



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 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

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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!!

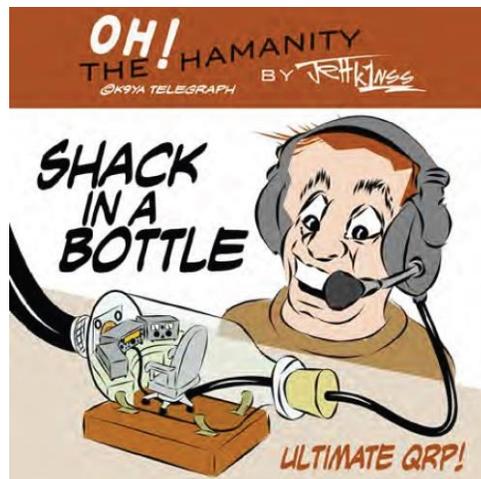
Don't forget the great regular column articles, too, from Don Zank, AA9WP, in his Ozaukee County ARES Column, Stan Kaplan, WB9RQR, in his Computer Corner Column, Bill Shadid, W9MXQ (your Editor) in his Vintage Amateur Radio Column, and Gary Sutcliffe, W9XT, in his "On the Air," Column- complete with 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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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)

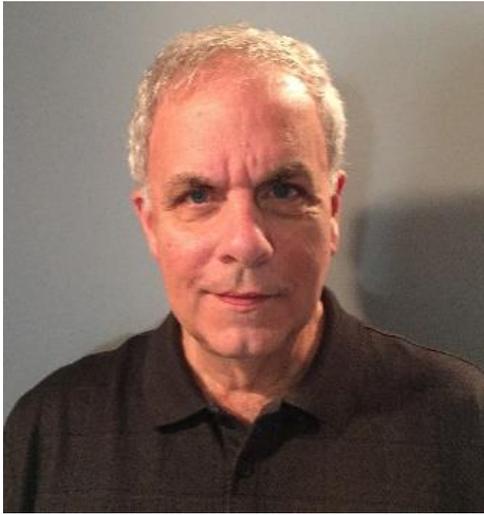


A Timeless Classic
The Hallicrafters SX-100 Mark 1B – Vintage 1955 – 1961

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.



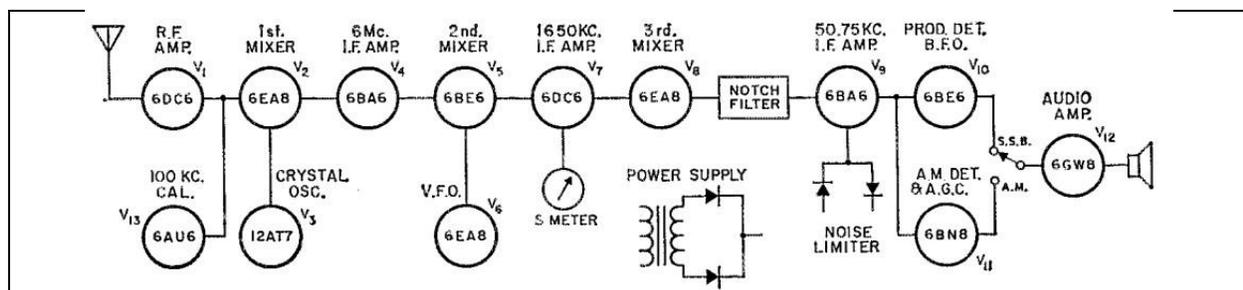
Hallicrafters HA-10 LF/MF Tuner

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,

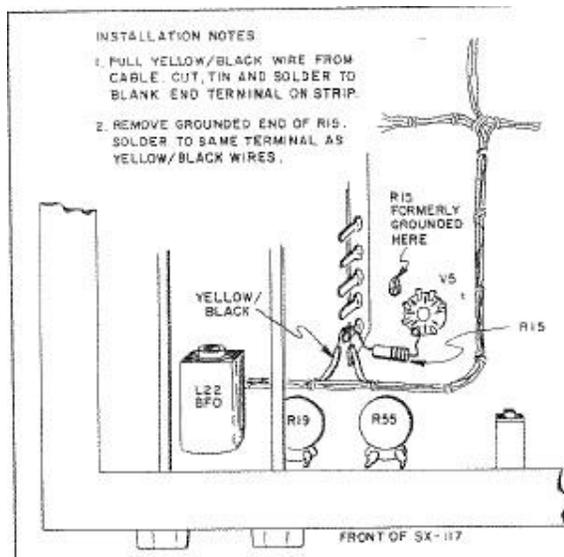
A Block Diagram of the SX-117 appeared in the aforementioned QST Review:



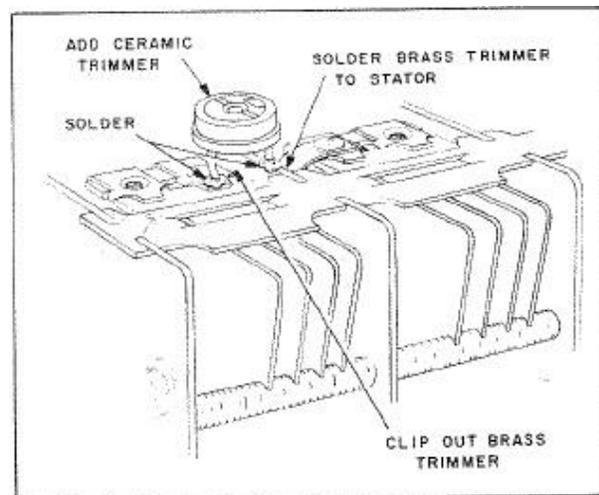
The triple conversion design of the SX-117 is evident here. The presence of the Notch Filter in the SX-117 design is an interference tool that remains appropriate even on today's bands. By the time of the SX-117, the Product Detector, as shown in the block diagram was becoming universal in SSB receivers. 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.



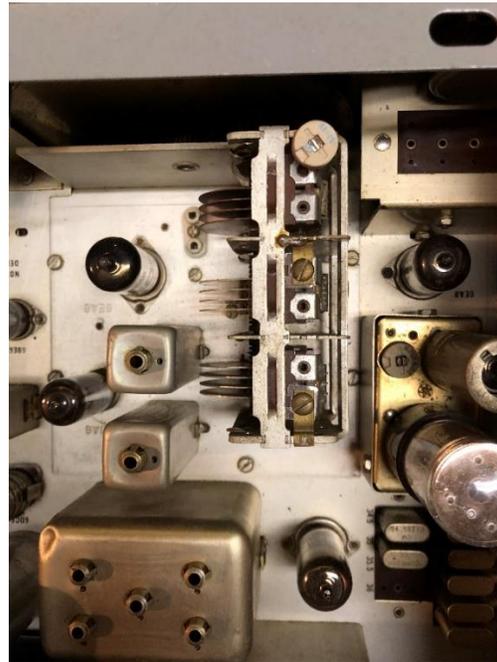
Ceramic Trimmer modification for SX-117 Receivers before Serial Number 117004.

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



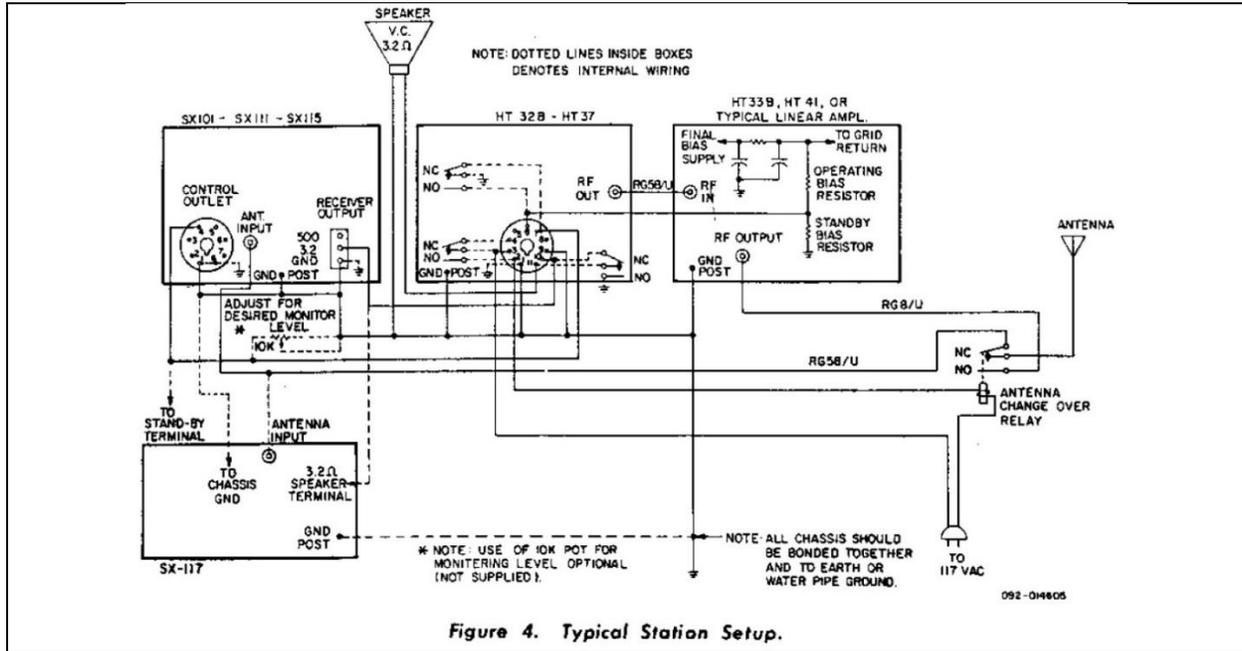
Notice in this closer view that the brass clip – that was the original compression trimmer – has been removed in the process of adding the new trimmer. The trimmer was supplied by Hallicrafters to customers.

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

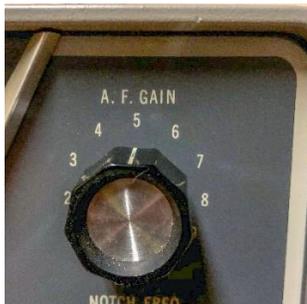
Connecting the SX-117 to the outside world – like a transmitter, for instance – was an interesting and somewhat frustrating experience if you used the Receiver’s Operating

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



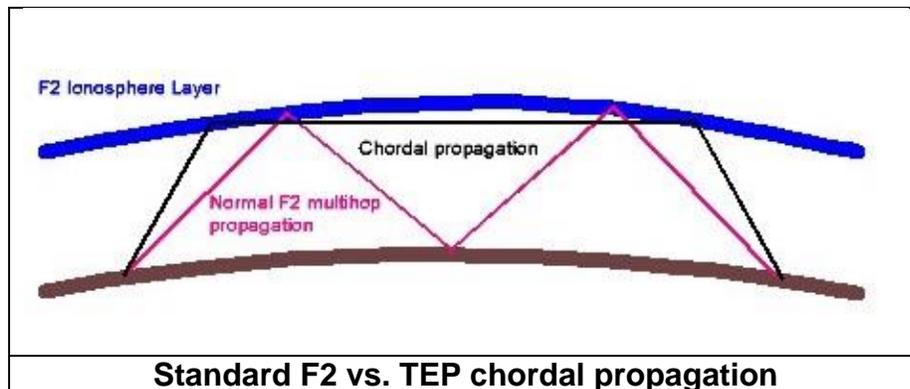
The big June event is, of course, Field Day. Barring something exceptional, this will be my 52nd consecutive time operating it. It starts early afternoon on Saturday, June 25, and runs for 24 hours. Set up will begin on Friday.

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.



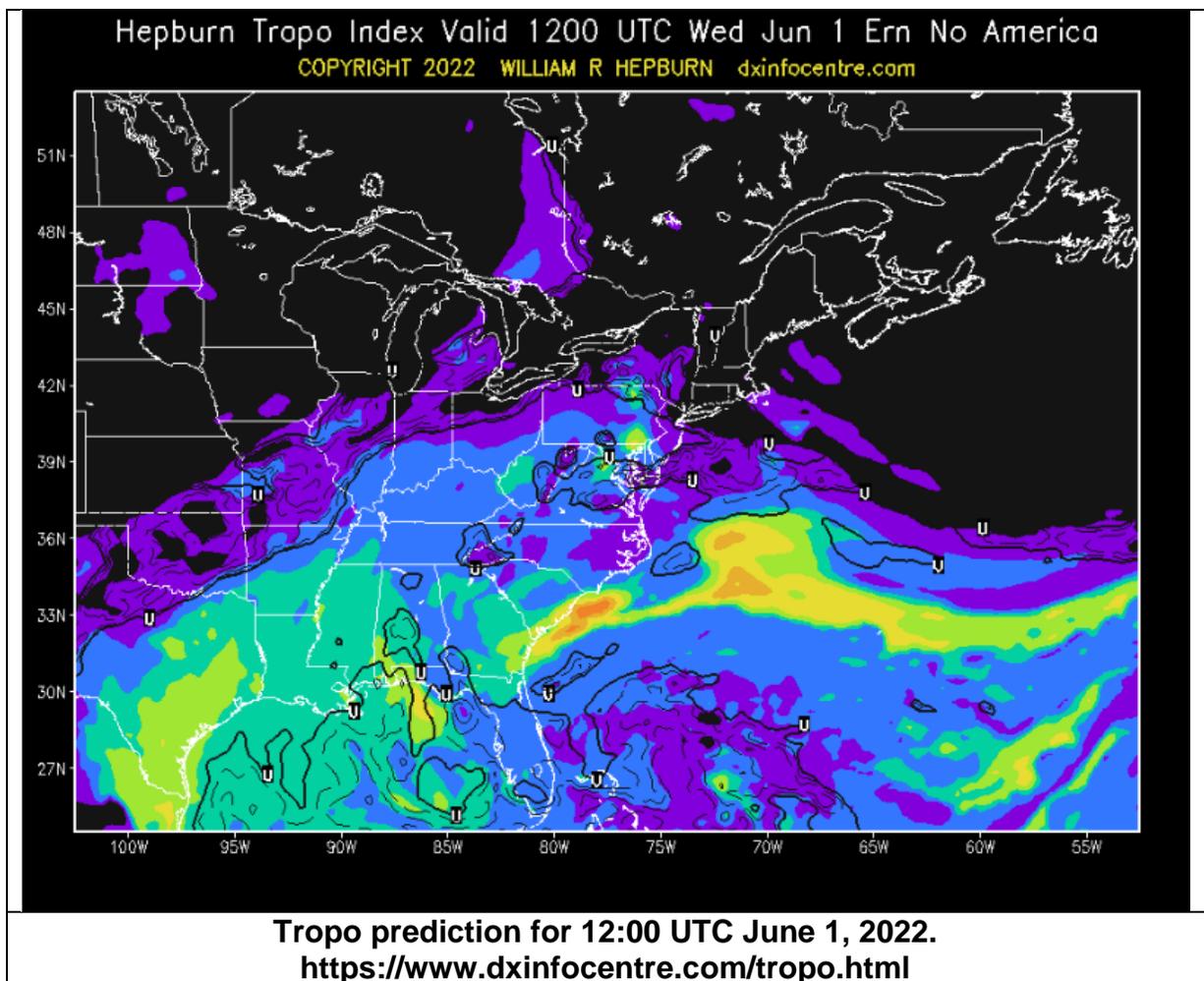
Unfortunately, we are too far north to couple into TEP directly. However, sometimes we can use another propagation mode to get to the Gulf region to take advantage of any TEP. There have been other times when I got a single

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.

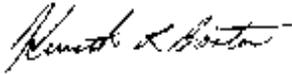
Scholarship/STEM: Tom W9IPR is looking for volunteers to aid in moving the S.T.E.M. program along; with an eye to taking the program to the Cedarburg school system.

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 |

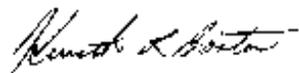
ANNOUNCING!!!!!!

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