



The *ORC* Newsletter

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



ORC Repeaters on 146.97 (-127.3PL), 224.18 (-127.3PL), 443.75 MHz (+127.3PL) - Callsign W9CQO

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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.

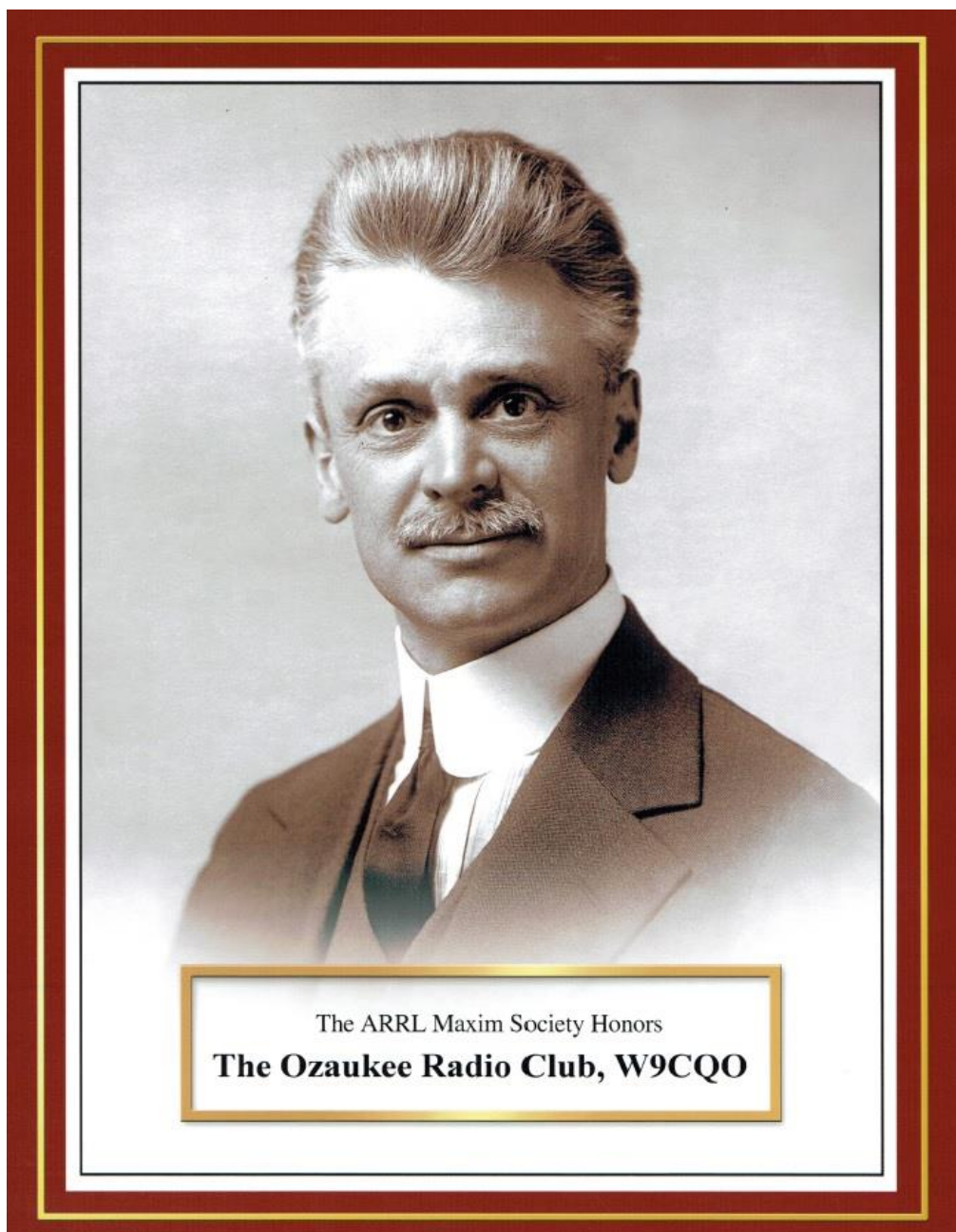
Those who were at the Field Day site know that my time there was limited. My daughter was expecting a baby to be born at any time and I needed to ready to leave on short notice. The baby just missed Field Day, being born early Monday morning. Mother and baby are doing well. We welcome Henry McCarthy 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



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April 28, 2022

The Ozaukee Radio Club, W9CQO
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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

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**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.

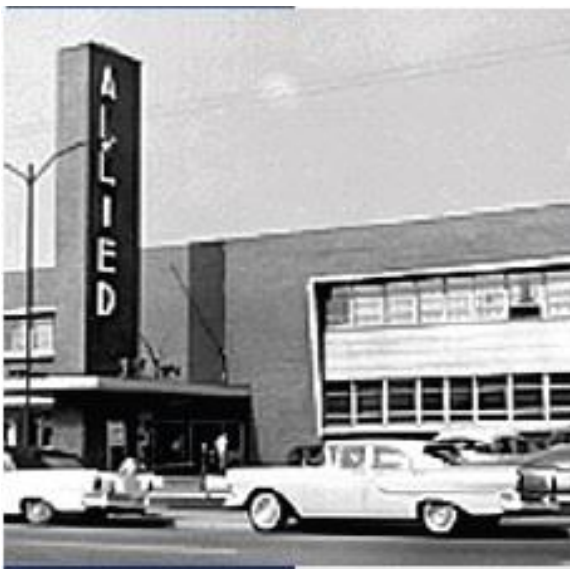
Our regular Ozaukee Country Amateur Radio Emergency Coordinator (ARES EC, Don Zank, AA9WP, has taken the month off and his slot is filled by ARES EC, Vic Schier, WT9Q (our fellow ORC Member). Vic is EC of Washington County, our neighbor to the west and home to many ORC Members. Stan Kaplan, WB9RQR, in 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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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

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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.

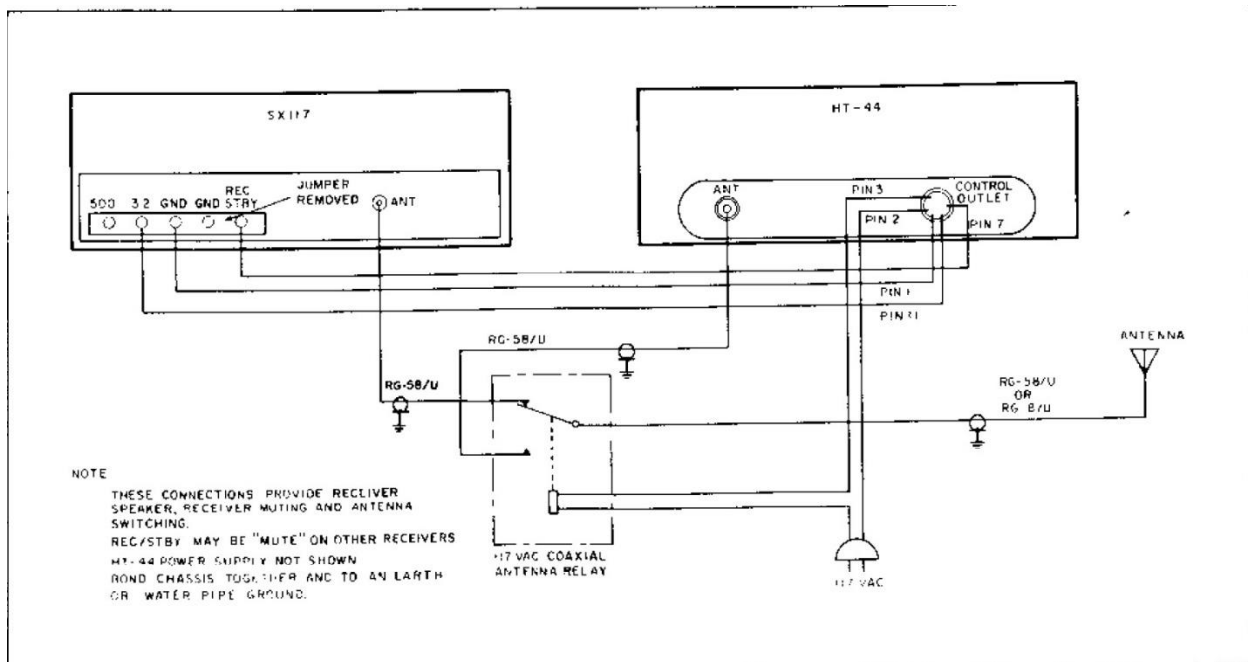
The HT-44 Transmitter was a very late transmitter for its time that used the phasing method of generating single sideband (SSB) signals. This article is not a comparison of the various methods available to generate SSB – many well written articles appear on the internet on this subject. Suffice it to 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 receiv-

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.



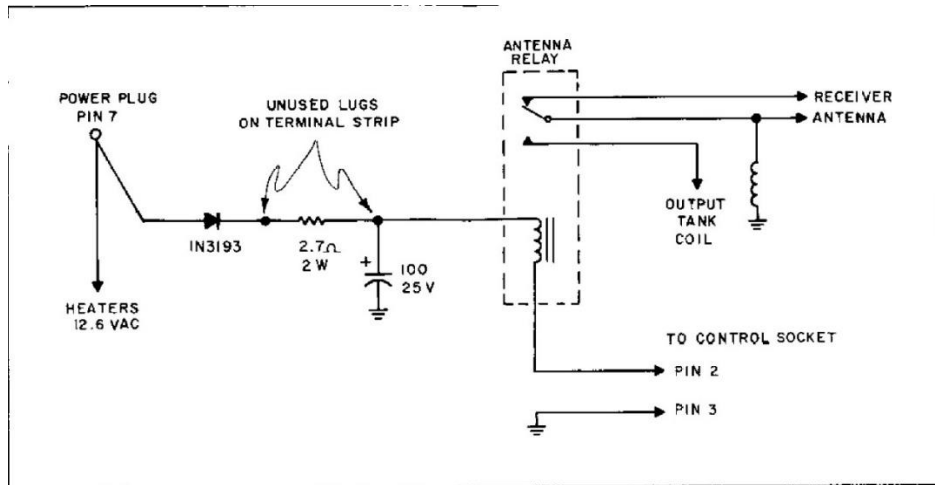
Interconnection Diagram – Hallicrafters SX-117 Receiver and HT-44 Transmitter
Hallicrafters HT-44 Operations Manual

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.

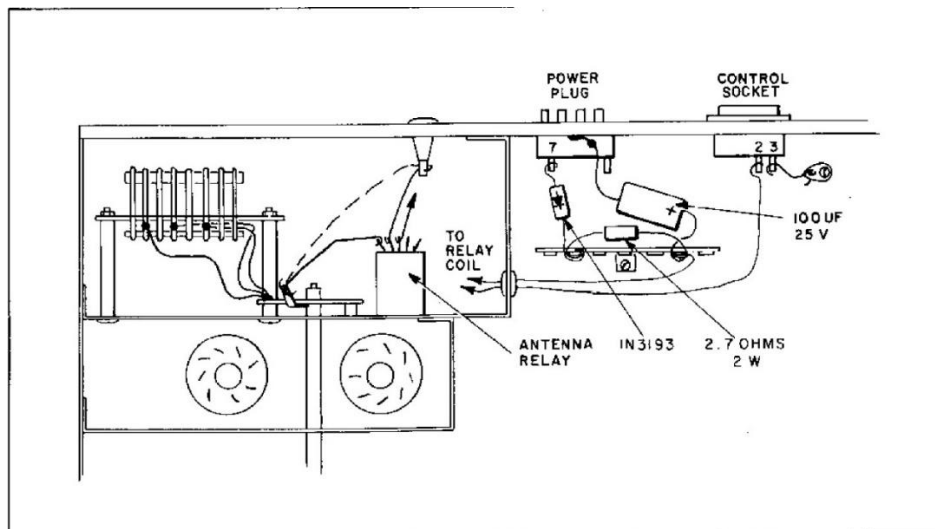
This was a popular modification on the HT-44, so it is a good idea to look for an installation done by a previous owner if you find and acquire one of these transmitters. If you find it installed, confirm good operation of the relay, the diode, and the electrolytic capacitor.

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

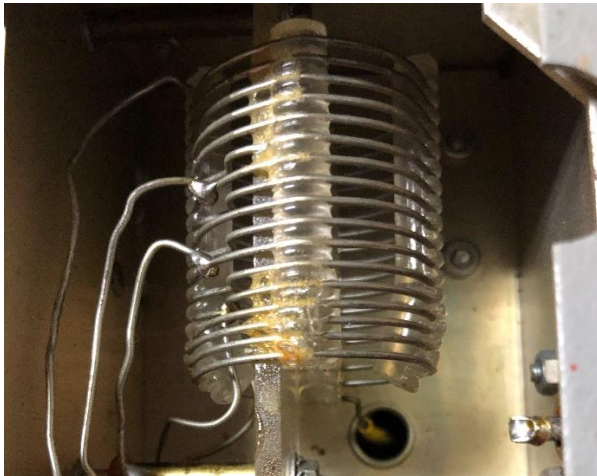


W9MXQ

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.

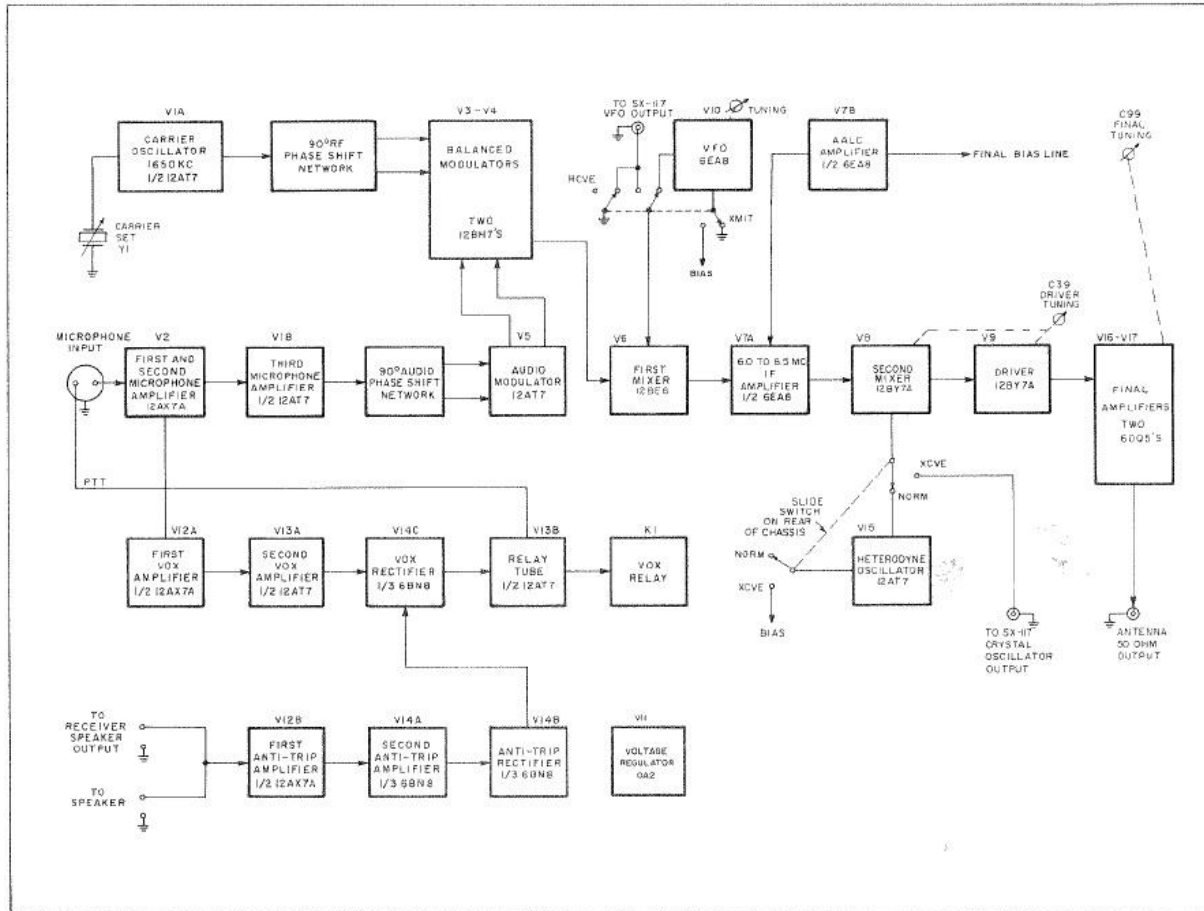
What once was – but is no more . . .
The Home of Hallicrafters Past and now empty



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.

© W9MXQ

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
511 & Kostner Aves., Chicago, Ill. 60624

P.S. We'll send you complete specifications twice as fast, too!

Export: International D.N. - Hallicrafters, Canada: Radio Sales Company, Montreal, P. Q.

1

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!

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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.

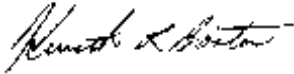
Scholarship/STEM: Tom W9IPR would like some help in collecting some of the scholarship fund donations from the barn to be conveyed to the Cedarburg recycling event to be held soon.

OLD business: No old business was presented

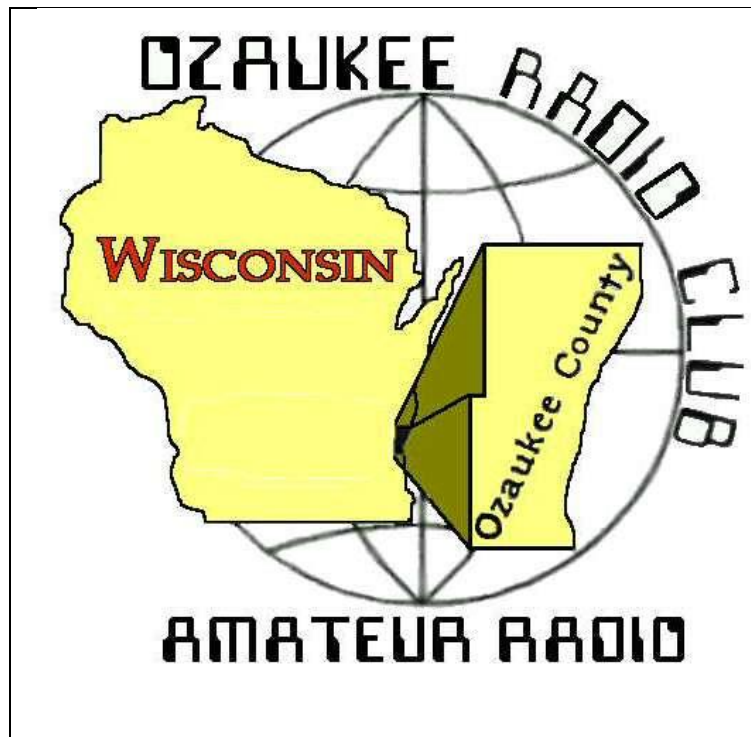
NEW business: Gregg W9DHI informed us that KC9WUI is now an SK, and much of his equipment has been given to the club, for sale, with proceeds to be split between the family and the club. A suggestion was made to give club nametags to new members, which will be taken up by the board.

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