spring and summer for the last five years or so. The last time I worked Japan on 10-meter CW was December of 2014. It is easy to see why those who have not experienced the good times just ignore the band. I hope to encourage you to give 10 M a chance if you have not in the past.

Some things make 10 M the most accessible of the HF bands. The first reason is that it is the only HF allocation that Technician Class operators can use for phone or digital communications. Technician class operators can use CW, RTTY, and digital modes from 28.000-28.300 MHz. In addition, they can use phone in the 28.300-28.500 segment. Techs are limited to 200 watts.

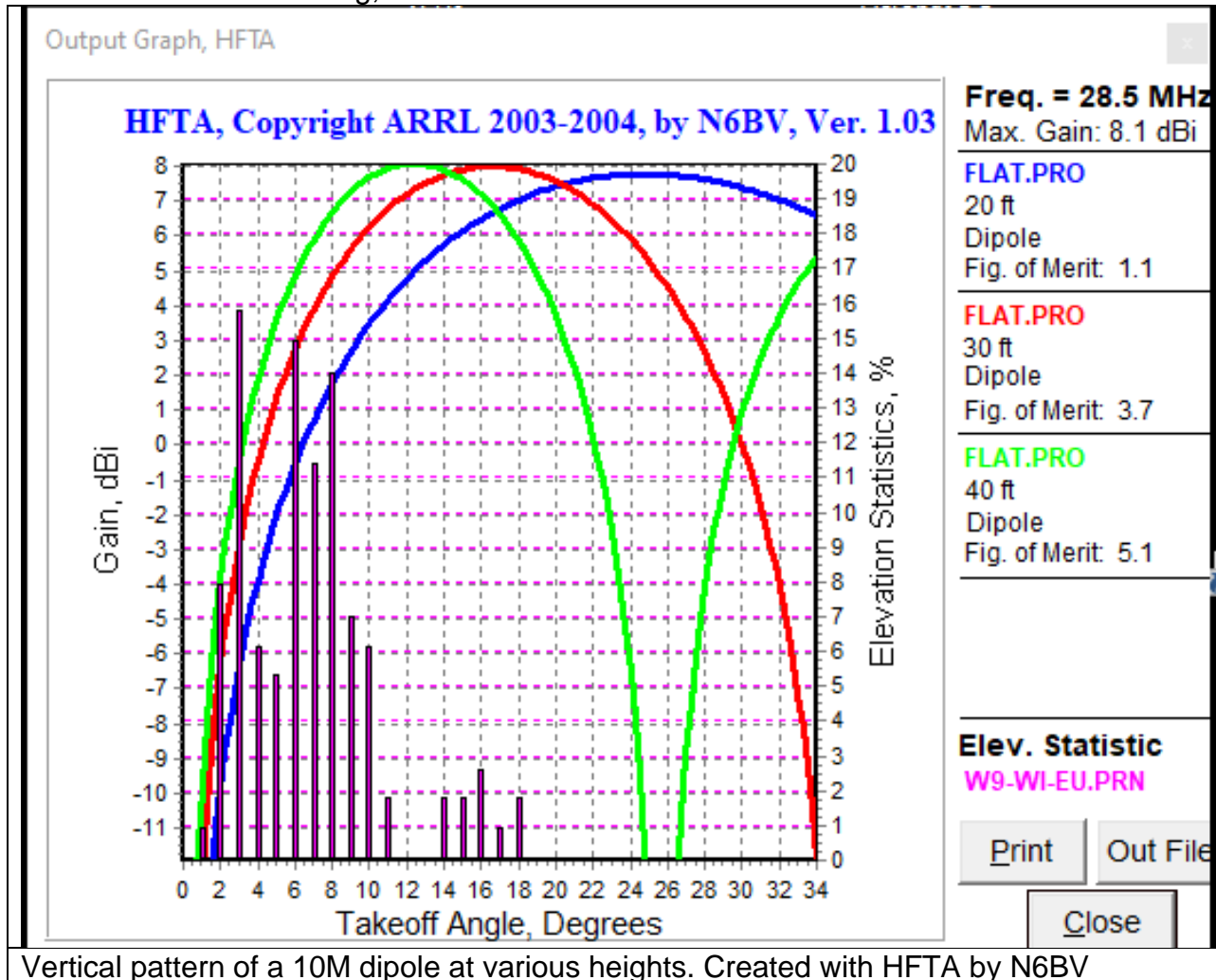
Another advantage of the band is antennas are small. A small 10 M Yagi can usually be turned with a heavy-duty TV rotator. A dipole is about 16.5' long and simple to build. If you can get it up in a tree about 20-30 feet, you can make a lot of contacts.

The diagram below shows the vertical patterns for 10-meter Dipoles at various heights above flat ground. The purple vertical lines indicate that if the band is open to Europe, that is the probability of the signal coming in from that angle. The probabilities cover an entire sunspot cycle. As we get into the initial part of the sunspot cycle that supports 10 meters, most openings will occur on the left side with lower angles. The higher angles will happen more often in a few years. But, even at 20 feet, a dipole will have some gain during many openings now.

If you can get it higher or live on a hill, it should work even better for DX. Openings to North American locations will have higher angles but will require higher maximum usable frequencies.

If you don't have a rig that covers 10 meters, used HF radios are going for very affordable prices. Maybe you can find someone to loan a spare old radio for a while to get your feet wet.

Propagation on the band tends to follow the sun. Sometimes the band will open to the south soon after sunrise. As the sun ionizes the atmosphere between us, Europe will start to open up. If you are watching a map of the world showing the areas of daylight and darkness, you will see the eastern European stations begin to fade out as they reach sunset, with the UK and Spain being the last signals from that part of the world to remain late in the morning, our time.



Vertical pattern of a 10M dipole at various heights. Created with HFTA by N6BV

You will start hearing African and South American stations as the morning progresses. Africa will fade out as they go into darkness, but they often remain workable longer in their darkness than European stations since there is more ionization on the path crossing the equator than on the polar European openings. Hawaii and the Pacific stations start coming in when after their sunrise. Later if conditions permit, the band will open to Japan and other parts of Asia. Those signals will disappear after we reach darkness, with the last signals heard coming from the south Pacific.

How long stations can be heard while in darkness depends on the ionization level. Ten meters can remain open a few hours after dusk during very high sunspot periods.

North-south paths will be more reliable than polar paths to Europe or Asia. The aurora zone will expand during times of geomagnetic disturbances. The auroral zone absorbs signals if the radio waves travel through it. Look for periods when the K index is in the 0-2 range, preferably for a few days in a row.

Occasionally we get some morning long path into Asia. We usually point the beam to the northwest in the afternoon to work Asia on 10 meters. But, as the name suggests, long path signals take the long way around the world. So, we turn the beam southeast in the morning. I decoded a few FT8 Japanese stations on the 10 M long path a couple of days before writing this.

Often there is an opening to northern Europe a few hours after the band closes. Signals are often weak and watery sounding and are often missed. There is sometimes a similar path with us at the eastern end around 9:00 PM local time. But the west end is in Mongolia, and there is not much activity from there.

HF communications are a lot of fun. Ten meters provides an easy way to put together an effective station without tall towers. Regardless of your license class, if you have not operated 10 meters, take advantage of the sunspot peak for the next 4-5 years.

Pico Balloons

I have been a ham for over 50 years and have dabbled with countless activities within the hobby. Yet I keep coming across interesting activities I didn't know existed. As I mentioned above, I was speaking at DX University. It was a series of talks aimed at the new DXer. However, they had a somewhat off-topic presentation that really caught my imagination – Pico Balloons.

You are probably aware of ham radio groups that send up balloons containing amateur radio beacons. They usually include a GPS and a 2 Meter APRS beacon showing their location. They go up to a point where the balloon bursts, and the radio package returns to earth by parachute and is hopefully recovered for a new flight a hundred miles or so away.

The talk at DX University covered a different class of radio balloons using tiny balloons and extremely lightweight radio systems. It was presented by a member of the Northern Illinois Bottlecap Balloon Brigade. This is a group of adults and school-age members who design, build, and launch their radio beacons. <https://nibbb.org>

The balloons they used are in the party balloon class, helium-filled ones you buy for birthday parties. Some also use somewhat larger balloons. Sometimes they use hydrogen instead of helium because it is often easier to get, has more lifting power, and has less leakage.

The electronics include a GPS receiver, a WSPR beacon transmitter running about 10 mW, a power system, and of course, the antenna. The weight of the entire system, including the balloon, is less than 10 grams.

Solar cells provide power. Usually, no battery or super caps are used to store power for weight reasons, and therefore only operate during the day. Most are on 20 M, although some Internet research showed one set for 30 M.

The list of problems that must be addressed is impressive. Keeping to the weight limits is one of the most challenging. Others include figuring out how much lift is needed and how much lifting gas to use to meet the target. Aeronautical ham radio is not allowed over certain countries, so the device must know where it is and be silent when over those countries. Even launching without getting the antennas tangled or caught in a tree can be challenging. It is almost a mini-space project!

Since they run the WSPR beacon system and use HF, it is possible to track them as they fly. Sometimes they make a complete trip around the world before they are lost. If they last the first few days, they usually are lost when they fly through storm systems. One group I found on the Internet had one that made five and a half trips around the world!

The talk I heard was fascinating. It was a tremendous educational experience for both the kids and adults. Some group members did not have ham tickets when they started but got them later. The Bottlecap group uses a different member's call sign for each launch.

There is quite a bit of interesting material on the Internet on Pico balloons. If you don't look into new and different activities in ham radio, you are missing out on a lot!

SET

The annual Simulated Emergency Test (SET) was held Saturday, October 1. Since I live in Washington County, I am with the WASHARES group. We had members activating emergency stations in hospitals and other official locations. I was at the Aurora Medical Center in Hartford.

OZARES also participated in the SET. As part of a joint effort, members of each group attempted to check into both ARES repeaters. I'm sure Don, AA9WP, the OZARES Emergency Coordinator, and Vic, WT9Q, the WASHARES Emergency Coordinator, will have more details in this or next month's newsletter.

DX

When the Russians invaded Ukraine in February, there was a 30 day ban on ham radio for Ukrainian amateurs. Even after the 30 days expired, you didn't hear them on the air. Although the war continues, Ukrainian stations have started showing up on the bands. I

worked a few of them recently. I'm sure these are from the safer part of the region. It is good to see some of them back on the air.

After a long drought due to COVID, it looks like DXpeditions are finally back! Add that to improving high band propagation and it will be a lot of fun. The DXpeditions mentioned here are the bigger ones. There are many single-op efforts, often part of a vacation. I usually don't mention them. It seems a lot plan on doing a fair amount of operating, but once they get caught up in sightseeing and other vacation activities, their operating time is very limited. Often those times don't line up well with propagation to us either.

A group of twelve European hams will be going to the Comoros Islands in the Indian Ocean starting October 6. They will be using the call sign D60AE. It looks like it will be a well-organized effort.

There are two operations from Madagascar this month. The first is by a group of four European ops from October 11-22. They will have two stations, and each operator has his own 5R8 call. There is also a holiday style operation by IK6QON from October 8-17, using SSB and CW on the HF bands.

The African country of Benin will be activated by a Russian team that has been going to African countries for the last couple of years, including A25RU, 7Q7RU, etc. They have been run very well. They will fire up TY0RU from October 14-26. The eight-man crew should have several stations on the air. Keep an eye out. In the past, they operated from the announced operation. Then they showed up in another country shortly afterwards with little notice.

Cocos Keeling is an island northwest of Australia in the Indian Ocean. A group of three Aussies will activate the island at the end of the month. They will be on for CQWW but on the air before and after the contest for a few days. This one can be a bit tough due to propagation and little activity. This might be your first good chance to pick it up in many years.

A very large group of German hams will be in Papua New Guinea at the end of the month and early November. This is another good catch from the western Pacific. Lesotho is one of the landlocked homelands in South Africa. It used to be pretty common, but there has not been a lot of activity in recent years. However, eight ZS hams will be there starting November 2.

Two other Pacific island operations will happen in early November. First, Palau will be activated by a group of US hams. Second, Tonga will be put on the air by two Bulgarian hams for almost three weeks in November.

The CQWW Phone contest is at the end of the month. There are always several contest DXpeditions. They are on the air a few days before, often with different calls than they use in the contest. They are checking out their stations and learning the propagation. Some do most of their operating on the WARC bands to keep demand for their country

by DXers high until the contest. So, spend some time listening between about October 24-28, and you might find some new ones. Of course, getting on during the contest is also a good idea, even if you are just looking for new countries.

Contests

The biggest contest of the year is the CQWW Phone contest. The rules allow everyone to work everyone for credit, so a lot of stations get on to work new countries. With good high band propagation, this year should be one of the best in a very long time.

You work DX for QSO points. Contacts with other continents are worth more points. Multipliers are DX countries and CQ zones. There are 40 zones, and we are in zone 4. The exchange is signal report and zone, so we will give out "59 04." You can work the same station again on each band.

You can work US stations, but they are worth QSO zero points. You get country and zone multipliers for working your own country, though. Don't call other US stations if you are not sending in a score. You will probably be wasting their time. If a US station calls you, log it and send in your score, so they get credit.

Even if you are not serious, getting on for a few hours and seeing what you can work is a lot of fun. If you plan to send in a score, check out the rules.

The November CW Sweepstakes starts Saturday afternoon on November 5. This is a popular contest. I think it is also one that small stations can be successful with good operating skills. The exchange is long. I will send "001 A W9XT 70 WI" to my first contact. What this means is somewhat complicated, and I suggest you read the rules and supplementary information online.

Only a few events are listed this month, including the ORC meeting and Friendly Fest. If you plan on participating in some ham radio related activity, let me know by the end of the previous month so that I can include it in the activity chart. Better yet, send a short article to our editor giving the details and why we should also participate.

Well, October will be a busy month between preparing our stations for winter and many stations to work on the air.

Check my monthly Operating Aid – Next Page . . .

W9XT's Contest, Operating, DXpedition, and Special Event Picks for October and early November 2022

W9XT's contest picks for October and early November 2022					
Name	Start	Length	Bands	Mode	Link
CQWW Phone	0000Z Oct 29	48 hours	160, HF	SSB	https://www.cqww.com/
ARRL Sweepstakes CW	2100Z Nov 5	30, work 24 max	160, HF	CW	www.arrl.org/sweepstakes

Dates/Times in UTC. Subtract 5 hours from UTC to get local (CDT). HF = 80, 40, 20, 15, 10 Meters

W9XT's DXpedition picks for October and early November 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Comoros	Oct 6-17	D60AE	160, HF	CSD	https://comoros2022.wordpress.com/
Madagascar	OCT 11-22	5R8xx	160, HF, 6	CSD	Ops each have their own 5R8 call sign
Benin	Oct 14- 26	TY0RU	160, HF, 6	CSD	https://ty0ru.org/
Cocos Keeling	Oct 26- Nov 4	VK9CM	HF,6	CSD	
Papua New Guinea	Oct 25- Nov 10	P29RO	160, HF, 6	CSD	
Lesotho	Nov 2-7	7P8CW	HF	CSD	
Palau	Nov 2-14	T88WA	160m HF, 6	CSD	
Tonga	Nov 2-20	A25GC	160, HF, 6	CSD	

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

W9XT's operating & event picks for October and early November 2022			
Event	Dates	Details	Link/notes
ORC Meeting	7:30 Oct 12 PM		Zoom/in person
Friendly Fest	8:00 Nov 5	Elks Club 5555 W. Good Hope Rd. Milwaukee	

Ozaukee Radio Club Minutes of Membership Meeting. 9/14/2022

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 Pat W9JI officially initiated the meeting at 7:30 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance but were not addressed individually. Jeananne, N9VSV, put out a plea for members to help man a table at the upcoming HRO Superfest; Vic, WT9Q, reminds members of the upcoming SET scheduled for Oct 1; Fred, W9KEY, mentioned the Route 66 on the air event, running now, with 21 active stations on the route; Gary, W9XT, will be participating in the 'QSO today' program and speaking at W9DXCC

Program:

Dave Ellison, W7UUU, via zoom, gave us a presentation on his shack fire in October 2020 that totally destroyed his radio shack, which was housed in a garage adjacent to his home in Washington state. The cause was due to a faulty MOV surge protector in a plastic power strip. This gave Dave the idea to rebuild the shack using his desire to design the ideal shack. [at this point, at 7:45 PM, the connection to Dave via the internet dropped out completely, and the presentation was then concluded].

Scholarship Auction:

Due to the interruption of the program, Stan, WB9RQR, held the auction, items sold included a complete Winlink system, a Linux desktop computer, and some other items. The 50-50 raffle was then held.

Committee reports:

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

2nd VP: Bill, K9GN, briefly reported the recent lighthouse event happenings, and referred to the newsletter article by Fred, W9KEY, stating rainy weather was experienced, and over 300 QSOs were made. W9MXQ added that the article was a welcome addition to the newsletter and reminded the group that more articles would be welcome.

Treasurer: Gary N9UUR set out the current balance sheet at each table; cash balances look strong, and the fall Swapfest earned a nice profit. The August treasurers' report was accepted; motion made by K9QLP; 2nd by AA9W and carried.

Secretary: Ken W9GA reported the Aug 2022 minutes are posted; a few corrections were brought up by members to those minutes; a motion to accept [with corrections] was made by N9VSV; and K9GN 2nd, and the motion carried.

Scholarship/STEM: Tom, W9IPR, went over the financial impact of the dollars earned by the Swapfest; and the impact on the S.T.E.M. program; plus, the impact of table sales at the Swapfest due to many items from Nels [WA9JOB - SK] and Ed, AA9WW, donations. Tom reminded members of the \$60K we donated to the ARRL for awards, and that we have over \$17K available to support students locally. The S.T.E.M. committee is due to meet in October.

Technical committee: Tom KC9ONY is now serving in the committee, running the meeting streaming equipment, as Gregg W9DHI has stepped down from his position.

OLD business: There was no old business

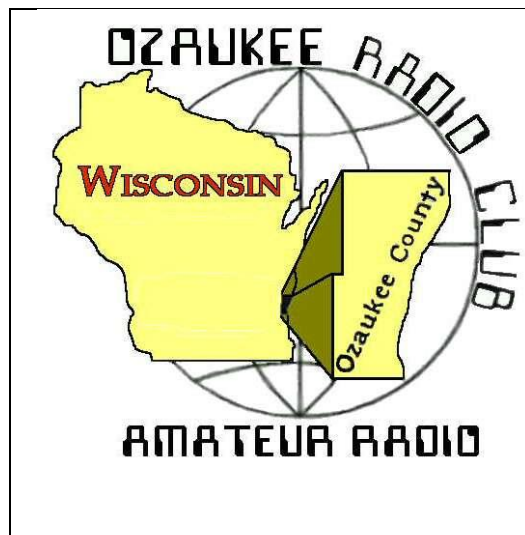
NEW business: Tom W9IPR made a recommendation for the board of directors to consider; that we supply a name tag for any 1st year dues paying members who join; and also, that the board consider donating [again] to the ARRL defense fund. Stan, WB9RQR, noticed that the ORC is not listed under the ARRL'S list of special service clubs, and a review of all of our services offered was briefly discussed.

Adjournment: WB9RQR moved to adjourn, N9DRY 2nd, motion carried; time ending was 8:44 PM. There were 23 in-person attendees, 10 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- October – Jason Spetz KC9FXE
ARRL Wisconsin Section Manager
- November – Dave Ellison W7UUU - From the Ashes:
Fire and Rebuilding the Ideal Ham Shack
- December – Fred LeMere KD9IGO
Horizontal Loop Antenna and Feedline
- January - Elections

We need some programs for the coming 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 Volkmann, W9JI, at orc_pat_w9ji@outlook.com to discuss your idea for a program

ORC Meeting Agenda

October 12, 2022

- | | |
|--|--|
| 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 Volkmann (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:
Jason Spetz KC9FXE
ARRL Wisconsin Section Manager | 9. Secretary's Report:
Ken Boston (W9GA) |
| 5. President's Update:
Pat Volkmann (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
9 November 2022**

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

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



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

Facebook: facebook.com/orcwi

Volume XXXIV

November 2022

Number 11

From the President

de Pat Volkmann, W9JI



As the end of the year approaches it's time to prepare for the election of Club officers once again. The elections will be held at the January meeting. The ORC Bylaws place a term limit on the offices of President, 1st Vice President and 2nd Vice President. Ben Evans K9UZ, and I have reached our three-term limit and neither of us will be running for office. I will continue to be on the ORC Board as the Past President. I will also chair the Nominating Committee, which will try to find candidates for each office.

Here is the slate of candidates for office as of November 2nd:

Office	Name	Call
President	Bill Greaves	K9GN
1 st Vice President	No candidate	
2 nd Vice President	No candidate	
Repeater Vice President	Tom Trethewey (Incumbent)	KC9ONY
Secretary	Ken Boston (Incumbent)	K9GA
Treasurer	Gary Bargholz (Incumbent)	N9UUR

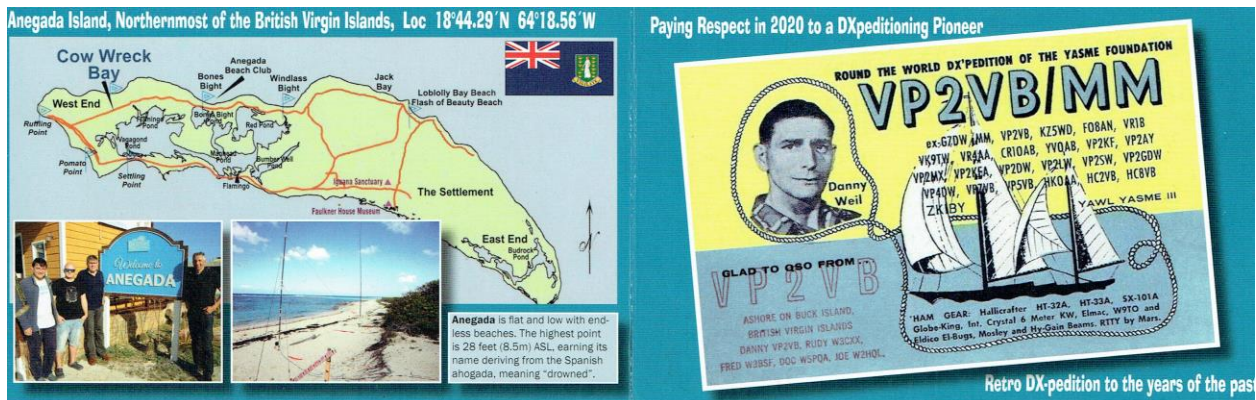
You can nominate yourself or another person for office. If nominating another, that person has to be willing to accept the nomination. Nomination is simple, just let me know that you are interested in an office. We will also take nominations from the floor at the January meeting.

If you are interested in how the election process works, it is documented in the Club bylaws on the ORC website.

We will be having a discussion on dues at the November meeting. We are spending more than we are taking in and it's time talk about raising the dues.

Last month, I mentioned the documents that the ORC has accumulated since its founding in 1964. Included in that collection are lots of old newsletters. Some of the newsletters are tucked in manilla folders, other are in bound volumes like you would find on a library shelf. The oldest one that I was able to find (so far) is the March April 1980 issue, edited by Ron Yokes, W9BCK (SK). Our Editor has included a copy of that newsletter in this issue. While all of the usual Club activities are included, one caught my eye. The report on the Big February Catchall Party opens with “Booze, babes, banjo’s and bandits” and concludes with “A good time was had by all”. It’s interesting to see what the Club was up to 40 years ago.

I recently received this card from the VP2VB 2020 DXpedition. The group was located on Aneгада Island, the northernmost island in the British Virgin Islands. The call sign was originally held by Danny Weil, who is considered “the pioneer of the worldwide DXpeditions”. In the 1950s and 60s, Danny traveled by boat to exotic locations on his boat Yasme, providing DX contacts to many hams. The Yasme Foundation (yasme.org) carries on the DXpedition spirit and sponsored this adventure. This is a very nice card that relates an interesting story, along with confirming the QSO.



VP2VB QSL Card

See you at the meeting.
Pat Volkmann W9JI



A Message from the Editor

Newsletter Table of Contents

de: Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. As pat mentions, we have the complete March/April 1980 ORC Newsletter, reprinted at the tail end of this edition. See how many calls you recognize. Thanks to the help of Gary, K9DJT, I had the pleasure meeting Ron Yokes, W9BCK, very late in his life. An experience I will value to the end of my radio days. Take a look and remember.

Speaking of Pat, W9JI, see his fine article that takes my own Vintage Amateur Radio article of this month on Frequency Accuracy for Vintage General Coverage Radios and adds a related, very handy, shack addition he has installed at his QTH.

I draw your attention to Joe Bettencort, KD9RAW, a new author on these pages. Joe brings us information on his leadership at the recent Boy Scouts of America Jamboree on the Air (JOTA) activity in rural Sheboygan. It is nice to see the long tradition of JOTA support from Ozaukee Radio Club – so well handled in the past by Bill Howe, KA9WRL (SK). It is obvious that Joe continues our place in that event.

Check out a new series penned by long time contributor and past editor to the ORC Newsletter, Stan Kaplan, WB9RQR. Stan starts a new series on Linux for the newcomer. That includes me – and maybe you, too.

As the current editor of the Newsletter, I would be happy to accept hard copy issues from any of the volumes previous to XXI (21) to copy and digitize for our files. They would be gladly returned to you. Contact me at newsletter@ozaukeeradioclub.org for further details. If you have digital copies, PDF files, or most anything else) I would accept them as well for this project. See more on Page 35.

Our regular Ozaukee Country Amateur Radio Emergency Coordinator Ozaukee County EC, Don Zank, AA9WP, is here with an article on CW and it's place in ARES. Gary Sutcliffe, W9XT, brings us On the Air Activities – Contests, DX, and Special Events through November and into December. Last but not least, check out Minutes of the last meeting as provided by our club Secretary, Ken Boston, W9GA. Check the complete Table of Contents on the next page.

Be sure to note information on coming meetings and info on making presentations at our In-Person and Zoom monthly meetings.

Do you need help in getting thoughts to paper (or keyboard!!) for an article? Contact me at newsletter@ozaukeeradioclub.org.

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8	Stan Kaplan, WB9RQR: Computer Corner No. 296: LINUX: INTRODUCTION
11	Don Zank, AA9WT: Ozaukee County ARES CW
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35	REPRINT – March/April Ozaukee Radio Club Newsletter – Intro Page



_____ **Onward To the Newsletter** _____

Jamboree on the Air (JOTA) – Boy Scouts of America 2022 Event at Kohler Andre State Park, Sheboygan, Wisconsin

by: Joe Bettencort, KD9RAW



You may have heard some young voices on the radio last month. That is due to the 64th annual JOTA (Jamboree On The Air) held October 14-16. JOTA is a worldwide event run by the Boy Scouts of America. This event, which is BSA's largest, is meant to get youth involved in the HAM world. Approximately 1.3 million Scouts participate annually at over 200,000 HAM shacks!

Locally the Troop and Pack that I worked with (Troop 865 and Pack 3894 out of Mequon) participated remotely from Kohler Andre State Park while camping. Our set-up included: four radios and antennas, allowing us to run 2 HF bands and 2 UHF/VHF bands. We were able to make contacts using HF Frequency 7.205 MHz and VHF using the WiresX repeater in Sheboygan. Five scouts earned the special edition 2022 JOTA patch, and one Scout, Matthew, who earned his Radio Merit Badge. The Radio Merit Badge, by the way, is one of the least earned badges in all of Scouting!

Here is Matthew Seiberlich, Radio Merit Badge awardee, working the amateur radio bands at JOTA 2022:



KD9RAW Pictures

Bands were busy during this event! In addition to JOTA there was a POTA event weekend and QSO party happening. These three simultaneous events made finding an open

frequency very difficult. High winds at our location made the hearing a challenge at times.



The radio setup at Kohler Andre State Park

KD9RAW Picture

Bands were busy during this event! In addition to JOTA there was a POTA event weekend and QSO party happening. These three simultaneous events made finding an open frequency very difficult. High winds at our location made the hearing a challenge at times.



Antenna is out in the clear for best operation. It is ground mounted away from the operating position.

WD9RAW Photo

This event's success locally is due in large part to the volunteers from ORC, LEFROG and MARC. Special thanks to Alex, WB9X, for the use of his repeater, Leroy, WD9HOT, for being a friendly contact for the scouts, Tom, KC9ONY, for showing up to assist, Loren, N9ENR, for bringing his analyzer and running DSTAR, and Steve, W9MCU, for assisting at camp. Not to be left out was Fred, W9KEY, for scouring the air waves and making contacts along with several Scouts, including Matthew, Cyrus, James, Zachary, and Rylan. This was truly a group effort and I wholeheartedly appreciate the support and enthusiasm these groups and individuals showed from the planning process through execution.

(Editor's note: ORC members of more than just a few years will remember Bill Howe, KA9WRL (SK) who was always our window on the Boy Scouts, Jamboree, and Jamboree on the Air. Joe, KD9RAW, is to be commended for his service to our youth and his keeping Bill Howe's passion alive in the Ozaukee Radio Club. Our hat is off to you, Joe. What a fine mission you have!!



THE COMPUTER CORNER

No. 296: LINUX: INTRODUCTION

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

WHY YOU ARE READING THIS. Bill Shadid (W9MXQ), our editor for the ORC Newsletter, suggested it. He proposed articles on Linux covering such stuff as file management (including saving files), updating, and running of programs, creating directories, and finding applications (programs) online. Seemingly simple stuff, but also mystifying for long-time Microsoft Windows users trying to get themselves introduced to Linux for the first time. So, with those suggestions in mind, plus lots of background info to cover it all properly, I have enough topics to fill the remainder of this year and all of the next with articles. Now, all I need to do is to write them! Next month's topic, most logically, will be on acquiring and installing Linux.

WHY USE LINUX? First, you can do anything with Linux that you can do with Windows. As I personally discovered early on, you can even pull document files from Windows into Linux, then modify and save them, pretty much to your heart's content, *even on the same computer!* I have done that myself using dual-boot computers, directly, after booting from the Linux side (these are machines with both Windows and Linux on the same computer, but in separate areas of the hard drive). For example, a letter written in Microsoft Word can be ported directly from the Windows files on the Windows side into Libre Office in Linux on the Linux side (Libre is a stand-alone substitute for Word that comes with my favorite version of Linux). There, the letter can be modified, expanded, rewritten, saved, and printed, as you like. So, with Linux you can read Windows directories (folders), and the files inside them, from a single hard drive where both exist. But not the other way. Microsoft refuses to read files from Linux when both exist on the same machine.

So, you are not constrained by using Linux. Indeed, your horizons are expanded. Moreover, Linux is free of charge. That means using it separates you from the marketing whims and monetary charges of commercial providers such as Microsoft. So, you are not locked into paying for upgrades every few years or paying yearly sums to keep using what you already have. Many of us old timers remember that computing started as a no-cost, shared adventure and we feel it should still be that way today. The source code for Linux itself is freely available (and it must legally stay that way), so you can actually change the Linux operating system (OS) to fit your personal needs if you have a bit of programming skill. Many users have done just that, and the result is that there are dozens of versions of Linux to pick from when you get started. Some view this as a disadvantage, with too many choices. True enough, it can sometimes be dizzying and confusing, but can be avoided by simply picking a good version. Later, if you find a version that you like better, you can always switch. You have no such choices when you pick Microsoft Windows!

WHAT VERSION SHOULD I USE? You want something that looks and feels a lot like Microsoft Windows, so the learning curve is as easy as possible. There are a couple of versions that could easily fit this bill. My favorite is **Linux Mint Cinnamon, version 21, 64-bit**, nickname “**Vanessa**”. That version is a pleasure to install and use, and it has provisions to find and install all the drivers (software to run the hardware in or attached to your computer) you might need. Once it is installed, it also has slick provisions for keeping your software updated to the latest and greatest with the least pain and time expenditure.

WHAT SHOULD I NOT GET? Don’t bother looking for a Microsoft Office substitute. **Libre Office** comes with Vanessa and is even more complete than MS Office (see the following table).

Table 1: Windows versus Linux Software

COMPONENT	MICROSOFT (WINDOWS)	LIBRE OFFICE (LINUX)
Spreadsheet	Excel	Calc
Drawing	---	Draw
Presentation	Powerpoint	Impress
Formula	---	Math
Document	Word	Write
Database	Access	Base

Most people will want software to create or open, modify, and save and print documents in the same way as Microsoft Word. Libre Office Write will do that. But all the others (Calc, Draw, Impress, etc.) are also all in your machine and ready to go when you install Vanessa.

[As an aside, Libre Office even comes in a free Windows version that works fine to sub for Microsoft Word, so you don’t need to buy MS Office even for Windows. Libre will even save documents in MS Word format (.doc, .docx and several others) so they can be read and edited in Word.] You can get Libre for Windows from MajorGeeks.

Actually, you will find there are thousands of free programs available through Vanessa after you install it. Want to run Winlink? Software is available to do it. Mine is already up and running on a Linux machine in my basement, operating 24/7. Mostly, I run it remotely, from a main machine in my office, using remote control software called AnyDesk that works beautifully on both Windows and Linux. That is, I run Winlink (Telnet) on a Linux machine in my basement using AnyDesk on a Windows machine in my office, two floors up, via either wired or wireless network. It works fine.

SYSTEM REQUIREMENTS. Let me close this introduction with a few words about collecting things you need. If you have an older computer that works well, it would be an ideal candidate to install and play with Linux, so long as it meets certain base requirements for Vanessa (which I recommend). Pretty much anything you find that was built

around 2014 or later should work, maybe even before that. It must be a 64-bit desktop or laptop computer for Vanessa. Vanessa will work with at least 2 GB of memory (RAM - Random Access Memory, those memory sticks) but 4 GB would be much better. It will work with as small as an 80 or 100 GB hard drive, but more is better. Given you have those minimum requirements, you can install a system that will be supported to at least April 2027.

GETTING A LINUX 21 DISK. The other thing you need is the software itself. You can download the *iso* file of Linux Mint Cinnamon, version 21, 64-bit, nickname “Vanessa” at this location:

https://www.majorgeeks.com/files/details/linux_mint.html

Be sure to select *download (Cinnamon)* to start the download. It will take some time since it is 2.4 GB in size. Once downloaded, you must use this file, named:

linuxmint-21-cinnamon-64bit.iso

to burn an actual bootable DVD with all the installation files on it. Pop this bootable disk in a drive, reboot, and up will come a live copy of Linux desktop that you can play with at your leisure. Shut it all down when you are done, and no changes will have been made to the hard drive. On the other hand, click the desktop icon “Install Linux 21” that comes up after reboot, and you will start the program that installs Vanessa to your hard drive. See next month’s article for details.

AN ALTERNATE TO ALL THAT. If you are a member of the ORC, WiARC or LeFrog, you can get that installation DVD free from me, just for the asking and a pick-up. Contact me by email or phone and we can arrange a mutually agreeable time and day for you to pick up the disk at my QTH in Saukville. Give me a bit of time (2 days) to prepare a disk, in case I am swamped or have a bunch of other commitments. Fair enough?



OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator, aa9wp@arrl.net

CW



There is a great deal of discussion and training in the amateur radio emergency services aimed at using the digital modes. It may be WINLINK, Fldigi and NBEMS, JS8Call, psk31 or the old standby of RTTY. The advantages are obvious. The modes can transmit a great amount of information quickly. The received messages can be printed out. The possibility of misunderstanding by phone modes is reduced. The weak link of the digital modes is their dependence upon computers, and in some cases, the internet. Add in the hardware layer of TNC's or soundcards and the number of possible failure points increases. As does the complexity of the digital modes and hardware. But what about the original digital

mode of CW or Morse code? For some reason CW does not get mentioned much in the emergency services literature.

There are distinct advantages to using the CW mode. At low power levels and with its narrow bandwidth, CW can be successful in less than optimum propagation conditions. It requires simple equipment, a key, and a simple transceiver.

CW seems like a natural fit for emergency operations. No worry about the internet or computers. Basic and simple operation. It may not be as fast as digital modes or easy as phone but "when all else fails," CW would be the go-to mode. And CW on the hf bands definitely has more range than VHF FM.

Back in 1998, when the FCC started discussions about lowering the 20-wpm requirement for an Extra Class to 5 wpm, or eliminating the requirement, I decided I needed to get an Extra Class license at 20 wpm. And in October 1998 I passed the exam and CW test. However, I haven't used CW much except for contesting. Then it is pretty easy to copy call signs and 5NN. This summer I decided to freshen up those CW skills for the upcoming contest season. And the best way to learn or freshen up those skills is by training with the CWops Academy. <https://CWops.org/>

The CWops group offers three yearly sessions, each eight weeks long, that meet twice per week. An advisor will meet, via zoom, with a group of students to review the daily homework assignments and answer any questions that come up. The advisors will provide plenty of operating tips from ragchewing, and hunting for dx to contesting. A vital component of this education is the suggested minimum of one hour per day of CW practice. This is in addition to the daily homework assignments between classes. The Academy weekly sessions and daily homework supply the incentive and discipline needed to master CW.

There are four levels available. Beginner is the starting point where an operator can learn the Morse Code characters using Morse Code Trainer software. The goal is to learn the letters, numbers, and symbols by sound and not by the number and position of the dits and dahs. The minimum goal is 6 words per minute (wpm).

Next is the Fundamental class with the goals of improving head copy of CW, and the skills needed for ragchewing and contesting. The minimum goal is 10 wpm. An online training program, Learn CW Online, is employed to improve character recognition. <https://ICWo.net/>

The Intermediate Level session follows with the goal to learn Morse code at 20 wpm. As before the sessions are designed to increase instant character recognition and head copy. Software at this level includes Morse Runner <http://www.dxatlas.com/MorseRunner/> and RufzXP <https://www.rufzxp.net/>. At the RufzXP site you see this discouraging headline: *Yannis Scutaru, 11 years old, proved speed 1093 cpm (217 wpm) under supervision of the referees!*

Damn kids! Anyhow that is not the goal of these sessions.

Finally, the last session is the Advanced where the goal is 25 wpm plus. In this session, the important technique of copying from behind, basically allowing two or three characters to pass, before starting to copy or type is practiced. The fun part of this session is participating in the Wednesday and Thursday sessions of the CWops contest, hour-long contests that begin at 1300 and 1900 UTC on Wednesday and 0300 UTC on Thursday. An exciting hour of working stations sending at 30 wpm plus. Scores are submitted on the 3830 site.

Once the Advanced class is completed, membership in the CWops organization is accomplished with the sponsorship from three other CWops members. Sponsorship, after participation in several of the CWops mini tests, is easy as the other operators are familiar with the Academy members.

I am proud to say that I passed the Advanced Class and now have the CWops number 3252. But finishing the class does not mean my CW cannot be improved. Like, golf, bowling, DXing, and contesting, there is always room for improvement. Especially sending with a dual paddle CW key.

If you want to learn CW and be a proficient operator, I highly recommend participating in the CWops Academy. Now, how to integrate more CW operations into the amateur radio emergency services.

Vintage Amateur Radio

de Bill Shadid, W9MXQ



Last month we talked about the use of the 1950's, 1960's and 1970's General Coverage Shortwave Radios and their use of Bandsread controls to provide better frequency readout accuracy on the ham radio bands – or, for that matter, anywhere in the radio's coverage where the users wanted a wider spread of a frequency area on the tuning dial.

The lessons from last month are fine – and they are correct. However, what was not shown was the procedure to be reasonably sure the radio is actually tuned to the frequency shown on the dial. The fact is, it may be close but almost a certainty that in those radios mentioned in last month's article¹ it is off by some amount. Maybe by quite a bit.

This is an old story today with Vintage Amateur Radio Collectors. So, you have your totally analog (that is, not digital²) readout 1960 vintage station all aligned and ready to test and you call a fellow ham to listen to you on the bands. You tell him/her that you will transmit on 14.250 MHz but to listen and call back on the frequency where your transmitter is sending. He/she hears you and the subject of transmitter quality sound is a forgotten topic when the first statement from them is, "hey, you are transmitting on 14.248.32 MHz – you are way off!!" You, on the other hand, feel complimented because you are accurate to within a little over 0.01% - never mind how close that is – it still does not fit with your on the air partner's digital readout on his/her modern Super Band Burner Transceiver. Oh, forgot to mention, that Super Band Burner also has an accuracy measurement. But never mind – that is generally not up for conversation!! Word to the wise, find another true Vintage Radio Person to help you check that radio. In this world of letter monikers, find a LBDR ham³. This is not a testament on non-collectors or new generation hams. It is just that the history of somewhat drifty free running oscillators is fading fast among new hams.

To ensuring reasonable frequency accuracy – or at least a ensure reasonable trust of the frequency read – there are several tools involved:

1. Use of an internal or external 100 kHz Calibrator Oscillator.
2. Use of known nets on the bands being used.
3. Use of Frequency Standard Stations.
4. Use of crystals used for transmitter operation.

We will discuss all four of these methods of calibration. However, for this exercise, we are going to focus on just the Hammarlund HQ-180C Receiver – one of the radios used in the article last month. That Hammarlund is very representative of the two dial (Main

Tuning and Bandsread) system used on most radios of the time. In one form or another, you can find this system used on most radios of the time – even including units from Japan (Trio/Kenwood, mostly) or private labeled versions of these radios branded as Allied Radio, Radio Shack, Lafayette, Olson, and others.

The biggest variation was in radios like the also shown Hallicrafters SX-110. Note the following two pictures to illustrate what I mean.



The Hammarlund HQ-180C

Note the two Tuning Knobs and Readouts. Left is Main Tuning, and the Right is Bandsread.

The Hallicrafters SX-110

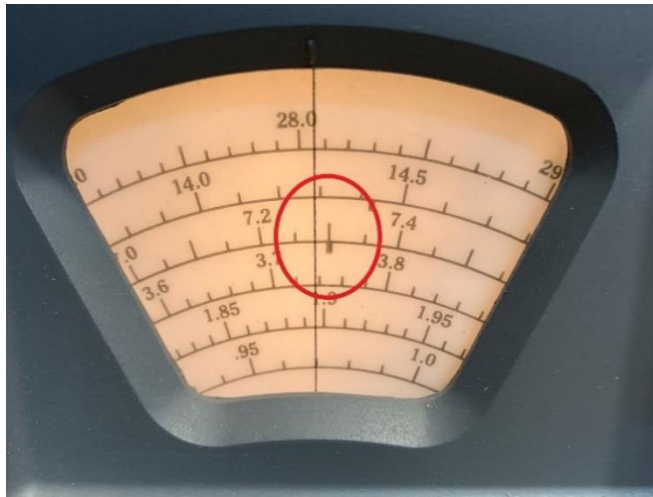
Note the two Tuning Knobs and Readouts. Left is Main Tuning, and the Slide Rule Dial on the Right is Bandsread.

Both Radios – W9MXQ Collection

Remember also, for reference, that many radios did not have a ham radio band calibrated bandsread readout. Such radios were more likely to include a 0 to 100 scale that was to suffice to spread out the scale on a portion of the main tuning dial. Do not assume that all such radios were low cost – many were just not intended for ham radio use as their primary market. A good example is the Hammarlund SP-200 SuperPro Receiver covered in the article. The SP-200 was primarily marketed to the military and other government agencies.

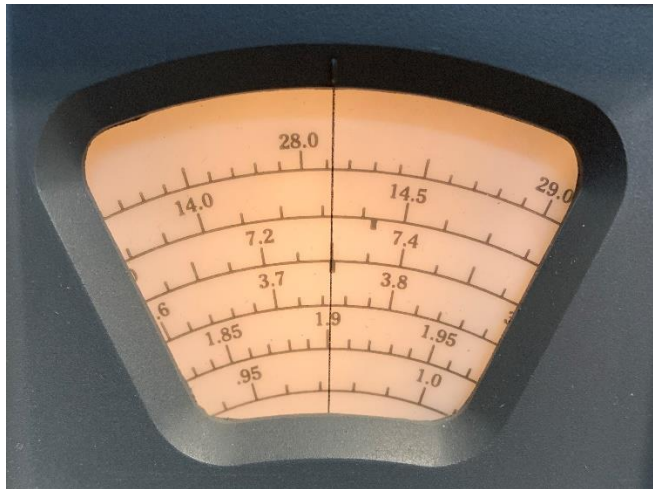
The pictures represent a top-of-the-line radio from Hammarlund and a mid-range radio from Hallicrafters – and their performance reflects that point. This illustration is to show typical radio panel design and is not related to performance.

Back now to the HQ-180C. Recall last month that the example showed how to set the radio to receive on MidCARS (Midwest Amateur Radio Service⁴ - <http://midcars.net/>). (We will talk about MidCARS, and other nets, later.) In last month's review, we showed the dial settings for 7258.00 kHz in the following three pictures:



This is the left readout window (reference HQ-180 photo, above). This is the readout window connected to the MAIN TUNING Control. Marked here is the middle arc that includes the range we need. Note in the middle of the red oval, the arc shows a bold mark, or bulge. Move the MAIN TUNING Control so that the indicator falls right on that bold mark, as in the picture just below this one.

W9MXQ Picture



As referenced above, note that the readout is now exactly over the bold mark on the arc between 7.2 and 7.4 on the dial. This indicates that the receiver is tuned to 7.3 MCS (MHz), which is the top of the 40-Meter band. We now need to move to the next picture and to start using the BAND SPREAD readout window and Control.

W9MXQ Picture



The next part of the process is to move to the BAND SPREAD readout window – to the right of the S-Meter. On the readout window, you can see that I have tuned the receiver on 40-meters (third arc from the bottom to just below 7.26 MCS (MHz) in order to tune in MidCARS at 7258 KCS (kHz).

W9MXQ Picture

The first question you should be asking is, “how do you know in the first picture that you are exactly on 7.3 MCS (MHz) on the main tuning dial.” Darn good question because

you do not know that for sure! What we showed last month is “reasonably accurate,” but leaves a lot to be desired.

So, first we will bring a 100 kc (kHz) Crystal Calibrator into the picture. These handy devices are either standard equipment in the radio (the HQ-180C has one) or they are available as an external unit or an option that plugs into the radio. Crystal Calibrators provide an accurate⁵ signal that can be engaged to provide a carrier on the radio every 100 kc (kHz) from the lowest frequency to the highest frequency the radio covers. The little oscillator provides harmonics of the 100 kc (kHz) signal so when engaged you can hear a carrier accurately placed every 100 kc (kHz) across the spectrum.

So, in the example with the three pictures above – to properly calibrate the radio against the 100 kc (kHz) Calibrator. First adjust the Bandsread dial so the readout is on the 40-meter band (third arc from the bottom) and set at 7.3 mc (MHz). Presetting the Bandsread dial becomes an important step when using any of the calibration tools indicated in this article.

Now go back to the Main Tuning Dial and set it to 7.3 mc (MHz). After setting both dials to 7.3 mc (MHz), turn on the 10 kHz Calibrator. (This is on the SEND – RECEIVE – CALibrate switch on the HQ-180C – elsewhere on other radios so equipped.) Now carefully and slowly move the Main Tuning Knob to zero beat with the Calibrator signal that is audible at 7.3 mc (MHz). If you have to move the Main Tuning to zero beat the Calibrator, do so. Then can be assured that the Bandsread dial is now at 7.3 mc (MHz).

Now tune the Bandsread dial (with the Calibrator still on) to 7.2 mc (MHz) and you should hear the calibration signal again at the next harmonic downward. If you have to adjust the Main Tuning a bit to be accurate, then do so. The fact that the dial is calibrated at 7.3 mc (MHz) does not mean that it is also calibrated at 7.2 mc (MHz). It almost certainly will not be zero beat as far away as 7.0 mc (MHz). Oscillators did, over time, become more and more linear – because the oscillators became digital – not analog. Companies like National Radio and Collins Radio took exceptional measures to make their analog dials as linear as possible – but they still had error from one end of the band to another.

So, what if you do not have a Crystal Calibrator in your radio? Frankly, the majority of radios of the time did not have such calibrators. However, they were available on the aftermarket. Check these examples:



Bud Radio, Inc. Model FCC90B from the 1950's. This self-powered calibrator used a 50C5 Oscillator and a 35W4 Power Supply rectifier. The filaments were wired in series and then powered off the AC Line. This unit was AC-DC and therefore somewhat dangerous⁶. (KB8TAD)



Hammarlund Radio Company XC-100 Calibrator – used a 6BZ6 Oscillator tube. The filament and plate voltages were taken from the host receiver. It dates from the mid-1950's. Some Hammarlund receivers had front panel switching to access the calibrator while others required separate user provided on/off control. **(Hammarlund Catalog)**



Heathkit HD-20 Crystal Calibrator dates from 1960 through 1975. It operated from an internal 9V Battery to operate the 1N409 Transistor oscillator. It is shown here connected to the Hallicrafters SX-110 Receiver. These are common at Hamfests to this day – and they still work just fine. **(W9MXQ)**



General Radio 1213-AB Crystal Oscillator Unit is a vintage calibration instrument used by fellow vintage radio aficionado, Pat, W9JI. This unit provides calibration signals every 1 mc (MHz), 100 kc (kHz), and every 10 kc (kHz) as switched. Note the also included General Radio 1203-B AC Power Supply. **(W9JI)**

External Crystal Calibrators are connected to the antenna input of the receiver to be calibrated. However, whether internal or external, when using a Crystal Calibrator, remember to turn it off when not used for calibration. The first time you forget to do so, you will find yourself wondering why there are so many carriers on an otherwise dead band! Also, you can use accessory (external) calibrators for calibration of a transceiver. By the time transceivers came along, calibrators were either standard equipment or a low-cost option that could merely be plug into the connector provided on the back or inside the radio.

(Older radios can be confusing – carefully note the instruction manual on the subject. Many things shown today as operating details were assumed to be known in 1960!)

Examples of popular vintage, analog readout transceivers that included a calibrator were:

- Collins KWM-1, KWM-2, KWM-2A

- Hallicrafters SR-150, SR-400, SR-2000, FPM-200
- Drake TR-4, TR-4C, TR-4CW, and TR-4CW-RIT
- Swan 500, 500c, 500cx, 700

Examples of popular vintage, analog readout transceivers that did not include a calibrator as standard equipment (or were optional plug-in devices) were:

- Hallicrafters SR-160, SR-500 (both came with calibrator, but crystal optional.)
- National NCX-3, NCX-5, NCX-200
- Swan 250, 350, 350c

When using a calibrator in a transceiver that did not include a special connector for connecting the calibrator you need to be careful. Completely remove the calibrator from the antenna connection before transmitting. You will make that mistake only once!!

More sophisticated oscillators, such as the General Radio 1213-AB Crystal Oscillator Unit add another level of potential frequency confirmation with the addition of the 1 mc (MHz) and 10 kc (kHz) positions for output frequency. However, beware when using as close a signal as every 10 kc (kHz) that you actually listening to the signal you think you are. For instance, when listening to 7250 kc (kHz) on the dial – be aware that you may be listening to 7240 or 7260, or even further away.

I regularly use my Heathkit HD-20 Calibrator or the internal calibrators in radios (such as the one inside the HQ-180C Receiver). One point to remember is that the calibrator itself needs to be calibrated. That is done using WWV when there is no modulation, turning on the calibrator, and zero beating the calibrator with the WWV signal by adjusting the tuning trimmer on the calibrator,

Another common way to determine dial accuracy on the vintage radio is to tune to a popular net that can be depended on to always be on the same frequency anytime you listen. I will mention only a few here – you can come across many . . .

- On 40-meters:
 - SCARS (South Coast Amateur Radio Service on 7251 kc (kHz))
 - eCARS (East Coast Amateur Radio Service on 7255 kc (kHz))
 - MidCARS (Midwest Amateur Radio Service on 7258 kc (kHz))
- On 20-meters:
 - Maritime Net on 14300 kc (kHz)
(Also Navy Net and Coast Guard Net)

When using this method of frequency calibration, tune the net on your bandspread. If it is off frequency as you see on your dial, move the bandspread to where it should be located for the frequency you are tuning. The, bring the net into tune by carefully adjusting the main tuning knob. On some receivers – including the HQ-180C, there is a fine adjustment of the dial pointer that can be engaged to move the pointer to the correct location for the frequency you are tuning. That control on the HQ-180C is shown on the

second page of this article where the front of the radio is pictured. Note the small, unmarked knob to the right of the readout and meter panel.

When using nets, always remember that on occasion they will move to avoid QRM. Listen to the net for a bit before making the adjustment – most times when this happens, the net control operator will announce frequently that the net has moved due to QRM and is operating at a frequency he will announce. For that reason, net frequencies are not as dependable as the next group of known frequencies.

In addition, there are some similar methods of determining frequency accuracy against a known accurate station. There two systems I regularly use:

- I talk to a fellow ham close-by who is using a modern transceiver who can tell me my frequency when I ask him/her to do so. (Thanks to Dave, WØAH, who receives such requests multiple times a month. As another long-time ham, he remembers the days of “estimated frequency.” Dave is also my contact for determining proper sound from my signal when using a vintage transmitter and microphone.
- I use my own Yaesu FT-817ND connected to a dummy load to transmit and detect with my vintage receiver. Dave’s equipment and the FT-817ND have integrated systems to ensure a high degree of frequency accuracy. When doing this, remember to protect the front end of your monitoring receiver or transceiver.

Another method to determine accuracy are frequency standard stations. There are frequency standard stations in most countries in the modern world. In the United States, we have WWV stations at 2.5, 5, 10, 15, and 20 mc (MHz). There was an "experimental mode" transmission on 25 mc (MHz) that ended at the low part of the previous (Cycle 24) Sunspot Cycle. It remains to be seen if it will return. These stations are primarily for calibration of the Main Tuning dial as none of these frequencies fall within the band-spread of a ham radio band⁷.

When using WWV to calibrate the Main Tuning dial, remember that most main dials are not adjustable – so you must simply remember the error that you may well see. My HQ-180C is off a small fraction of an inch on the dial when tuning WWV on 10 mc (MHz).

In the United States, there is another option that is closer to two different ham bands. CHU in Canada is an excellent frequency standard on par with the accuracy of WWV here (at least for our purposes). They transmit modulated and unmodulated signals on 3.33 mc (MHz), 7.85 mc (MHz), and 14.67 mc (MHz). CHU transmissions are not done with as much RF power as WWV. You may have trouble hearing them, depending on your location.

These stations do not significantly change frequency under most any circumstances.

JJY in Japan is very close in its frequency transmissions to what we receive on WWV. (Kenwood radio users will note that some models show WWV/JJY on the bandswitch for 10 mc (MHz) reception.)

One final method of determining frequency on the ham bands is the use of crystals in the transmitter (if you are using a transmitter in your installation and if it can be operated with crystals). Many hams who started as Novices and were required to run crystal control still have a supply of crystals. You can use the SPOT control on the transmitter to send a very low-level signal at the frequency on the band selected on the transmitter – and then use that frequency to ensure the accuracy of the bandspread dial. Remember, however, that old crystals can change in frequency. Beware of that possible issue!

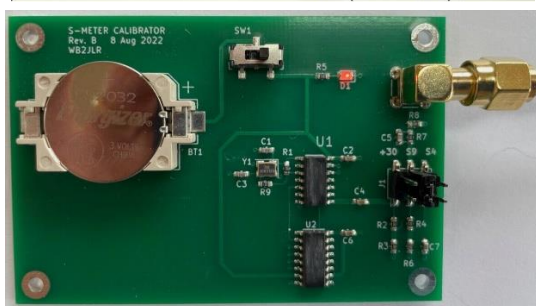
When using a crystal to check frequency you need to remember that it will show on your receiver on the intended frequency in the transmitter. The crystal itself may be on a different frequency and the transmitter is using the crystal at some multiple of its actual design frequency. So, you may be able to test in two locations. For instance, let's say you have a crystal you use on 7120 kc (kHz). It may have a fundamental frequency of half of that – or 3560 kc (kHz). So, actually, depending on what you need and the setup in the transmitter, you could test your receiver accuracy at 3560, 7120, 14240, 21360, and 28480 kc (kHz). Funny how that works – and shows the original design of how the bands related to each other. The transmitter works to “emphasize” the output on the band it is tuning (and to reject significant output on bands you are not using.

Before closing, I want to show you some modern crystal calibrator tools that have taken up residence at W9MXQ.

To replace the old Heathkit HD-20 Crystal Calibrator, I have added two devices:

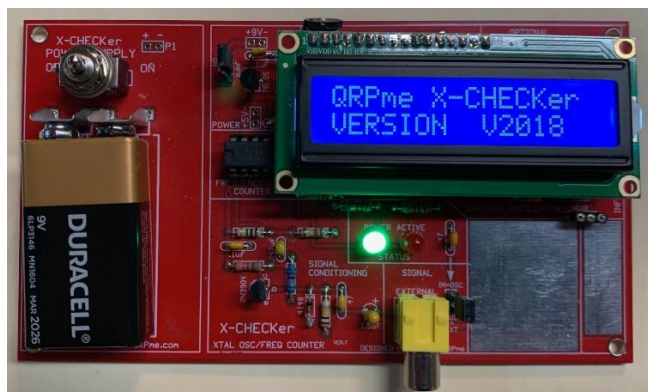


Marker Generator Crystal Calibrator 1 mc (MHz), 100 kc (kHz), 50 kc (kHz), and 25kc (kHz) Switched. This under \$25 calibrator from eBay is USA made from a company called Electro-Resales LLC. It replaces the old-style calibrator and even has the ability to be powered from 6.3 VAC filament power in a vintage radio. (eBay)



Portable S9 RF Signal Generator. This under \$35 device from eBay is USA made from rprprp54 (WB2JLR). It provides calibrated signals on frequencies⁸ through the HF and VHF spectrum. You can select from three levels that include S9+30, S9, and also S4⁹. Power is from a CR2032 Button Cell Battery. (eBay)

Recalling a product shown in an earlier article, I use a very nice piece of equipment for determining the fundamental frequency of most any crystal. I refer to the QRPme X-CHECKer. This confirms that a crystal is oscillating where you think it should. The X-CHECKer was shown only a few months ago in an article on Hints and Tips on Vintage Radios¹⁰. Above, I related that crystals age and go off frequency a bit (but sometimes a lot) or just quit working. It pays to have a way to test a wide variety of crystals. Remember, however, that most Crystal Checkers will show the fundamental frequency. The example shown above with a 7120 kc (kHz) crystal may actually be a crystal running on a fundamental frequency of 3560 kc (kHz). The 3560 would show on the readout – not 7120 in that case. Also remember that the crystal could be fundamental on 7120 and show as that frequency on the X-CHECKer.



QRPme X-Checker Crystal Checker. This is available for direct for \$50 plus shipping from:

<http://grpme.com/?p=product&id=Q17>

(W9MXQ)

One point of clarification in this article – and in any article on calibration of the two-dial (main and bandspread) tuning design. When using the main tuning dial, be sure to note in your radio's Operating Manual how to set the bandspread dial. This is important for the procedures outlined herein.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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 an article like this, it is good to have a second person review the process.

Notes and Credits:

¹ The radios in last month's article were the Hallicrafters SX-110, the Hammarlund HQ-180C, the Allied Knight-Kit Space Spanner, and the Hammarlund SP-200 SuperPro.

² There were mechanical digital readouts in the 1960's and also some Nixie Tube™ readouts in this period that were little more than a representation of the frequency – not a true frequency counter as used on modern radios. Such units were no more accurate than the analog readout other than very critical mechanical designs to counter the tendency of mechanical readouts to be less than linear in their span. The mechanical digital readout depending on the linearity of the mechanical oscillator drive and in particular the linearity of the variable capacitor or inductor used to tune the VFO.

³ "LBDR Ham." Translation – *Licensed Before Digital Readout* Ham.

⁴ MidCARS can be found on the web at <http://midcars.net/>. On the air they are found at 7258.00 kHz. Generally, this one is pretty dependable as to being right on frequency.

⁵ Crystal Calibrators are commonly accurate to 0.005%. That said, a 100 kHz signal could be between 99.9995 and 100.0005 kc (kHz). “Close enough!!” But just remember, as you continue to use harmonics, the error of its deviation specification is also multiplied. This is not a major issue in an HF radio that covers only to 30 mc (MHz).

⁶ AC-DC power means that the unit being powered does not have a power transformer and runs directly off AC mains power. In the case of the Bud FCC90B Calibrator, the 115 VAC is rectified and use for plate voltage on the oscillator. The two tubes’ filaments are wired in series directly across the line. One side of the AC line is tied to the oscillator’s metal chassis. You can receive a shock if the AC plug is incorrectly connected. A problem from the days before polarized plugs. Be careful!! The use of an isolation transformer – NOT a Variac™ - is strongly advised.

⁷ It is true that the 10 mc (MHz) signal is in our 30-meter band area – but no older receiver includes 30-meters (or any other WARC band) on the bandsread dial.

⁸ Frequencies – mc (MHz) – provided on the Portable S9 RF Signal Generator are as follows:

N x 1.78977 mc (MHz) – fundamental is 1.78977 mc (MHz) with harmonics above.

⁹ Reference to S9+30, S9, and also S4 is also indicated as -43dBm, -73dBm, and -103dBm, respectively – at 50 ohms impedance. Calibrated Frequency Range is 1.8 to 30 MHz and therein is accurate within 1 dB (± 0.2 S-units). Extended Range is 30 MHz to 1 GHz with signals generated where the level is uncalibrated.

¹⁰ Little Tips and Tricks with Vintage Radios, W9MXQ, September 2022 Ozaukee Radio Club Newsletter. Available at <https://www.ozaukeeradioclub.org/index.php/newsletters>, check for Archives.

¹¹ Websites for other organizations mentioned in this article:

- eCARS (USA) - <http://www.ecars7255.com/>
- SCARS (USA) - <https://southcars.com/>
- WWV (USA) - <https://www.nist.gov/pml/time-and-frequency-division/time-distribution/radio-station-wwv>
- CHU (Canada) - <https://nrc.canada.ca/en/certifications-evaluations-standards/canadas-official-time/nrc-shortwave-station-broadcasts-chu>



A Distributed Antenna and Calibration System for Vintage Radios

de: Patrick Volkman, W9JI



My shack has several operating positions, each connected to an antenna switching panel. There are a number of boat anchor radios in the shack that are not connected to the main antenna system as they are only used occasionally. I also have a workbench for repairing radios and it isn't located near the operating positions. The boat anchor receivers and repair bench didn't readily fit into the antenna switching scheme so a new approach to an antenna connection was needed.

The solution turned out to be fairly simple. I installed an "antenna bus" in the shack. The bus* is a 16-gage copper wire attached to the ceiling with ceramic standoff insulators and runs around the perimeter of the room.

The far end of the bus can be switched between two receiving antennas. To use the antenna bus, a clip lead is run from a receiver to the overhead wire. This arrangement allows for a quick and easy connection to any receiver in the room. It is especially handy when testing a radio.



Antenna wire held by ceramic insulator. This type of insulator was used in "knob and tube" house wiring in the very early 20th century, before sheathed wire and conduit were adopted.

W9JI Picture

Calibration accuracy of an old radio is often questionable, even for those with a crystal calibrator. A benefit of the antenna bus system is that a signal generator can be connected to the wire to provide a calibration signal. This generator setup allows an accurate signal to be sent to any radio in the room. The signal intensity can be varied, allow-

ing for a rough check of receiver sensitivity. Unlike a crystal calibrator, the generator is not limited to multiples of the calibrator crystal frequency. This is quite useful for checking band spread accuracy and linearity.

A few caveats are in order. First, only one receiver at a time should be connected to the antenna bus system. If multiple devices are connected the front end of the receiver may be detuned to the point where sensitivity is reduced. Second, the antenna bus is indoors and as such it is located near a number of noise sources. The system is particularly good at picking up noise from my motion detector lamps which are on the outside of the house about two feet from the wire. Third, I do not use this system for testing transmitters. It could be used with a transmitter, but I find it simpler to use one of the operating positions where I know the antenna characteristics.



The signal generator and radio can be connected to the antenna bus located overhead. (Hammarlund HQ-129, HP Model 606A Signal Generator, and Koolertron Signal Generator)

W9JI Picture

The antenna bus provides a simple solution to a distributed antenna system with the added advantage of providing a calibration signal when needed.

W9JI

* Note: “Bus” is an electrical term used to describe a node where several devices may be connected in parallel. Some examples are a power bus, video bus, audio bus or computer data bus. “Buss” is frequently used but has a different meaning. The Merriam Webster dictionary says buss means kiss, as in “a kiss on the lips”. *Merriam-Webster.com Dictionary*, Merriam-Webster,

<https://www.merriam-webster.com/dictionary/buss>.

Buss™ is the trademark used by Bussmann, a fuse manufacturing company. “Buss™” is an old and trusted brand for fuses. Check <https://bussfuses.net>

On The Air Activities!

de Gary Sutcliffe, W9XT



November is right in the middle of the busiest time of the year for contesters. The last weekend of October is the CQWW Phone contest. The first weekend of November is the ARRL Sweepstakes, which will start within hours of publication of this newsletter. Then, after a free weekend, is the phone version of Sweepstakes. The last weekend of November is the CW version of CQWW. December starts with the ARRL 160 Meter Contest, followed by one of my favorites, the ARRL 10 Meter Contest. I used to operate all of them seriously but have cut back in recent years.

CQWW Phone

Conditions this year were the best we have had in many years. The solar flux was up around 130. The A and K indices were not great, but in general, the bands were in good shape. ORC members K9DJT, W9KEY, W9MXQ, and W9IPR, were heard or reported during the contest on the last weekend of October. Did I miss anyone?

A relatively new ham, this was W9KEY's first contest with conditions like this. Fred made almost 800 contacts with his wire antennas, on 80 through 10 meters. He was amazed at the number of unique countries he worked in a weekend, 91 in his case.

Ten meters was Fred's best band, with 340 contacts and 77 different countries worked. Fred mentioned, "Even a new ham can put up an effective, low cost 10-meter antenna in a small city lot." Excellent job, Fred!

W9MXQ reported a short time (about 4 hours total) effort with some time on both days. He worked 92 stations in 42 different countries, including an all-time new one (ATNO), Thailand. Well over 50% of his contacts were on 10-meters with the highest frequency stations works all the way up above 29 MHz – where you would expect to hear FM. Those highest frequency stations were Japanese. W9MXQ reported better conditions on Sunday than on Saturday.

Ten meters is my favorite band. It has been a long time since it was this good. So, I decided to do a single band, ten-meter effort. Unfortunately, I had terrible problems with noise. It ranged from S3 to S7. Ten meters is a quiet band, and it is possible to work stations that don't move the S-meter. Even S3 noise on the band will cover up a lot of stations.

Despite the problems hearing, I made 456 contacts in 99 countries. Although Japan is a common country to work it has been a long time since I worked Japan on 10-meter SSB. My last 10-meter SSB contact was in March 2015! So, it has been a long wait!

The three contacts I had with Japan were extremely weak. I am surprised they heard my low power signals. In a year or two, we will be working lots of S9 JA's. In the meantime, I have a project tracking down the noise sources before the CW weekend of CQWW and the ARRL Ten Meter Contest.

DXCC Top Twenty

DXers try to make contact with hams in every country. The premier award is the ARRL DX Century Club (DXCC). This award was started after WWII and has evolved over time. You need to work and confirm 100 countries to qualify. You get endorsements as you add countries.

The definition of a "country" can be a bit hazy, and the rules have changed to what a country is. Actually, they are officially called "entities." Many factors go into what is an entity and what is not. Things like distance from other land masses, administration by different government departments, and other factors go into it. This means that Alaska and Hawaii are separate entities, as are Puerto Rico and other possessions of the United States.

There are 340 current entities. Sometimes new countries are added, and others are deleted. One example is Czechoslovakia. In 1993 the country split into the Czech Republic and Slovakia. Czechoslovakia was deleted, and two new ones were created. If you have Czechoslovakia confirmed, you have all time credit, but some awards, such as the DXCC Honor Roll, which requires 331 or more confirmed countries, only count current ones.

Some countries have many hams so contacting them is easy. Others don't have many active hams, or even any. Some don't even have any people living there! It can take a long time to get on the Honor Roll and longer to work them all. It took me over 40 years to get to the top of the Honor Roll, with all of them confirmed.

The website Club Log (<https://clublog.org>) periodically publishes its list of the top countries needed by DXers. The latest version of the top 20 is below.

There are many reasons for making the list. North Korea is simple. Ham radio is not permitted there. The last time it was on the air was in 2002. An NGO aid worker was allowed to operate for a while from his hotel room under special restrictions, including two security officers being present. Then North Korea was found to be cheating on their nuclear development program, and they responded by kicking every foreigner out of the country.

Others, like Bouvet Island, are located in very remote locations that are difficult to reach. No one lives in Bouvet, and it is tough and expensive to go there. The last DXpedition failed to land on the island and had to return. That trip cost about \$750,000.

Some are military bases like KG4, Guantanamo Bay. You need special permission to go and operate there. Fortunately, that KG4 is on from time to time. But five US possessions are on the top 20 list. They are the ones with KP and KH prefixes. Some of these are wildlife sanctuaries, and the government agencies that oversee them just don't allow anyone to visit. For example, Desecheo is off limits even though it is visible from Puerto Rico and apparently a frequent stop for Haitian fishermen, pirates, and smugglers who camp on the beach.

Club Log Top Twenty Most Needed List		
Rank	Prefix	Country (Entity)
1.	P5	DPRK (NORTH KOREA)
2.	3Y/B	BOUVET ISLAND
3.	FT5/W	FT5/W CROZET ISLAND
4.	BS7H	SCARBOROUGH REEF
5.	CE0X	SAN FELIX ISLANDS
6.	BV9P	PRATAS ISLAND
7.	KH7K	KURE ISLAND
8.	KH3	JOHNSTON ISLAND
9.	3Y/P	PETER 1 ISLAND
10.	FT/G	GLORIOSO ISLAND
11.	FT5/X	KERGUELEN ISLAND
12.	YV0	AVES ISLAND
13.	VK0M	MACQUARIE ISLAND
14.	ZS8	PRINCE EDWARD & MARION ISLANDS
15.	KH4	MIDWAY ISLAND
16.	PY0S	SAINT PETER AND PAUL ROCKS
17.	PY0T	TRINDADE & MARTIM VAZ ISLANDS
18.	KP5	DESECHEO ISLAND
19.	VP8S	SOUTH SANDWICH ISLANDS
20.	KH5	PALMYRA & JARVIS ISLANDS

China did not allow ham radio when I was first licensed. Neither did Turkey or Albania. Now they are relatively common, and I have worked a half dozen or so Chinese stations in a single contest. As conditions improve, many more Chinese stations will end up in the log. Right now, they have 174,000 licensed hams, according to the ARRL. Probably most don't have stations or are on VHF only, though.

COVID put a halt on DXpeditions, which meant few of the rarer ones were on the air for a few years. That is loosening up. We are in for a treat! Numbers 2 and 3 on the list will be activated in the next few months. More on them next month.

November Meteor Showers

I have covered making 6- and 2-meter contacts via meteor trails a few times. The Leonid shower peaks on November 18. There are a few 6-meter grid operations scheduled for the Leonids.

Another event, the Taurid Swarm, will peak on November 5, but it is not a sharp peak. The Taurids are a minor shower, but its orbit has close encounters with Jupiter, and that has caused the meteoroids to form clusters. These clusters encounter earth every 3-7 years, and this year is expected to be one of the good years.

One characteristic of the Taurid Swarm is it produces more fireballs, large meteors that are very bright. Hams call them blue whizzers, and they can sustain propagation for tens of seconds or more.

Contests

As mentioned earlier, November is a hectic month for contests. The CW portion of the ARRL Sweepstakes starts on Saturday, November 5. It was covered last month. The phone event starts two weeks later, Saturday, November 19. So, what I wrote last month for CW applies to the phone weekend.

The last weekend of the month is the CW running of the CQWW contest, which was also discussed last month. Unfortunately, this is the Thanksgiving weekend, which can be an issue with family conflicts. I much prefer the CW event over the phone weekend. It is easier to make contacts using a small station from this part of the world on CW than phone.

The first weekend of December is the ARRL 160 Meter contest. You can work anyone in this contest. Note the odd start and end time. It starts at 4:00 PM on Friday afternoon. The times are set to take advantage of the dark hours when 160 is open. This is a CW only contest.

We send a signal report and state (599 WI). DX stations only send a signal report. Multipliers are states, Canadian provinces, and DXCC countries. Contacts with US or VE stations are worth two points. DX stations count as five points. Multiply QSO points with the multipliers for the final score.

DXpeditions

This month has a good supply of DXpeditions. With the decent number of sunspots, a lot of interesting DX can be worked this month.

Last month I mentioned a Russian group going to Benin using the call sign TY0RU. They showed up as planned and did a good job. I noted in previous operations they showed up in additional countries after their announced one. True to form, they have

moved on to Togo with the call 5V7RU. I have already worked them on 12 meters for a new band country. While in Benin, they seemed to be spending the majority of their time on FT8.

P29RO continues to be on from Papua New Guinea. I got them on 17M FT8 and also worked them on 10M SSB during CQWW.

Lesotho, using the call 7P8CW, and operating from one of the South African homelands, should be on by the time you read this. The same is true for T88WA from Palau, although they have been delayed a few days. Both were mentioned last month.

The Rebel DX Group will be sailing to Banaba Island. The start date will be around November 7 or 8 as of this writing, and they plan to stay for ten days. Apparently, they will only be using FT8 and only in Fox/Hound mode.

Over in the Central African Republic, TL8AA will be used by the Italian DXpedition Team. This group has done a great job in previous operations. If you see them on FT8, they will use Fox/Hound mode. The dates are November 12-26.

Down in the Caribbean, a group of W9s, including a few friends of mine, will be operating from St. Martin. The call is TO9W, and they will be on 160-10 meters, but their focus will be on the low bands. They may get on 60 meters as well if time allows. November 30-Dec 9.

That wraps up November. Between the contests and DXpeditions, your radio will barely have time to cool off! See my Charts, next page.



Sorry, I couldn't resist . . .

W9XT's Contest, Operating, DXpedition, and Special Event Picks for November and early December 2022

W9XT's contest picks for November and early December 2022					
Name	Start	Length	Bands	Mode	Link
ARRL Sweepstakes CW	2100Z November 5	30, work 24 max	160, HF	CW	www.arrl.org/sweepstakes
ARRL Sweepstakes Phone	2100Z November 19	30, work 24 max	160, HF	Phone	www.arrl.org/sweepstakes
CQWW CW	0000Z November 26	48	160, HF	CW	https://www.cqww.com/rules.htm
ARRL 160 Meter Contest	2200A December 2	42	160	CW	www.arrl.org/10-meter

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

W9XT's DXpedition picks for November and early December 2022					
QTH	Dates	Call	Bands	Mode	Link/notes
Togo	Nov 1-11	5V7RU	160, HF, 6	CSD	
Papua New Guinea	Oct 25-Nov 10	P29RO	160, HF, 6	CSD	
Lesotho	Nov 2-7	7P8CW	HF	CSD	
Palau	Nov 2-14	T88WA	160M HF, 6	CSD	
Banaba	~Nov 7, 10 days	T33T	160M, HF, 6	D	Apparently FT8 F/H
Central African Republic	Nov 12-26	TL8AA	160M, HF, 6	CSD	http://www.i2ysb.com/idt/
St. Martin	Nov 30-Dec 9	TO9W	160M, HF, 6, maybe 60M	CSD	http://www.k9el.com/TO9W/TO9W.htm

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

W9XT's operating & event picks for November and early December 2022			
Event	Dates	Details	Link/notes
Taurid Swarm	Peak November 5		+/- 1 week or so
Leonids meteor shower	Peak November 18		

Ozaukee Radio Club Minutes of Membership Meeting. 10/12/2022

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 Pat W9JI officially initiated the meeting at 7:28 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. Pat noted that Tom KC9ONY is confirmed as the RPT committee chairman. The question was posed as to which member could obtain the senior center key before the meeting. ORC now has QSL cards for W9CQO, and Mike KD9GCN is answering the requests for the Lighthouse event. Gary N9UUR noted that 10 meters has been open lately.

Program:

Pat introduced the new section manager [ARRL] for the Wisconsin section; Jason KC9FXE; who has taken over for Pat Moretti, who recently retired. Jason [via Zoom] gave our members a brief overview and history of his ham radio career, and his involvement in public safety and police work. He then was approached as a suitable candidate to take the job as the ARRL section manager for WI, which he stepped into with interest. He has some desire to expand the section newsletter and assist with the ARRL's intention to cultivate new and young hams into being active in the hobby. He will be required to stand for re-election in 2 years [as this is a temporary appointment] but has a good outlook on improving the hobby, and the ARRL's involvement.

50/50 Raffle: This was won by bill K9GN; an award of \$18.

Scholarship Auction:

Stan WB9RQR held a short auction, consisting of magnets and some computers.

Committee reports:

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

Treasurer: Gary N9UUR handed out balance sheets and reported that we were still solvent. The July treasurers' report was accepted; motion made by KC9FZK, 2nd by K9QLP and carried.

Secretary: Ken W9GA reported the Sept 2022 minutes are posted; a motion to accept was made by KC9TSO; 2nd by N9VSV, and motion carried.

Scholarship/STEM: no report.

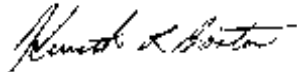
Tech committee: no report

OLD business: Ken W9GA reported that he is updating the club standing as an affiliate club, with special club status.

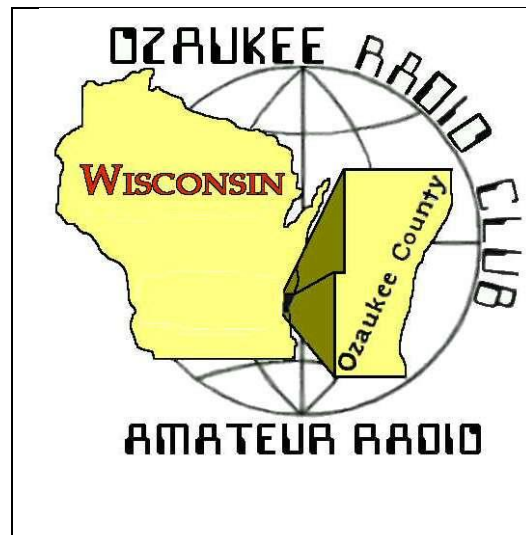
NEW business: Jeananne N9VSV suggested a review of the secretary's tasks include tracking club status.

Adjournment: WB9RQR moved to adjourn, KD9RMX 2nd, motion carried; time ending was 8:51 PM. There were 23 in-person attendees, 13 Zoom attendees.

Respectfully submitted.



Kenneth Boston W9GA, Secretary



Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- November – Dave Ellison W7UUU - From the Ashes: Fire and Rebuilding the Ideal Ham Shack
- December – Fred LeMere KD9IGO Horizontal Loop Antenna and Feedline
- January - Elections

We need some programs for the coming 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 Volkmann, W9JI, at orc_pat_w9ji@outlook.com to discuss your idea for a program

ORC Meeting Agenda <i>November 9, 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 Volkmann (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: Dave Ellison W7UUU - From the Ashes: Fire and Rebuilding the Ideal Ham Shack	9. Secretary's Report: Ken Boston (W9GA)
5. President's Update: Pat Volkmann (W9JI)	10. Treasurer's Report: Gary Bargholz (N9UUR)
	11. Committee Reports
	12. OLD BUSINESS
	13. NEW BUSINESS
	14. Adjournment

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)
-

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

**Program
Fred LeMere KD9IGO
Horizontal Loop Antenna and Feedline**

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

The following eight pages are a complete reprint of a copy of the March/April 1980 issue of the Ozaukee Radio Club Newsletter.

The quality of the document is controlled by the quality of the perhaps multiple copied version of the Newsletter provided by Pat Volkmann, W9JI, which came from a collection of club documents provided by Stan Kaplan, WB9RQR.

If any of you have any old Newsletter copies that precede the earliest one shown on the Ozaukee Radio Club Newsletter Archive List (January 2002), please contact this Editor:

Bill Shadid, W9MXQ, at newsletter@ozaukeeradioclub.org

Recall Pat, W9JI's note (in "From the President," at the beginning of this issue), he has collected many back issues. There may be more, so let us know.

Take this opportunity to review our past. Do you want to see more back issues?



Its March / April 1980 – starting on the next page

APRIL 1980.....NEWSLETTER.....W9BCK, EDITOR

The Ozaukee Radio Club Newsletter is published six times yearly and mailed five days prior to club meeting dates in January, March, May, July, September and November. Filing deadline for publication for articles and items is 15 days prior to club meeting dates. Mail items to be published to W9BCK c/o RCA - Suite 403 - 101 Falls Road, Grafton WI 53024. Questions or comments regarding the club or any of its activities may be directed to Barry Anderson WB95FK, President, W55 N838 Cedar Ridge Drive, Cedarburg WI 53012, or phone 375-0590.

ELECTION OF CLUB OFFICERS - 1980

The elective process took place during the regular meeting on January 9, 1980 at the Pleasant Valley School Club Meeting Room. Congratulations are very much in order for:

Barry Anderson	WB9SFK	President
Herb Roehner	WA9UVK	Vice President
Micheal Behlen	WD9FQW	Treasurer
Lee Voge	KA9EXZ	Secretary
Skip Douglas	KA9DDN	Vice President Repeater
John Strachota	WB9OHY	Activities Manager
Terry Berg	W9AWO	John's Hand Holder

Congratulations gents, and thanks on behalf of your electors for stepping up to the tasks before you (and us) in 1980.

OUR PRESIDENT SPEAKS

In a year which will be dominated by nation wide political races and foreign diplomacy, perhaps the word of the month should be "communication". Webster defines communication as:

1. A process by which meanings are exchanged between individuals through a common system of symbols (CW..?)
2. A technique for expressing ideas effectively.
3. To make known. An exchange of information.

In this coming year, I'm sure we all hope these many attempts at communication are accurate and successful. But who should really understand communication better than we? The Ozaukee Radio Club is founded upon this word ... "communication" (and of course, self-training and technical investigation).

It has bothered me that, in this era of highly technological communications, we haven't been able to get the word out that our club exists for all hams. Why, when some sources state there are 100+ Amateurs in Ozaukee County, there are only 60 some that have applied for membership in 1980? And worse, only 30+ attend monthly meetings? I invite the hams who are not members and the members who are inactive to contact any club officer or myself personally regarding any "problem" they perceive in our organization. After all, we cannot attempt to correct any such problems unless they're brought to our attention.

Therefore, let's communicate to all Ozaukee County Hams (and beyond) our club goals for 1980: (which include but not limited to)

1. Educational Meetings
2. Field Day
3. Novice & Higher Level License Classes
4. Local Communication Efforts
5. Swapfest
6. Corn/Brat Roast Family Party

I would like to promote 1980 as a year of involvement, be it technical or social, and Communication!

73, Barry WB9SFK

TREASURER'S CORNER

Mike, WD9FQW says we have 14 regular, 43 regular & repeater and 11 repeater only members as of 3/6/80. Bring a guest to meeting & join him up.

SWAP FEST UPDATE

Mike is also chairman of Swapfest, May 10 at Cedarburg Gymnasium in down town Cedarburg. Tickets \$1.50 in advance, \$2.50 at the door. Tables are \$3.00. Much membership help is needed for ticket sales...See WD9FQW or WB9SFK at meeting 3/12/80. Volunteers are needed May 9 (evening) to set up tables and May 10 all day. 70 tables are needed for Swapfest. If anyone knows of table availability in quantity please contact Mike at 377-6577.

CLUB MEETING DATES

March 12 at Pleasant Valley School and April 9 in Port Washington at Ozaukee County Emergency Operating Center in the basement of the Courthouse Annex. Take I-43 to Hy 33 Exit and proceed to Port Washington Downtown area and turn left (North) on Milwaukee St. (one block East of Stop Lite). Go North 1/2 block and turn right into alleyway. Parking on South side of alley. Enter Annex at door across alley just north of parking lot. A video program dealing with severe weather reporting is planned along with a tour of the Communication Facilities.

GOVERNORS CONFERENCE, A COMMUNICATION EXERCISE

On Thursday 2/28/80 Jeff WA9USA, Cesar N9APC and Terry WA9AWO attended the Governors Spring Conference for Emergency Preparedness in Madison. HF and VHF amateur stations were set up at the Concours Hotel in downtown Madison. 62 of 70 Wisconsin Counties checked in between 9 am and 4 pm. Ozaukee County hams accounted for 33 - 2M and 7 - 75M check-ins and placed 3rd behind Milwaukee and Dane Counties. A darn good showing for Wisconsin's smallest county. A total of 487 contacts State-wide were logged. Governor Dreyfuss stopped to make one HF & one VHF contact. Several Emergency Co-ordinators from various Wisconsin Counties were most impressed by station operations. A good time was enjoyed by all attendees. Thank you all for your support and check-in cooperation with especial thanks to Joe Bauer W9WQ who passed the 37/97 check-ins to the 75 meter relay to Madison.

Terry Berg, WA9AWO

REPEATER NEWS - WR9AAE HAPPENINGS

As most regular repeater users know, the WR9AAE Autopatch is back in service. Please keep in mind the new procedures for identifying calls to our recorder. After accessing the patch, but before dialing a phone number, identify with your call, date, and local time. Also note that due to the coming 911 telephone system, Ma Bell has changed the Metroline access number from 9 to 7. If you inadvertently use 9 you will get a busy signal signifying your error.

Several members of the club, notably K3GGN - Dean, WB9PAS - Russ, WA9UVK - Herb, and AA9W - Ed, have recently been active in developing our repeater system. We can use lots of help in several areas to speed up the work ahead. Specific talents I am looking for include CMOS Circuit Design, PC Board Layout Design, and Electronic-Oriented Drafting. In addition, we are looking for volunteers to help in raising the repeater antenna some 30 feet to the top of the 210 foot tower we are on. This will be done this summer if other plans pan out.

Some of the "bells and whistles" which will set WR9AAE out from the crowd are already in the design stage. We will have voice I.D. as well as CW I.D. An emergency Autopatch with a 911 access will be available to all licensed amateurs. This will have an autodialer programmed to call the Ozaukee County Sheriff's office. Several taped messages will be available via touch-tone access. Examples of use would be information about upcoming club meetings or events and information concerning operation of the repeater systems.

I'm sorry about the recent problem with the tone burst logic. Rest assured that I'm working on permanent solutions to all such troubles.

WR9AAE is your repeater. What can you do to contribute to its growth?

See you on '97-KA9DDN, Skip

2250 HERTZ TONE ACCESS CIRCUIT

Joe W9WQ has done it again!! He has invented a 2250Hz circuit that will "blow" your mind. It uses no current at all, unless it's moving air currents. The W9WQ lung powered Tone Burst Oscillator made from a piece of 1/4" OD Brass Tube closed at one end. It's length is slightly more than 1-3/8" for 2250Hz. As Liz' sez "just put your lips together and blow". Thanks Joe, we really needed that.

RTTY REPORT

I am not quite sure why, but there was enough of a response to the first column so that a little RTTY column will regularly appear in this paper. The one column format will be the rule. This means that if you want an in depth analysis on the subject, you can go to the library. I don't know what you will find, but I am sure it won't be much. To my knowledge there hasn't been a really good amateur orientated RTTY Handbook published since 1962. The New RTTY Handbook, Byron H. Kretzman, Cowan Publishing Corp. I don't know if this is still in print. There are a few copies around the county. There are other handbooks around, but they do not seem to be more than indifferently organized reprints of previously published magazine articles. The only other landmark publication is a series of nine articles by Irv Hoff K8DKC (now W6FFC) appearing in January-November 1966 QST. I regard these issues of QST so precious that I won't let them out of the house. If you want copies, I will be glad to furnish them to anyone interested. However don't even bother to ask to borrow the magazines in which they appear. The problem with most current RTTY Handbooks is that they expect the reader to run before he is ready to walk. Lately this situation has been made even worse. Computers and RTTY are made for each other. Recent articles presume that the novice is familiar not only with RTTY, but also speaks computer. Even for an old bugger like me, it is a bit much.

I might add that the author of those RTTY articles in QST, Irv Hoff, can be found almost every evening on 14.075 or so exchanging computer programs with his buddies on the East Coast. At least half of the RTTY DX runs computer. You can tell by the sound of the keying.

The point of this column is that there is a great deal said about RTTY, but not many places where you can find the basics. The format of this column is such that I will try to hit a high point each issue, no more.

Recent investigation revealed that AJ9J has three Model 15's none of which he wants to keep. One is in nice shape. One "needs a little work". The third--well if he offers to help you put it in your car, don't let him do it. It is parts only.

BEACONS IN THE NITE (AND DAY TOO)

This might be called the "In Case You Missed It Department". October QST p. 86 had a very interesting little table jammed up in the upper left corner of the page, reproduced below. All of these beacons have been logged since May of 1979.

Active 10-Meter Beacons			
Call	Location	Freq.	Keying
VE3TEN	Ottawa, ON	28.175	fsk
DL0IGI	Germany	28.205	fsk
N4RD	Englewood, FL	28.2075	cw
3B8MS	Mauritius	28.210	fsk
GB3SX	England	28.215	fsk
5B4CY	Cyprus	28.220	fsk
VP9BA	Bermuda	28.235	fsk
A9XC	Bahrain	28.245	cw
EA2OIZ	Spain	28.2475	cw
DK0TE	Germany	28.255	fsk
ZS6DN	So. Africa	28.315	*
ZE2JV	Rhodesia	28.330	*
W6IRT	N. Hollywood, CA	28.888	cw

*Mostly fsk, but other emissions are used for propagation tests.

6Y5RC Jamaica 50.05 fsk
unk. Jambia 28.2025 unk*
*Operates daily 0400Z-0500Z
1500Z-1600Z
Ed, WA9BMA

NOVICE NET

Each Sunday, Larry KA9EXY is sharpening our slo-speed CW skills each Sunday at 1:30 pm CST on 3725 Khz. Larry is using the standard CW QN series of Q signals for CW new operation. A reprint of these Q sigs and their meanings are found elsewhere in the letter along with message form information. Sounds like fun guys, let's all give Larry a boost, help him speed up the action and give true purpose to his worthwhile effort. February check-ins include W9WQ, WB9SFK, WD9ISS, KB9DY, K9IWC, WA9AWO, and W9BCK (yes, I can still copy 5 WPM smart guys, it's those Q-sigs that kill me).

RON, W9BCK

3940 KHZ NET

"Good Grief!" You say, "you mean there are still some people who can tune below 146/97MHz Well, believe it, because its true! The 3940 41, 42, 43, 37, 39 (etc)Khz net meets each Sunday at 1 pm CST. First off we have transmitter hunt to find the NCS station. After you find him you gotta watch him because he sneakily moves around (clearing the band, I think its called). But Oz-Rad Hams are tough, determined guys who know how to stick with the fox, no matter how sly his maneuvers. He even changes his voice. Sometimes it's high pitched, other times low.

3940 (cont'd)

NCS's (who ever they are) are working up a neat and regular system to allow those rock bound or phase locked 2 meter types to cross band check the net through alternate NCS operators. This is going to be a lot of fun and help bring two different Oz-Rad tribes together more often. Catch him if you can, there ain't no rocks on 75.

RON, W9BCK

CLUB ADVANCEMENT CLASSES

Advancement: To move forward, achievement.
Class: Structured environment conducive to learning.

Teacher: A learning facilitator. As principal instigator for the "pass the blankety-blank exam class" which will be finished by newsletter time, I want to express my sincere thanks to Kieth and Pete McIver, Ralph Evans WA9UDZ, Mike Behlen WD9FQW, Nels Harvey WA9JOB and Joe Bauer W9WQ who graciously consented to teach selected topics for the advancement class. FCC exams are scheduled 3/26/80 in Milwaukee which should be the "proof of the pudding". I also want to thank the students who suffered through this, our first grand experiment and who endured above and beyond the limits of the posteriors while planted in seats for younger sized students. I hope those planted will blossom in spite of the fertilizer draped upon them. 73, Terry Berg, WA9AWO

THE BIG FEBRUARY CATCHALL PARTY

Booze, babes, banjo's and bandits. They were all there, whooping it up at D & G Hall with Russ, WA9PAS choking the mike with his usual fervor; embarrassing the more inactive among us by showing various postures assumed by participating Field Day Hams (all horizontal); revealing technical competence which would have better remained hidden; showing all the guys (& gals) who quit drinking since they invented the funnel; mug shots of "what? me worry?" types; stories of messed up mess cooks (mashed potatoe pancakes, indeed!) Southern comfort gone' northern, all the way from Minny-a-no-place; gals captured jewelry; guys got their surprise package. The gathering was great, the food and program excellent and the nite caps better than ever. A good time was had by all.

RON, W9BCK

CHANGE OF IDENTITY

Daryl, ex-WA9DMX is now AJ9J (another one of those "new countries" in Ozaukee).

CHANGE OF ADDRESS - (TEMPORARY)

N9AJ - Faustin Prinz
Bay Beach 2 #B-5
Fort Meyers Beach FL 33931

FOR SALE

Kenwood TS-820 W/CW Filter...\$675.
Kenwood 820 Remote VFO.....\$150.
Dentron MLA-2000(2kw) Amplifier...\$600.
Above items mint condition -(Barry)WB9SFK

Estate Sale (WB9RQW)

Colins S-line, complete....\$negotiable
Viking 80-10 Antenna Tuner\$80.

For all above items contact Barry, WB9SFK
375-0590

Bearcat 210 Scanner

Ring 284-4360 ask for Harvey, K9EOY

XYL CORNER

Ann Berg WD9JHP, expresses appreciation on behalf of all long suffering wives of our male membership for an enjoyable evening at D & G "what-cha-ma-callit" Party.

STOLEN GOODS!!

...From Dennis Wroblewski K9DTK....
(1) KDK FM-2015R Tx/Rx Serial 5331
(1) FMMC-1 Microphone with built-in
Micro-pad Touch Tone

Forward information to Greendale Police
Dept. or K9DTK - 4200 West Rivers Edge Dr.
Milwaukee WI 53209
Tel. 355-4922

CLUB STATION

Club is seeking equipment to set-up a club station a Pleasant Valley School to provide a permanent place of radio operations for club members. This project is not moving so good. Give it some thought, then tell your newly elected officers to move it along. The club has equipment that it owns scattered all over the county. For those "most interested" members, insist on an inventory of these items and put the stuff to work.

RON, W9BCK

RECOGNITION - RECOGNITION

The next time all you guys are bumping bellies trying to beat each other out of the tasty cakes, donuts and sugar coated jelly filled paunch puffers and washing it down with sugar filled pop & coffee at our next meeting - just take a minute or two away from your mad scramble toward dietary disaster and look for the skinniest guy around - that's right, reac

SHEBOYGAN COUNTY ARC

George Mienert K9GM, president of SCARC and editor of their newsletter and I, exchange letters to publish things of mutual interest to our memberships.

- 2 meter net 147.06/.66 Wed. Eves.
- George reminds us that FCC form 610 must be filed if you moved recently.

FOR SALE

Regency HR 212 Tx/Rx, 12 Ch, 17W.
Regency HR 2MS, 8 Ch, Scanning Tx/Rx
Complete Model 19 Teletype set-up
w/receiving converter and home brew P.S.
Call Gene WB9NRM at 458-6238

BTI LK 2000 8-10M Amplifier. Floor Model
(2 plus kw) Excellent condx.
Ring George K9GM at 565-2810

Personalized Rubber Stamps made to order
Contact K9XJ at 876-2370

The Farnsworth Club has two complete
Novice Stations for Sale. Good buys
@\$100 to \$200.

Contact K9ERO, Jim
c/o George K96M @ 565-2810

SHEBOYGAN NOVICE

Larry, KA9EXY should be on lookout for
a new group of Novices from Sheboygan
on air soon and invite them on the
3725 Khz. Net. Contact K9GM for more
information Larry. Ask WA9AWO to climb
upon 147.06/.66 & find out calls, freqs.,
etc.

Thanks for your input George

RON, W9BCK

MORE NEWS'S ON NEVE'S NOVICE NET (WHEW!)

As many of you know, the Ozaukee Cw Net finally got off the ground. As 6 of you know, it got off to a shaky start, but after a while it got humming pretty good. Three cheers and thanks to: WB9SFK, Barry; WD9ISS, Harold; W9BCK, Ron; KB9DY, John; W9IWC, Reed from Milwaukee; WA9AWO and maybe some others were cheering us on as SWL's. The previously mentioned shaky start came from the fact that my rig was off. Another reason was that we didn't have a very good way of checking in, after some thought, I finally came up with what I thought would be the best way. Using the first letter of the suffix of the call, the members would

check in. An example might be that the NCS would send OCWN (Ozaukee CW Net) and his call. He would then send "A" and everyone who's call was "A" would check in, such as WA9AWO, then NCS would send "B" and the B's would check in, such as W9BCK. And so on through the alphabet. This way we avoid the problem of having a meg of stations on at once. If you have any suggestions scratch us a line. The QTH is the same as the one in the Novice Corner, but please, if you call me up, or write use the call, or else you'll end up confusing my dad Larry Sr.

73 Es Cu All On Sunday
Larry KA9EXY

DX CORNER

This corner is going to be WB9BGJ's corner. Sus Sez he will contribute here if we keep after him. So...guys.... let's tickle Sus with a few reminders that there is good DX interest in Ozaukee County. From just casual listening it's not hard to tell that all the bands are doing very well. I even heard some europeans on my old BC-348; and every body knows you can't make RF go through those old 6K7's (right Jeff?) So let's hear it from Sus & all his old DX buddies next time.

RON, W9BCK

SOME THINGS THAT DIDN'T MAKE IT.....

My apologies to Lee KA9EXY for not getting his "brain teaser" in. Will try for the May issue Lee.

A low current drain tone access circuit from KA9DDN suitable for handy talkie and other 2 M installations.

Mike, WD9FQW submitted a circuit which is excellent but will be superceded by KA9DNN which is the same circuit with one device removed. Didn't want to get anybody mad. (I still like W9WQ's the best though.)

CONTRIBUTING EDITORS

WA9BMA Ed RTTY Corner
WA9AWO Terry Activities/Classes/GUV's Conf
WD9FOW Mike Swap Festival
WB9SFK Barry Inaugural Address/Swap Fest
KA9EXY Larry Novice Things
KA9EXZ Lee Jacket Man
KA9DDN Skip Repeater...Repeater...Repe...
WD9JHP Ann XYL Stuff

EDITORIAL

.....Who said it couldn't be done?

Thanks, you big bunch of Amateurs
Well done ES 73' til' May-RON W9BCK.

out and give a firm handshake to W9DQS, Bob Williams, who has been rounding up and serving the goodies (and yes, cleaning up after everyone is filled & gone) since the club started way back in the late fifties. Please say, "thank you Bob, I owe all of this (place hand on top of bulbous frontal protrusion) to you, thank you very much (burp)" Bob's long standing steady contribution is, indeed, more appreciated than anyone can say. We all thank you, Bob.

RON, W9BCK

ABOUT CLUB JACKETS

All jackets listed below come in the light gold color, number 1-5 are shell type jackets and the other two are winter and spring type. The jacket samples will again be at the March 12 meeting, which is the deadline for the initial order. Tax is included in the price. The price is for the jacket imprinted not just the jacket itself.

1. APPOLLO snaps only, no pockets, sizes available S 36 - 38 to XL 48 - 50. \$10.92
2. WARM-UP snaps only, large arm holes, no pockets, sizes available S 36 - 38 to XXL 52 -54 \$13.00
3. COMET snaps only, 2 large front pockets, sizes available S 36 - 38 to XXL 52 - 54. \$13.52
4. DAYTONA PACER - 2 pencil pockets on sleeves, 1 large pocket in front, zipper only, large racing stripes, sizes available XS 34 to XL 48 - 50. \$15.08
Specify stripe colors: Royal/Red/Royal
White/Red/White
White/Royal/White
White/Black/White
Red/White/Red
White/Black/White
White/Old Gold/White

They are a must!
5. SURFER - zipper only, zippered pocket, hidden hood, colored string stripes on front, any color, sizes available XS 34 to XL 48 - 50 @\$10.52
6. QUARTERBACK - snaps only, 2 front pockets, pile lined winter type jacket, hidden hood, sizes available S 36 - 38 to XXL 52 - 54. @\$21.84
7. BIG LEAGER - snaps only, flannel lining for spring, 2 front pockets, sizes available S 36 - 38 to XXL 52 - 52. @\$15.55

8. T-SHIRT - available in Light Gold heather tones, sizes are regular T shirt sizes. CAUTION, shirts will shrink so order one size larger. Name and call cannot be stitched on but the club logo can be imprinted. @\$ 6.24

ACTUAL FINISHED DIMENSIONS

	XS	S	M	L	XL	XXL
CHEST	38	45	49	53	57	61
LENGTH	24½	28	29	30	31	32
SLEEVE	32	33	34	35	36	37

INK COLOR TO BE USED IS ROYAL BLUE

NAME TO BE STITCHED ON FRONT IN SMALL LETTERS WRITTEN IS \$1.00

CALL SAME SIZE, Individual is \$1.29

CALL CAN ALSO BE ON THE BACK IN LARGER INDIVIDUAL LETTERS, WHICH CAN BE IN THE STATE OF WISCONSIN OR IN OZAUKEE COUNTY, THE LETTERS COST 60 CENTS EACH. ADD 4% TAX FOR LETTERS.

NAME _____
 ADDRESS _____
 PHONE NUMBER _____
 CALL _____ WHERE _____
 JACKET TYPE _____
 SIZE _____
 COLOR _____
 COST/JACKET _____
 LETTERING/NAME & CALL _____

NAME ON FRONT ADD \$1.04
 T SHIRT SIZE (IF ORDERED) _____

PLEASE BRING THE MONEY TO THE MARCH MEETING
 ORDERS WILL BE SENT AFTER THE MEETING FOR THE INITIAL ORDER.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL LEE
 VOGUE KA9EXZ AT 692-2158

LEE KA9EXZ

FIELD DAY

What, Where, Whom, When? Somebody said to stir up the Think Tanks and get an early start on Field Day thinking. Volunteers needed at next meeting: Someone who can cook, 14 Supervisors, 39 Beer Drinkers, 1 CW Operator, 4 Balloon Operators (for Giese's antenna) 3 Fishermen and a Partridge in a Pear Tree.

ARRL QN SIGNALS FOR CW NET USE

QNA*	Answer in prearranged order.
QNB*	Act as relay Between.....and.....
QNC	All net stations Copy.
QND*	I have a message for all net stations.
QNE*	Net is Directed (controlled by net control station).
QNF*	Entire net stand by.
QNF	Net is Free (not controlled).
QNG	Take over as net control station.
QNH	Your net frequency is High.
QNI	Net stations report In.*
	I am reporting into the net. (Follow with a list of traffic or QRU.)
QNJ	Can you copy me?
	Can you copy.....?
QNK*	Transmit messages for.....to.....
QNL	Your net frequency is Low.
QNM*	You are QRMing the net. Stand by.
QNN	Net control station is.....
	What station has net control?
QNO	Station is leaving the net.
QNP	Unable to copy you.
	Unable to copy.....
QNQ*	Move frequency to.....and wait for.....to finish handling traffic. Then send him traffic for.....
QNR*	Answer.....and Receive traffic.
QNS	Following Stations are in the net.* (Follow with list.)
	Request list of stations in the net.
QNT	I request permission to leave the net for.....minutes.
QNU*	The net has traffic for you. Stand by.
QNV*	Establish contact with.....on this frequency. If successful, move to.....and send him traffic for.....
QNW	How do I route messages for.....?
QNX	You are excused from the net.*
	Request to be excused from the net.
QNY*	Shift to another frequency (or to.....kHz) to clear traffic with.....
QNZ	Zero beat your signal with mine.

*For use only by the Net Control Station.

Notes on Use of QN Signals

The QN signals listed above are special ARRL signals for use in amateur cw nets *only*. They are not for use in casual amateur conversation. Other meanings that may be used in other services do not apply. Do not use QN signals on phone nets. *Say it with words.* QN signals need not be followed by a question mark, even though the meaning may be interrogatory.

INTERNATIONAL Q SIGNALS

A Q signal followed by a ? asks a question. A Q signal without the ? answers the question affirmatively, unless otherwise indicated. See the ARRL *Handbook* and *Operating an Amateur Radio Station* for an expanded list.

QRA	What is the name of your station?
QRG	What's my exact frequency?
QRH	Does my frequency vary?
QRI	How is my tone? (1-3)
QRK	What is my signal intelligibility? (1-5)
QRL	Are you busy?
QRM	Is my transmission being interfered with?
QRN	Are you troubled by static?
QRO	Shall I increase transmitter power?
QRP	Shall I decrease transmitter power?
QRQ	Shall I send faster?
QRS	Shall I send slower?
QRT	Shall I stop sending?
QRU	Have you anything for me? (Answer in negative.)
QRV	Are you ready?
QRW	Shall I tell.....you're calling him?
QRX	When will you call again?
QRZ	Who is calling me?
QSA	What is my signal strength? (1-5)
QSB	Are my signals fading?
QSD	Are my signals mutilated?
QSG	Shall I send.....messages at a time?
QSK	Can you work breakin?
QSL	Can you acknowledge receipt?
QSM	Shall I repeat the last message sent?
QSO	Can you communicate with.....direct?
QSP	Will you relay to.....?
QSV	Shall I send a series of V's?
QSW	Will you transmit on.....?
QSX	Will you listen for.....on.....?
QSY	Shall I change frequency?
QSZ	Shall I send each word/group more than once? (Answer, send twice or....)
QTA	Shall I cancel number.....?
QTB	Do you agree with my word count? (Answer negative.)
QTC	How many messages have you to send?
QTH	What is your location?
QTR	What is your time?
QTV	Shall I stand guard for you.....?
QTX	Will you keep your station open for further communication with me?
QUA	Have you news of.....?

ABBREVIATIONS, PROSIGNS, PROWORDS

CW	PHONE (meaning or purpose, exception obvious)	CW	PHONE (meaning or purpose, exception obvious)
AA	(Separation between parts of address or signature.)	HX	(Handling instructions. Optional part of preamble.)
AA	All after (used to get fills).	Initial(s). Single letter(s) to follow.
AB	All before (used to get fills).	IMI	Repeat; I say again. (Difficult or unusual words or groups.)
ADEE	Addressee (name of person to whom message addressed).	K	Go ahead; over; reply expected. (Invitation to transmit.)
ADR	Address (second part of message).	N	Negative, incorrect; no more. (No more messages to follow.)
AR	End of message (end of record copy).	NR	Number. (Message follow.)
ARL	(Used with "check," indicates use of ARRL numbered message in text.)	PBI	Preamble (first part of message).
AS	Stand by; wait.	Read back. (Repeat as received.)
B	More (another message to follow).	R	Roger; point. (Received; decimal point.)
BK	Break; break me; break-in. (interrupt transmission on cw. Quick check on phone.)	SIG	Signed; signature (last part of message).
BT	Separation (break) between address and text; between text and signature.	SK	Out; clear (end of communication, no reply expected).
C	Correct; yes	TU	Thank you.
CFM	Confirm. (Check me on this.)	WA	Word after (used to get fills).
CK	Check	WB	Word before (used to get fills).
DE	From; this is (preceding identification).	Speak slower.
PHONE	Phone; telephone.	Speak faster.
HI	(Error in sending. Transmission continues with last word correctly sent.)		

over

Printed in U.S.A.

AMATEUR MESSAGE FORM

Every message originated and handled should contain the following component parts in the order given.

I PREAMBLE

- Number (begin with 1 each month or year)
- Precedence (R, Q, P or EMERGENCY)
- Handling Instructions (optional, see text)
- Station of Origin (first amateur handler)
- Check (number of words/groups in text only)
- Place of Origin (not necessarily location of station of origin)
- Time Filled (optional with originating station)
- Date (must agree with date of time filled)

II ADDRESS (as complete as possible, include zip code and telephone number)

III TEXT (limit to 25 words or less, if possible)

IV SIGNATURE

CW MESSAGE EXAMPLE

I NR 1 R HXA WIAW 8 NEWINGTON CONN 1830Z July 1
a b c d e f g h

II DONALD R SMITH AA
164 EAST SIXTH AVE AA
NORTH RIVER CITY MO 00789 AA
PHONE 733 3967 BT

III HAPPY BIRTHDAY X SEE YOU SOON X LOVE BT

IV DIANA AR

CW: Note that X, when used in the text as punctuation, counts as a word. The prosign AA separates the parts of the address, BT separates the address from the text and the text from the signature. AR marks end of message; this is followed by B if there is another message to follow, by N if this is the only or last message. It is customary to copy the preamble, parts of the address, text and signature on separate lines.

RTTY: Same as cw procedure above, except (1) use extra space between parts of address, instead of AA, (2) omit cw procedure sign BT to separate text from address and signature, using line spaces instead; (3) add a CTSM line under the signature, consisting of all names, numerals and unusual words in the message in the order transmitted.

PHONE: In general, use *prowords* in place of procedural signals or *prosigns*. The above message on phone would go something like this: "Message Follows Number one, routine, IX Alpha, WIAW, check eight, Newington, Connecticut, one eight thutree zero zulu, July one, to Donald Initial R Smith, Figures one six tower, East Sixth Avenue, North River City, Missouri zero zero seven eight nine, Phone seven thutree thutree, thutree niyen six eight, Break Happy Birthday X-ray see you soon X-ray love Break Diana, End of Message, Over." Speak in measured tones, emphasizing every syllable. Spell out phonetically all difficult or unusual words, but do not spell out common ones.

PRECEDENCES

The precedence will follow the message number. For example, on cw 207R or 207 EMERGENCY. On phone, "Two Zero Seven, Routine (or Emergency)."

EMERGENCY - Any message having life and death urgency to any person or group of persons, which is transmitted by amateur radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief of stricken populace in emergency areas. During normal times, it will be very rare. On cw, this designation will always be spelled out. When in doubt, do not use it.

PRIORITY - Important messages having a specific time limit. Official messages not covered in the "Emergency" category. Press dispatches and other emergency-related traffic not of the utmost urgency. Notification of death or injury in a disaster area, personal or official. Use the abbreviation P on cw.

INQUIRY - Messages pertaining to the health or welfare of persons in a disaster should carry this precedence, which is abbreviated to Q on cw. These messages are handled after PRIORITY traffic but before ROUTINE.

ROUTINE - Most traffic in normal times will bear this designation. In disaster situations, traffic labeled "Routine" (R on cw) should be handled last, or not at all when circuits are busy with emergency, priority or inquiry traffic. Most traffic handled on amateur circuits in normal times will fall in this category.

Handling Instructions

HXA - (Followed by number.) Collect landline delivery authorized by addressee within . . . miles. (If no number, authorization is unlimited.)

HXB - (Followed by number.) Cancel message if not delivered within . . . hours of filing time; service originating station.)

HXC - Report date and time of delivery (FOD) to originating station.

HXD - Report to originating station the identity of station from which received, plus date and time. Report identity of station to which relayed, plus date and time, or if delivered report date, time and method of delivery.

HXE - Delivering station get reply from addressee, originate message back.

HXF - (Followed by number.) Hold delivery until . . . (date).

HXG - Delivery by mail or landline toll call not required. If toll or other expense involved, cancel message and service originating station.

This prosign (when used) will be inserted in the message preamble before the station of origin, thus: NR 207 R HXA50 WIAW 12. . . (etc.). If more than one IX prosign is used, they can be combined if no numbers are to be inserted, otherwise the IX should be repeated, thus: NR 207 R HXAC WIAW. . . (etc.), but: NR 207 R HXA50 HXC WIAW. . . (etc.); On phone, use phonetics for the letter or letters following the IX; to insure accuracy.

OZAUKEE COUNTY AMATEUR RADIO CLUB -WR9AAE

W I S C O N S I N

SWAPFEST

S A T U R D A Y

MAY 10

1980

***** CEDARBURG COMMUNITY GYMNASIUM *****

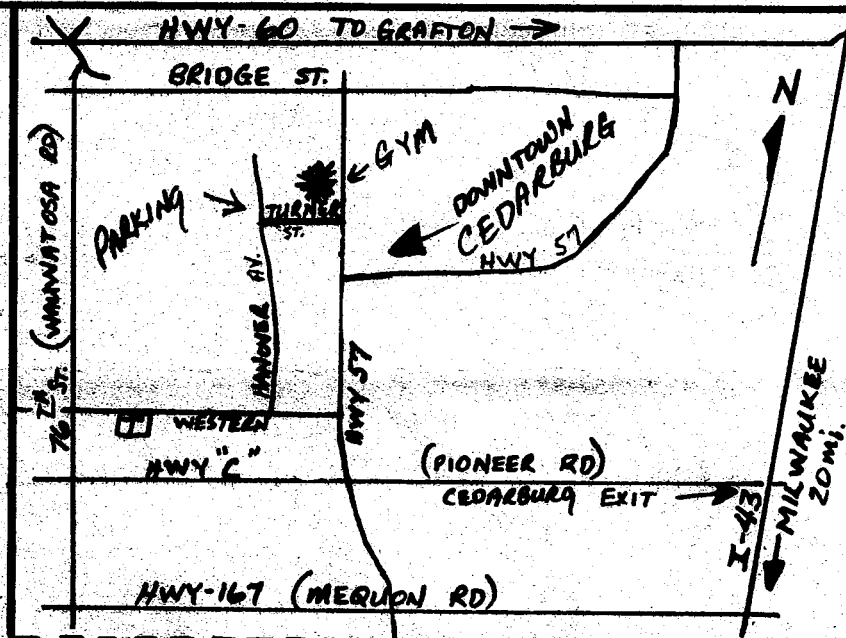
OPENS: 8 A.M. (SWAPFEST SELLERS ADMITTED :7 AM)

ADMISSION: \$1.50 ADVANCE - \$2.50 DOOR
TABLES(6') \$3.00 ADVANCE
TABLE AND ADMISSION AT DOOR - \$5.00

TALK - IN 146.37 / 97
146.52

- * WE'VE OUT-GROWN LAST YEARS SWAPFEST, AND MOVED INTO THE GYMNASIUM!!!!
- * REFRESHMENTS WILL BE AVAILABLE THROUGHOUT THE SWAPFEST.
- * FREE FM CLINIC
- * PRIZE DRAWINGS
- * COMMERCIAL EXHIBITORS
- * SAVE BY SENDING FOR YOUR ADVANCE TICKETS NOW .

73

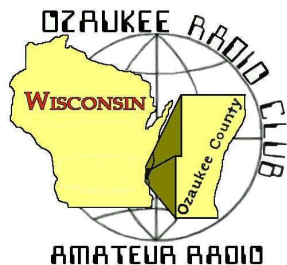


--- ADVANCE RESERVATION ---

NAME _____ CALL _____
 ADE _____ CITY _____ STATE _____ ZIP _____

SEND _____ TICKETS @ \$1.50 EACH
 RESERVE _____ TABLES @ \$3.00 EACH

PLEASE SEND CHECK OR MONEY ORDER TO: OZAUKEE RADIO CLUB, INC.
 PO BOX 13, PORT WASHINGTON, WI. 53074



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 Facebook: facebook.com/orcwi

Volume XL December 2022 Number 12

From the President de Pat Volkman, W9JI



Elections will be held at the January meeting. In order to run for office or to vote, your 2023 dues must be paid. As of today, we do not have a candidate for Second Vice President. You can nominate yourself or another Club member for Second VP or any of the other positions. If nominating another, that person has to be willing to accept the nomination. Nomination is simple, just let me know that you are interested in an office. We will also take nominations from the floor at the January meeting.

Here is the slate of candidates for office as of December 8th:

Office	Name	Call
President	Bill Greaves	K9GN
1 st Vice President	Jeananne Bargholz	N9VSV
2 nd Vice President	No candidate	
Repeater Vice President	Tom Trethewey (Incumbent)	KC9ONY
Secretary	Ken Boston (Incumbent)	K9GA
Treasurer	Gary Bargholz (Incumbent)	N9UUR

We had a discussion on raising dues at the November meeting. The main reason for the proposed increase is that we are spending more money annually than we are taking in. With the current surge in inflation, that situation is likely to get worse. The Club is currently in good financial shape and a dues increase will help keep us that way. A motion proposing the increase will be made at the December meeting.

A special thank you goes out to Ed Rate for his donation of \$600 to the ORC. While talking with Ed about the donation, he said "I've been a ham most of my life and it's been a joy." We agree with you Ed. We will put the money to good use.

Tom Ruhlmann W9IPR has stepped down as Chair of the STEM Committee. Tom has been the Chair of the STEM (previously Scholarship) Committee for some years and felt it was time to hand the job off to someone else. I have agreed to take on the role of Chair. The STEM committee has had a couple of recent meetings and is in the process of defining what we want to do with our program. We will keep the Club informed as things develop.

Field Day 2022 results were published in the December issue of QST. The Ozaukee Radio Club placed 8th in the nation in the 3A category on total points scored. The score is based on a combination of the number of QSOs, and bonus points awarded for various Field Day activities. The ORC finished 4th in the nation for number of QSOs in 3A, with 2847. A very good showing for our Club. Thank you to all who participated.

See you at the meeting.

Pat Volkmann W9JI



A Message from the Editor

Newsletter Table of Contents

de: Bill Shadid, W9MXQ

See Club President, Pat Volkmann, W9JI, and his monthly message on Page 1. Upcoming elections are the source of our future leadership team. This is a good time to step up and make a difference.

I want to draw your attention to the monthly column by Gary Sutcliffe, W9XT, as he includes fellow members in his fine On The Air Activities article. Gary not only writes about events, but he is also aware of the activities and stories of his readers.

Stan Kaplan, WB9RQR, continues with his excellent primer on Linux™. This is an excellent series on those just coming onto the Linux scene. And Don Zank, AA9WP, as he talks about, “In Theory...” Up front in this edition, check out Pat Volkmann, W9JI, as he shows us a separate FT8 Antenna to handle a specific antenna need he found in his station.

Do you procrastinate about getting on the air? Check my article, “Just get on the air!!” in this edition of the Newsletter.

My article on Vintage Amateur Radio shows a bit more personal side of the collecting that I do with radios. And, last but not least, check out Minutes of the last meeting as provided by our club Secretary, Ken Boston, W9GA.

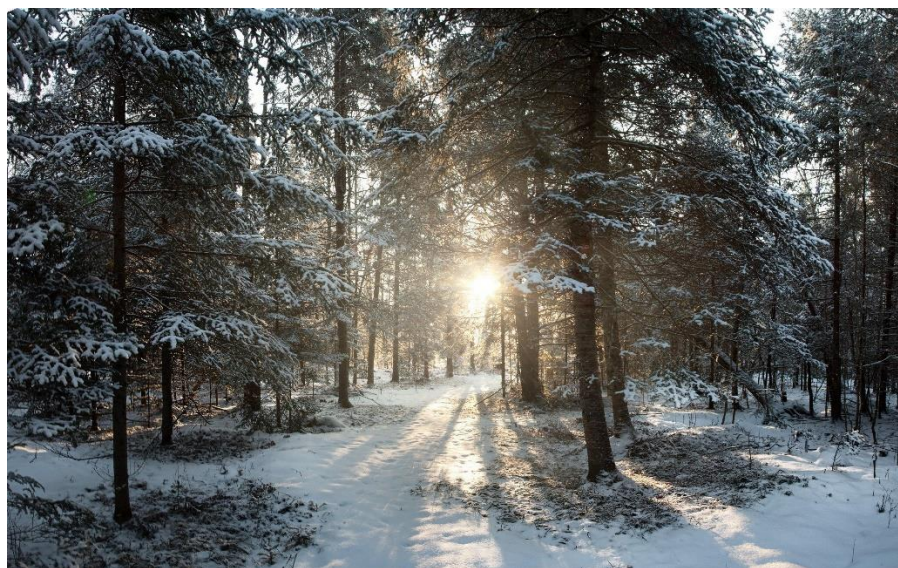
Two things for comment – repeating from the past:

1. I would be happy to accept hard copy issues from any of the volumes previous to XXI (21) to copy and digitize for our files. They would be gladly returned to you. Contact me at newsletter@ozaukeeradioclub.org for further details. If you have digital copies (PDF or most anything else) I would accept them as well for this project.
2. 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. An example is on page 34, this month.

Enjoy the Newsletter!!

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December 2022 – Table of Contents**

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7	Stan Kaplan, WB9RQR: Computer Corner No. 297: Installing Linux Mint Cinnamon v.21, 64-BIT, "VANESSA"
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40	A bit about Next Month



Winter in Wisconsin – ©Pinterest

Onward To the Newsletter

FT-8 Antenna Tip

de: Pat Volkmann W9JI

I was having trouble working South America on 40 and 30 meters on FT-8 with my wire antenna. I wanted to improve the situation without getting into a major antenna project and here's what I did.

My main wire antenna is a variation of a double extended Zepp, up about 50 feet. The antenna pattern favors signals to the east and west, so it works well for Europe and Asia. South America has been a problem with relatively few contacts and poor signal reports.



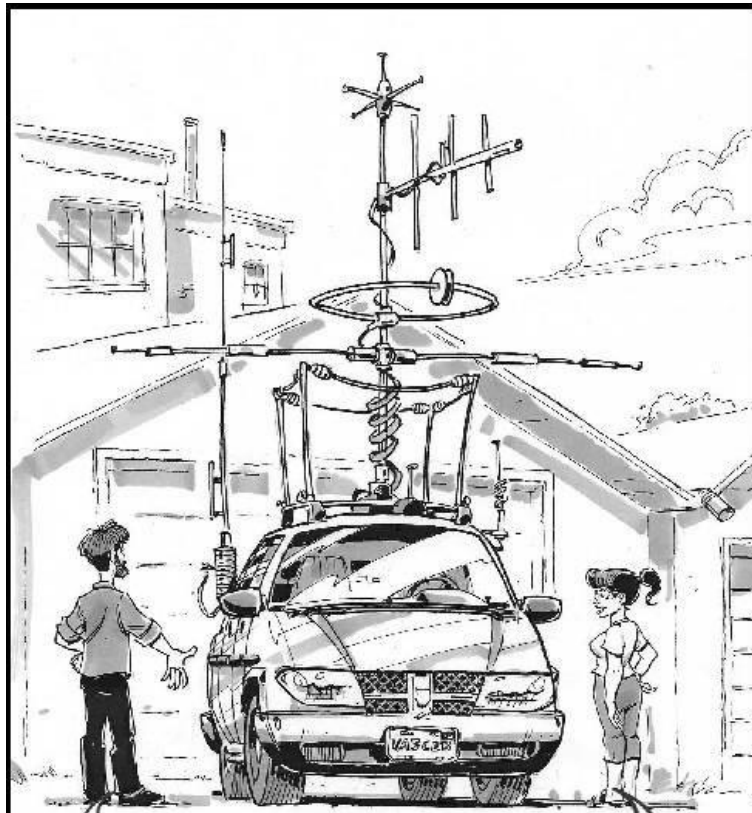
Mounting bracket for Hamstick™ Antenna

Photo by W9JI

I was able to improve the situation with a simple change – I added a vertical antenna. I took one of the 40-meter Hamstick antennas that I used for HF mobile and mounted it on the deck in my backyard. Two elevated radials tucked under the edge of the deck created the ground plane. The radials are out of sight and the vertical blends in with the deck railing. The feed line runs into the shack and connects to a tuner. The incorporation of a tuner in the systems allows for easy multiband operation. The 40-meter ham stick works well on 40, 30 and 20 meters.

It took about 3 hours to install the vertical and radials and run coax into the shack. There was no additional cost as I already had all the parts. I am now able to work South America easily on FT-8 on 40, 30 and 20 meters.

73, Pat, W9JI



XYL to K9DJT as he puts the finishing touches on his rover adaptation to his Ford Escape

“Gee, honey, I can’t wait to see you back that into the garage!!”

THE COMPUTER CORNER

No. 297: LINUX: INSTALLING LINUX MINT CINNAMON v. 21, 64-BIT, “VANESSA”

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

We will assume you got a copy of the *iso* file and burned a bootable installation disk, or you got a copy of the installation disk from me (see the last paragraph of last month's article, always available on the ORC website).

Put the installation disk into your DVD drive and turn off the machine. After a few seconds, turn it back on. Your DVD drive light (little green or red LED on the front of the drive) should light and blink repeatedly, indicating that your system recognizes the disk and is booting from it. After some seconds, a Linux logo should appear in the center of the screen. Sit tight and let the boot disk continue to do its thing. Realize that it must load a complete, working operating system (OS) and boot the machine with it.

After the system boots from the installation disk, you should eventually be presented with a new desktop¹. Your machine now has a working copy of Vanessa up and running. You can play with it as much as you like but leave the disk in the drive. For example, press the Linux logo in the system tray (where the start button is in Windows – in the leftmost position of the system tray) and type in Desktop (or select Desktop from the list of All Applications). In the resulting window, you can select which icons you would like to show on the desktop (if Vanessa was to be permanently installed). Explore like this all you want, for as long as you want. When you are finished exploring, remove the disk and shut down. Your machine has just been restored to the condition it was in before you booted with the installation disk; no changes have been made permanent. You have experienced the use of a *live* OS disk.

But our goal is to install Linux permanently, rather than to just play with it. So, reboot with the installation disk and be sure to leave it in the drive. You will note an icon on the desktop labeled Install Linux Mint. Click that, and you are off and running with the actual installation process. Be aware, you will need the password of your home wireless network or a cable connection (looks just like a phone connection, but wider with more wires in it). If you have a cable, best to plug it in before booting with the installation disk. If you have a choice, use the cable – it is usually faster than wireless.

OK, you clicked Install Linux Mint by the CD icon. Select English as your language and click continue, then US for the keyboard layout and click continue. Then check the box by Install Multimedia Codecs and click continue. Note that at this point you need the cable or wireless connected so the software can go out and retrieve codecs and drivers as needed.

The next screen will give you several choices, depending upon what the installation disk software found on the hard drive. Your goal is to check ERASE DISK AND INSTALL

LINUX MINT. When you have done that, click Install Now. A caution screen will appear next, allowing you to go back before an impending format of the drive. Select continue. Choose Chicago as your nearest location, then continue.

Now comes the main identification screen, Who Are You? Use care with providing this information. I suggest the following. For your name, type your first and last name with caps for the first letter. My entry: Stanley Kaplan. It will then suggest a name for the computer, the name it uses when it talks to other computers. Edit this and shorten as you wish. I used: MSI-Lorosh (my computer has an MSI motherboard and Lorosh is its nickname). Now decide on a password. This is critical. You will need to type it often, so use care in your design. I have used the 4-digit house number of a childhood home followed by my initials in lower case (no spaces anywhere). Devise your own and make it really hard for anyone to guess. Note this bug when typing in the password: if you click the eye so that it has a line through it, it WILL show what you typed. If you leave it with no line through the eye, it will NOT show what you typed. Retype your password a second time in the space provided to confirm it. Be sure to check **Require my password to log in**, unless you intend to never have your machine connected to the Internet or to another computer that is connected to the Internet. With all that done, click continue.

Now watch the screen for a number of minutes. You will be entertained for a while with slides showing neat options and available software, while the installation program copies files to the hard drive, retrieves language packs, Libre Office, and other files, configures software, removes unused and backup files, and generally packs Vanessa into your hard drive space. When all done, your choice is to Continue Testing or Restart Now. Choose Restart Now. After a black screen and Linux logo, the message "Please remove installation medium" will appear and the CD door should open. Remove and put the disk away and shut the CD door. Press ENTER. If nothing happens, shut off power to the computer (turn it off). Wait a few seconds and turn it back on. Vanessa should appear when the machine boots up. But you are not done yet!

There will be a Getting Started box in the middle of the screen with a number of entries. Immediately click First Steps. Some of these categories can wait until later, but some really cannot wait. Here are those that I consider critical and must have your attention right now for safety, security and to really complete the installation process. They are listed in order of importance.

1. UPDATE MANAGER. Select this first and install a new version if one is available. When done with updating the Update Manager, it will present you with a series of new updates. **Install all of them, now.** Yes, it will take some time, maybe even up to half an hour or more, depending on how many there are. It is important to do these installations. Furthermore, you may be asked to reboot the computer when finished. Do it.

2. FIREWALL. Click the status box to turn it on. That is all you need do. The default settings are fine, but it is important to have this watchdog on to keep you safe.

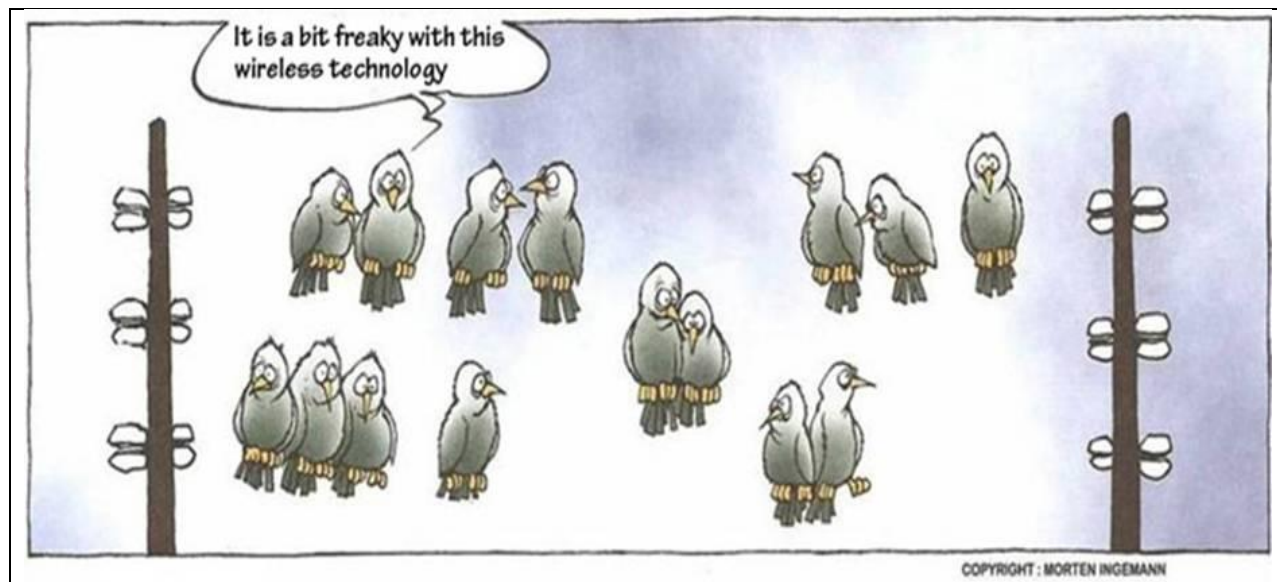
3. DRIVER MANAGER. Activate this, and it will go out and find drivers for your hardware devices. Probably it won't find any since some were installed during the early part of the install process. But do it just in case. Are drivers important? Your printer will not work without one, just as an example.

4. SYSTEM SNAPSHOTS. Open and activate this. I suggest that a monthly snapshot is in order, at least. Make it weekly if you like, or even daily if you are working on critical projects. Set it up as you wish. Use care not to make multiple, overlapping snapshots unless you intend to.

These 4 are the critical items. The others are up to you. Under SOFTWARE MANAGER, you can see some of the many thousands of programs available to you. Don't overload yourself at first unless one or another lets you tackle a project you need to do. On the other hand, I do recommend VLC since it will let you view screens with graphics while you are surfing the web or looking for info on a topic.

Finally, when you exit the important ones noted above, look for any notifications in the system tray. There may be some language packs that you will need ... if there are, install them. It will not take much time. You have now installed Vanessa!!! Next time we will see how to use it.

¹If the new disk fails to boot the machine, remove it from the disk tray, restart and (for Dell machines) repeatedly press F2 during the very start of the reboot to get into the BIOS. In the BIOS, under BOOT, move the CD/DVD/CD-RW Drive entry to first in the priority list so the machine will attempt to boot from CD/DVDs when a disk is present in the drive. Then Save and Exit and try to boot from the CD again. To get into the BIOS of other machines, consult your user manual, try F2, ESC, or email me with details and I will try to help you out.



OZARES: Ozaukee Amateur Radio Emergency Services

de: Don Zank AA9WP, OZARES Emergency Coordinator



In theory, theory and practice are the same. In practice, they are not.
Albert Einstein

In theory there is no difference between theory and practice. In practice there is.
Yogi Berra

The Friends of the Cedarburg Library recently held a book and magazine sale. As I was searching through the selections, I came across a book titled "The Theory and Mechanics of Bookkeeping." An interesting choice of words. But I suppose bookkeeping can be more mechanical in usage. Debits need to equal credits in double-entry accounting and things like that.

That got me wondering about a possible book titled "The Theory and Mechanics of Amateur Radio" although "The Theory and Practices of Amateur Radio" may be more accurate.

I think we are all familiar with the many theories that make up amateur radio. How propagation works, the various modes of operation, and the basics of analog and digital electronics. And of course, every ham's favorite topic of discussion: Antennas

The mechanics or practices will vary depending on the activity. The mechanics of contesting, DXing, and digital modes are all different.

Amateur radio emergency services have moved from the mechanics of message passing to a more intricate interaction between served agencies, using the guidelines from the National Incident Management System, or NIMs.

Emergency communications aim to help all parties maintain situational awareness when normal modes of communication have failed. Taking the guidelines direct from the NIMs information:

Communications systems need to be . . .

- **Interoperable** – able to communicate within and across agencies and jurisdictions.
- **Reliable** – able to function in the context of any kind of emergency.
- **Portable** – built on standardized radio technologies, protocols, and frequencies.
- **Scalable** – suitable for use on a small or large scale as the needs of the incident dictate.

- **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.

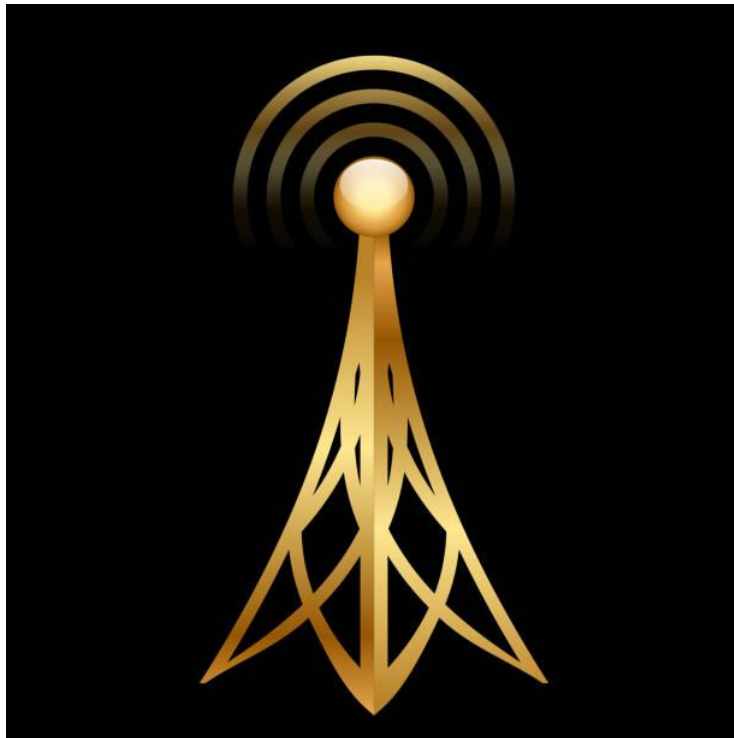
It isn't quite time for New Year Resolutions, but I think the above list will provide good subject material for the next year. See you then and have a great holiday season.

73

Don, AA9WP

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



On the date fringe of the radios that I most enjoy collecting and restoring are the Hybrid Radios pioneered in the mass market by Sideband Engineers (SBE) (some would say, Hallicrafters¹) and fully realized by Trio/Kenwood and Yaesu-Musen. Hybrid Radios became defined as a solid-state transceiver (or separate receiver and transmitter) where all functions, except for the power amplifier driver and power amplifier tubes being solid state.

Eventually, Sideband Engineers (SBE), Kenwood, Yaesu, Henry Radio (Tempo from Uniden), and a mass market offering from Hallicrafters fell into this description of radios offered. Kenwood had offerings early-on that were close – but with more tubes at critical circuit functions².

There were 20 twenty different hybrid models and/or model series that were made by five manufacturers – plus two more manufacturers known to have experimented with product offerings in this field³.

To begin what will be a review of the various Hybrid Radios⁴ made for the market the focus for the moment will be Yaesu's FT-101Z and FT-101ZD. The "Z" in the model number is the version of the FT-101 series while the "D" denotes "Digital Readout." Here is an example of this model transceiver . . .



Yaesu FT-101ZD Mark II SSB/CW/AM Transceiver
W9MXQ Collection (from KC9CI)

The FT-101ZD was introduced in 1979 and followed a very long line of original FT-101 HF Transceivers that included the FT-101, FT-101B, FT-101E Series, and the FT-101F Series. These earliest FT-101 units⁵ had a different appearance but were Hybrid Radios. Here is the earlier (original) model (in version E form):



Yaesu FT-101EE SSB/CW/AM Transceiver

W9MXQ Collection

Here is a breakdown of the various versions of the FT-101Z models:

FT-101Z Model Breakdown and Options						
Model	Digital Readout	WARC Bands	Cooling Fan	CW Filter	AM/FM Mode	Notch Filter
FT-101Z	Optional	No	Optional	Optional	No	No
FT-101ZD	Standard	No	Optional	Optional	No	No
FT-101ZD Mk 1	Standard	No	Optional	Optional	AM	No
FT-101ZD Mk 2*	Standard	Yes	Optional	Optional	AM	No
FT-101ZD Mk 3	Standard	Yes	Optional	Optional	AM/FM	Yes

* - the radio model in this article

The FT-101Z series was a single conversion design with a nominal 9 MHz i-f system. A second i-f filter is in the i-f chain as well to allow for continuously variable bandwidth in this single conversion scheme. This continuously variable bandwidth which is a nice feature and is installed in all models of the FT-101Z. Unlike earlier versions of the FT-101, the FT-101Z series models offer a Noise Blanker as a part of the main design of the radio. It is not optional.

The FT-101ZD covered here is a Mark II version of this model. It therefore had the WARC Bands and the AM Mode. It is equipped with the Cooling Fan Option. The CW filter is ready for installation – but has yet to be done. The radios from Yaesu with early versions of continuous bandwidth tuning are quite suitable for casual CW operation at narrower bandwidths. The -60dB bandwidth is wider than it would be with the specific Yaesu 600 Hz CW filter for the radio (Yaesu XF8.9HC). (Yaesu added a 350 Hz CW filter option late in the production cycle – few details of this filter seem to be available.)

In theory, the FT-101Z model (without the digital readout) was available in all forms through the Mark 3 version. In reality very few were likely imported for the North Ameri-

can Market. But to be sure, it was likely possible to buy an FT-101Z Mark 3, if you could find one.

The AM and FM choice shown for the Mark 3 model was a bit more complicated than shown. While the AM mode was standard on the Mark 1 and Mark 2 models, it was not standard equipment on the Mark 3 models. For that version, the user had the option to purchase either the AM or the FM module for field installation in the transceiver. Only one could be installed at a time.

The FT-101Z series had a wide range of options for use with the radio. Those included the SP-901 and SP-901P Speaker Console (the S-901P included a Phone Patch). Also, one could purchase a Remote VFO model FV-101Z or FV-901DM.



The FV-101Z Remote VFO was an analog readout unit for use with all versions of the FT-101Z and FT-101ZD. This was perhaps the only option uniquely tied to the FT-101Z series. All others were shared with the up-market FT-901 and FT-902 series Transceivers⁵ that inhabited an identical cabinet and shared much in the electronics area. This view shows the readout configuration that was present on the non-digital readout FT-101Z.

Universal Radio



The FV-901DM Digital Remote VFO, intended for the FT-901 and FT-902 Transceivers also matched and worked with the FT-101Z series radios. This Remote VFO had digital features, such as 40 memories.

Universal Radio

Not shown here were items such as RTTY Interface Units (YT-901 and YK-901). and 50, 144, and 430 Band Transverter (FTV901R). However, some more common options are shown below. These items, as their model numbers denote, also supported the FT-901DM and FT-902DM product lines.



The SP-901 Speaker Console is the matching speaker for this series of radios.

Not everyone's cup of tea, the matching speaker is a must for me for radios that I collect.

Universal Radio



The SP-901P Speaker/Phone Patch is the same as the above SP-901 Speaker except that it included a Phone Patch. Phone Patch operation was quite common on the Amateur Radio Bands when these radios were new. This unit included all necessary cabling to connect the radio to the telephone line.

Universal Radio



The FV-901DM Digital Remote VFO, intended for the FT-901 and FT-902 Transceivers also matched and worked with the FT-101Z series radios. This Remote VFO had digital features, such as 40 memories.

Universal Radio

When acquiring an older radio that has been used through its life – the one in this article was purchased new in mid-1981 – it is good practice to remove the Cooling Fan and inspect it for collected dirt and to oil its bearings. I use a product called “3-IN-ONE™ Multi-Purpose Drip Oil. 3-IN-ONE has been on the market since 1894 and is currently

made and marketed by WD-40 Company. Website for the product is <http://www.3InOne.com>. Chemically, it is not to be confused with the WD-40 product.

Here are example pictures:



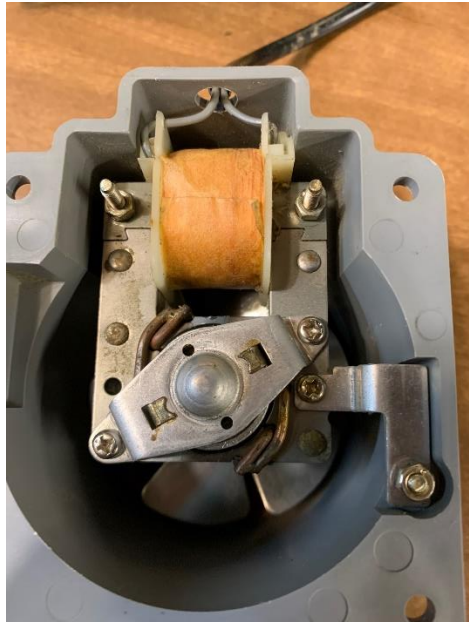
**Before Cleaning
FT-191ZD Rear Panel
Fan Just Removed**



**Before Cleaning
FT-101ZD Rear Panel and Fan
Showing Lint in Fan Assembly**



**After Cleaning
FT-101ZD Rear Panel and
Fan Cleaned and Fan Lubricated**



**To remove the fan from its housing to
clean/lubricate further, remove the
three nuts at the top and lower right.**

The radio was well cared for over the years. Careful initial power-up with a Variac™ showed that all was well and that the power supply was working. Only four problems came to light (three are corrected) and these items are typical of the minimum that will be found even with very well cared for older radios that have not been in regular use.

1. The dirty fan already mentioned. This is a common problem especially with older shaded pole motor designs that heavily interfere with air flow through the assembly causing dirt (lint) to collect. The fan assembly was cleaned and lubricated. When the motor is removed from its housing (as noted above) the lubrication points at both ends of the motor frame are clearly visible as small holes in the metal surrounding the motor at both bearings (front and back). Two or three drops of oil is fine – maybe a couple more if the motor has been stored for years. The oil is stored around the bearings in felt washers. Be careful (!! too much oil will cause it to be forced back out through the holes and attract dirt. Newer motors are sealed and require no attention. These old-shaded pole motors require some attention every year, or two.
2. Associated with the above problem the antenna relay was found to have collected a lot of the same kind of lint found in the fan. The relay was cleaned (its exterior and the contacts) and then modified a bit to shield it from any future air flow that caused it to collect dirt.
3. The bandswitch wafer that selects the band heterodyne crystals was dirty and was cleaned with DeoxIT™ contact cleaner applied through a small opening “needle” delivery tube to prevent any of the chemical getting on the switch wafer or elsewhere in the radio. Evidence of this need is shown in signals that seem to come and go (or not appear at all) or intermittent transmitter operation.
4. The illumination lamps for the analog dial (just above the main tuning dial) are both out. The photograph on the first page of this article seems to show them working but, in fact, they are illuminated with a small flashlight sitting inside the radio just for this photograph. I will replace the lamps but when the digital readout is installed, the illuminating of the analog dial is not really necessary. Because of linearity issues with the analog drive, it needs to be adjusted to be on frequency at various points on the dial. The digital readout makes that unnecessary. Many owners of these radios disconnect those lamps or do not replace them when they ultimately burn out. (For the picture shown in the first page of this article, I setup a flashlight inside the radio to illuminate the dial for the picture only. The work to remove the VFO assembly and replace the burned-out lamps remains to be done.⁷⁾

The FT-101ZD in this article was used for about 30 contacts in the CQ WW DX CW Contest and it showed very satisfactory performance. It certainly does not provide the performance of my FTdx-101MP (the current holder of the “101” moniker) but the receiver performs well in the face of strong adjacent signals. Keep in mind that I am using nothing more than the standard 2.4 kHz SSB Filter with the continuously variable (down to 300 Hz) bandwidth feature. The radio performed essentially without issue and was a pleasure to use. I admit to being spoiled by QSK (full break-in CW) on more modern ra-

dios but that was not a feature of radios at the time when this radio was new. But it must be remembered that Ten-Tec's excellent, QSK equipped Omni A was on the market for a year before we saw the semi-break-in FT-101Z series. And, the Ten-Tec Omni A had solid state finals. What is a feature of the hybrid radios and those preceding them will have to be noted as their clean, low distortion vacuum tube finals. Only now, at the time of this writing, are we seeing constructive efforts to upgrade the spectral purity of solid-state final amplifiers. Vacuum tubes with less restrictive and defined upper power limits are harder to drive into distortion.

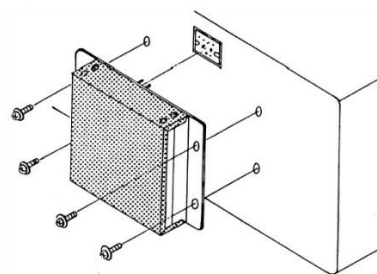
Important note: Do not think for one moment that vacuum tubes cannot be driving to distortion. My point here is that for given 200-watt input (100-watt output) vacuum tube final amplifier, its similarly rated solid-state cousin is more prone to distortion in general ham radio operation. Watch that Microphone Gain Control and keep your eye on the ALC reading as its use is defined in the operating manual. I also do not want to confuse the issue of proper operation of solid-state power amplifiers. Operating them within proper parameters can net a clean and pleasant to hear signal.

This brings up an interesting story on the Japanese hybrid radios from the 1970's is that they heralded the beginning of the modern era of radios with quiet receivers and competitive receiver performance. In truth, other than conveniences like QSK, these radios are competitive in many ways to radios of today. Kenwood with their TS-530S and the TS-830S (single and double conversion, respectively) along with the FT-101ZD and the FT-901DM/FT-902DM (single and double conversion, respectively) were excellent performers on the scene in the day.

Most hybrid radios (but not all of them) offered a single package operation – that is, no separate accessories, such as power supply, are required. Properly optioned for DC operation, the FT-101ZD shown in this article can operate from 120/240AC Power as well as 13.6VDC – all from the one package. Even a relatively good speaker is part of that one box package. Here is the back panel of the FT-101ZD showing the standard 120/240VAC unit on the left and the installation of the added 13.6VDC Yaesu DC-1 Module on the right:



Rear Panel of the FT-101ZD
Note Optional Fan is Installed
See Tape over DC Module Connector⁸
Note Power Connector at Lower Right
W9MXQ



Sketch from FT-101ZD Operating Manual
Note installation of Yaesu DC-1 Module

Yaesu FT-101ZD Operating Manual

Connector at Lower Right is wired for 120VAC, 240VAC, or 13.6VDC Operation – as appropriate.
 Fuse rating – Fuse Holder to the left of the Power Connector – is changed for different supply voltages.



© 1979 Yaesu-Musen

Yaesu loved to tout the global nature of its go anywhere design – owing to the universal power supply capabilities of the FT-101ZD. Above is the Mark 2 Version from 1979 and is a picture taken of the original brochure (found on eBay™) after adding the radio to my collection. Notice the first-generation FT-101 fading into the past behind its latest new offspring. A worth successor to the original!

This FT-101ZD has an interesting story – as many radios that I collect happen to have. This one was owned by Phil Rebensburg, KC9CI. I met Phil in the first week after moving to Wisconsin in 1998. This radio was Phil's first radio – back when he was KA9FWN. When he traded the radio for a more modern one years later, he sold this FT-101ZD. Phil had kept track of the radio and made it available to me when he found that it had been put aside after the most recent owner made a move to a more modern rig. We found that it may have been in at least one other shack over the years. But it is home to stay, now.

Phil is very active on local nets and is a Group Commander in US Air Force MARS. MARS (Military Auxiliary Radio System) is a United States Department of Defense sponsored program, established as a separately managed and operated program by the United States Army, and the United States Air Force. Phil's original crystals for fixed frequency net operations on MARS frequencies, above and below 80 meters, are still in place in the radio. The most recent owner of the FT-101ZD was also a MARS operator.

Phil is also a Net Control Operator for the Midwest Country Cousins Net on Tuesday evenings, on 75 meters. He participates in the Thursday evening version of the same

Network – same band but with a different Net Control Operator. I checked into both nets with the FT-101ZD, the first week I had it, and it was well heard with its barefoot 100 watts output all over the Midwestern United States. At least one of the operators I found via that net is a fellow vintage radio collector – and it was nice to talk to him with the FT-101ZD.

Phil is a special and long-time friend. I have assisted him over the years with maintenance and even replacing HF radios in one of the local ARES (Amateur Radio Emergency Service) operations where he provides management. I have assisted him also with his personal station at home. He could tell you stories about me helping him “MARS enable” his radios! I sincerely thank Phil for making this FT-101ZD a part of my Vintage Amateur Radio collection.

I appreciate that you read my articles. Remember that I am open to questions and comments anytime at my email address, 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 an article like this, it is good to have a second person review the process.

Notes and Credits:

¹ Hallicrafters announced their FPM-200 Hybrid Transceiver in the 1950’s with several publicity splashes and at least one major event that would publicize the radio. The radio was introduced but never made in volume. The transceiver used a pair of 6146 finals driven by a 12BY7. There were some regulator tubes in the power supply circuitry.

² Some radios listed as “hybrid” actually have more than just driver and power amplifier tubes. The Kenwood TS-511S, for instance, also has tubes in transmitter and receiver mixer circuits and at the output of the common transmitter and receiver i-f. My opinion is that those radios were so far ahead of their predecessors in solid state circuitry that they were named “hybrid.”

³ A good deal of information exists on at least development versions of a hybrid version of the Drake TR-4CW-RIT (last version of the popular TR-4 Transceiver) that was to be called the Drake TR-5 (with a “-“ in the model number – the later version of this model was the TR5, no “-“ in the model number). The final TR5 was preceded by the rather revolutionary solid-state TR7. So, the marketed TR5 came out after the TR7. Confusing, but true.

⁴ For purposes of the discussions on this series of radios. Here is the list:

1. Drake TR-5 Transceiver (never produced – but some details known)
2. Hallicrafters FPM-200 Transceiver (1959) (Seemingly only few produced)
3. Hallicrafters FPM-300 Transceiver (1972)
4. Heathkit SB-103 Transceiver (never produced – but some conjecture exists)
5. Heathkit SB-402 Transmitter (never produced – but some conjecture exists)
6. Icom IC-700R/IC-700T Receiver and Transmitter (1967) (Only a few produced)
7. Kenwood (Trio) TS-511S/TS-515S Transceiver (1971) (Several extra tubes – not totally a hybrid but widely accepted as so)
8. Kenwood TS-520 Series Transceiver (1973)
9. Kenwood TS-820 Series Transceiver (1976)
10. Kenwood TS-530S Series Transceiver (1981)
11. Kenwood TS-830 Series Transceiver (1980)
12. Kenwood TS-900 Series Transceiver (1973)

13. Kenwood R-599/T-599 Series Receiver and Transmitter (1970)
14. National Radio (Japan) with the HyGain 3750 Transceiver (1977)
15. Sideband Engineers SBE-33 Transceiver (1962)
16. Sideband Engineers SBE-34 Transceiver (1966)
17. Sideband Engineers SBE-35 Transceiver (1970)
18. Sideband Engineers SBE-36 Transceiver (1972) (Made by Robyn of Japan)
19. Uniden of Japan with the Henry Radio Tempo 2020 Transceiver (1975)
20. Yaesu FT-101, FT-101B, FT-101E Series, and FT-101F Series (1970)
21. Yaesu FR-101.FL-101 Series Receiver and Transmitter (1974)
22. Yaesu FT-101Z/FT-101ZD Transceiver (1979)
23. Yaesu FT-901/FT-902 Series Transceiver (1979)
24. Yaesu FT-102 Transceiver (1982)

⁵ Subject of a future article.

⁶ "WARC Bands," in this article, are defined as the 30-, 17-, and 12-Meter Bands. For this radio, and all in the list in Note 4, WARC Bands did not include the later addition of the 60-meter band.

⁷ The illuminated analog dial is unnecessary when the digital readout is present. Besides, the digital is more accurate across the band – not requiring linearity caused resets for accurate readout in several points across the span of the band.

⁸ The taped over DC-1 DC Power Supply is sometimes present with and without the tape. I presume that if the tape is missing but actually it may not always have been applied at the factory.

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Then...

Yaesu Musen™

YAESU

The radio

Now...

Yaesu Musen™

On The Air Activities!

de Gary Sutcliffe, W9XT



This month is kind of weird. The first was on a Thursday, which means our meeting and thus the newsletter are pretty late in the month. That means many of the December activities will be well in progress or over by the time you get this. That is why I include activities for the upcoming month. A lot has happened since the last newsletter!

Recent Contest Review

The ARRL Sweepstakes were the first and third weekends of November. Unfortunately, I always have a conflict on the first (CW) weekend, so I only put in a token effort. However, Vic, WT9Q, was pretty serious about SS CW and sent in the following report:

"I finally got the "Sweep" after seven years of trying. I reached my goal so the mug will soon be on my desk. The ARRL Sweepstakes contest is a fun one because a person can only operate for 24 hours, and all participating stations are either in Canada or the USA. You don't need an amplifier to do well in this contest. If you contact all 84 sections, you did the full sweep and you qualify for a coffee mug. Last year I missed one section, Quebec. The year before that I missed 3 sections. In 2018 I missed it by 4. But this year I logged my last needed section, EWA (East Washington State) for the Sweep with time to spare. The coffee is going to taste so sweet from that cup. Now all I have to do is to send \$20.00 to the ARRL so that they send me the mug."

Congratulations on the clean sweep Vic! They can be tough to get, especially in the CW Sweeps. Oddly, Wisconsin was pretty rare this year.

The last weekend in November was the CQWW CW DX contest. That was the weekend right after Thanksgiving. We had out of town family activities, and I knew I would not get home until a couple of hours before the start. I would have liked to do an all-band effort, but I knew I would not be rested up enough to get by on only a couple of hours of sleep for each of the two nights. I decided to do a single band 10-meter, low power, assisted operation.

While I was setting up, I checked the propagation numbers. They did not look good. The solar flux, so crucial in the higher bands, had been dropping the last week or so. It had been in the 130s, but now it was only 109. The A index was not all that good either. That did not bode well for 10 meters, so I made a last-minute call to do 15 meters instead.

Openings on 15 meters were pretty good during daylight, but the band didn't stay open very late. Actually, the band closed on Friday night before the start, and I didn't make any contacts until Saturday morning.

Things went pretty well for me. I finished with 641 contacts into 113 countries, all with low power on 15 meters. CQ published the claimed scores for submitted logs after the log deadline. My score was the top North American entry, something I am pretty happy about. It still has to go through the log checking process, but I am not worried about score reductions significant enough to drop me down a spot.

WT9Q passed along his comments on the CQWW CW effort.

“This year I did not put in a full-time effort for the CQ World Wide DX contest. Our oldest grandson went off to college in fall and wouldn't be getting home until Friday pushing our traditional celebration back by one day. Our house would be full of company for the first 24 hours of the contest, and I didn't want to miss that special time together. My goal for this contest had always been to beat last year's score. That would not possible this year, so I changed my goal to contacting as many different countries as possible and hopefully log a new country. I never can remember which countries I still need towards DXCC so when the contest was over, I loaded the ADIF file into Ham Radio Deluxe and then exported those same contacts to an Excel worksheet. I then sorted the contacts by country and compared them to the countries that were already confirmed. Voilà, I logged two new countries: New Caledonia and Samoa. Each country is over 6,000 miles away and that made a total of 80 different DXCC contacts in less than 24 hours. That was a lot of fun.”

That is great, Vic! It is always a bonus to pick up a new one in a contest. Also, congratulations on your grandson going to college!

The following weekend was the ARRL 160 Meter contest. I played around a little and made a little over 500 contacts. With a big effort in CQWW the previous weekend and the ARRL 10 Meter contest coming up, I didn't want to get burned out.

There was a lot of Wisconsin activity, including ORC members K9DJT and WT9Q. Vic and I operated in the low band unlimited category. We used the online scoring system so we could keep an eye on each other. In our class, there were five Wisconsin stations in the top eight in the country!

Gary, K9DJT, gives an interesting account of how he went QRP in the ARRL 160 Meter contest.

160M QRP – Really???

I recently learned that my friend and Elmer, WE9R, was planning to participate in the 160m CW contest. He said he was going to enter the QRP category. On a

lark, I thought I would do the same but not tell him. My hope was to surprise Lyle by outscoring him but that didn't happen.

I couldn't believe how much fun I had with this contest and what I learned. I had expectations of only making a few contacts and instead I bagged 207 (only 10 less than WE9R). The farthest Qs were the Bahamas, US Virgin Islands, and Puerto Rico. I also worked everything between the Midwest and the east coast and down through most of the southern states. Going west was a different story. Kansas, Oklahoma, and South Dakota were the furthest in that direction. I also did a few in Texas which is southwest. I am only guessing I was unsuccessful in making it out to the western states because of the lack of radial symmetry in my 160m tower/inverted L antenna system. Then again, it could have just been poor propagation in that direction. What really surprised me though was the number of Gruber contacts I made, i.e., one call, that's all. I think I smiled every time someone came back to me. After all, it was only five watts, and it was 160m! The lowest power I had ever used in the past was during my novice days at 75 watts input. This was insane!

I learned through this contest that a lot of power to communicate is not required. In addition, I confirmed that a low SWR is unnecessary. I had my antenna tuner engaged when I started out to bring my 1.9 SWR down to 1:1. My first few contacts asked me to repeat my callsign a couple of times which made me think about the insertion loss of the antenna tuner. I disengaged it, ignored the SWR, and all of a sudden, I was making Gruber contacts. (I still want to check it out with my Bird wattmeter to confirm if it really made that much of a difference.) The reason the higher SWR didn't negatively affect my signal is that I'm feeding the antenna with about 25' of 7/8" Heliac®. The loss due to SWR in that line is almost as low as ladder-line at 1.9 MHz. Nearly all of the five watts are being radiated!

It's funny how things evolve. It now appears there's a portable QRP rig in my near future. Give QRP a try! You may be pleasantly surprised.

Nice job, Gary! That is very impressive for your first shot at a 160-meter QRP effort! It was not your antenna or power that prevented you from working to the west. We just did not have very good propagation. I missed most of the sections in California and a few in W7. I was lucky to snag a KH6, though. The A index was around 20, indicating that the geomagnetic field was disturbed and adversely affected long distance contacts.

You are right about coax loss due to SWR. With the description you mentioned, your 5W output was reduced to 4.97 watts at the antenna. The connectors in the tuner probably added more loss than that! That is due to the very low loss coax and the short length. If you had a longer line and higher losses, it could have been a problem.

The only other factor is some rigs can't handle high SWR and will reduce power to prevent damage to the rig. If you were using a 100-watt rig running at 5W, it would probably not even notice if you forgot to connect your antenna!

VHF

December is usually not a big month for VHF activities, but some exciting stuff is happening. We had an opening to New Zealand on the night of December 1. Unfortunately, I was not copying any of them with my best 6M antenna frozen east, but a friend near Port Washington heard some, and another friend near Madison worked one or two. It was probably sporadic E (Es) coupled into some TEP (Trans Equatorial Propagation). That was the closest I have come to working New Zealand. Hopefully, we will get some F-layer propagation to that area as the sunspot cycle improves.

The primary mode for 6 meters is Es. We get a lot of it in the spring and early summer. Single hops can get us out to about 1200 miles or so, but multi-hop Es is not uncommon, and we sometimes get opening as far away as Europe. So, while most of the excitement happened about 5-6 months ago, there is also a smaller Es peak in December.

On the morning of Dec 5, Gary, K9DJT, alerted me that 6 meters was open. It was a pretty good opening to the East Coast, down towards Texas and some other stations to our west, including South Dakota, Colorado, and other states. Too bad there were no new grids for either of us.

Gary and I did work a new grid on 6 meters a few days earlier. On the morning of December 3rd, Gary was up early working stations on meteor scatter and scored a contact in EN25, northwest of Minneapolis, for a new grid. He was gone when I arrived but was on again the following morning. I stopped operating the 160M contest and was able to work him for my first new 6-meter grid in about five months.

EN25 is a bit hard for us. It is too far for ground wave and too close for most Es openings. I have the additional problem of a big hill in that direction. Meteor contacts that close are at high angles, making it possible to get over that hill.

Those QSOs were probably from the Geminid meteor shower. It peaks this year around December 13-14. The Geminids are known for slow, very bright, slow, moving meteors. A week before the peak, the shower appears to be pretty good with Gary, K9DKT, making multiple contacts every morning.

Meteor scatter is a lot of fun. If you are set up for FT8 and have an all-mode rig capable of operating on 6 or 2 meters, you are all set. Give it a try. Six meters is much easier, so try that band first if you don't have any experience.

The mode is MSK144 in the WSJT mode drop-down. MSK144 is similar to FT8 in operation, but some special operating conventions apply. So please read up about it before you give it the first shot.

Direct QSLing

If you want to QSL directly, and some DX stations only QSL that way, you send an en-

velope with your QSL and an SAE (Self Addressed Envelope). You are expected to pick up the return postage. It would be unfair for hams in rare 3rd world to pay for hundreds of stamps.

In the past, we used something called IRCs (International Reply Coupons) to cover postage. In theory, anyone in the world could take one to their local post office and exchange it for a surface mail stamp good to anywhere else in the world. You had to include 2-3 with your QSL for return air mail for most countries, although some required as many as seven.

You could go to your local post office and buy them. But when I did, I would get a deer in the headlights look most of the time. They were apparently not a big seller. Stations that got cards with IRCs usually bought stamps with cash and used the IRCs they got to send for QSLs they were seeking. It was sort of an international currency. A forebearer of Bitcoin?

IRC's were phased out many years ago. The alternative was to send "green stamps," dollar bills. That was risky for several reasons. In some countries, it was illegal to possess foreign currency. Sending cash could get them in trouble. That seems to be less of an issue these days.

Of course, the big danger was that envelopes got pilfered. It was a way for postal workers in poor (and some not so poor) countries to subsidize their income. That sometimes happened with IRCs too, where they could be traded for bread or cigarettes in some places.

Right now, the standard rate for most countries is three green stamps. Some countries have higher postal rates, and you need to include more. Usually, if \$3 is not enough, they will say so on their QRZ page.

So, to get a direct QSL from a DX station, you need to buy a \$1.40 stamp, add \$3 for postage, and probably another \$0.40 or so for two envelopes and your QSL. Figure \$5 as a round number. By the way, postage rates will go up again next month. So, buy your forever Global stamps soon! If you go in and ask for air mail stamps, you will get the same look as if you ask for IRCs.

With the high costs, it is no surprise that Logbook of The World (LoTW) is so popular. But if you want a real QSL, and some are very nice to have, probably the best way is direct.

Modern technology has found a way to improve direct QSLing. It is called OQRS, for Online QSL Request Service. Essentially, it allows you to check an online log. If you made contacts with that station and if they use the service, you can request a QSL. You send money via PayPal to cover return postage. One big advantage is that it eliminates the chance your envelope gets lost or stolen. It also eliminates the time it takes to for your envelope to get there.

The first step is to go to the Club Log site. Club Log is an excellent site for DXers, and if you chase DX, I suggest you sign up. It is free, but they can always use donations to keep it running. The easiest way to check if the DX station uses the service is to go to <https://clublog.org/logsearch.php>

Enter the DX station's call and your own call sign. Then click on Show Contacts. If the station uses the service and you have contacts, you will get a page showing the bands and modes of your QSOs. If they use OQRS, you will see a button to click to request a QSL card.



Club Log screenshots showing checking for QSOs and requesting QSLs.

You will get a detailed list of your QSOs if you click that button. Then, you can click on the ones you want to be confirmed. The screenshot shows I checked one QSO for direct and one via the bureau. The other two were unchecked, so you can see what the options look like.

If you select via the bureau, there is no charge, but expect to wait a long time and have envelopes on file at the W9 incoming QSL bureau. If you check one or more for direct QSLs, you click the Check Out button, and you will be taken to your PayPal account, where you can finalize the transaction.

This one is fairly typical. There is a cost for the first QSL, but additional ones are free. Generally, they just print out a label with the QSO info for the QSL card. It does not cost more to confirm multiple QSOs. If it is a DXpedition, it might give you the option to donate extra to help cover the costs of the operation. Some DXpeditions are very expensive and rely on donations. Next month I will cover a DXpedition that has a budget of \$720,000! If it is a DXpedition, they will often QSL via LoTW within a day or two, but the physical card takes several weeks or more, depending on how many others are ahead of you.

I had a problem with OQRS and PayPal. I have two PayPal accounts. One is for my business, Unified Microsystems, and one is a personal account. When I go to the OQRS check out, it often takes me to my business account. I don't want to pay for QSLs from the business account. For some reason I can't change accounts when using

OQRS. I can usually change accounts when I order from other places. A simple work-around is to log into the account you want to use and then open OQRS in a different window. It then goes to the account you have open.

Of course, like anything else, some people try to take advantage of you. Usually, they are not the ones using OQRS but use ham radio to make money. Their QRZ.com page will say something like you have to request a card and pay via PayPal. Usually, OQRS costs \$4-\$5 for as many contacts as you wish. The bad guys often charge something like \$7 per QSO. Sometimes that is only for a LoTW confirmation, which does not cost them any money to use.

There is a QRZ page of a ham in the Pacific who goes into great detail about why you should be happy to pay extortion rates because he built up his station so you could work the DXCC country. I won't play that game. If the guy makes a \$1 or so from OQRS, and it really does not cost me more than mailing green stamps, I don't care. But making contacts should not be a paying job.

Contests

If you read the newsletter as soon as it is published, the ARRL 10 Meter Contest starts in a few hours. I should have covered this one last month, but I didn't notice that the publishing date was so late this month. Anyway, the ARRL 10 Meter Contest is perhaps my favorite contest. It starts at 6:00 PM Friday night, December 9, local time.

One nice thing about this contest is that it won't keep you up all night. The band will open around sunrise, around 7:15, and might stay open to 7:00 PM if we are lucky. The other thing is that 10M is a quiet band. Antennas are also small compared to the other HF bands. Another thing to keep in mind is if you have a Technician license, you can operate phone on 10 meters, the only HF band that is allowed.

You can operate phone only, CW only, or mixed mode. In addition, there are high, low, and QRP power, and assisted or unassisted categories. So, you have a lot of choices. This year should be a real treat. We are finally coming out of the sunspot minimum. The last 6 or 7 years have been more like a VHF contest, waiting hours for a sporadic E opening. Although the solar flux dipped a bit in the last few weeks, it is coming back up. About a week before the contest, it was about 150. Last year it was in the upper 70's. My rule of thumb is we will get an opening to Europe if it is over 100 and the geomagnetic field is quiet for a couple of days. So, it appears we should be getting some really fun DX openings!

There is one contest left in 2022 after the ARRL 10 Meter contest. That is the Stew Perry Top Band Distance Challenge. It is a 160-meter CW contest. Usually, this is the Saturday between Christmas and New Year's. But with those being on Sundays this year, they figured activity would be down on New Year's Eve. So, it is on December 17. The TBDC is very different from a lot of contests. First of all, QSO points are based on the distance between the two stations. You send your grid square as the exchange, and

your logging program will compute how many points each contact is worth as you log them.

You get more points if you are running low or QRP power. But there is a twist here. You get additional points if the other station is also running lower power. The theory is that the other station has to do a lot of work digging out weak signals from low power and QRP stations. So, should they not also get extra credit?

You don't know how much power the other station is using when you work it. You won't find out until you send in your log. Their website shows the claimed scores of each entry. As more logs come in and low power/QRP stations you work are identified, you watch your score go up. But so do the scores of your competition. So, your standing may go up or down depending on how many smaller stations you contacted compared to the competition.

Another quirk is that there are no multipliers. Instead, your score is entirely the total of your QSO points. There are also a lot of awards, and some are pretty strange. For example, there is a plaque for the best score by a US low power station with a lot under 4500 square feet and a random wire antenna no higher than 35'. There is another for the first low power station to work 100 grid squares, and another for the best score which was 100% search and pounce. One odd one is for the top score in a grid ending in 42 (EN42, CM42, etc.) Fans of the *Hitchhiker's Guide to The Galaxy* will understand that one. Don't forget to bring your towel.

The TBDC is a fun contest. I like that other stations are willing to try to dig you out of the noise, hoping you are a low power or QRP station and worth a lot of extra points. The home page has tabs to the rules, awards, etc. Note that spotting assistance of any type is not allowed in this contest.

The first big contest of 2023 is the ARRL RTTY Roundup, starting on January 7. This contest is getting back to its roots, and only the RTTY mode is allowed. FT8 and other digital modes were tried for a couple of years, but now they have their own contest.

You can work any station once per band. Multipliers are states, Canadian provinces, and DXCC countries, but they count only once. Working another Wisconsin station on a different band does not increase your multiplier total.

If you are currently operating FT8 on HF, you have all the equipment you need to operate RTTY. However, WSJT does not support RTTY, so you will need new software. I use the free MMTY program, but there are others available. If you like digital operating, try RTTY for something different.

DX

I usually don't mention operations to DX countries made by a single operator. These are generally part of a vacation or business trip and working them is more of a hit-or-miss

type of thing. It seems many of them have intentions of doing a lot of operating, but when they get there, they find other more interesting things to do and don't get on the air much.

I am making an exception to one starting around December 20. There is an operation by F6CUK to the Crozet Islands. This group of islands is in the Indian Ocean, roughly halfway between Madagascar and Antarctica. France administers them, and the only inhabitants are stationed on a small scientific base.

The operator will only be there to operate his radio. Crozet is not exactly a tourist hot spot, so he should have plenty of time on the radio. Well, that was the plan anyway. Apparently, there was a lack of communication, and some authorities did not understand that he would be transmitting. They didn't want RFI to mess up their scientific equipment and told him he could not use his transmitter! It looks like there was some sort of compromise, but he will not be allowed to operate at least 5 hours a day. Hopefully, once he is there, any interference problems can be solved, and he will be allowed to operate more.

The operation will last until about January 26 when the next supply ship arrives. No call sign has been announced. The standard prefix is FT4Wx, but the French seem to like to issue a lot of TO calls, making it hard to know where they are. It is likely most operation will be on 30, 20, and 17 meters FT8. This is a rare one. Crozet is #3 on the most wanted list on Club Log. I only worked it once, on 20-meter CW back in 1983.

Another tough one will be activated from the Bangladesh Dal Char Island. It is to activate the island as part of the Islands On The Air (IOTA) program, a popular DX activity. Propagation to that part of the world is hard from here, and I will be happy to work it for DXCC credit. I only have it on two bands, both CW. Five ops will be operating Dec 10-16. SSB & FT8 are the expected modes.

The Republic of the Congo will be put on the air by a large group of Czech operators. It appears they will have several stations set up. They plan to focus extra on the low bands and receive antennas. Some recent DXpeditions to Africa had problems hearing on the low bands. It is good to see these preparations.

Next month I will cover a big DXpedition to the second most needed DXCC entity at one of the most isolated places on the planet. The last two attempts failed. Will the third time be the charm?

FIFA Special Event Stations

If you have not been living in a cave for the last few weeks, you know the soccer World Cup is being played now in Qatar. There are some special event stations on the air. One of the best is from the United Arab Emirates, using the call sign A60FIFA. They will be active until December 19. The UAE is a relatively rare one, and this might be an excellent chance to log the country. Different operators will use the call sign, and you might find a /0, /1, or other designation added. QSL to EA7FTR.

TI1GOAL is another special event station for the World Cup. I'm sure there are others

WRTC 2022

The World Radio Team Competition is coming up in July of next year in Italy. Wait! You said 2022 above. Next year is 2023. Yes, it was supposed to have been held in 2022, but uncertainty with COVID resulted in delaying it a year. They didn't want to change everything, so they decided to just keep calling it WRTC 2022.

The WRTC is sort of like the Olympics of ham radio. Two operator teams from around the world come together to compete in the IARU contest in July. To qualify, you have to operate a lot of contests over a period of a year or two. You get points depending on how well you do. There are about 40 teams.

Ham radio contesting is inherently unfair. Someone always has a better location or station, so it is hard to know if the station or the operator made the difference between winning and losing. WRTC attempts to level the field. Each station has identical antennas, and great efforts are made to ensure all the stations have conditions for noise, etc.

The WRTC will be held in July. I will cover it in more detail as we get close, but there is a special event for WRTC during January. It is the WRTC 2023 award. Are you confused yet? The WRTC 2023 award for the WRTC 2022 held in 2023? Well, they had a WRTC Award 2022, so I guess they had to use the actual year.

Anyway, it is to publicize the WRTC in July. During January, they will have the award activity. You try to work the special stations. Most of the call signs will have the suffix WRTC. So far, 45 stations are listed, but it appears they might add more. You get five points for SSB contacts and 10 points for CW contacts. You can work the same station on a different band or mode to earn points. The basic award requires 100 points. There are many other awards for working them all, working them all on the same band and mode, etc.

The event only includes the bands and modes legal for the IARU contest. That means 80-10 meters, less the WARC bands, and CW/SSB only.

The list of stations is on their website. It looks like they tried to have a station from every qualification area. The one from our area will be using the call N9W. All the US stations will use N#W, where # is the call district number.

The qualifier from our area is NE9U. Scott is from Wisconsin and chose Craig, K9CT, as his teammate. They are very serious about this and went to Italy last summer to operate the IARU to get an idea of what propagation is like from there.

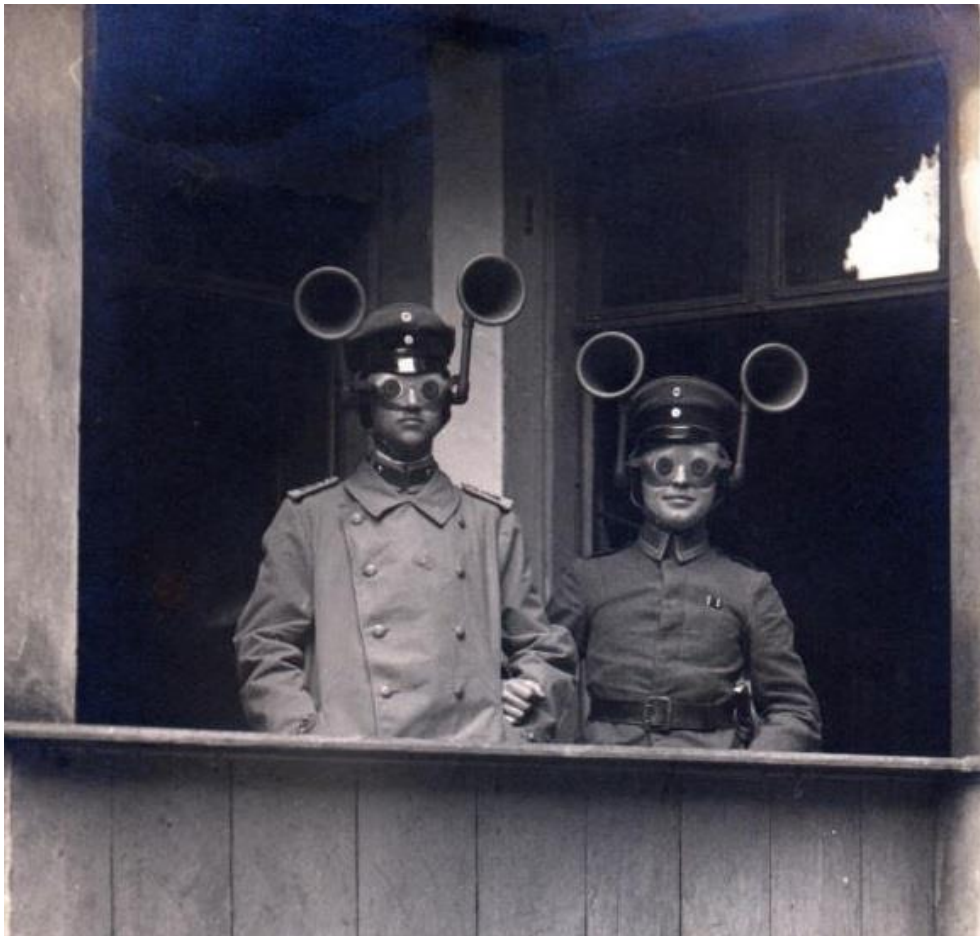
So, if you like events like the 13 Colony event around the Fourth of July, you might enjoy this one. Check out the website for more information, lists of calls, etc.

That wraps up the final installment for 2022. Thanks to Gary, K9DJT, and Vic, WT9Q, for their comments. If you have any operating things you would like to comment on, please send them to me by the Monday before the first Wednesday of the month. Earlier is even better!

They don't have to be on contesting or DXing. Maybe you participated in some public service event or had a really special QSO. Perhaps you fired up that old Novice rig and relived your first days as a ham. Whatever you made an impression on you is fine! It would also be an excellent place to publicize some upcoming events you enjoy.

73 & Enjoy the holidays!

Check my monthly Operating Aid – Next Page . . .



Gary, W9XT, and future XYL on a date night early in their relationship. They are testing a new theory from W9XT on weak signal detection. Actually, not known at the time, Gary was secretly modeling head gear for Walt Disney's future Mickey Mouse Club.

W9XT's Contest, Operating, DXpedition, and Special Event Picks for December 2022 and early January 2023

W9XT's contest picks for December 2022 and early January 2023					
Name	Start	Length	Bands	Mode	Link
ARRL 10 Meter Contest	Dec 10 000z	48, work 36 max	10	CW, SSB	www.arrl.org/10-meter
Stew Perry TBDC	Dec 17, 1500Z	24, work 14 max	160	CW	https://www.kkn.net/stew
ARRL RTTY Roundup	Jan 7, 1800Z	30, work 24 max	HF	RTTY	https://contests.arrl.org/Contest_Rules/RTTY-RU-Rules.pdf

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

W9XT's DXpedition picks for December and early January 2023					
QTH	Dates	Call	Bands	Mode	Link/notes
Crozet	Dec 20 – Jan 26	TBD	TBD	TBD	
Bangladesh	Dec 10-16	S21DX	HF	S-D	
Rep. of the Congo	Jan 6-21	TN8K	160, HF, 6	CSD	https://www.cd xp.cz/

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

W9XT's operating & event picks for December and early January 2023			
Event	Dates	Details	Link/notes
World Cup special event	To Dec 19		A60FIFA, TI1GOAL, others
Geminid meteor shower	Peak Dec 13-14	6 & 2 Meters MSK144	+/- a week or so
WRTC 2023 Award	Jan 1 0000 – Jan 31 2359Z	80, 40, 20, 15, 10 CW & SSB	https://www.wrtc2022.it/en/wrtc-2023-award-31.asp

Just Get On the Air!!

de: Bill Shadid, W9MXQ



As many, if not most of you know, in my other life in the next country to the west, I have been the long-time President of the Wisconsin Amateur Radio Club in Germantown, Wisconsin. One of my passions has been to get the majority of the people in that club to actually get on the air from time to time. I do understand how things work and while I am a very active on the air ham radio operator, I am also a model railroader without a model railroad, and an amateur astronomer but currently have no telescope. Does that make me less of a model railroader or amateur astronomer? Well, yes it does!! For this short article, however, we will forget about what I don't do and focus on what I do – as well as maybe what you don't do.

I have been a ham since 1964 and except for a short stint in the US Army, have never in all of those years been inactive. I have had large HF beams on big towers in three different locations with property filled with various wires and VHF/UHF weak signal arrays. I have been an active repeater owner and for years owned a repeater in central Illinois. I have been active in contesting, DX'ing, rag chewing, repeater operating, HF social nets, HF technical nets, and a million other things. SSB, CW, RTTY, SSTV, PSK31, Digital Modes of various flavors all have come, gone, or in several cases, stayed with me. So, how has my intensity in the hobby changed? It has only increased. At times when first married and living in an apartment, I had no outside antenna. So, I got on the air every day, on HF and local VHF (AM in those days), with inside the apartment antennas.

When I was in the working day scene and traveling all over the world, I was reluctant to leave large antennas at home when I was not there to talk care of them, I moved to simple vertical and dipole arrays for when I was at home. While traveling I visited hams in foreign countries, operated at club stations in many parts of the world – even worked FM repeaters while driving in Germany and the United Kingdom, using a trusty FM portable that many times traveled with me. (Last one that traveled with me was a Drake TR-22C that still resides here.) I have been in the homes and shacks of hams from every continent and in many countries – and attended their club meetings.

Today, some of my best friends are DXers and Contesters of recognizable names but my passion in operating has moved on – I appreciate their talent and their installations to make their success. But the fact that I do not intensely do that has no bearing on my enjoyment of the hobby. I measure my success in terms of how many different people I have talked to and that I know something about them, their families, and their passion in

the hobby. I have graduated – yes, that is the right word – to a focus on simple antennas that no longer worry me about their ability to stand up on a windy winter Wisconsin night or a stormy Wisconsin spring storm.

So, what do you do? Does the passion for the hobby burn in you? Or, like so many, do you become discouraged when you hear stories about 100-foot towers whose owners are complaining that's they have not yet worked some rare DX on all nine HF bands (actually there are ten bands if you count 60-meters, but that is another story). I feel their pain, but I do not share it. If I connect with one DX station on one band (and I do quest to do that!!) then I am a happy man. (How many times can I need to say "59 Wisconsin" to the same person?) But if you are one of those that likes that kind of thing, thinks it is important, and that is your passion then my hat is off to you. But do it – don't just talk about it!!

Back to my question, so what do you do? Are you sitting in a chair wishing for that 100-foot tower or have you gotten over to HRO and walked out with a \$190 Hustler vertical and some coax, put it up, and gotten on the air. Oh, you say, "I cannot complete with all those big stations." You think?

I got the idea to write this article, yesterday – a typical day at W9MXQ. I had just finished returning a vintage Drake TR5 to the air. The TR5 is a very rare radio (only 300 made at the end of Drake's time making amateur radio equipment) and this one had suffered the fate of being very heavily modified by a previous owner. I had finished the loose ends of the modifications – funny how you can put yourself in the mind of a total stranger and figure out what he had not done when you have no idea what he did in the first place!! The dirty little secret about the Drake TR5 was that it did not measure up in many hams' eyes by not running 100-watts output. 100-watts output had, and still is, the norm. This little radio puts out 50 to 60 watts on 20-meters – a bit more on 160-meters and a bit less on 10-meters. While it possesses a receiver that is ultra-quiet and rivals the best of the breed (even today) it produced only a third to half the power of its big brother, the Drake TR7 Transceiver. Do you think that is a handicap.



**The Drake TR5 Transceiver with RV75 Remote VFO
(Did you think I could write an article without a picture included?)**

W9MXQ

I had finished the corrective surgery on the radio and put it on the air – answering a CQ from a station in New Jersey. We talked for about 15 minutes, and then he had to leave the air. We talked about the TR5 and his remembrance of the radio when it was introduced in the 1980's (1981 and 1982 were its only marketing years). When he signed off, another person called asking about the TR5 – and related that he had read my articles on the TR5 in the Ozaukee Radio Club Newsletter. He was from the UK – near Swindon, England. We talked about Collins and Drake equipment for about 45 minutes with him giving me a “59+” report. This continued for another two hours and for 21 total contacts. The TR5 was running 50 watts carrier, 60 watts PEP on SSB to my ground mounted GAP Titan DX Vertical Dipole Antenna. Did that turn out to be a handicap?

See what you, too, could be doing? Challenge yourself to get on the air, forget your perceived impediments, and just go for it. Check out the events in Gary Sutcliffe's “On the Air Activities” column here in this Newsletter. Watch for Special Event stations, look for Parks on the Air (POTA) and Summits on the Air (SOTA) stations, check out the group called “100 Watts and a Wire,” and see what people are doing with minimal antennas and power. Hey, get on the 10-meter contest going on as this Newsletter is being released.

Some Related Links:

- ARRL “Get On The Air:” <https://www.arrl.org/on-the-air>
 - ARRL membership may be required to access
- Parks on The Air (POTA): <https://parksontheair.com/>
 - Many Available Contacts – every day, 365 days a year
- Summits on the Air (SOTA): <https://www.sota.org.uk/>
 - Many Available Contacts – every day, 365 days a year
- 100 Watts and a Wire: <https://100wattsandawire.com/>
 - Great Fun – any simple antenna qualifies
- On the Air Activities! – Monthly Column . .
 - https://www.ozaukeeradioclub.org/news/Current_ORC_Newsletter.pdf
 - Author dedicated to getting you On the Air.

Good luck – see you on the air!!

73, Bill, W9MXQ



Ozaukee Radio Club Minutes of Membership Meeting. 11/09/2022

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 meeting at 7:32 PM; and with actual members attending, a go-around was conducted. Zoom attendees were also in attendance and were introduced individually. Pat mentioned that we need a club member to pick up the Senior center key the afternoon of the meeting. Tom KC9ONY now has a donation from WB9NEA of various items, like a matchbox and antenna parts to be auctioned off, with proceeds to go to the repeater fund. Vic WT9Q managed a clean sweep [1st time!] in the ARRL sweepstakes; other members also were active in the event; W9XT, W9KHH. Gary N9UUR made a QSO with 'Godzilla'; station callsign W9G.

Program:

We were supposed to have a re-start of the presentation by Dave W7UUU on his shack fire and restoration, but technical difficulties [again!] rendered that impossible. Pat offered to run a video of a Nat Geo program about a young ham, or a program from the BBC about WW2 where the British intercepted German intel [Bletchley park] but difficulties cancelled that as well

50/50 Raffle: This was won by Bill AC9JV; winning an award of \$14.

Scholarship Auction:

Stan WB9RQR held a short auction, GE Mobile Speaker, Yaesu FT-726 Transceiver, a couple of desktop computers, and some books.

Committee reports:

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

Treasurer: Gary N9UUR presented balance sheets and mentioned a dues increase may be necessary. The October treasurers' report was accepted; motion made by WB9RQR; 2nd by K9GN and carried.

Secretary: Ken W9GA reported the Oct 2022 minutes are posted; mention was made by N9VSV about clarifying the duties of the club officers; a motion to accept was made by KA9PZG; 2nd by K9QLP, and motion carried.

Scholarship/STEM: no report, W9IPR was not present; Pat reminded all that there would be a scholarship committee meeting via zoom on the 15th.

Tech committee: no report, as W9DHI was not present.

OLD business: Stan WB9RQR and Nancy KC9FZK will be picking up the center Key prior to the meetings. W9GA is working on our club update at ARRL. W9JI, WB9RQR

and W9MXQ are working on a club history project, gathering, and scanning old newsletters and the like with the intent of putting digital copies up on the club website.

NEW business: N9UUR brought up the fact that we are exceeding our club income over the last couple years, and suggested we look at increasing our dues pricing. [\$15 > \$20] and several members were in agreement. This will lead to a formal motion in the near future. Elections are coming up; the club needs nominees for 1st VP and 2nd VP, please consider stepping forward! Fred K9IGO asked about simple tech questions and was advised to bring these forward outside of the business section of the meeting. Gary K9DJT asked why we were continuing to conduct a zoom link during the meetings, which he felt was taking away from the general meeting. Others stressed that the zoom hybrid model had other advantages. Bill K9GN talked about various radio clubs that were conducting HR 'Boot camps' for which he had joined one club doing this successfully.

Adjournment: WB9RQR moved to adjourn, K9DJT 2nd, motion carried; time ending was 8:31 PM. There were 18 in-person attendees, 16 Zoom attendees.

Respectfully submitted,



Kenneth Boston W9GA, Secretary



Upcoming ORC Monthly Meeting Programs

de: Pat Volkmann, W9JI

- December – Fred LeMere KD9IGO - Horizontal Loop Antenna and Feedline
- January – Elections, “The Secret Listeners” video
- February – Open

We really do need some programs for the coming 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 Volkmann, W9JI, at orc_pat_w9ji@outlook.com to discuss your idea for a program.

ORC Meeting Agenda

December 14, 2022

- | | |
|---|--|
| 1. 7:15 – 7:30 PM
Check-In and Introductions | 7. 2 nd VP Report:
Bill Greaves (K9GN) |
| 2. 7:30 PM Call to Order:
President Pat Volkmann (W9JI) | 8. Repeater VP Report:
Gregg Lengling (W9DHI) |
| 3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc. | 9. Secretary’s Report:
Ken Boston (W9GA) |
| 4. Presentation:
Fred LeMere, KD9IGO
Horizontal Loop Antenna and Feedline | 10. Treasurer’s Report:
Gary Bargholz (N9UUR) |
| 5. President’s Update:
Pat Volkmann (W9JI) | 11. Committee Reports |
| 6. 1 st VP Report:
Ben Evans (K9UZ) | 12. OLD BUSINESS |
| | 13. NEW BUSINESS |
| | 14. Adjournment |



**Next Month's ORC Meeting
Hybrid In-Person/Zoom Meeting
11 January 2023**

Program
Elections
"The Secret Listeners" Video

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