



# The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO  
Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XXX

January, 2018

Number 1

## From the President

*De Kevin Steers (K9VIN)*



From the Prez,

Happy New Year! And what a stark start to the year it has been. Last week I measured -19 degrees Fahrenheit on the thermometer up north, and made no attempts to do anything outside, other than fetch firewood. I had some time off after my Christmas holiday and spent it cabin-bound, gladly, playing Radio. I added a few countries to the log, and always enjoy it when my youngest daughter, Lily, climbs on my lap, puts her head on my chest, and listens to the voices coming over the

airwaves.

If nothing else, the cold weather has taught me plenty in the past weeks.

Rotors do not seem to like to move when it is below -10 degrees Fahrenheit.

The sound of a lake 'making ice' can actually wake a person up in the morning.

The charge of a car battery can protect it from freezing. Apparently, my car sat for a week and with a weakened charge, the battery froze solid, nearly bursting. Luckily, it regained its viability after being thawed and given a good charge.

Be sure to attend our January 10 meeting to vote for Your 2018 Ozaukee Radio Club Board Members! This year could prove to have some hotly contested races☺, and Every Vote Counts.

Lastly, if you have ideas or topics for a program at one of our upcoming meetings, please reach out to a board member. You don't need to be an expert on the topic, but if it's a newer topic or technology, you likely know more about it than any of us oldsters, please don't feel intimidated! Heck, we are polite enough to not correct presenter, anyway! ☺

Let's make 2018 a fantastic year in Amateur Radio; it starts with you!

73, K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Welcome to 2018! This year's DX activity will start with a bang. The biggest DXpedition in years will start around the 3<sup>rd</sup> week of January. This is the DXpedition to 3Y0Z – Bouvet Island.

Bouvet is about 1000 miles north of Antarctica. If you drew a line between the southern tips of South America and South Africa, Bouvet would be about halfway between them. It is a nature reserve and administered by Norway.

Bouvet is a small volcanic island. It has high cliffs and lots of ice as well as being one of the most remote places on earth. It is said more people have flown in space than have visited Bouvet Island. Because of that, it is rated #2 on the all-time DX wanted list. (North Korea is #1.) The last operation there was in 2008.

Getting there is very difficult. Sailing time will be 10-12 days through high seas. Between travel and time on the island the operators will be gone for about 6 weeks.

It is estimated that that the trip will cost around \$800,000. Based on estimated number of contacts that comes out to about \$6 per QSO. About half the cost will be paid by the members of the DXpedition. The rest is made up by contributions from foundations, ham radio businesses, radio clubs and individual ham contributors.

There are 20 operators from 8 countries. I know a few of them personally and most of the rest by reputation. These are the best operators. Of course, there are many team members who are not going but are essential to the operation. They expect to arrive on the island about January 23. The people and equipment will be helicoptered to the island as soon as conditions allow. Wind and fog could delay that for several days.

They plan to operate all the HF bands, CW, SSB, and RTTY. They will also be on FT8, but only at times contacts with other modes are not possible. Be sure to read their write up on their web page on how to work them on FT8. You will not work them unless you follow their plan. For the VHF oriented, they plan on being on 6M and 2M moon bounce.

With most openings being north-south and not over the pole, we should have pretty good propagation on several bands. Openings on 10 & 12M will be short with weak signals, but are possible. Things will improve on 15M. The bands between 40 and 17M will be the best bands from here. They will be active on 80 & 160. The low noise levels there will be helpful in digging out weak signals. Their web site has a lot of information on propagation to the island, including some band by band animated propagation maps and a link to a personalized propagation forecast. Expect the pile ups to be really huge the first week or so.

The web site for the DXpedition is <https://www.bouvetdx.org/>. Even if you are not a DXer, it is worth a quick visit to the site. The amount of effort for this operation is mind boggling.

With all the excitement over Bouvet it is easy to overlook the other DXpeditions in January. The most interesting is to Eritrea by an international group. They will be using the call sign E31A January 14-23. Operation will be on 160-10M, CW, SSB and RTTY.

Another good one is to the Comoros Islands in the Indian Ocean January 28-February 1. A group of Italians will be operating 80-10M, SSB, CW and digital. The call sign will be D68I. I have always been a fan of the Olympics, especially the winter ones. There will be a special event station on from South Korea. The call is DT23WOP. They are on the air now and will continue through the end of February.

As usual there are a number of announced operations by one or two hams. Many of them are vacation style, meaning they will be on the air when not doing other vacation activities.

There are a number of contests this month as well. The ARRL RTTY Round Up starts Saturday January 6 at 18:00 UTC (noon local). It ends at 2400 UTC Sunday (6:00 PM local). Basically, work anyone, anywhere using RTTY on the 80-10M except for the WARC bands. There are single operator and single operator unlimited. The unlimited class can use spotting assistance. These are split into low power (<150W) and high power (>150W). Send a serial number and state. DX station sends a signal report and serial number. This is a good contest for those working on a digital DXCC or WAS award. More info at <http://www.arrl.org/rtty-roundup>

The January VHF contest is the weekend of January 20-21. Operations start at 6M and up. The exchanges are grid squares. Of the three ARRL VHF contests, this is probably the least active. It does not have the Es potential of the June contest or the tropo possibilities of the September running. Winter weather can be an issue for the rover stations. Full information is at <http://www.arrl.org/january-vhf>.

The January CW and Phone North American QSO parties are this month. The CW event starts at 1800 UTC (noon) Saturday January 13 and runs 12 hours. You can only operate 10 of them. SSB is on January 20. RTTY is in February. There is another set in the summer. It has been discussed many times in the past so we won't go into details here except the power limit is 100W and you send your name and state for the exchange. Rules can be found at <http://www.ncjweb.com/NAQP-Rules.pdf>.

Probably the biggest January contest is the CQ World Wide 160 Meter Contest. It starts at 2200 UTC (4:00 PM local) on January 26 and runs 48 hours. Maximum operating time is 30 hours. This contest has QRP, low and high power categories. There are assisted and unassisted categories. There is an interesting new rule for the assisted categories. Normally the station must all be contained in a 1000' or other sized diameter circle. In this contest assisted operators can use a remote receiving station located within 1000KM of the transmit antenna. This is quite interesting. Will it give stations with the ability to do it an unfair advantage or will it give contester with high noise levels a fighting chance to hear something? I know a couple of hams who have cottages up north and go up there to operate 160M contests because of the noise situation. Rules for the CQ 160M contest are at <http://www.cq160.com/rules.htm>

Conditions on 160 have been pretty good this season. During the Stew Perry Top Band DX Challenge the on December 30 I watched the Badgers win the Orange Bowl instead of operating. Afterwards I worked a half dozen stations out of Europe while running just 100 watts. That wraps up January. With the really cold weather we have been having I am starting to envy the guys with the boat anchor tube rigs that keep their shacks warm!

# THE COMPUTER CORNER

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THE COMPUTER CORNER


## *No. 239: Safeguarding Your Data*

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It is not unusual for me to run across good articles that are worthy of reprinting in the Computer Corner column. This is another one, from CERT, as was last month's. Reprinted by permission granted to Stan on 29Nov2017. Copyright 2017 US-CERT All Rights Reserved.

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# US-CERT

UNITED STATES COMPUTER EMERGENCY READINESS TEAM

## Security Tip (ST06-008) Safeguarding Your Data

Last revised: January 24, 2017. **Author** US-CERT Publications. It is especially important to take extra security precautions when multiple people use your computer—or when you store sensitive personal and work-related data on your computer.

**Why isn't "more" better?** Maybe there is an extra software program included with a program you bought. Or perhaps you found a free download online. You may be tempted to install the programs just because you can, or because you think you might use them later. However, even if the source and the software are legitimate, there may be hidden risks. And if other people use your computer, there are additional risks.

These risks become especially important if you use your computer to manage your personal finances (banking, taxes, online bill payment, etc.), store sensitive personal data, or perform work-related activities away from the office. However, there are steps you can take to protect yourself.

### How can you protect both your personal and work-related data?

- **Use and maintain anti-virus software and a firewall** – Protect yourself against viruses and Trojan horses that may steal or modify the data on your own computer and leave you vulnerable by using anti-virus software and a firewall. Make sure to keep your virus definitions up to date.
- **Regularly scan your computer for spyware** – Spyware or adware hidden in software programs may affect the performance of your computer and give attackers access to your data. Use a legitimate anti-spyware program to scan your computer and remove any of these files. Many anti-virus products have incorporated spyware detection.
- **Keep software up to date** – Install software patches so that attackers cannot take advantage of known problems or vulnerabilities. Many operating systems offer automatic updates. If this option is available, you should turn it on.
- **Evaluate your software's settings** – The default settings of most software enable all available functionality. However, attackers may be able to take advantage of this functionality to access your computer. It is especially important to check the settings for software that connects to the Internet (browsers, email clients, etc.). Apply the highest level of security available that still gives you the functionality you need.
- **Avoid unused software programs** – Do not clutter your computer with unnecessary software programs. If you have programs on your computer that you do not use, consider uninstalling them. In addition to consuming system resources, these programs may contain vulnerabilities that, if not patched, may allow an attacker to access your computer.



- **Consider creating separate user accounts** – If there are other people using your computer, you may be worried that someone else may accidentally access, modify, or delete your files. Most operating systems (including Windows, Mac OS X, and Linux) give you the option of creating a different user account for each user, and you can set the amount of access and privileges for each account. You may also choose to have separate accounts for your work and personal purposes. While this approach will not completely isolate each area, it does offer some additional protection. However, it will not protect your computer against vulnerabilities that give an attacker administrative privileges. Ideally, you will have separate computers for work and personal use; this will offer a different type of protection.
  - **Establish guidelines for computer use** – If there are multiple people using your computer, especially children, make sure they understand how to use the computer and Internet safely. Setting boundaries and guidelines will help to protect your data.
  - **Use passwords and encrypt sensitive files** – Passwords and other security features add layers of protection if used appropriately. By encrypting files, you ensure that unauthorized people can't view data even if they can physically access it. You may also want to consider options for full disk encryption, which prevents a thief from even starting your laptop without a passphrase. When you use encryption, it is important to remember your passwords and passphrases; if you forget or lose them, you may lose your data.
  - **Follow corporate policies for handling and storing work-related information** – If you use your computer for work-related purposes, make sure to follow any corporate policies for handling and storing the information. These policies were likely established to protect proprietary information and customer data, as well as to protect you and the company from liability. Even if it is not explicitly stated in your corporate policy, you should avoid allowing other people, including family members, to use a computer that contains corporate data.
  - **Dispose of sensitive information properly** – Simply deleting a file does not completely erase it. To ensure that an attacker cannot access these files, make sure that you adequately erase sensitive files.
  - **Follow good security habits** – Review other security tips for ways to protect yourself and your data.
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Happy Computing!

# Vintage Amateur Radio

De Bill Shadid, W9MXQ



Collins Radio Company was certainly on a mission to reinvent the ham station back in the 1950's and 1960's. Last month we talked "The Day the Universe Changed" and Collins announced the game changing S-Line Station. Now we come to the next big step with the 1959 introduction of the KWM-2 Transceiver. This month we will also see the 30S-1 and the 30L-1 companion Linear Amplifiers. The 30L-1 Desktop Linear Amplifier is still often seen in a modern ham station. Recall the 30L-1 was shown last month with the S-Line.

Here is the KWM-2A Station that is in operation at W9MXQ . . .



**Collins KWM-2A Transceiver, 312B-5 External VFO, 30L-1 Linear Amplifier  
Also, Electro Voice 638 Microphone and Heathkit HD-1410 Keyer**

(W9MXQ Shack Photo)

**(Not shown is the Collins 516F-2 AC Power Supply – installed out of this view)**

The KWM-2 (and its extended frequency range sister, the KWM-2A, pictured above), took the KWM-1 Triband Transceiver concept (20-15-10 meters) and added 80 and 40 meters. The design basis for the KWM-2 was changed to the recently introduced S-Line rather than the KWM-1's reliance on technology coming from the 75A-4 Receiver and KWS-1 Transmitter. Many consider the KWM-2 as a 75S-1 Receiver and 32S-1 Transmitter (the original S-Line units) in a single cabinet. That is a very nice thought, but it is not so. While many elements were part of the separate units, a true transceiver is the combination of shared components and circuits – not separates residing in a single box.

I would draw your attention to my previous installment on the S-Line separate receiver and transmitters for an explanation of the Standard and Expanded Coverage radio differences. In this case the KWM-2 was the Standard Coverage and the KWM-2A was the one with Expanded Coverage. (For this article, unless addressing a specific difference, I will refer simply to KWM-2.)

The KWM-2 lacked any sort of interference fighting tools other than the very selective Collins Mechanical Filter in the i-f section of the radio. The excellent -6 dB @ 2.1 kHz and -60 dB @ 4.2 kHz bandwidth (for a slope factor of 2:1) does a good job of keeping out of bandwidth interfer-

ence away from the receive audio. This performance is in keeping with what we expect from i-f filter performance today.

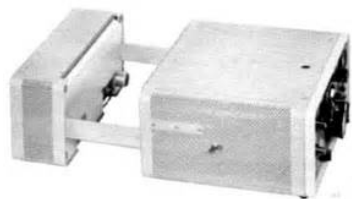
Some operators felt they needed more interference rejection for their use of the transceiver. Waters Manufacturing, Inc. came to their assistance with a cleverly designed Q-Multiplier add-on that installed a circuit module with controls that were mounted piggyback to the Power/Function Switch. As if that was not enough, there is a factory wired phono jack on the chassis of the KWM-2 that is a direct input for a Heathkit (or another brand) Q-Multiplier. I have a Heathkit GD-125 Q-Multiplier that works perfectly with my KWM-2A and even matches the Collins radio in color, if not styling. A Bing™ or Google™ search on “Q-Multiplier” will provide more information on this remarkable device. Heathkit and National, and others made external Q-Multipliers in some form.

There were many accessories for the KWM-2 Transceivers. One is shown in the picture at the intro to this article – the 312B-5 External VFO. Those units together allowed:

- Transceive with the KWM-2 VFO
- Receive with the KWM-2 VFO and Transmit with the 312B-5 VFO.
- Receive with the 312B-5 VFO and Transmit with the KWM-2 VFO.

The separation between receive and transmit was essential with the KWM-2 on CW. Due to a design flaw in the KWM-2, the offset to allow one to hear the other station was absent and was never fully corrected as long as the KWM-2 was manufactured.

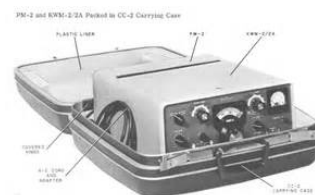
Collins offered a portable AC Power Supply – in compact format – for the KWM-2. Called the PM-2, it clamped to the back of the radio and provided for a self-contained unit that could merely be plugged into an AC outlet for operation. Even a CC-2 Carrying Case was marketed to make taking the KWM-2 on a road trip . . .



**PM-2 Sliding into KWM-2**  
(CCA)



**PM-2 (left) on KWM-2**  
(CCA)



**PM-2 and KWM-2 in a Collins CC-2 Case**(CCA)

The KWM-2 design focused on mobile operation with a 351D-2 Mobile Mount that allowed for “slide-in” connections to the radio – no hand connection of power, speaker, or antenna leads were required. The mobile mount folded away when not in use thus making for minimal intrusion onto the riding area of the front seat when the radio was not installed.

For power while driving, the KWM-2 used the MP-1 Mobile Power Supply – designed to be mounted on the engine side of the fire wall and provided a cable that went through the firewall and into the cockpit area of the car to the 351D-2 Mobile Mount.

Also for mobile use, Collins offered the 136B-2 Noise Blanker that mounted under the top cover of the radio using screws that came through the ventilation holes in the cover. It was a rather inglorious mounting. I have a 136B-2 that I have tried but have learned that its primary noise target was the ignition noise prevalent in automotive ignition systems of the day. I did not permanently mount the 136B-2 in my KWM-2A. One interesting design parameter of the 136B-2 was based on Collins’ engineering research that showed noise to peak at approximately 40 MHz. To the end, the 136B-2 had a connection to attach the automobile’s broadcast radio to a

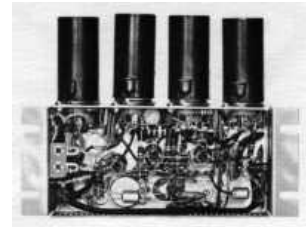
noise sensor terminal connector on the Noise Blanker. That antenna was to “see” the noise signal and use it for a trigger for blanking operation.



**MP-1 Mobile DC  
Power Supply(CCA)**



**351D-2 Mobile  
Mounting Bracket(CCA)**



**136B-2 Noise Blanker  
(CCA)**

Another interesting accessory for the KWM-2 was the 399B Novice Adapter. Those of you in ham radio long enough will remember that Novices on HF were limited to 75 watts input power on CW only. Power was easy enough to set during the CW tune-up process, but another requirement was that the transmitter had to be crystal controlled. This device accommodated crystal control on up to four different crystals.

To compliment portable operations, Collins offered a Tape Reel Dipole Antenna, the model TD-1. It would extend a metal ribbon tape on both legs that were calibrated to show proper length for a resonant installation. The product included nylon rope for attaching each end to a support point as well as a length of RG-58 coaxial cable feedline.

For an installation not requiring a separate VFO – as the 312B-5 shown above – there was a 312B-4 Station Console shared with the separate S-Line stations. Like the 312B-5 it includes a wattmeter, speaker, and phone patch – but not the External VFO function.



**399B-2 Novice Adapter  
(CCA)**



**TD-1 Portable  
Dipole Antenna(CCA)**



**312B-4 Station Console  
(CCA)**

Other accessories as diverse as Mounting Plates for aircraft use (351E) and Rack Mounting Adapters (351R). A wide range of microphones were available in the SM-1, SM-2, and AM-3 Desk Microphones as well as the MM-1 Mobile Microphone and the MM-2 Headset were ready for any installation reality. Also, there were several custom-made Samsonite™ Carrying Cases for KWM-2 and S-Line portable use (CC-1, CC-2, and CC-3). To permit complete 3.5 to 30 MHz spectrum coverage, a set of crystals for every 200 kHz range were included in the CP-1 Crystal Packet. That CP-1 Crystal Packet is a part of the of the W9MXQ station using the KWM-2A here.

Two major accessory items for the KWM-2 Transceiver (as well as the other S-Line Receiver-Transmitter Stations) were some excellent Linear Amplifiers. Those included the very popular 30L-1 Desktop Linear Amplifier and the somewhat less available 30S-1 Floor Mount Linear Amplifier as shown here . . .





(W9MXQ Shack Photo)

The Desktop 30L-1 Linear Amplifier had an input of 1,000 watts (DC and PEP) with a CW and SSB output of 500 to 600 watts input. It had a solid-state power supply rectifier system and used four 811A Triode final amplifier tubes.



(CCA)

The Floor Mounted 30S-1 Linear Amplifier had an official input of 1,000 watts (DX and PEP). At about the time of the introduction of this amplifier there began an understanding that PEP input was generally "twice average DC" so amplifiers of the time were tuned up at a lower plate voltage to allow for legal DC tuning at 1,000 watts. After the tuning procedure was done, the amplifier was switched to a higher voltage to run an actual peak input of 2,000 watts. (Therefore, older amplifiers, including the 30S-1, have a CW and SSB switch position.) The 30S-1 had a solid-state lower voltage system, high-vacuum 3B28 high-voltage rectifiers, and an Eimac 4CX1000A Ceramic Power Tetrode in its amplifier circuit. What this amplifier lacked in desktop compactness it made up for in having a fantastic station presence!

There are a few more points about the KWM-2 Transceiver's history. One of these may be due to inventory supply issues tied to discrepant material received at the factory (or one of many other reasons). The front escutcheon of the radio could have some different model numbers other than the official KWM-2 or KWM-2A model names. Note below a picture of the escutcheon and some variations I have noted over the years.



(W9MXQ Shack Photo)

Shown is the front panel escutcheon for the KWM-2A at W9MXQ. For a Standard Coverage unit this would be marked as KWM-2. However, over the years I have noted the following variations:

- KWM2
- KWM2A
- KWM2-A

No one has ever offered any good explanation for this but, to the disappointment of the collector, the appearance of one of these deviations does not seem to impact value – up or down. I have never seen this kind of variation on other S-Line components.

The other change shows a Dial Brake added to the radio near the end of production. This picture below shows the minimal appearance changes over time compared to the picture at the beginning of this article . . .



(CCA)

Very late production KWM-2A

First, see the late version Rockwell Collins logo over the escutcheon. The Dial Brake is visible at the lower left side of the main tuning knob. The product remained all vacuum tube design right down to the accessory 312B-5 AC Power Supply that included tube rectifiers.

The KWM-2 was manufactured in nearly original form into the 1970's and was perhaps the very last of the S-Line radios to be available. The KWM-2 was even more of a "game-changer" than the S-Line Receivers and Transmitters. Think about the impact of a single package with a complete station – the "Transceiver," as we like to call it. What one of us does not use this concept today? The sophisticated, ubiquitous SSB/CW station transceiver owes its existence to the KWM-2 – or at the very least, its predecessor Collins KWM-1 Tri-Band Transceiver. Suffice it to say it is owed to Collins Radio Company.

I want to thank my long-time friend, Phil Rebersburg, KC9CI, for helping find and add this gem of a radio and accessories to my collection.

# Elections of 2018 ORC Officers at the January 10<sup>th</sup> Meeting

De Ken Boston (W9GA)

Here is the slate of officers for this election:

<b>President</b>	<b>K9VIN, Kevin Steers</b>
<b>1<sup>st</sup> V. Pres.</b>	<b>W9JI, Pat Volkmann</b>
<b>2<sup>nd</sup> V. Pres.</b>	<b>K4WTH, Robert Eskola</b>
<b>Rptr V.P.</b>	<b>KC9ONY, Tom Trethewey</b>
<b>Secretary</b>	<b>K9UZ, Ben Evans</b>
<b>Treasurer</b>	<b>N9UNR, Dave Barrow</b>

I am pleased that the incumbents are willing to serve another term, and a new face has stepped in to fill the 2<sup>nd</sup> VP position left open when Dave Carpenter had to back away from his position. In order to be eligible to vote, you will have had to have paid your annual dues of \$15.00 before or at the meeting. We will be looking for any additional nominees to write in at the meeting just prior to taking a vote.

Keep in mind that we will be looking for nominees for any of the club awards that are outlined in the club bylaws, as accessed from our website. Please consider any worthy candidates for Ham of the Year, and Turkey of the Year. Other awards such as operator of the year, contesteer, public service, committee, project, club service are described, and can use your input. Our popular program of the year award can be selected from the following list:

Feb 2017	W9KR	Collins KWS-1 Mods
March 2017	W9JI	SDR w/USB System
April 2017	KB9JMH	VIPER Ride
May 2017	W9JI	National HRO50/60 + History
July 2017	WA9JOB	BC Tower Tuning/Detuning
Aug 2017	K9JAT/W9ZMR	Conductivity of Materials
Sept 2017	AA9W	Early Television History
Oct 2017	W9FAD	AC Induction Motors
Nov 2017	W9JI	Regenerative Receivers
Dec 2017	W9MXQ	Collins Gold Dust Twins

(NOTE; Jan and June meetings were elections and FD prep procedural meetings)

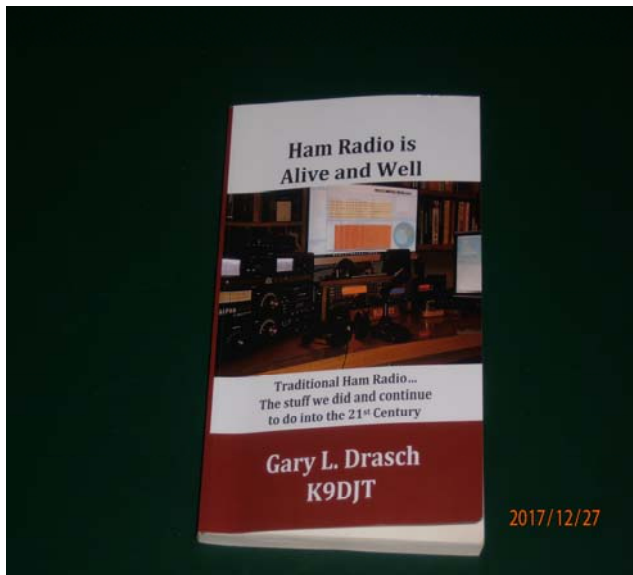
Pick your favorite, and we will collect your choices at the February meeting, along with votes for Ham and Turkey of the year.

# UPCOMING EVENTS

## *Membership meeting & elections – January 10, 2018*

**Fall Swapfest** – we are planning on September 8<sup>th</sup> so as to avoid a conflict with the W9DXCC convention on the 15<sup>th</sup>; HRO open house on the 28 & 29<sup>th</sup> and hopefully the Chicago FM club that still has not chosen a date but were on the 23<sup>rd</sup> last year.

**Breakfast at Jim's Grill** – Several of the members gather at 7AM for breakfast on Saturday mornings at Jim's Grill in Echo Plaza in Cedarburg. All are welcome to come help solve the world's problems.



**New Book** - We have another published author in the group. Gary Drasch (K9DJT) has authored the book "Ham Radio is Alive and Well" and it is really a good read. He wrote it for the "newbie" to ham radio and for the old timer who has been away for awhile. I found it especially good for the discussion of the modes that I really have not tried. Nice job Gary. Well written. You can get a copy directly from Gary for \$19. Get it now before he raises the price. I hope ARRL and HRO start to offer it as it is an easy, informative, fun read.

**Don't forget the West Allis Radio Club Swapfest on Saturday, January 6<sup>th</sup>.**



# Meeting Minutes - December 13, 2017

De Ben Evans (K9UZ), Secretary



President Kevin S. (K9VIN) called the meeting to order at 7:38 PM. All the attendees introduced themselves.

## **Announcements, Show-and-Tell, Bragging Rights:**

Gary D. (K9DJT) has gotten a book he'd written published entitled "Ham Radio is Alive and Well."

Jim A. (K9QLP) said that Ron Yokes (W9BCK) now has a two-meter rig and is on the air after a long absence, so give him a shout on the 9-7 repeater.

Tom R. (W9IPR) brought ARRL membership applications to the meeting for anyone not yet a member who would like to join. Tom stated that he'd like to see a donation by the club to the ARRL Frequency Defense Fund, whose objective is to protect the ham bands from commercial interests.

Robert E. (K4WTH) acquired a Kenwood TH-74A handy-talkie, and he asked for help in programming it because the manual isn't any help. Tom (W9IPR) suggested talking to Kenwood directly.

Kevin mentioned that a letter was sent to silent key Kent Christiansen's wife, thanking her for the donation to the club of radio equipment.

## **Program:**

Bill S. (W9MXQ) gave a presentation on his personal experiences with the Collins KWS-1 transmitter and 75A-4 receiver, otherwise known as the "Gold Dust Twins."

## **50/50 Drawing:**

There was no drawing.

## **Auction:**

Stan K. (WB9RQR) conducted the auction. About 20 items were sold, including a laptop with Linux installed, a wireless inspection camera and a couple of HTs. A handful of other items were given away.

## **Officer Reports:**

Kevin S. (K9VIN) President – Spring Swapfest: Kevin said that Kristian M. (KC9TFP, the Spring Swapfest chairman, who was not at the meeting) reports that there have been no ticket sales to date but sales are expected to come in starting January. Loren J. (N9ENR) later corrected that, saying, in fact, that three tables and tickets were sold. The date and location of the swapfest: September 5, 2018 at the St. Mary's Curling Center.

Pat V. (W9JI), 1st VP – No report.

There was a brief discussion on the date of the Fall Swapfest. Tom (W9IPR) and Loren (N9ENR) agreed that, based on what is known at present, September 22<sup>nd</sup> would be a good date for the swapfest that likely wouldn't conflict with other area swapfests. Apparently, the FM Club has decided to move their

swapfest to a Sunday (probably the 23<sup>rd</sup>), but follow-up should be done to assure that the 22<sup>nd</sup> will be clear of any conflicts.

Robert E. (K4WTH), 2<sup>nd</sup> VP – No report.

Tom T. (KC9ONY), Repeater VP – Tom and Loren (N9ENR) made changes to the receive antennas for the remote sites in order to try to clean up the noise. A sweep was done on the antennas at the receive sites which showed a few problems. Two receive sites, Grafton and Port Washington, are disabled due to noise affecting the voter. There is still more work to do.

Ben E. (K9UZ), Secretary – The minutes from November's meeting is in the newsletter. Motion to accept the minutes was made, seconded and passed.

Dave B. (N9UNR), Treasurer – Not in attendance, so there was no report.

### **Committee Reports:**

Tom R. (W9IPR), Scholarship – A payment of \$2,020 was sent to the ARRL for their foundation to administer the \$2,000 scholarship for 2018 (the \$20 is for administration costs). Applications are open through January. The qualification criteria for candidates are as follows: a US citizen; holder of an amateur radio tech license or higher; a fulltime student in a four-year undergraduate degree program (no restrictions on field of study); less than 26 years old; a resident of Wisconsin. The ARRL will make the judgement as to who should be awarded the scholarship based on our criteria. Dave C. (KC9REP) suggested that a scholarship be considered for college students in a two-year education program.

Stan (WB9RQR) pointed out that tonight's auction took in \$295. Half goes to the scholarship fund and the other half goes to OZARES.

Ken B. (W9GA), Nominations – Regarding the elections in January, Ken has been talking to potential candidates. He said it would be good to have most of the incumbents stay on for next year because it's becoming harder to find people to replace officers. Ken will be calling people in the coming weeks to find other candidates, but if anyone is interested in running, that person or persons should contact him. Stan (WB9RQR) pointed out that the election in January will be in place of a program.

### **Old Business:**

There was no old business.

### **New Business:**

Ben (K9UZ) asked whether we would be holding the awards banquet in 2018. Kevin (K9VIN) said people have lost interest in attending, which is why the event was cancelled last time due to so few people signing up. Kevin directed Ben to send an email to the membership to "test the waters."

Tom T. (KC9ONY) pointed out that there's been no vote to revise the by-laws to establish the scholarship officers. Tom R. (W9IPR) said he's not yet drafted the language, but will do so in the next few days and send the proposed rule changes to the board.

A lengthy discussion was had as to what would happen and what should be done if, for any reason we lost the repeater site at Sandy's barn, which is also

used to store scholarship property. Jim A. (K9QLP) said that repeater space is at a premium, and we need to make sure the barn isn't "junked up." No action was taken on this subject.

Robert E. (K4WTH) discussed the status of the club website and Facebook account, previously under Brian's (N9LOO) charge. Ben (K9UZ) is now in charge of the website, Robert (K4WTH) is in charge of the Facebook pages. Robert discussed ways to increase traffic on the Facebook pages, including making one of the pages open to the public or posting video of the meeting programs. Nels (WA9JOB) moved to send the topic over to the board for discussion. The motion was seconded and passed.

**Adjournment:**

A motion to adjourn was made by Nels, which was seconded and passed. The meeting was adjourned at 9:44 PM.

**Attendance:**

There were 25 members and 1 guest present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## ORC Meeting Agenda

January 10, 2018

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to order: Introductions. Kevin Steers (K9VIN)
3. Announcements, Bragging Rights, Show & Tell, Upcoming events, Etc.
4. Elections
5. 50/50 – Kristian Moberg, KC9TFP
6. Fellowship Break
7. Auction – Stan Kaplan (WB9RQR)
8. Presidents Report – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)

10. 2<sup>nd</sup> VP Report – Robert Eskola
11. Repeater VP report – Tom Trethewey, (KC9ONY)
12. Acceptance of Minutes : Ben Evans (K9UZ),
13. Treasurer's report – Dave Barrow (N9UNR)
14. Committee reports.
  - A. Spring Swapfest
  - B. Other:
15. OLD BUSINESS
16. NEW BUSINESS
17. Adjournment to ?

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### The ORC Newsletter

465 Beechwood Drive  
Cedarburg WI\* 53012

### First Class

Next ORC Meeting

#### Grafton Senior Citizens Center

**1665 7<sup>th</sup> Avenue, Grafton**  
Wednesday, January 10<sup>th</sup> 2018

7:00 PM – doors open

7:30 – Membership Meeting





# The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



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Volume XXX

February, 2018

Number 2

## From the President

*de Kevin Steers (K9VIN)*



Thankfully the days are getting longer, and summer is not far off. For me, understanding what that means to each of the bands is still a work in progress. I suppose I will forever be a student of the airwaves.

Truthfully, I have not been on the air much this winter. I have been busy restoring two 1990's vintage snowmobiles, and between wrenching, test driving, and feeding wood into the fireplace, there isn't much time to operate. Granted, I do have 40M or 20M on in the house most of the day, tuned to a convenient frequency where I can eavesdrop on both

sides of a conversation. Incidentally, my youngest daughter loves to cuddle up next to the radio and listen to voices piped in from afar, often times drifting off, like her father!

Recently disaster preparedness has come into the news, as it occasionally does. Recently, in Hawaii, an emergency alert went out warning citizens that "... a missile attack could hit land or sea within minutes". Interestingly, there was a group of reporters in Hawaii doing research on Ham Radio, etc, while this happened. It has become painfully clear what little communication would be available without power and without communications infrastructure. NBC news carried a story last week entitled "Hawaii's Communications Breakdown and How Going Ham Could Save Us".

Do a Google search on that title, or find the video on YouTube. It is well worth the watch, and it may just help us grow our Amateur Radio Community.

73,  
K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Well, January was very interesting, and that will continue through February. Last month I dedicated a lot of space to the 3Y0Z Bouvet Island DXpedition. They had some delays due to weather and icebergs. They left port in Chile on January 19<sup>th</sup>. They arrived on January 31<sup>st</sup>. That is a long time to spend in high seas. They were on the air maritime mobile early on the trip but shut down because they were worried about damaging their rigs from the motion of the ship.

Just to make things interesting, there was a magnitude 6.6 earthquake near the island. There was concern of a tsunami, but that didn't occur. Apparently, earthquakes are quite common in that part of the world. We don't hear about them since nobody lives around there. There is concern that a strong earthquake could cause shifting or avalanches of the glaciers they will be staying on.

Once the ship arrived they had to wait for the weather to improve before landing. The 45 knot winds and the ship pitching 30° was more conducive to launching lunch than the helicopters. It was a waiting game. Then on Saturday, February 3<sup>rd</sup> the ship developed trouble in one of the engines. The captain declared it was unsafe to stay and aborted the DXpedition. They started heading back to port in Chile but after two days at reduced speed decided it would be better to head to South Africa instead. They are continuing to Cape Town as this is being written. Years of planning and work and hundreds of thousands of dollars were spent on this operation. As you can imagine the team is disappointed, but they are talking of another attempt in the future.

There was a shakeup at the ARRL board meeting in January following quite a controversy. One additional thing that came out of the meeting was a change of the DXCC rules. The change meant the Republic of Kosovo was eligible to be included as a DXCC country or more correctly a DXCC entity. Kosovo declared independence from Serbia in February 2008. Hams have been operating under the Z6 prefix for years but until January 21<sup>st</sup> it did not count for DXCC. Almost immediately the Amateur Radio Society of Kosovo club station Z60A was activated and Kosovo immediately jumped to the top of the DXCC needed list.

The pileups have been big. My first contact with them was on 20 phone and the operator called me by name. Boy, was I surprised! It turned out it was K9JF, who is an ARRL Honorary VP, at the microphone. Hams from 10 different countries went to Kosovo to help with the operation. They have been very active and DXers from the area have worked them on bands between 160 and 17M. Kosovo won't remain at the top of the list too long as it is easy to get to and the hams there have been active. With the new DXCC status there will be even more activity. With the addition of Kosovo there are now 340 countries on the DXCC active list.

Between an island being activated for the first time in 20 years, and a brand new one to work, everything else seems pretty boring. There are a few other stations to be looking for though. The Comoros Islands in the Indian Ocean has been active under the call sign D68I. It is put on by a group of Italian hams who will be there until February 10. They are on 80-10 meters, SSB, CW and digital.

Gambia in West Africa will be active February 9-16 courtesy of a group of British hams as C5DX. This is interesting as it is part of a visit to a high school in Gambia. Four of the operators will be English students who are licensed hams. Part of the visit is to demonstrate ham radio to Gambian students. If you hear them on, remember these are not seasoned DXers and be patient.

Another British operation in February is to the Isle of Man. They will be active February 9-12 using the call MT0IXD. A focus of the trip will be to operate in the CQ WPX RTTY contest. The CQ WPX RTTY contest starts at 000-UTC on February 10 (6:00PM February 9 local time). It runs for 48 hours but you can only operate 30 hours. Off times must be at least 60 minutes. The exchange is signal report and serial number. The points per QSO is kind of complex and varies depending on the band and if the other station is in the same country, a different country in the same continent or from a different continent. Basically, just work everyone. Check the rules at <https://www.cgwpxrtty.com/rules.htm>. Multipliers are the different call sign prefixes. No one will get all that excited from my W9 prefix. There are a lot of categories you can pick from. You can go all band or a single band. Within those groups you can go high power, low power or QRP. They also have special overlay categories. One is for rookies, hams that have been licensed 3 years or less. Another is for modest stations. Basically, you can have a single tri-bander for 10, 15 and 20 meters, and single element wire antennas for 80 & 40.

The big contest this month is the ARRL DX CW contest. It will run on February 17-18. Basically, it is the world working the US. This is nice because you won't be fighting a wall of Europeans to work the rare African station. The DX stations will be looking for different states as multipliers, so you will send a signal report and your state. The DX stations send a signal report and their power. It is interesting when you get a call from someone running QRP. I once worked a Belgium station running 300 milliwatts in this contest.

Operating classes are QRP (5 watts or less), low power (150 watts maximum) and high power (1500 watts). You can operate in these classes as either limited (no DX spotting assistance) or unlimited which allows spotting assistance. You can also operate single band, but there are no power classes and you are not allowed to use spotting assistance. Full rules are posted at <http://www.arrl.org/arrl-dx>.

As usual there will be a lot of activity around the DX contest. There are about 20 different DX operations announced. They usually arrive a few days early to get set up, check out propagation, etc. They will be on the air, often concentrating on the WARC bands. One such operation will be from PJ2T, a big contest station on Curacao. One of the operators is a friend of mine, Rudy, NF9V. He will be on before and after the contest signing PJ2/NF9V. Work him if you hear him on.

Lots of stuff to get excited about on the radio this month. Make sure to get in on the action!

# Vintage Amateur Radios

de Bill Shadid, W9MXQ



The new age of ham radio that began with the Collins S-Line (including the KWM-2) was not to go on forever as a Collins-only domain. In 1961, the competition began to step up to the challenge. Bill Halligan, W9AC (now re-assigned), led his successful amateur radio manufacturing company, the Hallicrafters Company, into the lighter weight, desktop world with the introduction of the ultimately very successful SR-150 HF SSB/CW Transceiver. For your reference, here is the Hallicrafters SR-150 Station that is in frequent operation at W9MXQ . . .



**Hallicrafters SR-150 Transceiver and HA-1 'TO Keyer  
Shown with Hallicrafters PS-150-120 AC Power Supply/Speaker  
Also, Turner 254C Microphone and Vibroplex VibroKeyer (non-lambic) Key  
(W9MXQ Shack Photo)**

Not to be a too much of a “me too” radio, Hallicrafters took the concept of the Collins KWM-2 and made significant changes in design to make the SR-150 a step in a somewhat different direction.

The SR-150 did not use traditional transmitting tubes, such as the popular RCA 6146 tetrode of the day. Indeed, Hallicrafters was, however, using the RCA 6146 tubes in their popular HT-32 Series and HT-37 desktop transmitters. The SR-150 final amplifier used a pair of 12DQ6B/12GW6 tetrodes originally designed to be horizontal oscillator (sweep) tubes in television sets. Hallicrafters was perhaps the first to understand that these sweep tubes had real merit, durability, and frequency performance, in some designs, well above the HF bands. To this day, the dedicated transmitting tube vs. sweep tube argument goes on. From a cost and performance standpoint, the sweep tubes were the equal of and perhaps superior to the 6146 and its successors. This is said from the point of view of the cost and performance perspective of the

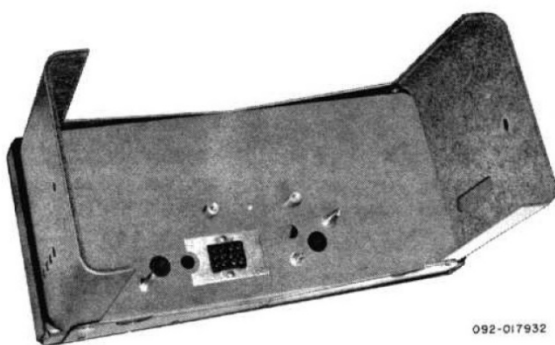
manufacturers. Ultimately, such very popular and market competitive products from Swan and Drake, as well as lesser volume producers such as Galaxy, National, as well as Hallicrafters itself thrived on sweep tubes and never returned to “real transmitting tubes.”

Hallicrafters, in its earlier days with SSB transmitters and transceivers, was never a producer of maximum power radios. The SR-150 was no exception with its 150 watts PEP input power and a resulting 80 watts PEP output. CW was rated at 125 watts input with an output of 65 to 70 watts. The receiver was not only very competitive, its dual conversion design was (and remains) one of the quietest designs on the market. To this day the SR-150 in my shack provides an eerily quiet receiver that on a dead band makes one wonder if it is working. But, working it is – when a signal is present it is every bit as sensitive as my Collins 75S-3B, Collins KWM-2A, or Hallicrafters SX-117 from the same era. A similarly quiet receiver design, the Drake R-4C, is not a match for the sound from the SR-150. Experience it if you can.

The identified competition, the Collins KWM-2, had significant, if not terminal issues with CW operators that were improved over the years but never fully corrected unless the user opted for a very expensive accessory, the 312B-5 External VFO and Console. Collins had ignored the need to provide for a proper offset allowing a tone to be heard (to copy the other station’s signal) and remove the need to keep retuning the receive frequency. Hallicrafters introduced a feature we use to this day – Receiver Incremental Tuning (RIT) that allowed a tunable offset of the receiver (only) so one could comfortably tune an SSB or CW signal. To take it another step, not only did Hallicrafters add this incredible (at the time) feature, they did so with a new technology device called a Varactor Diode. You can read about Varactors and they are not, as a device, the subject of this article – rather, their use is the subject. Suffice it to say, and very simply stated, Varactor Diodes provide an electrically variable capacitance to pull the SR-150 VFO receive frequency plus or minus about 2 kHz (2 kilocycles, back then!!).

Hallicrafters followed the lead of Collins in providing no interference fighting circuitry on the SR-150. That was followed later with reasonable features on Hallicrafters competition for the Collins S-Line, the transceive capable separate Receiver and Transmitter and Linear Amplifier setup – the SX-117, HT-44, and HT-45, respectively. Those items are the subject of a future article – perhaps next month.

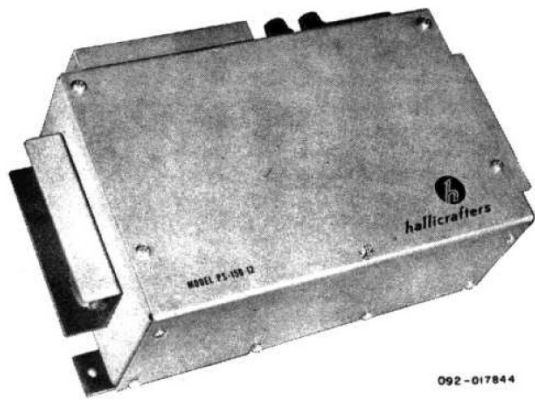
The SR-150 was offered with a variety of accessories to adapt it to home or mobile use. (All accessory pictures are from the Hallicrafters SR-150 Operations Manual.)



This is the MB-150 Mobile Mounting Bracket for the SR-150 Transceiver. The sides (left and right) were padded and they would fold away (toward the back) when not in use. The bracket was designed so that sliding the SR-150 into the mount would direct all rear connectors to quick disconnect sockets in the mobile mount. No hand connection/disconnection of wiring was required for installation.

The SR-150 Transceiver was compact for its day but not much different in size from its competitor, the Collins KWM-2. Hallicrafters and Collins tried hard in their designs to make the mobile mount as unobtrusive as possible when the radio was removed from the automobile.





This is the PS-150-12 DC Power Supply for the for the SR-150 Transceiver. This very nicely styled package was designed to be mounted in the trunk of the automobile. The power input required was nominal 12 VDC automotive electrical system power. There was no provision for 6VDC operation with this power supply so generally it required a vehicle made 1955 or later for operation.



This is the PS-150-120 AC Power Supply for the SR-150 Transceiver (and later Hallicrafters radios). You saw this in the intro photo in this article. But it is a rather elegant competitor to the Collins 516F-2 AC Power Supply that used two vacuum tubes. The PS-150-120 was all solid-state. The two PS-150-120 units in use at W9MXQ have shown 100% reliability over many years.

Hallicrafters used rather low plate voltages (and therefore higher current) in their radio power amplifier designs. The PS-150-12 and PS-150-120 provide 575 volts DC at about 260 ma (more current was available and used in later radios with the PS-150-120). There was also low HV (250 VDC) for lower level transmitter and receiver circuitry plus there was transmitter tube bias (-125 VDC) and filament voltage for the radio (12.6 VAC). The PS-150-120 even had provisions to easily read voltage and current on the HV line with a common Volt-Ohm-Meter (VOM).

One great feature of similar vintage Hallicrafters transmitters (and the transmitter within their transceivers) was ultra-simple tuning of the tank circuitry, while many radios had a relative long procedure of tuning the grid for proper grid drive while adjusting Tune and Load controls for proper plate current to get rated power. Hallicrafters capitalized on the fact that many hams were using commercially available or home brew beam, vertical, and wire antennas that had a fixed impedance of 50-75 ohms. So, load became fixed at 50-75 ohms (with the resulting removal of the Load control from the radio). Tuning the SR-150 (or the HT-37, HT-32, and later HT-44 Transmitters) involved the use of an output meter peaked by the Preselector (Grid) and the Output (Tune) controls. No loading and "dipping" of the plate current meter on the competition's radios. Tuning a Hallicrafters transmitter was virtually instantaneous when compared to the competition. Obviously, other antenna designs and impedances required an external antenna matching unit. The E. F. Johnson "Matchbox" tuners were popular for such applications in those days.

In closing, I must say that this radio is a favorite of mine. The entire Hallicrafters line into the 1970's was, in my opinion, some of the finest, best performing, and long term dependable radios marketed to the ham radio community at a competitive price. And, returning to my previous comments on "Desk Presence," Hallicrafters comes very close to Collins. The SR-150 Transceiver is difficult to find today with good appearance and operating condition. Most I see advertised are not working or have appearance issues. But the most important trait in vintage radio



collecting is patience in the search process. My SR-150 came from an estate perhaps five years ago. I am only the second owner of this radio.

And one more thing in this month's installment . . .

I would be remiss in not mentioning another Hallicrafters early SSB Transceiver that was introduced ahead of the Collins KWM-2, and more in keeping with the introduction of the original Collins S-Line. That would be the very advanced Hallicrafters FPM-200 HF SSB/CW/AM Transceiver that was produced more as an engineering exercise than a viable product, as it turned out. It was just too far ahead of its time



This FPM-200 is owned by fellow collector W8ZR. These radios were never fully marketed and it is felt that fewer than 200 of them were made and sold – less exist today. Hallicrafters sponsored DX-Peditions and other events with the FPM-200. There were even some events in cooperation with the United States Air Force with FPM-200 equipped cross-country flights.

Perhaps more details on the FPM-200 can be in a future article. It was almost unbelievable as a solid-state radio in a vacuum tube world. It had dual VFO's and a high concentration of printed circuit board assembly. The only vacuum tubes were two 6146's in the Final Amplifier, a 12BY7A Driver, and two OB2 Voltage Regulators. This radio's finals produced about 70 watts SSB PEP output and about 45 watts on CW. Today these radios would be hard, if not impossible, to maintain with their high population of unobtainable Germanium transistors. Like the Germanium transistor equipped National HRO-500 Receiver in my radio collection, some of these radios are best displayed and perhaps rarely used!

# Vintage Speaker Repair

By Pat Volkman W9JI



Recently, I picked up a National HRO-W receiver. The HRO-W was made in 1946 and has an external speaker and power supply, along with the plug-in coils for band changing. After some work on the power supply I was ready to try out the radio. I could hear a slight buzzing noise, but that was it. Some investigation showed that the speaker wasn't working properly.

The speaker is mounted in an art deco style metal box, finished with black wrinkle paint. The audio transformer is mounted on the speaker frame rather than in the radio cabinet. Originally, the speaker was an optional purchase, so if you wanted to stick to headphones only, you could save the price of a speaker and transformer. After removing the speaker from the case, it was apparent that damage had occurred to the voice coil and cone. Repair was needed!



changes in air pressure, which is the sound that we hear. (See photo)

Speakers are relatively simple devices and all the parts can be repaired or replaced. The speaker cone is connected to the voice coil. The voice coil is connected to the output of the radio. The electrical signals from the radio cause a changing current in the voice coil. This changing current pushes against the magnetic field of the permanent magnet, causing the cone to move. The moving cone causes

The date code on the speaker says that it was made in the first week of April 1946. The manufacturer is Jensen, a name that is still found on speakers. An internet search turned up hundreds of places promising to have repair parts for old speakers. This Jensen PM-10C, however, was too old or too unusual to find parts readily available.

I posted a request for help in finding speaker parts on the club email reflector and in a short time had a number of responses (Thanks, guys!). Most directed me to websites which, as it turned out, didn't have the parts that I needed. One reply said to contact a local guy who was "a master" at speaker repairs. That guy is Dave Roffer, in Post Washington. I met with Dave and he said that he could repair the speaker.

There were several things wrong with the speaker. The paper cone was creased and ripped in a number of places. The area where the voice coil connects to the speaker cone was torn and the voice coil itself was damaged.



Dave got the speaker repaired and at a reasonable price. He patched up the torn areas, reattached the voice coil and glued on a new dust cap. Dave pointed out that because of the age of the paper cone,

it was brittle and would have a frequency response limited to the midrange of audio frequencies. That seemed like it

would be OK for a communication speaker.

The repaired speaker works fine and sounds good. It looks good in that old speaker cabinet with the National logo in red and silver.



If you have a speaker that is in need of repair, you can contact Dave Roffer at 262-573-6124. If you are interested in the National HRO receiver line, you can look at the presentation I gave at the May 2017 club meeting. The presentation is on the Ozaukee Radio Club website [here](#).

Note: Old presentations are on the ORC website – About Us / Other Stuff / Downloads / Programs

## Notable Members - W9YKR RECOGNIZED

By Stan Kaplan, WB9RQR

Gary Cohen, M.D. (W9YKR) can be seen across the table most Saturday mornings at Jim's Grill in Cedarburg, having breakfast with those ORC members assembled at this popular "unofficial" ORC happening. Gary is a pediatrician in the Division of Neonatology at Children's Hospital of Wisconsin, on the Medical College of Wisconsin campus. Gary and his colleagues take care of high-risk babies, and this Division is noted world-wide for managing newborns that often would not survive in general medical facilities.

Gary was just selected as one of the Best Doctors in America for 2017-2018. The list of 650 area Best Doctors was selected from among 40,000 US doctors in more than 40 medical specialties and 450 subspecialties. This list contains the most respected specialists and outstanding primary care physicians in the nation. These are the doctors that other doctors recognize as the best in their fields. They cannot pay a fee and are not paid to be listed and cannot nominate or vote for themselves, so the list is a good, unbiased, and respected source of information. The website is [www.bestdoctors.com](http://www.bestdoctors.com) (though note that the list is not available on that site).

**Next time you see Gary, give him your congratulations!**



# THE COMPUTER CORNER

## No. 240: Uninstallers: Geek and HiBit.

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

(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)

<C:\Users\Owner\AppData\Local\Microsoft\Windows\Temporary Internet Files\Computer Corner\2018\Cc224.doc>



Generally, uninstall programs are a nuisance. The one that comes with Windows (in the Control Panel) is terrible, and many of the third-party versions are not much better. They claim to do a good job in cleaning out a program, but many do not catch all the bits and pieces, such as references to the program left behind in the registry. No matter what version of Windows you run, if you uninstall programs from time to time, your registry, shortcuts, and other sites in your machine's software accumulate these bits and pieces. This can lead to anything from the "blue screen of death" to simple crashes to

just slowing down your machine (and your work) because of invalid references left behind. When you uninstall a program, you want it gone, including every reference of any kind to it in your machine.

Back in June 2016, I wrote briefly about the then new Geek Uninstaller, mentioning that it is free, tiny, works beautifully, and really cleans out all the references to the program you are uninstalling. Nothing new here – it is still one of my two favorite tools for uninstalling software. You can get it at <http://www.majorgeeks.com/> (the software bears no relationship to the website though both have geek in the title). Look for it under Site Info (left panel), then Top Freeware Picks.

Now a new kid is on the block. Also available at majorgeeks is HiBit Uninstaller (current version 1.1.20). This terrific uninstaller is also free, small (2.54 MB) and you don't even need to install it with this portable version! Just download the ZIP file, unzip it to a site of your choice (such as the desktop), and click it to start. It will quickly present you with a list of all your installed programs, and right clicking one will begin the uninstall process. There is a tutorial available on majorgeeks, directly in the program description that will make its use clear. I recommend you watch it to get an idea of the program's features. For example, there is a Tools menu in the upper right part of the panel that includes a drive cleaner, registry cleaner, applications manager, empty folder manager and much more. Majorgeeks rates it as 5-star and claims it is every bit as good, if not better than, the competition. I keep both the Geek and the HiBit Uninstallers on my machine, because I can't decide which is better! To me, Geek Uninstaller seems great when you just want to quickly dump a program, while HiBit seems perfect when you want to uninstall something and then do a little cleaning and maintenance. In the latter case, it seems to take the place of CCleaner, and it is a bit more aggressive (that is good because CCleaner is very conservative, sometimes too much so). Hey, try it. You'll like it!

Happy Computing!

# Ozaukee Radio Club

## January 10, 2018 Meeting Minutes

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:31 PM. All the attendees introduced themselves.

### **Announcements, Show-and-Tell, Bragging Rights:**

Gary (K9DJT) received a certificate for First Place in the Wisconsin Radio Roundup last year. Also, his ORZ.com page was hacked; someone substituted his email address with another one in order to sell things that didn't exist. QRZ.com is aware of the vulnerability and has changed the

login procedure.

Stan (WB9RQR) showed the group a mini-CD that will completely erase everything on a computer's hard drive. It will be offered for sale at tonight's auction.

### **Elections for 2018 Officers:**

Nominations Chair Ken (W9GA) conducted the officer elections, which was in place of a program.

The following members were running unopposed for their current offices:

- President – Kevin Steers (K9VIN)
- First Vice President – Pat Volkmann (W9JI)
- Second Vice President – Robert Eskola (K4WTH)
- Repeater Vice President – Tom Tretheway (KC9ONY)
- Treasurer – David Barrow (N9UNR)
- Secretary – Ben Evans (K9UZ)

There were no additional nominations from the floor. Dave (N9UNR) pointed out that anyone who hadn't paid their 2018 member dues could not vote.

A motion was made to accept the slate of candidates without a balloted vote. The motion was seconded and passed unanimously.

Ken pointed out that at the next meeting in February, there will be votes for Ham of the Year and Turkey of the Year. Ham of the Year may be awarded to a member more than once, but not so for Turkey of the Year. Ballots will be handed out at the February meeting for the awards which will include lists of past recipients. There are many other awards that members can vote on, particularly the presenter of the best program of the year. The awards traditionally had been given out at the annual awards banquet, but lately interest has languished for the banquet and is in doubt for this year, so the awards will likely be presented at the March meeting.

### **Auction:**

Stan (WB9RQR) conducted the auction. About 11 items were sold, including a desktop computer with the latest version of Linux installed.

### **50/50 Drawing:**

Bill S. (W9MXQ) won the 50/50 drawing.

### **Officer Reports:**

Kevin S. (K9VIN) President – Reservations have been made for the venues for both

the Spring Swapfest (St. Mary's Curling Center) and Field Day (Pleasant Valley Park).

Pat V. (W9JI), 1st VP – No report.

Robert E. (K4WTH), 2<sup>nd</sup> VP – No report.

Tom T. (KC9ONY), Repeater VP – Tom had heard that the W.A.R. had sent out a letter for comment on the proposed ORC repeater antenna change. The letter was sent to possibly-affected repeaters in the area. The change is to directionalize the antenna away from the lake and toward the northwest.

Ben E. (K9UZ), Secretary – The minutes from December's meeting is in the newsletter. There was one mistake in the newsletter; the date given for the Spring Swapfest was wrong and should read May 5<sup>th</sup>, not September 5<sup>th</sup>. Motion to accept the minutes was made, seconded and passed.

Dave B. (N9UNR), Treasurer – Dave reports that the treasurer's reports were distributed and moved to accept them subject to audit. The motion was seconded and passed.

#### **Committee Reports:**

Club Historian, Robert (K4WTH) – Robert is making updates to the Facebook page with historical club photos. If anyone has photos or any other documents of historical significance, please share them with Robert.

#### **Old Business:**

Jim (K9QLP) turned the date of the Fall Swapfest over to the Cedarburg Fire Department (September 8<sup>th</sup>). There is still a question as to when the Belvidere swapfest will be. Tower Electronics may not be available to be at our swapfest on September 8<sup>th</sup>.

#### **New Business:**

Tom (KC9ONY) reports that Jerry (KC9WI), who was not at the meeting, is interested in writing book reports for the newsletter, but prefers not to buy new books to report on. If anyone wants a book reviewed by Jerry, he or she should give it to Jerry to read.

#### **Adjournment:**

A motion to adjourn the meeting was made, seconded and passed. The meeting was adjourned at 8:09 PM.

#### **Attendance:**

There were 28 members and no guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary



## AGENDA

February 14, 2018

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to order: Introductions. Kevin Steers (K9VIN)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Ben Evans, K9UZ, “RF Exposure”
5. 50/50 – Kristian Moberg, KC9TFP
6. Fellowship Break
7. Auction – Stan Kaplan (WB9RQR)
8. Presidents Report – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. 2<sup>nd</sup> VP Report – Robert Eskola (K4WTH)
11. Repeater VP report – Tom Trethewey, (KC9ONY)
12. Acceptance of Minutes : Ben Evans (K9UZ),
13. Treasurer’s report – Dave Barrow (N9UNR)
14. Committee reports.
  - A. Spring Swapfest
  - B. Other:
15. OLD BUSINESS
16. NEW BUSINESS
17. Adjournment to ?

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### The ORC Newsletter

465 Beechwood Drive  
Cedarburg, WI 53012

### First Class

Next ORC Meeting

#### Grafton Senior Citizens Center

1665 7<sup>th</sup> Avenue, Grafton

Second Wednesday

7:00 PM – doors open

7:30 – Membership Meeting



# The *ORC* Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO

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

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

Volume XXX

March, 2018

Number 3

## From the President

*de Kevin Steers (K9VIN)*



On the Air: Snowmobiling is competing with my on air activities in the Northwoods these days. While I still hold a Friday evening sched with a small group, I have not been scanning the higher bands during the day as I once had. I was pleasantly surprised to make a good number of armchair contacts during the recent 160M contest. My iPhone logging app made it so simple, as I don't have an official bench/computer setup currently.

On the Bench: A while back I picked up an automobile computer mount that bolts to the bottom of the passenger car seat. I have since mounted it to some lumber, and it holds a laptop conveniently while I sit on my couch. When I was at Dayton last year I spied another computer mount, apparently from a service vehicle; It was so heavy duty, the man nearly gave it to me. I am having a friend cut and weld a piece for it, so I can mount this one in my car and be back to mobile HF during my frequent travels.

Be sure to start planning for Dayton Hamvention in Xenia, Ohio. Now is the time to get in good graces with your significant other, and squirrel away mad money for the trip. I'll be sure to bring it up at the next meeting to see who is going, who has room, and when they are leaving.

Also, our Spring Swapfest is coming, so start looking at the treasures you may want to part with.

73, K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Last month I discussed the ill-fated 3Y0Z DXpedition to Bouvet Island. Running on their one remaining engine at about half speed they were finally able to make it to Cape Town South Africa. They spend 31 days on the boat in heavy Antarctic seas. The ops have flown home. They are determined to try again, perhaps in the next year.

The other big thing was the addition of Kosovo (Z6) to the ARRK DXCC list. Because it was new, by definition, it was the new #1 needed DXCC entity. Well, there has been a lot of activity out of Kosovo. So far, I have worked it on 4 bands and on CW,

SSB and Digital (FT8). They have even been on for a couple of contests.

Because of the activity it has dropped down to #14 on the ClubLog DXCC Most Wanted List. North Korea (P5) and Bouvet (3Y0) have returned to their #1 and #2 positions. ClubLog keeps track of the most needed DXCC countries. ClubLog is a great resource to DXers. The URL is <https://clublog.org>. You can sign up for a free account and upload your logs to them. You can join club leagues where you can see how you stand up compared to other members on countries worked and confirmed. I am members of the GMDXA, SMC and ARRL club leagues.

Based on the logs received, they can extract information on how each DXCC country is overall, by band and mode. This is much more accurate than the old surveys that used to be the source of rarity data. With over 300 countries it took a lot of work to fill out the survey on what bands you needed everyone on. A lot of DXpeditions upload their logs to ClubLog. Wait a half day or so and you can enter your call to see if the contact you made is in their log or not. Sometimes you are not 100% sure they got your call correct or something else happened that you didn't complete the QSO. Allowing DXers to check if they are in the log helps prevent unneeded "insurance contacts". Every duplicate QSO with a DXpedition is one less contact that someone else can make. It is also fun to spy on your competition and see if they have worked the DXpedition yet. Other ORC members who are ClubLog users are K9DJT and W9MXQ.

There are some other features on ClubLog worth looking into. Check it out!

If you were on for the ARRL DX Contest (phone) the first weekend this month you got a chance to see what propagation conditions we can expect the next few years. The solar flux was 68. Looking at historical data from the last minimum, the lowest daily SF number was 65.0 in September of 2007. The upper 60's is a typical average for the minimum. Most solar cycle models have us hitting the actual minimum in 2019 or 2020. We won't know for sure for about a year or so after it happens. This is because they average the sunspot number +/- 6 months to filter out the noise.

Bad radio conditions are not the only effect from low sunspots. The solar wind increases with sunspot activity. A recent report shows that the number of cosmic rays hitting the earth is increasing at an alarming rate because of low sunspot activity. Cosmic rays are very high energy particles from deep space. Like all ionizing radiation, cosmic rays can cause cell damage.

The atmosphere blocks some cosmic rays, but as the amount we get increases, more will reach the ground. People who fly a lot may have higher risk. This trend will decrease the time astronauts can remain in space. As if we need another thing to worry about.

Despite the lack of sunspots, hams continue to go on DXpeditions. March has a good assortment. The first one is to Revilla Gigedo. Normally this uses prefix XF4, but the call is 4B4B. This island is west of Mexico. They are on the air now and will continue until the end of the month. 160-6M, SSB.

Zimbabwe is currently on the air by a group of Norwegian hams using the callsign Z2LA. I have heard them a couple of times, but they have been weak so far. Hopefully we will get some better propagation before they leave on March 11. They are on 160-10M, CW and SSB.

Macao is being activated by a large group of Brazilian hams March 8-March 17. They will be running 3 stations 24 hours per day on 160-10M. I don't hold out too much hope on this one because it is a very tough path. Our best shot will probably be 20 meters, but 40 meters long path around sunset might work as well.

A large group of German hams are currently on Easter Island. They have been very active. 160-10M, CW, SSB, RTTY, and FT8. They will be there, using the call XROYD until March 15. Like Z3LA, 4B4B, and XX9B they will be posting logs to ClubLog.

Benin will be activated as TY7C from March 7 through March 18. This is being put on by a group of primarily French ops. Look for them on CW, SSB, RTTY, PSK and FT8.

Equatorial Guinea and hopefully Annobon Island will be on this month. The group has been very active from Equatorial Guinea since the start of the month as 3C3W. A group of YL ops (Lithuania, not Young Ladies) will be on 160-10M, CW, SSB and RTTY. They hope to go to Annobon Island and operate as 3C0W. Originally, they were hoping to go on March 5, but that fell through. Now they are hoping to for a flight on March 10. You can follow their activities on their web page at [http://www.lral.lv/3c0w\\_3c3w/index.html](http://www.lral.lv/3c0w_3c3w/index.html).

Another African operation is to Malawi, 7Q7EI, by a group of Irish hams. The dates are March 23-April 2. 160-10M, SSB, CW, and RTTY. They will be using ClubLog.

Yet another African DXpedition is scheduled to the Cameroons. Primarily an Italian operation, they will use the callsign TJ3TT from March 15-29. 160M-10M, CW, SSB, and RTTY.

The most important DXpedition this month, at least in my mind is to the Spratly Islands. This is a group of small islands and reefs in the South China Sea. The islands are claimed by the Philippines, Brunei, China, Vietnam, Taiwan and Malaysia. The islands have economic value for oil reserves and fishing. Increasingly China has been exercising its might by dredging the bottom to form man made islands for military bases. Their aim is to control the shipping through the area. The US has been increasing its naval presence there to guarantee freedom of the seas.

The dispute cost the lives of two German hams and some crew members when their ship was shelled by Vietnamese gun ships in the area in a 1983 DXpedition. At least on other DXpedition the ship had to turn back after encountering military forces of one of the countries claiming ownership. They had permission from another country to be there.

Hopefully the 2018 DXpedition will not have any of these troubles. It is being put on by a large international group of about 20 hams from 10 countries. The announced dates were March 6-

March 13 but apparently they had flight delays so the schedule may be delayed. They will be on CW, SSB and RTTY on 160-6M. The call sign will be 9M0W. This will be another tough one propagation wise. The best band will probably be 20 or 30 Meters.

With all the interesting DXpeditions this month, we don't need a lot of contests. The big one was the ARRL DX Contest (Phone) earlier this month. *Coming up next is the Wisconsin QSO Party. This one can be a lot of fun since we are the ones everybody wants to work. It starts Sunday March 11 from 1:00-8:00 PM local time. Don't forget we change to Daylight Savings Time that day! Basically, you work everyone and send your county. Stations outside Wisconsin send their state. You can work each station again on each band and each mode. Modes are CW and phone. You can check out the rules at [https://www.warac.org/wqp/wiqp\\_pkg.pdf](https://www.warac.org/wqp/wiqp_pkg.pdf)*

The other remaining big contest is the CQ WPX Phone contest, starting at 0000Z March 25 and running for 48 hours. Single ops can only operate 36 hours with minimum off times of 60 minutes though. You can work everyone, but points can range from 1-6 depending on the location of the other station and the band used. Multipliers are the number of unique callsign prefixes. Having a call like W9XT is good in most contests, but W9 won't generate any pileups in WPX. Full rules are at <http://www.cqwpw.com/rules.htm>.

That wraps up March. There are a lot of things to do on the radio this month. March's space weather came in like a lion. Will it stay a lion all month?



# THE COMPUTER CORNER

## No. 241: Adware Cleaner

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



I consider this little adjunct program a real gift. Completely free, this little ditty was written by the Malwarebytes team and given to us as simply a present. It may have no ribbons, but it does a job that is quick, efficient, and unparalleled. Furthermore, you don't have to install it. Just download it (it comes directly as an .exe file) and run it. Stash it anywhere you like (my copy is in my Cleaning & Security folder, accessed by clicking an icon that is always on my desktop). Run it every month or two or three, and you will be clean.

So, what does it do? It deletes several different classes of malware, especially those associated with your use of the Internet. Of course, **adware** is the first of those. Nasty little bits of code that will shove unwanted ads in your face no matter what you are trying to do. Second, it will get rid of **unwanted toolbars** in your browser, like the Google toolbar that seems to be installed whether you want it or not. Third, it will remove a class of malware called **PUPs**, which is the acronym for **Potentially Unwanted Programs** (this is the program's real forte, which it does using its own expert lists of such bad stuff). Finally, it will remove **browser hijackers**, those bits of code that, for example, try to make you use Google as your browser when your real browser of choice is Firefox. A nice list of annoying "pains" that you don't need for distractions in your life. You simply need to fight back with this little program.

Furthermore, aside from getting rid of those annoyances, it may well speed up your machine. If you have been noticing your machine seems more sluggish of late when browsing, or even when not just browsing, it may be due to these unwanted programs adding extra memory demands and just plain slowing things down. One cleaning may help, and it is easy to do. Furthermore, the stuff Malwarebytes writes is safe. I use them for my virus protection, and I pay a welcome fee for it. In other words, I trust them explicitly.

Where do you get it? Majorgeeks, of course. Go to <http://www.majorgeeks.com/>, look in the left column for Anti-Malware and select it. Then select the Malware Removal and Repair subcategory and choose from the listings AdwCleaner (the latter is the actual name of the program). Download it and run it. Good stuff.

*[Happy Computing!](#)*



# Vintage Amateur Radio

de Bill Shadid, W9MXQ



This article shows the second product line by The Hallicrafters Company to move into the market created by Collins Radio Company and their S-Line Receiver, Transmitter, and Transceiver. Hallicrafters reinvented themselves in the release of their first installment, the SR-150 Transceiver that we detailed last month. Next, they released their SX-117 Receiver and HT-44 Transmitter. Like Collins, Hallicrafters focused on styling, ergonomics, and competitive performance in the new product entry. They kept the band coverage shown in the Collins 75S-1 while expanding the SX-117 a step beyond the Collins to cover the Broadcast Band and 160 meters – when properly optioned. Below you can see the Hallicrafters SX-117 and HT-44 station – with most of the related accessories – in operation at

W9MXQ . . .



**HT-44 Transmitter with the HA-8 Splatter Guard on top, PS-150-120 Speaker/Power Supply with the HA-1 'TO Keyer on top, SX-117 Receiver with the HA-10 LF/MF Tuner on top. Also, see the Astatic D-104 Microphone and Vibroplex VibroKeyer**

**(Picture mimics my first sight of this station – for the record, I never stack radios!!)**

**(This is a W9MXQ Shack Photo)**

Hallicrafters was, in the late 1950's and into the 1960's, one of the largest producers of ham radio equipment and accessories in the world. In 1965, advertisements in QST and CQ Magazine showed the same station as above. That same advertising made the point that 1965 was Hallicrafters' 31<sup>st</sup> year in business. They told us that they had "19 products to answer any amateur requirement." They said their closest competition had "less than half that number." Much of their business was concentrated in the United States, but the company had a global reach with cus-

tomers all over the “free world.” Hallicrafters was widely known for publicity generating events – including sponsorship of DX-Peditions and many events collaborating with the United States Air Force and other government agencies.

In 1962, the SX-117 Receiver was released to the market. At the time, the matching HT-44 Transmitter was a year away – and unannounced. Hindsight always being 20-20, an astute reader of technical specifications of the SX-117 at the time would perhaps have noticed that the receiver had a transmitter type VFO and back panel connections that betrayed its planned connection to a separate and matching transmitter. Sure enough, in 1963, along came the anticipated HT-44 Transmitter that did indeed interconnect with the SX-117. Those connections allowed frequency control of the HT-44 by the Transmitter or the Receiver. At the time, both Collins and Hallicrafters allowed completely split operation or transceiver control by the receiver VFO. Later, some manufactures would allow transceive control by either the transmitter or receiver VFO in addition to separate control. Another feature of the Hallicrafters SX-117/HT-44 combination is that they worked well in transceive on CW with a proper offset built into the frequency scheme. But, I must add that my friend, Bob, W9DYQ, would tell you that no self-respecting CW operator would operate this pair as a transceiver in Morse code operation! I must add that Hallicrafters upstaged Collins with the addition of a Notch filter – a point not ignored by Collins who added a Rejection Tuning (Q-Multiplier) feature to their upgraded 75S-3 Receiver.

In parallel to this new line, Hallicrafters also continued to produce “big iron” for the ham radio market due to their popularity. The famous Collins 75A-4 Receiver and KWS-1 Transmitter (reference an earlier installment in this series) were gone from the market by then. Hallicrafters made two such “big iron” stations. The highest cost and most spectacular setup was the SX-115 Receiver, HT-32B Transmitter, and HT-33B Linear Amplifier. Also, a lower cost version of that setup was the SX-111 Receiver, HT-37 Transmitter, and HT-41 Linear Amplifier. The SX-117/HT-32B/HT-33B lasted into 1964 but by then the lower cost SX-111/HT-37 station was gone. (The HT-41 Linear Amplifier went on a bit longer.) Hallicrafters based the SX-117 on the technically advanced SX-115 Receiver while the HT-44 was based, in some ways, on the HT-37 Transmitter. So, the family heritage moved forward. To those of you interested in this line, the SX-117 was a technically advanced version of the SX-115 receiver while the SX-111 was basically a low cost SX-101. This “big iron” will be back for your review in a later installment.

Like the SX-115, the SX-117 Receiver used a triple conversion scheme with a low noise 50.75 kHz third conversion – well known at the time in Hallicrafters radios for characteristically quiet receiver operation. Unlike some early SSB Receivers – but like the late versions of the SX-101 and SX-115 Receivers – the SX-117 used a Product Detector for demodulating SSB and CW signals. This change in receiver design in this period added to much improved AGC action. Before this, the practice of riding the RF Gain while keeping the AF Gain high began to fade. Today, this practice is virtually unknown to new operators. (But, it is very necessary to those of us using vintage gear even somewhat into the vintage of the SX-115 and SX-117!) I suggest that if you are interested in the design philosophy of the SX-117, check its ARRL Review in the May 1963 issue of ***QST Magazine***. Personal experience says that the SX-115, while superior in several ways, could have benefited by some features of the SX-117 – so all things considered, the SX-115 seems to be more superior from a reputation standpoint than from an operational one. Make no mistake, however, they are both fine radios.

The one shortcoming in Hallicrafters receivers of the time, including the much beloved SX-115, was that they stayed with what I refer to as tuned circuit i-f filters – avoiding costly mechanical or crystal bandpass filters. Collins receivers, starting with the 75A-4 Receiver, remain competitive to this day due to the design that included Collins mechanical filters. You will see in future installments that Heathkit, Drake, National, and others beat Hallicrafters at their own game by in-

cluding crystal filters in their competitive designs. Indeed, Hallicrafters did the same thing in their SR-150 Transceiver – and came back to that design in their later products. These too will be seen in future installments.

The HT-44 Transmitter is a clever adaptation of an unexpected technology, from my point of view. In keeping with the thinking at Hallicrafters to avoid expensive crystal filters, they left behind the Crystal Filter SSB Generation successfully used in the early 1950's HT-30 Transmitter, the later HT-32 Series Transmitter, and the SR-150 Transceiver. Instead, they borrowed from the technology used in their very popular, lower cost, "big iron" transmitter – the HT-37 – and used Phasing SSB Generation. I will leave the description of the different methods of SSB Generation to your study of the ***The Radio Amateur's Handbook*** from the American Radio Relay League. My favorite treatment of that subject appears in the 1963 and 1964 editions of that Handbook, beginning on page 305 (in both editions). But, it can be found well before that and right up to my 2018 edition. Why do I prefer the 1963 edition? It is described with vacuum tubes!

For the record, the Hallicrafters HT-44 had a rated input power of 200 watts on 80-10 meters for SSB and CW. Output power was 100 watts with a bit less on 10 meters. The HT-44 here at W9MXQ meets that specification and more (but is held to no more than 100 watts output). The final amplifier uses a pair of 6DQ5B Tetrodes. The 6DQ5B's in the HT-44 here are date coded 1964 and are branded "Hallicrafters." That means they were the original final tubes with the transmitter when it was delivered from the factory.

Hallicrafters' path to this transmitter design must have been a real study in their engineering department. Transmitter development for generating a Single Sideband (SSB) signal had been split in the industry with signal generation using the Filter Method and the Phasing Method. The differences in these designs are the subject for another article but suffice it to say that by the early 1960's most of the industry had moved to the Filter Method. (Collins' use of Mechanical Filters put them in the "Filter" camp – application of crystal or mechanical filters is the same as far as circuit results are concerned.) Hallicrafters by that time had significant experience in both methods with good experience in the Filter Method with the HT-30, HT-32 series, and the SR-150. However, the Phasing Method was successfully used with the popularly priced HT-37 Transmitter. In what I consider a surprise after the recent release of the SR-150, Hallicrafters installed a phasing SSB generator in the new HT-44 Transmitter. Any concerns about sideband suppression stability – somewhat of a problem in the HT-37 Transmitter – were solved in the successful and stable HT-44. At least in the time of the HT-44, the Phasing Method produced a more robust audio sound at the receiving end of the communication circuit. (This is a subjective comment based on personal experience – not a scientific analysis! This almost certainly is a product of a wider signal bandwidth in the HT-44.)

My experience is that using a HT-44 Transmitter in a ham station generates a significant number of audio complements. And, as if to tell the world that Hallicrafters had solved stability issues with Phasing SSB Generation, they moved the carrier balance control off the front panel (as on the HT-37) and placed it inside the cabinet under the top cover. Their confidence was well founded. My use of the HT-44 Transmitter rarely, if ever, needs that control to be adjusted once set. Even many crystal filter transmitters were not that stable – and some of them, such as Swan, had balance controls on the front panel.

I must add that using the HT-44 Transmitter (as with the transmitter section of the SR-150 Transceiver) is ultra-simple. The radio is fix tuned for a 50-75-ohm feed line and, as such, has no Load Control. Tuning the transmitter merely involved peaking the frequency calibrated Driver and Plate controls for maximum output on the front panel RF output meter.

Accessories used with the SX-117 and HT-44 Station included some interesting items. They are included in this article – starting just below.

I reference above that the SX-117 Receiver took a step beyond its Collins competition (the 75S-1 Receiver) by providing for more frequency coverage. Like the Collins radio, the SX-117 alone allowed for additional coverage – between 3.5 to 30 MHz in the standard equipment receiver. With the addition of the HA-10 LF/MF Tuner, however, the SX-117 could cover from what we now refer to as VLF to past 160 meters and up to just below 80 meters.



The HA-10 LF/MF Tuner allows the SX-117 to tune from 85 kHz to 3 MHz using properly assigned Range Crystals in the receiver. The general coverage operation (coverage outside 80-10 meters) required the addition of an optional auxiliary crystal oscillator which was nothing more involved than plugging a 6EA8 tube into the oscillator tube socket. The circuit was included with the receiver. Only the tube was missing. In one of those radio collector mysteries, Hallicrafters did not always include the “h” red ball logo on this tuner (above the lettering, “HA-10.”) See it in the at the right side of the HA-8 Splatter Guard front panel, below. Some advertising had the logo, and some did not. My HA-10 does not have it.

### **The HA-10 is a W9MXQ Shack Photo**

I think the most unique accessory for the HT-44 Transmitter is the HA-8 Splatter Guard. If anything, the HA-8 is best described as a poor man’s monitor scope.



The HA-8 Splatter Guard with its small feed-line coaxial sensor monitors the modulation level of signals – especially SSB signals. It used an EM-84/6FG6 “Magic Eye” tube. Used properly it senses power from 40 to 1,000 watts with insignificant insertion loss between 3.5 and 30 MHz. Higher frequencies up to past two meters are possible with a bit of a penalty of mismatch. However, the unit was designed as an HT-44 accessory. Setup involves adjusting the Sensitivity control at full carrier power so that the beams on the “Magic Eye” just close – “beams” from the left and right move toward the center from each side. During SSB Modulation one watches for the beams to stay at, or below, the center. A bright vertical line forms at the center if one over modulates.

### **The HA-8 is a W9MXQ Shack Photo**

In my SX-117 and HT-44 Station I use the Hallicrafters PS-150-120 Power Supply and Speaker Console. You saw a picture of this Power Supply in the installment of for the SR-150 Transceiv-



er. The model number of this unit takes its “150” from that transceiver. The “120” designates the AC power supply line voltage.



The PS-150-120 supplied necessary voltages to operate the HT-44 Transmitter or the SR-150 Transceiver. The Power Supply included a speaker for use with the SX-117 Receiver (or the SR-150 Transceiver). Connections for the speaker in an SX-117/HT-44 installation were routed through the transmitter via receiver/transmitter interconnections. Hallicrafters used only solid-state devices (silicon diodes) in the power supply and avoided the vacuum tube circuitry used in the Collins 516F-2 Power Supply (which, by the way, did not include a speaker). Also, Hallicrafters included pin connector sockets on the chassis to allow reading of plate current and voltage with a simply Volt-Ohm-Meter. Hallicrafters sold this unit internationally but I have not seen any evidence of there being a “PS-150-220” variant for use with 220-volt circuits. Nor have I seen a 220-volt version of the SX-117. I believe at the time it was more common to use a 220 to 110 VAC step-down transformer.

### The PS-150-120 is a W9MXQ Shack Photo



**Hallicrafters HA-1 'TO Keyer**  
(The HA-1 is a W9MXQ Shack Photo)



**Hallicrafters HA-1A 'TO Keyer**  
(The HA-1A is a W9DYQ Shack Photo)

The HA-1 'TO Keyer was a non-lambic Electronic Keyer using six vacuum tubes, two of which are regulators. The Keyer has a sidetone generator (not a transmitter feature in those days) and a mercury-wetted relay for keying. Keying contacts were designed to take up to 500 volts at up to 250 VA. Imagine that in today's Keyers! There was a later version of this Keyer, called the HA-1A that pretty much used the same design with knobs and front panel lettering to compliment the latest Hallicrafters products. Note differences in pictures, above. Incidentally, the Keyer was named by Hallicrafters after W9TO, designer of the circuit.

A major accessory for the SX-117 and HT-44 was the HT-45 “Loudenboomer” Linear Amplifier – this is not the first in Hallicrafters policy of naming radios in addition to model numbers. Recall other names such as “Sky Buddy,” “Ultra Skyrider,” “Sky Challenger,” and the later “Tornado,” “Cyclone,” “Hurricane,” and “Safari” radios we have yet to cover in this series. The Loud-boomer will be covered in a future installment detailing its design use with the SX-117/HT-44 and with the SR-150 Transceiver.



The matching Hallicrafters HT-45 Loudenboomer Mark IIA Linear Amplifier. A Story for a future installment. Not shown is Model P-45, 3,000 (VDC) Power Supply.

### **The HT-45 is a W9MXQ Shack Photo**

This equipment has been with me for over 30 years. I came via a chance meeting with a fellow during the time when my QTH was in Columbus, Ohio. Back at that time, vintage gear did not carry near the value it does today – treated then more like useless “stuff.” The owner was a friend of a local ham radio store manager and he was looking to find a good home for his SX-117, HT-44, PS-150-120, and the HA-8 Splatter Guard. Also, part of the package was the HT-45 Linear Amplifier and its matching P-45 High Voltage Power Supply. He asked simply that I promise to keep it and to take care of it – and pay him the shipping cost to get it from his QTH in Pittsburgh, Pennsylvania, to my QTH in Columbus, Ohio. Obviously (!!!), I accepted the offer and have never gone back on my word to keep and maintain the set. It looks and works like new – and even includes the original Hallicrafters shipping boxes for the receiver and transmitter. I am only the second owner of the SX-117, HT-44, and PS-150-120 (and also the HT-45 and its matching P-45 Power Supply).

The HA-1 ‘TO Keyer came to me from a Hamfest as did the HA-8 Splatter Guard. The HA-10 LF/MF Tuner came via Bob, W9DYQ, friend from childhood and fellow collector and owner of two SX-117 and HT-44 stations. Bob has the Radio Industries Loudenboomer Linear Amplifier which preceded the HT-45. More about that story when we talk about the HT-45. (To wet your appetite for this story, Radio Industries was a division of Hallicrafters, based in Kansas City.)

The SX-117 Receiver enjoyed wide popularity – maybe a bit more than its mate, the HT-44 Transmitter. To this day, you can spot SX-117 Receivers in pictures of ham shacks around the world. There are also many SX-117/HT-44 pairs still in operation here and there. They are not hard to find – but ones in pristine condition are somewhat rare. They have all aluminum cabinetry construction and at the time of their manufacture the technology of getting paint to stick to aluminum was not well developed. Many of these radios have good, sound cabinets but flaking paint. I am very fortunate to have a set with nearly flawless paint. Perhaps that is more due to the care these radios get at W9MXQ than in them being painted any better than their sisters and brothers from the production line. Unlike today, in 1963 when the SX-117 was introduced, it was regular practice to have a receiver from one manufacturer and a transmitter from another. The



system approach, introduced by Collins and the S-Line, started the trend to have a complete station with a single brand of radio and all accessories.

Today the SX-117 suffers from a lack of selectivity in competitive situations – recall my comments, above, about the “filtering” in the receiver. But, sitting in front of this set on a Sunday afternoon on a 40-meter rag chew is pure joy. Super audio on both sides of the circuit reminds me of what ham radio once was – and still can be. Listening to the golden tones of the SX-117 on CW must be experienced – as is the excellent, smooth CW keying from the HT-44. Give a listen if you have the opportunity!

**Sincerest thanks to Bob, W9DYQ, for his assistance in this article.**

## **UPCOMING EVENTS**

### **ORC Membership Meeting – March 14, 2018**

*Coming up next is the Wisconsin QSO Party. This one can be a lot of fun since we are the ones everybody wants to work.*

*It starts Sunday March 11 from 1:00-8:00 PM local time. Don't forget we change to Daylight Savings Time that day! Basically, you work everyone and send your county. Stations outside Wisconsin send their state. You can work each station again on each band and each mode. Modes are CW and phone. You can check out the rules at [https://www.warac.org/wqp/wiqp\\_pkg.pdf](https://www.warac.org/wqp/wiqp_pkg.pdf)*

***On April 10-15 the special event station W4S will be operating on 20 meters SSB from the Sun-N-Fun air show in Lakeland Florida. Tune in and listen to the Thunderbirds.***

## Silent Key: Lawrence McCalvy, WA9JMO

It was a warm summer night in 1963, when Larry called me, and encouraged me to go with him to Allied Radio on Port Washington Rd. for a Ham radio code class. That's why our calls were so close together. Larry and his family socialized with my family, and we were good friends.

As time passed, we drifted apart with different jobs, and interests. Larry lived in Racine, and I in Mequon. We would meet from time to time at swapfests, Dayton, and other Ham gatherings. In spite of all this, Larry and I always knew that because of our friendship back then, we always had a bond because of Amateur Radio.

Larry passed on February 6th, and with it so did our special bond.

73, Nels Harvey WA9JOB

## For Sale and Wanted

I have a like-new in the box Yaesu FT-817ND and an LDG Z-817 antenna tuner.

The equipment was purchased new at HRO in approx. October 2016. It was used a couple of times and has sat in the box since. It's a super nice little radio. Problem is I have too many super nice big and little radios. It needs to find a home where someone will use it.

The 817 includes an extra battery holder and power cord. Both power cords are terminated in Anderson powerpoles. I have the box for the 817 but for some reason I can't find the box for the LDG tuner.

This equipment new will cost you \$814 plus tax if you went to HRO today. I'll sell you mine for \$550 cash.

73' Tim, KA9EAK (Tim Boppre <[ka9eak@gmail.com](mailto:ka9eak@gmail.com)>)

---

I recently picked up a Gonset Communicator III and would like to offer it for sale. This radio is in great cosmetic shape, with very good paint and lettering. It looks complete on the inside but is pretty dusty from storage.

This is the Model 3313 which covers the 2 Meter band. These were very popular with radio clubs and Civil Defense groups. The Communicator III sold for \$270 in 1960.

The Gonset Communicators were made in the 1950s through 1961. They are a complete station in a box, with a crystal controlled transmitter, tunable receiver and power supply. The Gonset can be powered by either 12VDC or 120VAC. Power output is about 6 watts on AM. Gonset also made a VFO for the Communicators.

If you are interested contact me off list and make an offer.

Pat W9JI, [w9ji@arrl.net](mailto:w9ji@arrl.net)

## **Nets EVERY WEEK . . .by Sherm, KB9Q**

**United States Mideast 160 Meter net, 1.895 MHz, 0100 UTC daily.**

**160 Meter Roundtable, 1.865 MHz, 5:00 a.m. Central Time Daily.**

**160 Meter Roundtable, 1.895 MHz, 6:30 a.m. Central Time Daily**

**6 meter SSB, 50.160 MHz, Tu, 9:00 a.m., Central Time, MKE**

**6 meter SSB, 50.140 MHz, Tu, 8:00 p.m., Central Time, Kalamazoo Michigan, K8BKB NCS**

**6 meter AM, 50.400 MHz, Su, 7:00 p.m., Central Time, Michigan**

**"Breakfast roundtable", Mornings at 7:30 a.m. (Central Time) on 144.155 MHz USB**

**10-10 International: Monday - Saturday 1800 UTC 28.380 MHz (also 28.800 MHz with propagation)**

**Milwaukee Chapter 10-10 International: Sunday and Wednesday Nights 28.365 MHz, 8:00 p.m. Central Time.**

**(Monday and Thursday 02:00 UTC During CST and 01:00 UTC During CDT)**

**Milwaukee Radio Amateurs' Club 28.490 MHz, 8:00 p.m. Central Time Friday**

**222 Tuesday, any mode, any time. Start at 222.1 MHz USB, 223.5, MHz FM, 222.070 MHz PSK,**

**Don't forget Repeaters. (224.820 pl.127.3 Tuesdays 9pm-10pm in SE WI)**

**MSOE repeater W9HHX Monday night Net @ 8:00 PM 145.27 MHz, 127.3 PL After that net ends they move to 28.365 USB**

### **WEEKLY TWO METER SSB ACTIVITY**

**Central Wisconsin: Wednesday, 8:00 p.m. Central Time, 144.240 MHz, NCS WB9LYH**

**Chicago land: Thursday 7:00 p.m. Central Time, 144.220 MHz, NCS N9JBW**

**Chicago-Ohio: Friday 7:00 p.m. Central Time, 144.215 MHz, NCS KC9IFZ**

### **FROM MICHIGAN:**

**Sunday            9:30 p.m.    144.155 USB    K8NFT    (EN62ws)**

# Ozaukee Radio Club Meeting Minutes

## February 14, 2018

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:30 PM. All the attendees introduced themselves.

### **Announcements, Show-and-Tell, Bragging Rights:**

Karen KC9WQJ announced that Larry McCalvy, WA9JMO became a silent key. He and Nels Harvey passed their license exams together.

Naomi KC9YES introduced a new ham and possibly a new ORC member, Dave Flowers, KD9JYL.

Ken W9GA said that the Bouvet Island DXpedition didn't happen because of bad weather and engine trouble on the ship. There are more details in Gary W9XT's article in the February newsletter.

### **Program:**

Ben K9UZ gave a presentation on predicting and measuring RF field levels for compliance with FCC human exposure standards.

### **Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a Dell Latitude laptop with the latest version of Linux installed, and several Webroot hard disk erasers.

### **Officer Reports:**

Kevin S. (K9VIN) President – Working with Dave N9UNR to pay the renewal of the club's liability insurance.

Pat V. (W9JI), 1st VP – Pat has completed the first pass of the club inventory with recent additions of the Field Day computers. If anyone is in possession of club equipment which has not been notified, please inform Pat.

Robert E. (K4WTH), 2<sup>nd</sup> VP – Robert has gotten five or six historian-related requests which he hasn't yet gotten through but will do so soon. Also, he reminded members to pay their 2018 dues if they haven't already. Stan WB9RQR announced that Robert is the official Field Day computer networking honcho.

Tom T. (KC9ONY), Repeater VP – Tom wasn't at the meeting, so there was no report.

Ben E. (K9UZ), Secretary – The minutes from January's meeting is in the newsletter. Motion to accept the minutes was made by Nancy KC9FZK, seconded by Gary K9DJT and passed.

Dave B. (N9UNR), Treasurer – Dave was not at the meeting but he did distribute the treasurer's reports by email. Ben K9UZ made a motion to accept the reports subject to audit and Curt N9CBS seconded. The motion passed.

### **Committee Reports:**

Elections, Ken (W9GA) – Ken asked members to fill out and turn in ballots for election of Ham of the Year and Turkey of the Year. He will accept ballots at this meeting and at the March meeting, and the awards will be given in April.

Spring Swapfest, Kristian (KC9TFP) – No report.

**Old Business:**

Dave KC9REP asked whether or not the Antique Radio Club will again be joining forces with the ORC for the Spring Swapfest. Kevin K9VIN said it's his understanding that they will.

**New Business:**

There was no new business.

**Adjournment:**

A motion to adjourn the meeting was made by Stan WB9RQR, seconded by Jerry KC9WUI and passed. The meeting was adjourned at 9:23 PM.

**Attendance:**

There were 29 members and 3 guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary



## MEETING AGENDA

March 14, 2018

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to order: Introductions. Kevin Steers (K9VIN)
3. Announcements, Bragging Rights, Show & Tell, Upcoming events, etc.
4. Program: 50/50 – Kristian Moberg, KC9TFP
5. Fellowship Break
6. Auction – Stan Kaplan (WB9RQR)
7. Presidents Report – Kevin Steers (K9VIN)
8. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)

9. 2<sup>nd</sup> VP Report – Robert Eskola (K4WTH)
10. Repeater VP report – Tom Trethewey, (KC9ONY)
11. Acceptance of Minutes – Ben Evans (K9UZ)
12. Treasurer's report – Dave Barrow (N9UNR)
13. Committee reports:
  - A. Spring Swapfest
  - B. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

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### The ORC Newsletter

465 Beechwood Drive  
Cedarburg WI\* 53012

### First Class

Next ORC Meeting

### Grafton Senior Citizens Center

1665 7<sup>th</sup> Avenue, Grafton  
Wednesday, March 14<sup>th</sup> 2018

7:00 PM – Doors Open

7:30 PM – Meeting



# The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



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Volume XXX

April, 2018

Number 4

## From the President

*de Kevin Steers (K9VIN)*



As I write this, three more inches of snow are expected. That is in addition to the eight inches from last Friday evening. This April is like no other I recall. Knock on wood, the winter has been OK on the antennas, and now is the time to play with a new mobile setup, if only the weather would cooperate.

The only real excitement 'on the bench' that I can cite is my repair of a failed microwave oven unit. After 13 years, my over-the-range microwave failed to heat anything. And judging by the odd noise it made, I was sure it was toast. After trying to find a comparable model and color, with external vent, etc., the only ones I found were well over \$500. Not in

my budget (at least not for kitchen equipment).

I went to my friend Google, then to my better friend YouTube, and found reasonably accurate repair advice, so I determined that it was probably the Magnetron that had failed. Seventy-five dollars later, a four day wait, and about four hours of frustration, I had the unit removed, disassembled, tested, reassembled and re-installed on the wall. What a great feeling of accomplishment, not to mention teaching my kids how to save hundreds of dollars just by disassembling and reassembling on the kitchen table. One lesson I learned is how much pressure is on when the microwave was out of service. It is amazing what a time saver it is.

Well, the spring swap is only a month away, and things are starting to take shape. It is just a matter of time before we are setting up tables, per Loren's proven layout, and taking tickets at the door. Hope to see you all there!

73,  
K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Well, we are in spring now, but the cold weather sure does not show it. Despite this you can tell we are moving towards summer radio conditions. The shorter days mean that the nighttime paths don't last as long, and the long-distance paths are disappearing as the shorter dark periods in the northern hemisphere mean there is no period where both ends are in darkness.

Last month I mentioned the Wisconsin QSO Party. I had not been able to operate it in many years due to a conflict. For some reason my conflict was rescheduled for the following week. Something else came up that kept me out the first half of the contest, but I did finally get on, working Gary, K9DJT, Bill, W9MXQ, and probably a couple of other ORC members that don't come to mind immediately.

The ORC used to make a big effort in this event. I talked to Gary and Bill. Even though we all belong to different clubs we decided to submit our scores under the ORC. The ORC used to make a big effort in this event. Bob, W9LO (SK), used to be the sparkplug to marshal the troops to get on for the WIQP. What do you think? Should we start thinking of making a big splash for next year's event?

April is not a big month for contests. There are no big ones, so none will be discussed this month. The DX world is a bit more active.

The newest DXCC country, Kosovo, will be activated by a group from the Czech Republic on April 15-22. Bands were not mentioned but based on the antennas listed on their web site 80-10 are likely. SSB, CW, RTTY, and FT8. The call will be Z66D. If you worked the first station (Z60A) on from Kosovo once they became a DXCC country, you got a nice surprise from the Easter Bunny. The logs were uploaded to LoTW on April 1. It was much better than those hard marshmallow chickens that usually show up that day.

Bhutan will be activated April 4-11 by a small group using the call sign A5A. They will be on 160-6M, using CW, SSB, and FT8. There will be a special emphasis on FT8. This is a tough path. Our best shot will probably be 20M.

There will be another group going to Bhutan later in the month. A group of Japanese ops will be all operating on individual A52 call signs April 29-May5.

Also on the April 29-May 5 dates, a group of Russian hams will activate Mozambique with the call C96RRC. Look on 40-10M, CW, SSB, and digital.

St. Barthelemy will be activated by a few US hams using their FJ/Home-calls April 18-27, 80-10M, CW, SSB, RTTY and some satellite.

A group of Italian hams will be activating Mauritius under the call 3M8MB. The dates are April 20-28. The operation will be on 2M moon bounce.

Also from the Indian Ocean will be 3B7A from Agalega & St. Brandon. This is probably the biggest operation of the month. The French group will have seven stations covering 160-6M, CW, SSB, and RTTY. The dates are April 5-17 and the call sign will be 3B7A.

Palau will be activated under the call signs T88FT and T88IH by a pair of Japanese ops. The dates are April 17-24, 160-6M, CW, SSB, JT65 and JT9.

There are a number of single op DXpeditions this month. Many are holiday or business trip style, where they get on the air when other activities permit. Being on the air a lot is the best way to find them.

*That wraps up this month. See you on the air!*

## **THE COMPUTER CORNER**

### **No. 242: ONLINE BANKING**

*Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664 (262) 268-1949  
wb9rqr@att.net*



My gosh! Why would Stan include an article on Online Banking! Well, folks, many of us use our computers for banking, to one extent or another. At the very least, some of us look at our balances online. On the other end, some of us do all our banking using a computer, or even a smart phone. Not being an expert in the subject, I found someone who is. Our own Second Vice President, Robert Eskola (K4WTH) has worked in the banking industry for years and has written a short article to “heighten our awareness” in this area. Thanks, Robert, for being a guest author for the Computer Corner. Happy Computing, all!

#### **Banking for the Future: Safe, Secure Online and Mobile Banking**

Robert Eskola, K4WTH

It's always nice to go into things with your eyes wide open. If you are new to internet banking, you might not have considered where you can run into hiccups as you manage your money online. This article should help you to imagine a few things that can go wrong and may even help you deal with those situations. It should be noted that most consumers are quite happy with their online banking experience. They enjoy higher interest rates on savings, and they often have access to advances in banking technology such as remote deposit, images of checks deposited, and the ability to move more quickly than they would in a traditional bank teller transaction.

Another plus is that the few difficulties mentioned in this article are becoming less and less prevalent as banks improve due to competition. Online Bank Accounts and the speed of the internet makes some things faster, and some things slower. When you first open an account, it may feel like a “hurry up and wait” situation. You’ll need to complete an application online, and you might even need to send in a paper document with your signature. This can feel odd, compared to the relative speed of most other transactions online. At brick-and-mortar banks, you can begin using an account almost immediately.

Deposits to your online bank account can be slow, but with practice you will learn to move money quickly and efficiently. If you get a big check and want to start earning interest, you can expect to wait if you're going to mail the check in, plus you will be at the mercy of the post office. The higher Annual Percentage Yield you earn may still make it worth your while, but it's just no fun to wait. What can you do about this? Use an online bank application that allows you to deposit checks remotely, with a computer or mobile device.

Most banks within the United States use 128-bit or 256-bit encryption and follow NIST (National Institute of Standards and Technology) guidelines for what level of encryption to use with your document. For example, NIST declares 80-bit strength until 2010 and 1120-bit strength until 2030 (see NIST SP 800 57). Keep in mind the adage “location/location/location”. Where are you trying to access your information from is just as important as what you access. Never use open networks or free Wi-Fi spots to access your bank accounts. Also, monitor your checks. In a study done in 2016, 54% of bank fraud occurred from unauthorized use of contact information taken from checks. With only one check, a “bad guy” may have access to your routing number, account number, check number, name and address, phone number, and driver’s license. Making those deposits remotely using a computer or mobile device will start earning interest faster, and you don’t even need to pay for a stamp. But there is a catch: banks limit how much you can deposit with your mobile device, so you can't deposit large (usually over \$5,000) checks this way.

What about getting cleared funds quickly? If you need to pay somebody with a cashier’s check, an online bank account won’t help, since you will still need to run to your local branch. Current banking regulations stated in the Patriot Act require you to personally identify ownership on the account with intentions to create a paper trail. However, you can generally do a wire transfer out of an online bank account (if your payee will accept a wire transfer). Or set up your bill paying scheme to pay certain people and organizations on your schedule. The nice part of this is that if the payee you are trying to pay accepts electric payments, the funds move via Automatic Clearing House. On the other hand, if they do not accept electric payment, the bank will send a check to be delivered on the exact day you specify.

Note that you should never set up a system to have anyone routinely take money from your account on a scheduled basis. Why? It is almost impossible for you to stop this type of transaction, should an issue come up that makes you want to do so. The majority of bank fraud happens when insurance companies or cable/internet companies have your permission to remove money from your account automatically. You Can’t Spend It from Your Online Bank Account If You Don’t Have Checks Online bank accounts traditionally made it very easy to spend your money, making it necessary to really keep close track of your funds in the account. But, things have improved somewhat since the older days.

To keep your cash accessible, use accounts that offer online bill pay or debit cards that you can



use at an ATM or retailer. Always make sure never to write your pin on your debit card (this voids all protection you otherwise have in your account and you become liable for every penny). Whenever possible, always run any transaction as a “credit”. That allows you to sign your signature on your debit card and still have all the protection you would get if you would use a credit card.

Most major banks have some sort of rewards program tied with their online banking platform. Remember that you worked hard for your money. The question is, does your money work that hard for you? Customer Service with Online Bank Accounts is improving all the time, but you may occasionally have trouble with customer service. With a brick-and-mortar bank, you’ll likely have some familiarity with the staff. At a credit union, the staff might even get to know you very well. If you’re the type of person who enjoys this personal interaction, it’s easier to find at a brick-and-mortar institution.

On the other hand, you might want to just get things done and move on about your business, in which case online bank accounts are more efficient and can get most if not all types of transactions completed in a very timely manner. Sometimes problems are easier to solve in person. If there is a mistake somewhere, a face-to-face discussion may be the most effective way to make progress when things are confusing. You won’t have to wait on hold, and deal with an “escalation” process, since everybody can sit down together and figure things out. Why does the staff matter? It’s easier to get good service if you know them and they know you, especially if they know what you typically do with your accounts. And if you are familiar with the institution’s employees, you can select who to deal with.

Online bank accounts often require that you play the “1-800 Lottery” which is a trade off on knowing someone face to face. On the other hand, folks on the telephone often have later hours of operations and can resolve the issue, without you leaving the comfort of your home. You might get somebody helpful and knowledgeable, or you might not. On the bright side, you can always hang up and call back – hoping for a better-qualified representative, but that can be frustrating. It does seem, though, that in recent years, customer service has improved at most banks because employees are crossed trained to handle most issues.

Other Reason Why People Avoid Online Bank Accounts and Transactions: Sometimes online banking websites go down. When this happens, there’s no backup branch that you can go to – and the phone lines will be clogged. To protect yourself, always keep a local bank or credit union contact information with you so you won’t be penniless or without access while they fix the online problem.

To summarize, you should not ignore online banking because of the ability to quickly access and move money where you want it. Online accounts may offer an easy way to bank for free, and they are a good bet for quickly finding high-interest rates. Thus, they tend to make life easier. You may never run into any of the problems mentioned above, and your overall experience will probably be great. However, you now have an idea of what can go wrong when using these services.

# Vintage Amateur Radios

de Bill Shadid, W9MXQ



On the heels of last month's presentation about the Hallicrafters SX-117 Receiver and HT-44 Transmitter (and the SR-150 Transceiver before that) comes a review of the HT-45 Linear Amplifier and the Radio Industries Loudenboomer model. Customers buying the SX-117/HT-44 Twins or the SR-150 Transceiver would find the HT-45 to be a perfect match. This amplifier became a direct competitor to the Collins 30L-1 Linear Amplifier but was potentially a good deal more powerful – at least in the power supply and tube plate dissipation. Below you can see the Hallicrafters HT-45 Linear Amplifier that is in operation at W9MXQ.



**Hallicrafters HT-45 Mark IIA 80-10 Meter Linear Amplifier  
(Hallicrafters P-45 High Voltage Power Supply is Separate.)**

(W9MXQ Shack Photo)

The Hallicrafters HT-45 Linear Amplifier was capable of operating on most of the HF spectrum from 3.5 to 30 MHz, as were its mates, the SX-117/HT-44 and the SR-150. There was some efficiency drop-off outside the traditional 80 – 10 Meter bands of the time. This amplifier was developed by a Hallicrafters subsidiary operation, Radio Industries, Inc., of Kansas City, Kansas. That amplifier was known as the Loudenboomer. That name was kept with the release of the HT-45. Note the word "Loudenboomer" both on the front of the HT-45, above, and on the front of the Radio Industries version, below:



**Radio Industries Loudenboomer Mark IIA 80-10 Meter Linear Amplifier  
(Radio Industries PS-2A High Voltage Power Supply is Separate.)**

(Radio Industries Loudenboomer Operating Manual)

The Radio Industries Loudenboomer and the Hallicrafters HT-45 share all physical and electrical specifications. Despite the color differences in the included photographs, the two amplifiers might well have shared the same front panel silk screening. The black insert panel and trim at the top of the HT-45 Front Panel are separate pieces. I have not removed them from my HT-45 but I suspect I would see the Radio Industries panel with the Radio Industries and Loudenboomer name blanked. Further indication of using the same silk screen is noticed when looking at the word "LOADING" at the right side of the amplifier. You will see that the trim piece there nearly covers the "L" in that word. If a separate design screen had been used, this could have been adjusted. That is just one of several trivia items in these products.

The HT-45 used a newly designed triode from Eimac – the 3-400z. This is the predecessor tube to the long popular 3-500z that most of us know. 3-400z tubes today are nearly unobtainable. Some of these amplifiers (both brands) can be found today with an Amperex 8163 triode. The Amperex 8163 (also now nearly unobtainable) was a competing tube to the Eimac 3-400z but was slightly taller and was a very tight fit in the cabinet of these amplifiers. To my knowledge, neither Radio Industries nor Hallicrafters branded amplifiers ever shipped with Amperex tubes from the factory.

For a review, look at comparable specifications for the HT-45 (and Loudenboomer) and its competitive target, the Collins 30L-1:

<b>Specification</b>	<b>Amplifier</b>
	<b>Collins 30L-1</b>
Band Coverage	80-10 Meters
Power Amplifier Tube(s)	Four 811A Triodes
Total Dissipation	260 watts
Circuit	Zero Bias Grounded-Grid
Input Circuit	Tuned – 50 Ohm Impedance
Cooling	Simple fan across the Tubes
Input Power	1,000 Watts SSB/CW
Drive Power for Full Output	100 Watts
Power Output	500 – 600 Watts
Plate Voltage	1,800 Volts
Total Weight	38 Pounds

(Collins 30L-1, Radio Industries Loudenboomer, and Hallicrafters HT-45 Operating Manuals)

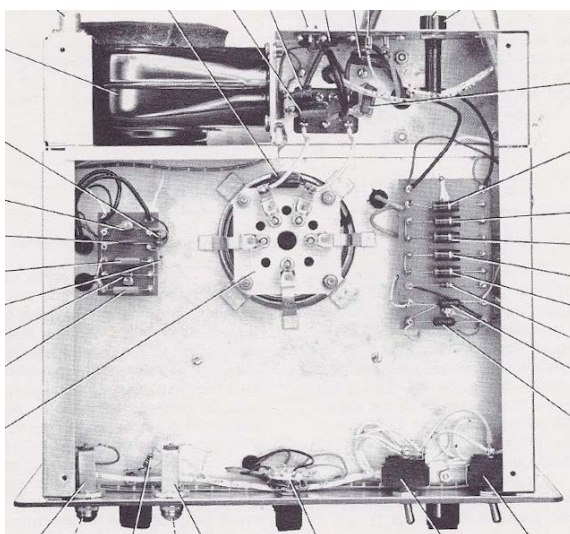
This comparison covers just these popular "table top" amplifiers. (The Hallicrafters P-45 Power Supply for the HT-45 was floor mounted – so maybe "table top" is a bit of a stretch!) The total weight of the HT-45 (at 103 pounds with its power supply) was far more than the 30L-1. That was related to the extremely underutilized P-45 Power Supply in the Hallicrafters system. I am sure that the P-45 Power Supply could have handled much more power. However, the single Eimac 3-400z tube perhaps could not. One wonders if Hallicrafters had plans for a two-tube version of the HT-45. Remember, however, that at that time there was disagreement on the point of 2,000 watts PEP input for SSB. Hallicrafters in those years did not agree with that specification and had no amplifiers rated beyond 1,000 watts. Indeed, even Collins rated the bigger 30S-1 Linear Amplifier (floor mounted amplifier and power supply weighing 170 pounds) at 1,000 watts input. Same as the 30L-1. The 30S-1 could produce far more than 1,000 watts input power.

The HT-45 has a rather unique tuned input. And, in fact, both the Collins 30L-1 and the Hallicrafters HT-45 worked with exciters (32S-1 from Collins and HT-44 from Hallicrafters, respectively) that required a load impedance very close to 50 Ohms. Collins did this with tunable Pi-Network input circuits – one for each of its five bands, 80 – 10 Meters. The Hallicrafters input was a “wide-band ferramic transformer” (to quote their actual terminology), “which is broad-band tuned and essentially flat from 3.5 to 30 MHz.” This was all well and good but the HT-45 was super critical to drive level and anything more than 50 watts presented to the input of the amplifier would cause great problems and terrible signal reports caused by overdrive. To resolve this, the Operating Manual for the HT-45 includes design and building instructions for a 3-dB RF Pad that tames the drive power and makes the input circuit of the HT-45 operate as smooth as silk.

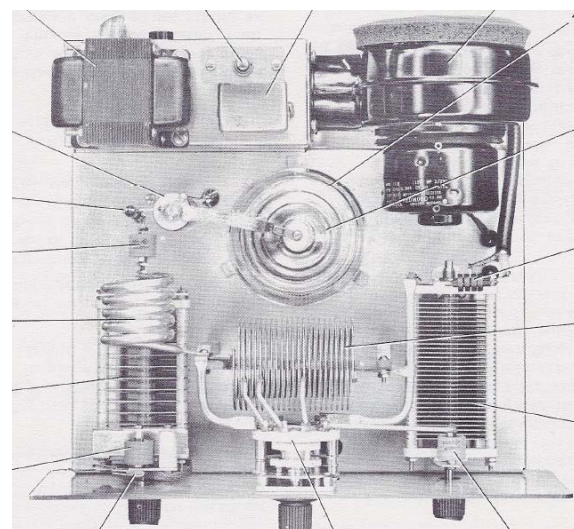
I have owned both the Radio Industries Loudenboomer and now the Hallicrafters HT-45 amplifiers. My original Loudenboomer and its matching 3-dB pad lives on with my fellow collector, Bob, W9DYQ. My current HT-45 has its own 3-dB pad, also based on the HT-45 Operating Manual. The pad uses a total of 38, 2-watt carbon composition resistors. As you would expect, the pad dissipates about 50 watts, peak.

Unlike the Collins 30L-1, and many other amplifiers of the time, the Hallicrafters HT-45 does not have in/out RF switching. When connected to its exciter (such as the Hallicrafters HT-44 Transmitter) it runs 1,000 watts input – period. A relay switching system needs to be designed to handle proper switching – keeping the 3-dB pad inside the amplifier part of the circuit (to prevent a 3-dB loss to the receiver). There is no hint of this in Hallicrafters’ documentation. If you find yourself in need of help making either the 3-dB pad or the relay switching system, you may always contact the author of this article for suggestions and some direction. I built my own switching relay from scratch. Such relays were readily available back in the 1960’s from P&H Electronics, Dow Key, and others. But, those are long gone, today. Home-brew is about the only option today.

Here is a peek inside the workings of the HT-45 Linear Amplifier...



**Hallicrafters HT-45 Linear Amplifier  
Inside Bottom View  
(Front Panel at Bottom of Picture)**



**Hallicrafters HT-45 Linear Amplifier  
Inside Top View  
(Front Panel at Bottom of Picture)**

(Hallicrafters HT-45 Mark IIA Operating Manual)



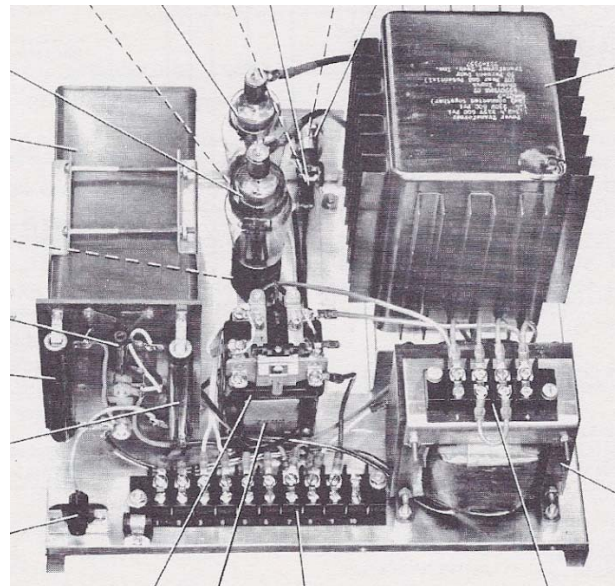
In the bottom view you can see that the grid connections on the 3-400z socket are directly grounded to the chassis. The Mark II Model of the Radio Industries and Hallicrafters amplifiers had the grid pins going to ground through 0.005 uF mica capacitors. In the same view you can see, in the upper left-hand corner, the blower connected to the chamber housing the AC and Control lines from the P-45 Power Supply – which is open to the main chamber where the tube socket is mounted. All air must flow out of the blower, through the AC/Control input area, into the main socket area, and out via the chimney surrounding the 3-400z final amplifier tube.

Turning the amplifier over shows the 3-400z tube surrounded by its chimney (open at the top) forcing air past the tube socket pins at the bottom, around the tube envelope, and then exiting around the plate cap. In this Top View you can see the TUNING (left) and LOADING (right) capacitors and the Band Switch connected to the tank coils. You will also see the filament transformer (top left in the picture) and the Blower Assembly. Between the filament transformer and the blower, you can see the housing for the “wide-band ferramic transformer.”

Now let’s look at the 75-pound P-45 High Voltage Power Supply. (The Radio Industries P-2A Power Supply is the same.) This is a true monster. It was before the days of the high silicon steel power transformer laminations. Even so, with modern iron in the transformer and choke, this power supply would still be heavy.



**Hallicrafters P-45 Power Supply  
Radio Industries P-2A Power Supply  
(Exterior Front Quarter View)**  
(“Radios by Hallicrafters,” Chuck Dachis 1999)



**Hallicrafters P-45 Power Supply  
Radio Industries P-2A Power Supply  
(Interior View - Bottom is Cabinet Rear)**  
(Hallicrafters HT-45 Operating Manual)

Some of these power supplies were delivered with the supply mounted on a piece of half-inch plywood attached to the bottom of the cabinet. My P-45 is mounted that way.

The front view shows the cover in place with a high voltage indicator lamp on top, on the small panel, with the primary fuse below it. The other picture – reversed front to back from the outer view, shows the Plate Transformer at the upper right, the Plate Choke at the lower right, with the 110/220 VAC jumper strip on top of that choke, the AC Power-On Relay in the middle just below center, and the two 866A Mercury Vapor Rectifier tubes at top center that are in a full-wave,



center-tapped circuit. At the upper left is an 8 uF, 3,000-volt Oil Filled Capacitor. There is a Millen high voltage connector at the lower left corner of the chassis plus a 10-pin terminal strip for interconnection with the amplifier.

The Hallicrafters P-45 and the Radio Industries P-2A Power Supplies are interchangeable and, like the two amplifiers, were built by the Radio Industries Subsidiary.

The HT-45 is very clean, simple, and effective design. It gets the same results (and maybe a bit more) than its target competition, the Collins 30L-1. One mystery (there are always mysteries in these old radios!) is why Hallicrafters selected vacuum tube rectifiers. Maybe Hallicrafters President, Bill Halligan, ex-W9AC, liked that blue flash in sync with SSB modulation and CW keying – just like me! Do you think?

In closing, here are two pictures of the HT-45 Linear Amplifier in operation at W9MXQ. Top is with the SX-117/HT-44 Receiver/Transmitter. Bottom is with the SR-150 Transceiver. The HT-45 is quiet and provide a good added signal punch to the exciter. The HT-45 also adapts well with other brands of the 1960's as well as radios of today.



**Left to Right: HT-45, HT-44, PS-150-120, SX-117**  
(with D-104 Mic, HA-8 Spatter Guard, HA-1 Keyer, HA-10 Keyer, VibroKeyer)



**Left to Right: HT-45, SR-150, PS-150-120, HA-1**  
(with D-104 Mic, HA-8 Splatter Guard, VibroKeyer)

Until next time – 73, and keep those old radios running on the bands!!

**W9MXQ**

# A Winter Away – A Trip Back in Time and Technology

de Tom Ruhlmann, W9IPR



For the past several years, Pat and I have volunteered at Sun-N-Fun in Lakeland FL during the winter months. I know, you think it is all sun and fun. Actually this is a lot like the EAA event in Oshkosh, only smaller. We also sponsor a four-year high school with a core curriculum related to aviation; have awarded over 150 flight training scholarships; operate several aviation summer camps and maintain a unique aviation museum (Florida Air Museum). Pat and I spend most of our time in the museum and I have also instigated a special event station (W4S) at the museum during the fly-in. About four years ago, I suggested we

recreate a B-17 or B-29 radio room in a section of fuselage. Last year, upon my arrival, I was presented a section of an MD-80 and told that it was my project – overwhelming. After two winters and the assistance of several others, it is looking pretty good.

As you enter one end, there is a replica of a B-17 navigator's compartment, complete with most of the required navigator's instruments and tools, and an explanation of the navigators duties. We even cut a hole in the top of the fuselage and installed an astrodome and sextant, along with an explanation of dead reckoning and celestial navigation.



In the center section, there is a display of various escape and survival items, including a parachute, May West life preserver, first aid kits and a Gibson Girl hand cranked emergency rescue transmitter.



The compartment of greatest interest is probably the B-29 radio operator's station. It is not yet complete but currently contains a BC-348 receiver that Bob Truscott (W9LO - SK) had given me, and most of the balance of equipment has been donated by Steve Berg (KB4IRB) of Orlando. Presently, it includes the ART-13 Collins HF transmitter; the 3 Command receivers and two transmitters with modulator, antenna relay and J-38 key.

And along the other side of the fuselage is a double row of airliner seats so the elders can take a rest and the younger set can have a seat and take an imaginary trip to Grandma's.

To be sure, it has been a fun project but I am sure it will not be completed yet this year as there is fake wiring, etc. yet to be installed and a few more items of equipment to be acquired. It's not the EAA Aluminum Overcast, Fi-Fi or DOC but it will give visitors a reasonable representation of the WWII bomber crew members' responsibilities and duties, as well as illustrate the changes in navigation and communications technology since 1945.



# Ozaukee Radio Club Meeting Minutes

March 14, 2018

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:33 PM. All the attendees introduced themselves.

## **Announcements, Show-and-Tell, Bragging Rights:**

Gary K9DJT: If anyone is interested in an ORC long or short sleeve shirt, see Gary. Need an order of at least three shirts for free shipping.

Vic WT9Q got his first RTTY contact last month.

Chuck W9KR: Three items were recently sold on the club's eBay account for about \$2,000 which goes to the Scholarship Fund. However, Chuck said he received a bill from eBay for \$227, a result of not checking off for autopaying eBay's fee out of the proceeds. The treasurer will reimburse him. Chuck said we can get much more money selling equipment on eBay than we would get at a local swapfest.

Gary N9UUR: The Wisconsin Association of Repeaters meeting is Saturday, March 17<sup>th</sup>, 9:30 AM at HRO.

## **Program:**

Ken W9GA gave a presentation on preventing your ham shack from causing RF interference to other electronic equipment, and also how to check your ham shack for compliance with FCC human RF exposure standards.

## **50/50 Drawing:**

Todd N9DRY was the winner of the 50/50 drawing.

## **Auction:**

Stan WB9RQR conducted the auction. Many items were sold or given away, including a tuner with roller inductors, an HP audio oscillator, an SWR meter and a 2-meter power amplifier.

## **Officer Reports:**

Kevin S. (K9VIN), President – Save the date of May 5<sup>th</sup> for the Spring Swapfest. Robert K9WTH, the club historian, has a box of stuff (photos and documents) that he would like to have digitized for access to members. Would like volunteers to help with the digital archiving and also identify members in old photos.

Pat V. (W9JI), 1st VP – No report, but adding to the discussion of archiving historical documents, Pat remarked that if members aren't interested in looking at the documents, let alone participating in the archiving process, then we shouldn't go through all the work that digital archiving entails.

Robert E. (K4WTH), 2nd VP – A new member "welcome" letter was put up on the club Facebook page, with links to the website and the by-laws, and club event dates. A question was raised as to whether a paper club flyer can be taken to HRO. Kevin K9VIN said he'll drop off copies of the welcome letter to HRO.

Tom T. (KC9ONY), Repeater VP – WAR has approved the repeater's new antenna radiation pattern. The new antenna has been ordered and should be shipped March 19<sup>th</sup>. Tom and Loren will assemble it, and then figure out a date to install. Not related to the repeater, there will be a Storm-Spotters

Training Class at the Ozaukee Fair Pavilion, March 20<sup>th</sup> from 6:30 to 8:30 PM. The event is free. Also, if anyone wants to be trained in conducting the Tuesday night Net, see Tom.

Ben E. (K9UZ), Secretary – The liability insurance has been renewed for another year. Ben has been making updates and small changes to the website, but the web publishing software, Joomla, has a steep learning curve. If anyone knows how to use Joomla or knows somebody who does, let Ben know. The minutes of February's meeting is in the newsletter. Motion to accept the minutes was made, seconded and approved.

Treasurer's Report – Dave N9UNR was not at the meeting, so Robert K4WTH gave the report. The Income & Expenses reports February for have been distributed. Stan WB9RQR made a motion to accept the reports subject to audit and Todd N9DRY seconded. The motion passed. Ken W9GA asked if the reservation for the Field Day grounds has been paid, and Robert said that it has. Also, the rental fee for the Curling Center for the Swapfest has been paid.

**Committee Reports:**

No committee reports.

**Old Business:**

Ben K9UZ: Has there been any news regarding the ARRL-administered ORC Scholarship recipient for this year? Will have to check with Tom W9IPR about that.

Bill W9MXQ: If anyone participated in the Wisconsin QSO party last weekend, if you haven't turned in your score, please mark it to the credit of the ORC as a group.

**New Business:**

Date reminders – Jefferson Walk, March 18<sup>th</sup>, MRAC Swapfest, March 24<sup>th</sup>.

**Adjournment:**

A motion to adjourn the meeting was made by Stan WB9RQR, seconded by Robert K4WTH and was passed. The meeting was adjourned at 8:55 PM.

**Attendance:**

There were 37 members and 2 guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary



## Meeting Agenda

April 11, 2018

- |   |  |
|---|--|
| <ol style="list-style-type: none"><li>1. 7:00 – 7:30 PM – Network &amp; Rag Chew</li><li>2. Call to Order &amp; Introductions</li><li>3. Announcements, Bragging Rights, Show &amp; Tell, Upcoming Events, etc.</li><li>4. Program: Bill Shadid, W9MXQ</li><li>5. 50/50 Drawing – Kristian Moberg, KC9TFP</li><li>6. Fellowship Break</li><li>7. Auction – Stan Kaplan (WB9RQR)</li><li>8. President's Report – Kevin Steers (K9VIN)</li><li>9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)</li><li>10. 2<sup>nd</sup> VP Report – Robert Eskola (K4WTH)</li></ol> | <ol style="list-style-type: none"><li>11. Repeater VP report – Tom Trethewey, (KC9ONY)</li><li>12. Secretary's Report – Ben Evans (K9UZ)</li><li>13. Treasurer's Report – Dave Barrow (N9UNR)</li><li>14. Committee Reports.<ol style="list-style-type: none"><li>A. Spring Swapfest</li><li>B. Field Day</li><li>C. Other</li></ol></li><li>15. OLD BUSINESS</li><li>16. NEW BUSINESS</li><li>17. Adjournment to ??</li></ol> |
|---|--|

Return undeliverable copies to:

### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

#### **Next ORC Meeting**

#### **Grafton Senior Citizens Center**

**1665 7<sup>th</sup> Avenue, Grafton**  
Wednesday, April 11<sup>th</sup> 2018

7:00 PM – doors open

7:30 – Membership Meeting



# The *ORC* Newsletter

## Special Post-Spring Swapfest Edition

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO

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

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

Volume XXX

May, 2018

Number 5

## From the President

*de Kevin Steers (K9VIN)*



Spring has sprung. I was so excited to see the warm weather, that I wanted to plant our herbs and flowers asap. Fortunately, my wife reminded me that Memorial Day is quite a way off, and that we should hold tight.

Well the ORC Spring Swapfest was a huge success, thanks to the many volunteers that made it possible. I appreciate the number of folks that not only helped us on Friday afternoon to lay out tables, but also those that stayed late on Saturday to ensure the rental tables were taken care of, and to assist Tower Electronics to get packed up. Tower brings their own tables, and additionally, they supply us with tables to help us to reduce expenses. This requires Jill to drive her own vehicle, pulling a trailer all the way from Green Bay, and for that we are very appreciative.

Attendance was up over last year, and I think the partnership with the Wisconsin Antique Radio Club has worked well for everyone. This year, with Scott and Jill and their Tower Electronics goodies, and another ham who rented 14 tables to sell nearly an entire estate, there was certainly something for everyone. It was great to see many familiar faces, and to see a number of hams that travelled from afar to participate in this social/swap event.

Dayton is right around the corner, so it is time for me to finalize my mobile HF installation after upgrading cars. I am hoping to make some contacts en route to Dayton, and to also use it on my weekend trips up north. Luckily, I was able to find a couple of adjustable HF coils that I am attempting to put into service. I spend a number of hours today soldering Anderson connectors and routing wires in the car.

Please begin planning for Field Day. As of this moment, we need a 20M band captain to lead the charge on that band. Please reserve June 23-24 on your calendar. It is a great way to learn how to run network cables, how to pitch tents, how to erect temporary towers, and how to work hundreds of stations in a low stress environment. You can even sit back and listen if you wish, to learn how we manage a pileup, etc.

See you all there!

73,  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Well, it looks like the warm weather has finally arrived. It is hard to believe we had a half foot of snow a couple of weeks before we hit 80° F. It seems everything around here is a couple of weeks late. It has left me with a bit more time with ham radio activities instead of my usual spring outdoor activities.

The longer days mean that the low band openings are shorter in duration and distance. I have been interested in the new 630M band. I am building up equipment to get on the band, and so far have succeeded in transmitting a

WSPR signal, but the microwatt output level has not been picked up by any other stations. I did receive a very strong signal on a separate antenna about 400 feet away.

In the meantime, I occasionally leave the receiver on 630 meters overnight and monitor WSPR stations. I record the unique call signs received. So far I have received over 60 different stations in total. As we approach summer, the number of stations received each night has been decreasing. Some of that is probably due to hams not running their beacons as conditions deteriorate, but I also hear fewer distant signals. Big west coast stations and even a Hawaiian station were commonly logged during the depth of winter have not been heard in quite a while. It is an interesting band. Keep in mind the FCC limit on this band is 5 watts EIRP.

The sunspots have been declining more rapidly than expected. There was an interesting article on SpaceWeather.com on it recently - <https://spaceweatherarchive.com/2018/05/01/sunspots-vanishing-faster-than-expected/>. Like predicting the snow storms we had in mid-April far in advance, long-range predictions of sunspots are still not a high accuracy thing. The article mentions there are currently 54 different models for sunspot prediction.

The big question is: What does it mean that the sunspots are declining faster than expected? That is a good question. In one scenario, it might mean we will have a shorter low period than we did last time. As you may recall, the last minimum lasted about twice as long as normal. It was also lower than usual. Long minimums predict that the next peak will be weak, which it was. So, if we have a short minimum, we should get a nice peak in a few years. That would be great! The other possibility is that we are going into an extended period of little sunspot activity like the Maunder and Dalton Minimums, where there was little sunspot activity for decades. Besides poor radio conditions, there are a lot of other side effects such as less energy from the sun causing cooling of the earth and reduced protection from deep space gamma-ray exposure.

Hopefully, the second possibility is not the result. I don't know about you, but I doubt I can wait another half dozen 11-year sunspot cycles for the kinds of 10 meter openings I experienced early in my ham career.

There are a few announced DXpeditions of interest in May. A group of Russian hams will be moving on to the next location of their Mozambique IOTA tour. They will be on from May 5-9 from Inhaca Island. The plan is for operating on 40-10 meters with CW, SSB and digital modes. The call is C98RRC.

The Mozambique mainland will also be on the air courtesy of a mostly Belgium crew. One source has them on May 4–11 and another May 2-15. The plan is to put the C8T callsign on 160-10 meters using CW, SSB, and RTTY. They also plan to be on 2-meter moon bounce. Rodrigues Island in the Indian Ocean will be activated May 11-16 by a group of French ops with the 3B9RUN call sign. They will be on 80-10 meters using SSB and FT8.

Another good island catch is Lord Howe Island. An Australian group will activate VK9LI May 11-18. The plan is to use CS, SSB, and FT8 on 160-17 meters.

As usual, there are a number of other planned operations by a single op who is traveling on vacation or business. They get on when they have time which varies from op to op. You just have to be monitoring the bands to catch them.

May is a quiet month for contests. The only big one is the CQ WW WPX Contest (CW). As usual, this is on the Memorial Day weekend. Like most 48 hour contests, this one starts at 0000Z Saturday (Friday night, May 25 local), and runs for 48 hours. Single ops can only operate 36 hours. Off times must be a minimum of 60 minutes.

The exchange is a signal report and incrementing serial number. Multipliers are the station call sign prefix. That means that KA9EAK, AA9W, AB9CD, AC9JV, K9VIN, WT9Q, W9JI as well as many other ORC members would be separate multipliers. QSO points vary depending on the band and location of the other station. Fortunately, your logging program will keep track of all that for you.

Like other CQ-sponsored contests, there are a ton of operating classes including all band, single band; high, low or QRP power; and with/without spotting assistance. That is a lot of classes. Pick a single band, a power level, and assisted/unassisted and put in 12 hours or so, and you are very likely to win a piece of wallpaper.

Because of the complex rules and QSO point schedule, you should check out the rules at <http://www.cqwp.com>. Too bad it is on a holiday weekend. To me, spending a weekend on the radio during spring warm weather is hard to do.

Of course, the big ham radio event this month is the Hamvention® in Dayton or Xenia or wherever. Maybe this year it won't rain so much. Also, it is not too soon to be thinking about Field Day!

# THE COMPUTER CORNER

## *No. 243: Keep Your Eyes Open*

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



This is just a portion of an email sent to me in April using the GovDelivery Communications Cloud on behalf of: United States Computer Emergency Readiness Team (US-CERT), 245 Murray Lane SW. Bldg 410, Washington, DC 20598, (888) 282-0870. You can get the original email, complete, at [www.us-cert.gov](http://www.us-cert.gov). Remember, I have left out a considerable part and edited the remainder, all in the interest of brevity. At least you should scan this shortened document and think about what you can do to prevent yourself from being targeted.

### **TA18-106A: Russian State-Sponsored Cyber Actors Targeting Network Infrastructure Devices.**

Written by the U.S. Department of Homeland Security US-CERT, National Cyber Awareness System: 4/16/2018

**Overview:** This joint Technical Alert (TA) is the result of analytic efforts between the Department of Homeland Security (DHS), the Federal Bureau of Investigation (FBI), and the United Kingdom's National Cyber Security Centre (NCSC). This TA provides information on the worldwide cyber exploitation of network infrastructure devices (e.g., router, switch, firewall, and network-based intrusion detection system (NIDS) devices) by Russian state-sponsored cyber actors. Targets are primarily government and private-sector organizations, critical infrastructure providers, and the Internet service providers (ISPs) supporting these sectors. This report contains technical details on the tactics, techniques, and procedures (TTPs) used by Russian state-sponsored cyber actors to compromise victims. Victims were identified through a coordinated series of actions between U.S. and international partners. This report builds on previous DHS reporting and advisories from the United Kingdom, Australia, and the European Union. This report contains indicators of compromise (IOCs) and contextual information regarding observed behaviors on the networks of compromised victims. FBI has high confidence that Russian state-sponsored cyber actors are using compromised routers to conduct man-in-the-middle attacks to support espionage, extract intellectual property, maintain persistent access to victim networks, and potentially lay a foundation for future offensive operations. The current state of U.S. network devices—coupled with a Russian government campaign to exploit these devices—threatens the safety, security, and economic well-being of the United States.

The purpose of this TA is to inform network device vendors, ISPs, public-sector organizations, private-sector corporations, and small office home office (SOHO) customers about the Russian government campaign, provide information to identify malicious activity, and reduce exposure to this activity.

### **Description**

Since 2015, the U.S. Government received information from multiple sources—including private and public-sector cybersecurity research organizations and allies—that cyber actors are exploit-



ing large numbers of enterprise-class and SOHO/residential routers and switches worldwide. The U.S. Government assesses that cyber actors supported by the Russian government carried out this worldwide campaign. These operations enable espionage and intellectual property that supports the Russian Federation's national security and economic goals.

### **Legacy Protocols and Poor Security Practice**

Russian cyber actors leverage legacy or weak protocols and service ports associated with network administration activities. Cyber actors use these weaknesses to:

- ...identify vulnerable devices;
- ...extract device configurations;
- ...map internal network architectures;
- ...harvest login credentials;
- ...masquerade as privileged users;
  - modify
    - .....device firmware,
    - .....operating systems,
    - .....configurations; and
- ...copy or redirect victim traffic through Russian cyber-actor-controlled infrastructure.

Additionally, Russian cyber actors could potentially modify or deny traffic traversing through the router.

Russian cyber actors do not need to leverage zero-day vulnerabilities or install malware to exploit these devices. Instead, cyber actors take advantage of the following vulnerabilities:

- ...devices with legacy unencrypted protocols or unauthenticated services,
- ...devices insufficiently hardened before installation, and
- ...devices no longer supported with security patches by manufacturers or vendors (end-of-life devices).

**Own the Router, Own the Traffic.** For example, an actor controlling a router between Industrial Control Systems – sensors and controllers in a critical infrastructure—such as the Energy Sector—can manipulate the messages, creating dangerous configurations that could lead to loss of service or physical destruction. Whoever controls the routing infrastructure of a network essentially controls the data flowing through the network.

**Network Devices—Often Easy Targets.** Once installed, many network devices are not maintained at the same security level as other general-purpose desktops and servers. The following factors can also contribute to the vulnerability of network devices:

- ...Few network devices run antivirus, integrity-maintenance, and other security tools that help protect.
- ...Manufacturers build and distribute network devices with exploitable services just because they are designed for ease of installation, operation, and maintenance.
- ...Owners and operators of network devices often do not change vendor default settings or harden them for operations or perform regular patching.
- ...Internet Service Providers (ISPs) often do not replace equipment on a customer's property when the manufacturer or vendor no longer supports that equipment.

## **Impact**

Russian state-sponsored cyber actors have conducted both broad-scale and targeted scanning of Internet address spaces. Such scanning allows these actors to identify enabled Internet-facing ports and services, conduct device fingerprinting, and discover vulnerable network infrastructure devices.

Legitimate user masquerade is the primary method by which these cyber actors exploit targeted network devices. For the most part, cyber actors can easily obtain legitimate credentials, which they then use to access routers. Organizations that permit default or commonly used passwords, have weak password policies, or permit passwords that can be derived from credential-harvesting activities, allow cyber actors to easily guess or access legitimate user credentials.

## **General Mitigation**

Here is what those of us who use, but do not manage networks can do: Immediately change default passwords such as those found in routers when you buy them. Change your other passwords at least once every year, and make the passwords strong (8 characters, upper and lower case, some numbers, and symbols).

Do not reuse the same password across multiple devices; each device should have a unique password.

Happy Computing!

Stan

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



I am going to dwell a bit this month on a competition grade radio transceiver manufactured in the 1960's. It truly can compete in many ways, today – outstanding filter performance, some level of interference control, and that holy grail of DX radio, dual receive.

I would wager, however, that you will not guess the radio's identity (before seeing the picture, below) because it has been a long time since these radios graced the operating positions of competitive operators. In 1965, Hallicrafters began building a series of Transceivers with traditional model numbers but also included names based on storms. Below you see the start of that series with the Hallicrafters SR-400 Cyclone Transceiver:



**Hallicrafters SR-400 Cyclone 80-10 Meter Transceiver**

If you go back in time and look at the SR-150 HF Transceiver article, first in the SR family in modern times, you see that Hallicrafters advanced the styling of the front panel bezel design. For reference, here is a picture of the SR-150 in the W9MXQ radio collection:



The front panel size of the SR-150 and the SR-400 were identical but complexity was increased in the later model. The addition of a very effective Noise Blanker, separate CW Filter, and Notch

Filter added to the SR-400 Front Panel. Hallicrafters kept their very good system of Receiver Incremental Tuning (RIT), successfully introduced in the SR-150. The RIT feature never left the design of any Hallicrafters transceiver after that initial design introduced on the SR-150 in 1961.

There were three versions of the SR-400 Transceiver. The first two were similar with more major changes with the third, final version. Here are some points of interest in the different models:

	<b>1</b>	<b>2</b>	<b>3</b>
<b>Model</b>	<b>SR-400</b>	<b>SR-400</b>	<b>SR-400A</b>
Model Name	Cyclone	Cyclone II	Cyclone III
SSB PEP/CW Input Power	400/360	400/360	550/320
SSB PEP/CW Output Power	200/180	200/180	275/160
Final Amplifier Tubes	2x 6HF5	2x 6HF5	2x 6KD6
Internal Final Tube Matching	No	No	Yes
Amplifier Automatic Level Control (Early Speech Processing)	Yes	Yes	Yes

The SR-400 Cyclone II was essentially an upgraded SR-400 Cyclone with all realized field issues addressed. The SR-400A Cyclone III was somewhat different. Most notable was the addition of the much more powerful 6KD6 final amplifier tubes. You will note a slight oddity of this version, however, in that the more powerful final amplifiers gave an SSB power increase of over 35% in input power while close to a 12% decrease in CW power input. It is my opinion that the 6HF5 pair had been asked too much running 360 watts input while the 6KD6 was properly rated on CW at its rated input of 320 watts.

With the release of the SR-400A Cyclone III we see the inclusion of Internal Final Tube Matching. All of us are familiar with the very inconvenient need to find electrically matched final amplifier tubes in sweep tube transmitters. The 6HF5 finals had to be a matched set from the manufacturer or distributor. In the SR-400A Cyclone III Hallicrafters introduced circuitry that allowed internal matching of the tubes. I find that even different brands of finals can be accommodated. For a while, the SR-400A Cyclone III that I have in my collection held a pair consisting of RCA and Realistic (Radio Shack) sweep tubes for the pair. They work fine. Ultimately that seemed incorrect (it really isn't incorrect in Hallicrafters' design) so I replaced the pair with a new set of RCA tubes. On the other hand, the SR-400 Cyclone II that is also in my collection uses a matched pair of RCA 6HF5 sweep tubes. Ultimately, because the need to use matched tubes changed, I pay less for finals in the more powerful SR-400A Cyclone III.

Worthy of note with the SR-400 series was Hallicrafters much touted Amplified Automatic Level Control (AALC). The "AALC" feature was touted at every opportunity. It was an early form of Speech Processing. Compared to today's AF and RF Clipping Speech Processor systems it was of little impact on signals. But at a time when the idea of processing speech was usually the domain of broadcast radio, it was unique. My feeling is that it added, at best, maybe 1 to 2 dB of compression – very little to 7 to 10 dB today. But, in those days the SR-400 and its 200 to 300-watt output power this just added a bit more sparkle to the signal. That meant just one more way to get noticed on the band.

Essentially, AALC pushed the ALC in the transmitter to force higher average signal level at what I would think would have been a bit of a sacrifice in audio quality. Did it work? I really don't know for sure – but I do know that my SR-400 Cyclone II gets excellent signal and audio reports. So, something is working!

There are interesting differences in the three models that go beyond the excellent transmitter section of the Cyclone III. The choice of the very heavy duty 6KD6 in the transmitter removed a long-standing reliance on the relatively weak 6HF5 design. (I will add that this opinion is my own – but supported by many fellow collectors from this period.) At the same time as the Cyclone III was released, the Hallicrafters organization was moving Amateur Radio operations from the traditional Chicago, Illinois location to the 1963 business acquisition site of Radio Industries, Inc., in Kansas City, Kansas. Kansas City was also the home of Hallicrafters' corporate owners, Northrup Aviation. At that time, different engineers took over the maintenance of the SR-400 design and made some changes. Were those changes cost driven, based on personal preference of different engineers, or other reasons? Today, no one knows. One does not argue over the improvement on the transmitter. But, what is known is that if you are a collector of these radios you know that there is a wide group of SR-400A Cyclone III owners that go to great pains to back convert their radios to SR-400 Cyclone II status in the lower level transmitter and receiver stages.

The original, and short lived, SR-400 Cyclone (some call this the Cyclone I) was widely known to have design issues that needed improvement. As noted earlier, the need for these changes drove the introduction of the SR-400 Cyclone II. I have owned all three, and currently have a Cyclone II and Cyclone III. Here is what I know:

1. The initial SR-400 Cyclone radios could have a rather rough sound on both SSB and CW. They were uncomfortable for listening. The final amplifier tuning could be temperamental and problematic. Neither of these traits were common with Hallicrafters which were traditionally easy on the ears and simple to tune,
2. The improved SR-400 Cyclone II radio turned out to mostly be a joy to work with for both listening and transmitter tuning. This model in its later version had the proper mounting provided for an optional PA Compartment Cooling Fan. At the same time, the PS-500A-AC AC Power Supply began to come equipped with a power connector for the fan. (Later, see more information about the available power supplies, and other accessories, for the SR-400 series radios.)
3. The final SR-400A Cyclone III model incorporated the previously mentioned upgrades in the transmitter. That was very well done. But, some receiver performance issues from the first version came back. The harshness of the original SR-400 Cyclone had returned and perhaps became worse. I have a plan to accomplish the reverse engineering necessary to take the receiver sections back to SR-400 Cyclone II status. That process is well documented. At this time, my SR-400A Cyclone III is not heavily used. It should be my main SR-400 design in use at W9MXQ – and it will be in the future.

Let's look at accessories – all accessories work with all models:



**Left to Right  
PS-500A-AC AC Power Supply, SR-400 Cyclone II Transceiver, HA-20 DX Adapter**

Above you see the PS-500A-AC Power Supply that supplies all High Voltage, Low Voltage, and Filament Voltage to the transceiver. This power supply has the connector for the PA Compartment Cooling Fan.



ment Cooling Fan, but this version of the transceiver has no accommodation for the fan to be added. (It is an early SR-400 Cyclone II).

The HA-20 DX Adapter deserves some credit for providing, to my knowledge, the very first opportunity for a ham radio operator to listen to two different frequencies (on the same band) at once. To the average person looking at the HA-20 it appears merely to be an External VFO. These External VFO's were very popular with transceivers of the day. But there is more to that story with the HA-20 when used with the SR-400 series transceivers:



Check the OPERATION switch in the picture at the left. There are five modes for the HA-20 (for this list just below, R = Receive and T = Transmit):

- OFF** (No power to the HA-20 – SR-400 controls R & T)
- STBY** (SR-400 VFO controls R&T)
- T** (SR-400 controls R while HA-20 controls T)
- R&T** (HA-20 controls R & T)
- DUAL T** (HA-20/SR-400 control R &SR-400 controls T)

So, the SR-400 with the HA-20 connected, setting the OPERATION switch on the HA-20 to “DUAL T” allowed a roughly equal level audio on two different receive frequencies at the same time. This would allow one to listen to a DX station’s calling frequency on the HA-20 while the SR-400 would play the sending frequency desired on both receive and transmit. So, you would tune the SR-400 VFO for the location of the DX station’s listening frequency while having the HA-20 on the DX stations calling frequency.

Now, let’s look at a not-so-well-known difference in different versions of the SR-400:



**Hallicrafters SR-400  
Cyclone**

Note “Red Ball” Hallicrafters “H” Emblem at the top center of the Readout Bezel.



**Hallicrafters SR-400  
Cyclone II**

Looks identical to the original version except that wording to the right of the bezel shows the name of “Cyclone II.”



**Hallicrafters SR-400A  
Cyclone III**

The last Version of the SR-400, from the Kansas City plant, the Cyclone III. See the changed Hallicrafters “H” Emblem. Now a white square with a Blue Ball and White “H.”

Color differences on the above pictures are due to photography – all Hallicrafters gear matched very well in color. My old SR-150 Transceiver matches the color of the newest SR-400A almost without any shade variance. This is a tribute to the painting process used by Hallicrafters in the

days before computerized paint matching. The only odd difference over the years with this design series (SR-150 through the end of the SR series) is the exact color of the front panel silk screening. There seems an almost indiscriminate change between light gray and white in the panel lettering and stripe band at the edges of the panel.

From my experience, Hallicrafters did as well, or even better, in matching paint and matching of design concepts from one model to another – including accessories that sat next to the radios. Collins was also good at the color matching – but not to the level Hallicrafters' attained. I have used the term, "Desk Presence" relating to Collins equipment in previous articles. Hallicrafters had a claim on Desk Presence as well.

If Hallicrafters had one failing during this period, it must be the result of the change to aluminum outer cabinets. Aluminum paint technology, now well developed, was a bit of a black art in the 1960's when these models appeared. To this day, it is hard to find an SR-150, SR-400, or other similar period Hallicrafters that does not have paint that is chipped and showing raw aluminum. With care, this issue is repairable – but the buyer of such gear today needs to be ready for this challenge.

The only other option on these radios – and then only on the late SR-400 Cyclone II – was the PA Compartment Cooling Fan. That fan was standard equipment on the more powerful SR-400A Cyclone III and not easily retro-fit to the original Cyclone or early Cyclone II radios.

There were other versions of the basic SR-400 design from Hallicrafters. We will discuss them in the future. They include the SR-2000, SR-540, and the SR-750. Also, there were units based on the earlier platform SR-150 Transceiver. These were two tri-band (80, 40, and 20 meter) models, the SR-160 and the SR-500. In keeping with the storm theme, Hallicrafters used the names, "Hurricane" and "Tornado" for some of these radios. More will follow about those radios.

The SR-400 Cyclone II and SR-400A Cyclone III are great additions to my collection (with the possible exception of the work needed to be done on the SR-400A Cyclone III). Both of these radios handle strong signals very well, have outstanding Noise Blankers, excellent SSB and CW i-f Filters, and effective Notch Filters. As Hallicrafters told us back in the day, ***"You should be talking on a Hallicrafters!"***

***(All Photos are shack photos from W9MXQ)***

## Forty Meter Nostalgia

De Ray Totzke (W9KHH)



Recently while busy with paperwork, I had the radio on the desk in the background tuned to the forty meter CW band. A slow QSO between two midwest stations, not too strong, was in progress. After a few minutes, another signal came on frequency and tuned up. Was the operator dipping his final, increasing the drive, again dipping the final, increasing the drive, over and over? After tuning, and tuning, and tuning, a long slow CQ was sent with call letters at times.

Whether or not the CQ was answered I'll never know as the paperwork was finished. The radio was turned off.

Listening to the band was like taking a flight back to the novice days long ago when the bands were crowded and stations were rock-bound. You have a crystal on one frequency and you called CQ whether or not anyone was on frequency. Receivers were not very selective letting the novice op hear many signals on many frequencies at once.

It was old times once again. For a few minutes, forty meters was alive with a QSO. Now, not so much. Tune forty CW and you find a quiet band or neighborhood noise sources. No, or few, CW QSO's. Whatever happened to "pounding brass through the night?"

## 2018 SIMCOM EMCOMM

De Don Zank (AA9WP)



The State Interoperable Mobile Communications Exercise, otherwise known as SIMCOM, was held this past February 6 thru the 8<sup>th</sup>. The purpose of this exercise is to "...educate, coordinate, and test Mobile Emergency Communication platform capabilities, from federal, state, tribal and local jurisdictions." Amateur Radio Emergency Communicators are provided an opportunity to work along with the emergency responders, National Guard and State Emergency government officials during SIMCOM. It is a great opportunity to test and learn how our mobile communication hardware and software will work, or not, in the field. It is good test of our operating skills and capabilities, including the software between our ears, as well.

There were several objectives established for the communicators participating. Objectives consisted of establishing communications between geographically separated branches, passing and sharing information between the branches, testing contingency operations, and completing a scenario event list. Radio communications took place on VHF/UHF/HF bands, with the Narrow Band Emergency Messaging Software (NBEMS) used to pass digital messages, which will be discussed in more detail later.

This year was a first for SIMCOM as it took place during the winter. It was also a first time opportunity for myself, AA9WP and Jon, KD9GAE, to participate. The Fitchburg Fire Department was host this year. So the remote sites consisted of the Fitchburg Fire Department, parks in Fitchburg, Sunnyview Expo Center in Oshkosh and the State Emergency Communication office in Madison.

Day one for the amateur radio operators started with class training at Wisconsin Emergency Management (WEM) office in Madison. The two morning classes, conducted by Skip Sharpe, W9REL and Denny Rybicke, K9LGU, were *Mission of Amateur Radio: Serving Agencies and Traffic and Message Handling*. The *Serving Agencies* class was a good refresher for our roles and responsibilities as communicators serving various agencies. The Traffic and Message Handling session focused on using the ICS-213 message form and the ARRL Radiogram. Training included hands-on message creation and copying among the attendees. The practice reminded everyone to speak at a writing speed, to use phonetics and procedural words to quickly and effectively pass traffic. For several of the attendees, this was their first time using the forms, but they quickly caught on how to use the forms and procedures.

The afternoon training session consisted of review of WEBEOC, “.. a crisis management system designed for supporting the response to emergency incidents within the state.” This replaces the eSpender system. WEBEOC was used during the exercise to track status of all the groups involved and pass messages. Also reviewed was WI-CAMS, an asset management program used for tracking equipment and personnel. This would play a part in day three.

While at the State Emergency Management Operations (SEOC) I had an opportunity to check out the new Emergency Management RACES radio room. Parts of the room were still in setup but the remainder looked very good. Nice operating stations with plenty of room to work. VHF/UHF/HF and aviation radios being used in the center.

Day Two was in the field. Jon and I were assigned to McKee Park in Fitchburg. Working with our Communication Leader, Jim Burns, KD9CIV, Fitchburg Fire and National Guard members, a communication position was set up in the field house. Our setup consisted of two VHF radios, one designated for digital communications and the other for voice communications on the WECOMM Network. A VHF HT was used to monitor communications and to communicate with the Fitchburg Fire Department. Headphones are a definite requirement in a room being shared with three or four other operating positions. An indoor antenna worked fine for local communications but to connect with the WECOMM Repeater in Cambridge, an outside vertical antenna was installed. I was thankful for some very good help from the National Guard to set up and run the coax for the vertical. It was also a good learning lesson. Working in the cold with small hardware was difficult. Next time I will be prepared with some magnetic tools for holding the hardware. A HF radio that can work on 60 meters needs to be included in my mobile communications setup.

Frequencies used for the SIMCOM exercise were supplied on the Incident Radio Communications Plan ICS-205. Three of the WECOMM Repeaters, Cambridge, Plymouth and Waukesha, were removed from the network and linked together to be used exclusively for SIMCOM.

By 9 am on Wednesday, communications were established and successfully tested with the SEOC, and the four other branches. The other branches were set up at McGraw Park in Fitchburg, the cities of Oregon, Verona and Oshkosh. Simplex mode was used on VHF frequencies

except for the WECOMM channels. Several messages were received using voice mode and passed to the Communication Leader. As well, several digital messages were passed using NBEMS, including a supply request for hot water and coffee.

Our digital station worked well however others were having some difficulty, so another good learning session for all involved. This is why we practice in events like SIMCOM, to learn and test our equipment and ourselves.

In the afternoon session, our group came up with a plan to test message passing and receiving. They composed a message of 68 words, with operating instructions and an opening line from T.S Eliot. This message was passed to another Branch, who in turn were to provide the message to the emergency responders, and then to Public Health. Public Health was to post the message on WEBEOC and we would check for the accuracy. It would have been great if the other group had digital capabilities, however they didn't, so it was left to voice mode to pass this message. We ran into the normal expected difficulties of voice message handling. I had miscounted the number of words, several of the words required respelling and it just took a good amount of time. Similar difficulties occurred when another group, using voice, was passing a message for a refuel of gas and diesel. Using digital modes to pass this traffic would have been much more efficient and effective.

By 4 pm our testing was completed and it was onto day three. And day three was a more interesting setup. Jon and I were joined by Warren, K9IZV at the Waukesha-Sussex Armory. (Did you know there was a Sussex Armory?) Our mission was to set up communications on HF and VHF. Jon set up his station to use 60 meters, and this included installing an NVIS antenna outside. Another lesson learned: Sussex had much more snow than other locations. So we tramped around the snow setting up the mast and running coax into the building. Warren setup a cross band system to work from inside the building to his car radio, tuned to the WECOMM network.

We met with Jeff Whittow from WEM Finance. Our goal was to pass a request, from Jeff to Emergency Management, for sandbags from the WEM cache at the Armory. The sandbags were needed to prevent vital telephone and fiber equipment from flooding. Our first attempts were on 60-meter HF but the band did not cooperate. While several other stations could be heard, no direct communications were established. So we moved to VHF and the WECOMM Repeater. Our message was delivered to the State Emergency Operations Center and a few minutes later we received an approval message. The very interesting fact in this exercise is that the people involved in creating and approving this message are the actual individuals who would be directly involved if this were a real-world situation. So it was just more than a simulation! It also provided an opportunity to show others the capabilities and skills used in amateur radio. By 11 am, our mission had been successful and we torn down our setup. However, I regret not using NBEMS to pass a message to EOC. Oh well, there is always next year.

But we learned a few things. We learned about HF operation and propagation, especially on 60 meters. We learned that the antennas at the SEOC are not tuned for 60 meters, but will be this summer. Warren found an intermittent cable in his mobile setup. We learned that when using digital modes, a printer would be a valuable asset to record and pass messages. Later I learned, talking with Scott Ziegler, KC9IIZ and Ozaukee County Emergency Manager, that using ink jet type printers in the winter can be very difficult. That is why the Sheriffs and other emergency vehicles use thermal printers.



Next year SIMCOM will be held on May 1 to 3<sup>rd</sup> in Waukesha. Interested? Questions? Please let me know or ask. If I don't have an answer I will try and dig one up..

73 Don Zank AA9WP

## The ORC Spring Swapfest

The ORC Spring Swapfest was again a great success with attendance increasing to just over 300, with participants such as the ARRL, Tower Electronics, Wisconsin Antique Radio Club, Red Cross and all the individuals selling their treasures. Our own Gary Drasch, author of "Ham Radio is Alive and Well", was there selling autographed copies of his book. Incidentally, it is a great book and really presents the changes and expanding opportunities within amateur radio. I am sure you will find it as good a read as I did. The following photos speak for themselves. If you missed the event you missed a really great swapfest in a great facility.

Nels sold tickets at the door while Grafton Destination Imagination Club provided the concessions and Stan and Mike provided the "sounds". Loren (N9ENR) and Kristian (KC9TFP) did a great job putting this event together – Thanks.



Thanks to all the members that helped make this year a successful Spring Swapfest! Attendance was up a bit. All the tables were filled. Plenty of food.

Thanks to Robert K4WTH for putting up the signs early this morning.

Thanks to Loren N9ENR and Kristian KC9TFP for organizing the tickets and tables.

Thanks to Nels WA9JOB and Chuck KC9YEP for manning the buyer ticket table.

Thanks to Jim K9QLP and Robert K4WTH for manning the vendor entrances.

Thanks to Mike KD9GCN for providing the sound system.

Thanks to Stan WB9RQR for announcing.

Thanks to LeFrog for loaning us 10 tables.

Thanks to Tower Electronics for loaning us 12 or more tables.

Thanks to Kevin K9VIN for securing the rental tables and printing flyers.

Thanks to Ben K9UZ for working on the swapfest announcement on the website.

Thanks to John W9FAD for helping setup on Friday.

# Ozaukee Radio Club

## April 11, 2018 Meeting Minutes

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:33 PM. All the attendees introduced themselves.

### **Announcements, Show-and-Tell, Bragging Rights:**

Dave KC9REP: Dave may have available in a couple weeks some used Inrico TM-7 Wi-Fi IRN Android-based radios. They are going on eBay for about \$250. Dave will sell them for around \$175-\$200.

Gary K9DJT: The ORC shirt orders aren't in yet.

Peter W0NG: A friend has ham equipment for sale which belonged to the friend's late uncle. Peter displayed pictures of the equipment on the club's projector.

Tom KC9ONY: Tom is offering tickets and tables for the Swapfest to sell at the meeting break and after the meeting. Loren and Kristian have made enough sales so far to cover the cost of the St. Mary's Center rental.

Karen KC9WQJ: All hams are invited to an ARRL Event on April 18<sup>th</sup>, hosted by the Milwaukee Repeater Club. Kermit Carlson W9XA, ARRL Central Division Director, will lead a discussion on the direction and upcoming changes for the ARRL.

### **Program:**

Bill W9MXQ gave a presentation on the Goals and Focus in Collecting Vintage Amateur Radio Equipment.

### **50/50 Drawing:**

Dick AB0VF was the winner of the 50/50 drawing.

### **Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a 64 GB Solid State Drive and a desktop PC with Linux installed.

### **Officer Reports:**

Kevin S. (K9VIN) President – The Spring Swapfest is approaching (Saturday, May 5<sup>th</sup>). Still figuring out how many additional tables to order. The Cedarburg High School Robotics Club can't do the refreshments stand at the swapfest due to a busy schedule. Instead, the Destination Imagination group from John Long Middle School in Grafton will provide the refreshments.

One of the topics discussed at the last board meeting is to possibly take some money from the Scholarship Fund, now invested in CDs, and diversify it to other types of investments with higher yield.

Pat V. (W9JI), 1st VP – No report.

Robert E. (K4WTH), 2<sup>nd</sup> VP – On the club Facebook page, instead of paying \$30 a month in promotional fees, we are actually paying according to the number of people that would look at our website.

Tom T. (KC9ONY), Repeater VP – The new repeater antenna has been assembled, and the arrangements for installation are being worked on. Also, this week is Tornado Awareness Week, and there will be drills in our area at 1:45 PM and 6:45 PM tomorrow.

Ben E. (K9UZ), Secretary – The minutes of March's meeting is in the newsletter. Motion to accept the minutes was made, seconded and approved.

Treasurer's Report – Dave N9UNR was not at the meeting, so Robert K4WTH gave the report. He passed out copies of the Balance Sheet and Income & Expenses reports for March. A motion to accept the report was made, seconded and passed.

**Committee Reports:**

Ken B. (W9GA), Field Day – As discussed at previous meetings, the tent used for Field Day is too heavy and is very difficult for our members to set up. After months of research, Ken ascertained that the most economical solution is to cut 14 feet off the tent at one end, shorten the poles by a few inches and double-stitch the edges where the cut is made. A commercial-grade tent of similar size (18' x 38'), bought new, would run about \$3,000 or more. Ken is asking the board to approve the \$1,050 that is needed for K&D to do the modifications. The proposed tent modification generated little discussion. Dave KC9REP questioned whether it would be more economical to rent a tent since the existing tent is used only once a year at Field Day. Kevin K9VIN responded that the tent was donated to us by OZARES and would also be used in the event of an emergency. Ken said a crew is needed to go to the shed, unload the trailer, load the tent and get it ready for transport to K&D.

Field Day is the last weekend in June, at Pleasant Valley Park, two miles north of Highway 60, off of Highway I.

**Old Business:**

There was no old business.

**New Business:**

There was no new business.

**Adjournment:**

A motion to adjourn the meeting was made by Stan WB9RQR, seconded by Bill W9MXQ and was passed. The meeting was adjourned at 9:11 PM.

**Attendance:**

There were 43 members present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## ORC MEETING AGENDA

May 9, 2018

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc,
4. Program: Robert K4WTH, “Echolink”
5. 50/50 Drawing
6. Fellowship Break
7. Auction – Stan Kaplan (WB9RQR)
8. President’s Report – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. 2<sup>nd</sup> VP Report – Robert Eskola (K4WTH)
11. Repeater VP Report – Tom Trethewey, (KC9ONY)
12. Secretary’s Report – Ben Evans (K9UZ)
13. Treasurer’s Report – Dave Barrow (N9UNR)
14. Committee Reports:
  - A. Spring Swapfest
  - B. Fall Swapfest
  - C. Field Day
15. OLD BUSINESS
16. NEW BUSINESS
17. Adjournment to ?

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### The ORC Newsletter

465 Beechwood Drive  
Cedarburg WI\* 53012

### First Class

Next ORC Meeting

#### Grafton Senior Citizens Center

1665 7<sup>th</sup> Avenue, Grafton  
Wednesday, May 9<sup>th</sup> 2018

7:00 PM – Doors Open

7:30 PM – Membership Meeting





# The ORC Newsletter

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ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO  
Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org) Facebook: [facebook.com/orcwi](https://facebook.com/orcwi)

Volume XXX

June, 2018

Number 6

## From the President

*de Kevin Steers (K9VIN)*



**Happy June everyone!** Well, with 50-degree weather, I think it has a bit to go, for sure!

Dayton, once again, was a scream! I motored down on Thursday, enjoying listening to the 2M Simplex frequency of 146.52. I made a handful of QSOs both on the way down and on the way home, with fellow Hamvention travelers. It was funny listening to a person from Illinois telling his life story, only to bump into him, on down the road, and telling him that I had heard most of it back around Racine! His callsign ended in EAA, which was memorable, and then I found out that Gary

Drasch and Bill Schnell had stopped for lunch with a group of Illinois hams, including EAA. How funny.

Once again, I rendezvoused with the Cherrylanders, old friends from Traverse City, MI. We stayed in Springfield and enjoyed evenings of camaraderie, Hockey matches at Roosers restaurant, and even tuned in to the Royal wedding from the Hotel Lobby. We also entertained ourselves with aquavit linea, smoked salmon, stinky cheese, and Kim Chee. Needless to say, the hotel lobby needed a good breeze to clear the air!

The Hamvention venue was great, with only brief, light rain showers most of the weekend. The food selection was reminiscent of a county faire, which I found exciting. I look forward to this event each year, and next year, I hope to focus on the Forum's, as I kind of forgot to look at the schedule. There are forums for Ham's of all levels, so there is something for everyone; well, maybe not for my wife 😊

If you recall from my last update, I had picked up an antenna coil to get me HF mobile, at our Swap Fest. I actually did use it for a QSO on 20M with Gary Drasch enrooted, but propagation was terrible. Before going to Dayton, I suspected that might be a Wolf River Coil, so I did some research. My coil seemed a bit smaller in diameter and not quite as many turns of stainless wire as their current model. But it did have a lot of tell-tale signs that it was an earlier version.

At Dayton, I searched out Wolf River Coils to ask a few questions - confirm, and then to pick up two more 'taps' for easier band changes. Gary from WWC was a great listener, and when I described the coil details, he smiled and exclaimed that I had one of his very early prototypes. Without skipping a beat, he said bring it to me, and I will swap it out with a current version. Customer Service like I would never have expected! On another plus side, as my posse assisted with removing, remounting, handling and discussing the antenna, one of them decided to use the antenna as a HOA

alternative antenna. So, in the end, Wolf River Coils came out ahead based on the package my friend decided upon.

Next month I will regale you with my time spent on the Hamvention grounds, and the few purchases that I made.

Next project is to get /MM up at the cottage. Maritime Mobile might be amusing on my pontoon, so I figure mounting a 2M antenna is easy enough, but I also picked up another Mobile antenna coil at our swapfest to get on 10-40M. Might be fun for contesting to set me apart, as well as for fishing.

Please plan to attend Field Day. As of this moment, we need a 20M band captain to lead the charge on that band. Please reserve June 23-24 on your calendar. It is a great way to learn how to run network cables, how to pitch tents, how to erect temporary towers, and how to work hundreds of stations in a low stress environment. You can even sit back and listen if you wish to learn how we manage a pileup, etc.

## **Saturday Breakfast at 7 AM at Jim's Grille**



**Every Saturday morning, an ORC group meets at Jim's Grille in Cedarburg to have breakfast and solve HAM radio and world problems.**

**The group is awaiting your opinions at 7 AM at Jim's Grille.**

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



June is also the start of the sporadic E (Es) season. The E layer of the ionosphere sometimes gets intense levels of ionization. The ionization is thought to be caused by wind shear. It appears to also be linked to storm fronts. Es is most common in June and July.

There is another minor peak in December and January. The big event of June is Field Day, the weekend of June 23-24. This is one of the ORC's biggest events. Final details for Field Day will be the program at the June meeting.

Sporadic E can affect propagation on the bands from 20 meters on up to occasionally 2 meters. VHF operators look forward to this time of the year. Es can provide communications with strong signals out to about 1200 miles. Sometimes there will be multiple zones of ionization and multi-hop opening occur. Most often they will be towards Central and South America. Usually, we will have a few to Europe and Africa.

The advent of FT8 should make this year's Es especially interesting. FT8 allows digging out signals over 20 dB below what could be copied with CW or SSB. I first got on FT8 back in early August of last year. A primary reason for me was to use it on 6 meters for working DX. Although it was way past the regular season, I worked US stations just about every night for several weeks. During this time there were few openings strong enough to support CW or SSB contacts. I did make a few QSOs into the Caribbean and Mexico.

I'm hoping FT8 will make multi-hop DX contacts much more common on 6 meters this season. It looks like it has already started. There was an opening to Japan on 6 meters late one afternoon in late May. At least one station from Wisconsin made multiple FT8 contacts into Japan. There were other reports from northern IL making contacts during this opening. Another 6M enthusiast I know worked the Canary Islands. You just need to be there. The openings often are brief.

Es also affect the upper HF bands. It is not noticed as Es too much on 20 and 15 meters because there are other propagation modes. It can be critical in Field Day. About every 3-4 years we have good Es opening. To win Field Day from this part of the country requires a good 20 meter ES opening to last into the night. It can also provide a lot of QSOs on 15, 10 and 6M. Without an Es opening the VHF station will only contact local stations. With a good opening, several hundred contacts are possible.

Most of the ORC Field Day HF stations have secondary band assignments for 10 and 15. It is important to periodically check these bands. If they open up, the stations must go there. It can make a difference of hundreds of QSOs to the Field Day effort. Last year some of the stations didn't go the alternate bands soon enough and it cost us. Since the stations are networked, it is easy to see if another station is making contacts on these bands. Also, keep an eye on the 6M station. If they are making contacts, chances are 10, and 15 are hopping.

The ARRL June VHF contest can get very interesting if there is a 6 meter Es opening. This event starts at 1800 UTC (1:00 PM local) on Saturday, June 9 and runs until 02:59 UTC Monday, June 11 (10:00 PM Sunday night, local time). You send your grid square as the exchange. The VHF/UHF bands from 6 meters and up can be used. All modes are allowed, but you can only work a station once per band regardless of mode. There are a number of entry classes. If you are planning on operating, check out the rules at <http://www.arrl.org/june-vhf>.

June is not usually a big month for DXpeditions. A couple of dozen vacation style operations are scheduled for June. None are very rare, and you just have to get lucky and be on when they show up.

The single big one is to Baker Island out in the Pacific. It is scheduled to be on from June 27 through July 7. The island has historical significance as it is part of the Baker and Howland island group. This is the area where Amelia Earhart is thought to have disappeared on July 2, 1937. The Baker & Howland group is a US possession. Like many small island groups owned by the United States, it is a wildlife reserve. The various government departments that manage these places have been very restrictive on letting hams, or anyone for that matter, to visit these islands. For that reason, Baker Island is #5 on the all-time needed list by DXers.

Some rare countries rank high because of political restrictions. North Korea is #1 on the list because ham radio is not allowed there. Other places are rare because going there is difficult and expensive. The aborted Bouvet Island DXpedition earlier this year is an example. Because of policies of the various departments in the government, four of the top twenty needed countries are US territories.

The administrative agencies have been getting a little more open about letting hams visit these places. They are now allowing groups to go every 5-10 years. Sometimes they have to pay for wildlife experts from the agency to come along. Often these agencies don't have the budget for making their own visits. The hams have to follow very strict rules to minimize disruption to the area, which is of course reasonable. June and July is about the worst time for a DXpedition to highly needed location. Their landing permission is only valid during this period because it would cause the least disruption to the birds.

The call sign is KH1/KH7Z. They will be on 160-6 meters. SSB and CW plus some digital. There are some bands that this island has never been worked with a digital mode. If you need this one, you better get them now. It could be another ten years or more before it shows up again.

That wraps up June. See you at Field Day!

## THE COMPUTER CORNER

### *No. 244: What Version of Windows Are You Running?*

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



The version of Windows you are using is always a question, unless you look it up or have arranged it to be part of your desktop display. The version is especially critical now that the latest Windows 10 Upgrade has arrived. If you have more than one computer, having the version on screen can confirm that you are up to date, anytime the desktop is visible. Here is how to do it. But, use care! You will be messing with the Registry, and if you make an intentional or unintentional error, it can screw up your computer royally. You only need to change a zero to a one, but make sure you make that change in the correct place. Here are the steps.

Right-click the Windows icon in the leftmost position on your tray. A list of stuff will come up. Right-click RUN. A Run box will come up. In the Open: box, type the word regedit (the case of the letters does not matter) and click the OK box. Select Yes if a User Account Control box comes up asking you if you want to allow this app to make changes to your device (computer).

1. OK, you are in the Registry Editor. You can see that your computer has 5 groups of entries, all beginning with HKEY. The one you are interested in is the second one in the list, HKEY\_CURRENT\_USER. Left-click the right arrow symbol (>) next to it. That will expand the sub-categories to about a dozen. The one you are interested in is Control Panel.
2. Left-click the > symbol next to Control Panel. That will expand the sub-categories to about 15. This time you are interested in Desktop.
3. DON'T click the > symbol this time. Rather click the word Desktop or the little folder symbol next to it. This will expand the listings on the right (Name/Type/Data) to over 40.
4. Scroll down the listings to PaintDesktopVersion, right click PaintDesktopVersion and select Modify (the first entry in the drop-down list).
5. In the box that comes up ("Edit DWORD (32-bit) Value"), the Value Data box has a zero in it. Change that zero to a one (change 0 to 1). This is the ONLY data change you will have made during this entire process.
6. Now, click OK and exit the Registry Editor. Reboot.
7. If all went well, the version should be showing in the lower right corner of your screen. This is what shows on mine:

Windows 10 Home  
Build 17134.rs4\_release.180410-1804

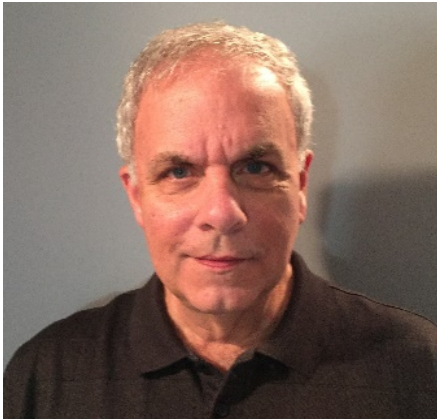
While you are perusing the Registry in the steps above, there is no danger. The only change is in step 6 above, when you change a zero to a one. If you exit the Registry Editor before step 6, no changes will be kept. So, be sure to follow the instructions exactly, especially step 6 and 7. If you are "twitchy" (very unsure of yourself), find out how to back up your Registry before you take the steps outlined above, so that you can restore the original version. Or, perhaps you can convince me to make the changes for you, while you watch, in my computer workshop.

There you have it. Information you need on occasion, now always on hand, but not in the way. Happy Computing!



# Vintage Amateur Radio

de Bill Shadid, W9MXQ



As the market for ham radio equipment was changing, Drake Radio Company made a major leap into the fray with the 1963 introduction of the all vacuum tube TR-3 HF Transceiver. This radio continued the theme introduced by Collins Radio Company with the KWM-2 and KWM-2A Transceivers. The TR-3 was soon replaced with the visually similar Drake TR-4.

The TR-3, and the similar TR-4 designs, lived into the late 1970's. For a time, the last TR-4C version was made in parallel with the much-touted Drake TR7 all solid-state transceiver. Before the Drake TR7's introduction, the design competed head to head with American and Japanese solid-state and hybrid radios. We should not underestimate the success of this line of transceivers – the first

TR-3 to the last TR-4C.

This Drake TR-3 article is the first of a two-part series on the Drake Vacuum Tube Transceivers. This article shows the TR-3 while the next one shows the TR-4 and TR-6.



**Drake TR-380-10 Meter SSB/AM/CW Transceiver in 1963**

**(Picture from Universal Radio)**

Drake took the same approach as Hallicrafters in meeting the demand created by Collins with the introduction of their S-Line series. Like Hallicrafters, Drake introduced a transceiver first and then later introduced a separate receiver and transmitter in the same line. Subject of a later article, Drake introduced the separate R-4 Receiver and T-4X Transmitter in 1965. Like the Collins KWM-2, but unlike the competing Hallicrafters SR-150, Drake did not include Receiver Incremental Tuning (RIT) in the TR-3 Transceiver.

Drake, like everyone other than Collins, made the TR-3 an acceptable transceiver on CW with proper and automatic offset for hearing the other station. The lack of RIT, however, offset that advantage in a time when drifting VFO's could play havoc in a longer QSO – both parties would move across the band while adjusting for the other's drift.

In a league of its own, Drake, unlike Collins and Hallicrafters provided real AM mode receive in the TR-3 with a diode detector. But they only went so far – as with all crystal filter SSB generation transceivers, there is only one sideband present on AM. In those days, “real AM guys” would watch for that and call you out on it – those were the big days of the AM vs SSB battles!

Drake did offer an alternative to RIT by offering a full external VFO, the model RV-3, for use with the TR-3 Transceiver. With the RV-3 one could separate receiver and transmitter frequency – perhaps leaving the transmit frequency static while adjusting the receiver.



**Drake RV-3 External VFO**



**Drake RV-3 showing the AC-3 Power Supply mounted in the rear**

**(Pictures from Universal Radio)**

Did you notice (left picture, above) the speaker grill in the RV-3? That was the way Drake managed to compress the table top requirements of the TR-3 station. This is like the feature set in the Collins 312B-5 External VFO for the KWM-2. (Collins' appearance was a bit more elegant.) To the right you see a rear view of the RV-3 showing the matching AC-3 AC Power Supply for the transceiver. Note the three cables coming from the rear of the RV-3/AC-3 Assembly – left to right they are AC Power Cord, Control/Supply Cables to plug into the TR-3 Power and External VFO connectors, and the cable from the speaker going to the TR-3. The bias set potentiometer is between the AC Power Cord and Control/Supply Cable and sets standby bias for the 12JB6 finals – part of the setup procedure for the initial installation.

Note: Standby Bias should be checked frequently on tube transmitters. In my opinion, it is more important to be a little more frequent with checks when using sweep tube finals.

Drake also offered a Speaker Console alone, the model MS-3. This was for users that needed a speaker and a housing for the AC-3 Power Supply but did not want the RV-3 External VFO. The rear view of the RV-3 and AC-3 shown above would be identical to a rear view of the MS-3 and the AC-3. In fact, the MS-3 and the RV-3 used the same Drake outer cabinet. Pictures of the MS-3 are rare and I could not find one I could legally use. The MS-4 Speaker is shown in next month's article about the TR-4 and is accessories. The MS-3 was identical except that no front panel nameplate appeared on the MS-3 Speaker.

Drake offered a variety of microphones for the TR-3 – both hand microphones and desk microphones. The ones I have seen – and I may not have seen them all – were private label units from Electro-Voice and Astatic. Personally, my favorite and best sounding microphone, with my voice, on the TR-3 or TR-4 series radios is the Astatic D-104 – the model without the amplifier in the base. I also have successfully used the Shure 444 (the high impedance model or the 444D with the setting

at High Impedance). But, alas, my Shure 444 contains a Heil retrofit microphone element, so it is not authentic – yet it garners audio compliments.

Drake also offered a DC-3 DC Power Supply for running the TR-3 in an automobile, boat, airplane, or anywhere 12 Volts DC was the available power source. Below is a picture of the DC-3 Power Supply.



The Drake DC-3 Power Supply was a neat, compact package with a switching circuit, like most all DC supplies of the day, to allow a high frequency oscillator and transformer to convert 12 volts to the various voltages needed by the TR-3 Transceiver. It was designed to mount on the bulkhead of the vehicle.

**(Picture from Universal Radio)**

The front panel size of the TR-3 was shared with all similar Drake equipment of the era. It was 5-1/2" high x 10-3/4" wide – quite compact for the day. The depth of the TR-3 was substantial at 14-1/2" – deeper than all of its accessories. The TR-3 was virtually all vacuum tube circuitry with little use of solid state devices except in the AC-3 and DC-3 Power Supplies. For the day, the TR-3 was quite stable and later solid-state versions of the Drake PTO were not substantially better than the excellent design that Drake provided in 1963. Like in the vacuum tube PTO provided by Collins in the S-Line, the well-designed Drake product was exemplary for the time. (To be sure, I would not want to attempt FT8 QSOs' today with a Drake TR-3!)

Unlike Collins, Drake did not choose the tried and proven 6146 tetrodes in the TR-3. Instead they went for three 12JB6 Sweep Tubes. Each of these tubes is capable of 100 watts input power – for an input on SSB of 300 watts PEP. CW operation was a bit less at 260 watts input, key down. Output power was about 50% to 60% of those numbers. The trio of tubes is capable of more - but not without unacceptable distortion and a significant shortening of their life.

As I will cover in a later article on the TR-4 series of transceivers, Drake did not keep this tube model. Instead they moved to the more common 6.3-volt version of the tube, the 6JB6. Drake was a firm partner with Sylvania in those days – and nirvana in a vintage Drake transmitter circuit are Sylvania 12JB6 or 6JB6 tubes.

In the day of the TR-3, Drake did not manufacture a linear amplifier. Provisions for working with an amplifier, however, were included. And, it must have been known at the time that the Drake L-4 Linear Amplifier (not to be confused with the later L-4B) was close behind. The grid driven, untuned input of the amplifiers of the day (for the most part) could accommodate the high output of the TR-3. More advanced, tuned input amplifiers would perhaps require a 3dB pad between the transmitter and the amplifier or careful adjustment of the output of the transceiver by loading the transceiver a bit light. One suggestion I recently heard on the Drake Net (7.238 MHz on Sunday afternoons) was to offset the Driver Tune a bit. That is an interesting thought given that such action also offsets the receiver's front-end tuning and the receiver sensitivity rapidly drops off. Perhaps noted by a non-user of the radio. But as with all such advice, I generally "take it under advisement."

Drake had a procedure for using a second receiver with the TR-3, instead of a separate VFO, like the RV-3 mentioned above. But, you could not transceive with this arrangement. With this procedure, one could connect and even control the muting of a separate receiver. The manual shows such an arrangement working with their premier receiver of the day, the Drake 2B HF Receiver. One flaw in the arrangement, corrected on the later TR-4 Transceiver, was the requirement to use an external switch and a relay to engage the remote receiver and to switch the antenna from the transceiver to the receiver. A complicated arrangement to be sure but back in the days of a brand-new



TR-3, ham operators were more tech-savvy and willing to make such adjustments to gain features. And, manufacturers were more willing to encourage modifications of their equipment. In this case, it was a “procedure,” not a “feature.”

Note: Drake used a different conversion scheme in the TR-3 and TR-4 Transceivers from what was used in the 2-Series Receivers and the 4-Series Receivers and Transmitters. There was no convenient way for frequency control of the TR-3 or TR-4 Transceivers to work with any Drake Receiver.

In the 1950's and 1960's – certainly in the time of the Drake TR-3 – it was all the rage to copper plate a radio's chassis. “Better conductivity,” “easier to solder directly to the chassis,” and “looks very nice” were all reasons for this trend. Now, move forward over 50-years and most of these chassis have turned black and/or some sort of iridescent black, brown, and green that is, well, just plain ugly. It does not impact operation, but it sure does look bad – no, not bad, “terrible” is the word!! Flawless ones are around – a Drake copper chassis receiver and transmitter set I bought new in about 1970 is still perfect and resides with the person I sold it to many years ago. I aligned it for him a few weeks ago and marvel at its appearance.

Drake radios starting with models that included a “C” in their model number stopped this process. Those chassis used the same steel construction but were cadmium plated and chromate dipped. They look nice unless subjected to enough moisture to allow them to rust. I will add that this “C” in the model number identifier was true but other models also had stopped using copper plating by that time. I no longer have any copper plated chassis Drake products in my radio collection.

Drake had a rather odd crystal i-f filter mechanical design in the TR-3. Their design used a separate filter for USB and LSB. So, there were two filters – and those filters existed in the circuits through the entire “3” and “4” product line. For the TR-3 however, both filters were encapsulated inside a can that looked like a miniature soup or tuna can – hence the nick name of “soup can” filters. These filters, as the years would prove, were problematic. They are now what we collectors like to call, “unobtainium,” or “no longer available.” The filters were used in early TR-4 Transceivers as well. If found in a radio today, they either work– in which case they are likely to keep working – or they are not working and no replacement (other than one sacrificed from a parts unit) will restore the radio to operation. Also, the TR-3 and early TR-4 radios with the “soup can” filters are working with a 4-pole design. The older units have less selectivity than the later, separate units with 8-pole filters. Filters to replace the late TR-4 separate filters are available from INRAD (<http://www.inrad.net>). However, there are a lot of interface issues that makes this solution less satisfactory for retrofit to a TR-3 or early TR-4.

I should add to the crystal filter story that Drake's very first crystal filter in a transmitting model was the TR-3 Transceiver. Drake stayed with inductive tuned circuit i-f filtering in its receivers (but not its transmitters) until the Drake R-4C Receiver was introduced along with its quantum leap in selectivity with very well-designed crystal filters. That is a story for a future article.

There is also an oddity in the Drake TR-3 (and all TR-4) transceivers that is the result of the conversion scheme. Check the PTO dial in the TR-3 picture at the start of this article. Note that on 80, 40, 15 and 10 meters the frequency goes up as the dial progresses to the right. But on 20 meters it progresses downward for the same dial direction.

Notice in that same picture, the UPPER and LOWER (sideband) lamps on the front panel. Instead of Upper or Lower Sideband being verified by position of the bandswitch or the mode switch (not labeled as such), it is verified instead by those lamps – since it changes in relation to the conversion scheme. You will note that to switch to the opposite sideband you use the SIDEBAND switch. On AM and CW modes, the SIDEBAND switch must be in the “X” position. Again, this covers some “smoke and mirrors” trickery to deal with the radio's conversion scheme – which could be the topic of another article! In another time, Drake would have added a wafer or two on the bandswitch to get

around the rather confusing front panel layout. In operation with the TR-3, or TR-4, the issue fades away after a few seconds of operation.

For conservation of panel space and the desire to eliminate the need for a meter switch, Drake equipped the TR-3 with two horizontal meters. The top meter reads plate current on Transmit and the bottom meter is an S-Meter on Receive. The S-Meter (bottom meter) monitors transmitter AGC in the transmit mode (we now call that ALC).

Drake made a Noise Blanker for the TR-3 that I have never seen and have rarely seen mentioned. I will rely on a bit of what may be tales here when I mention the 34-NB Noise Blanker that may, or may not, have been made for the TR-3 and early TR-4 Transceivers. The later TR-4's onward did use the 34-PNB Noise Blanker – one of which is in my own TR-4C. A TR-4 owned by my friend, W9JI, may actually have the mysterious and rare, 34-NB, retrofit into the TR-4 chassis. Especially at the time of the TR-3 and TR-4 in mobile service, a Noise Blanker would have been a nice accessory to have.

Today, given the choice, I would choose as somewhat more advanced Drake TR-4 Transceiver. In fact, I do have and use a TR-4C. But, to the point, the TR-3 is a pleasure to use with a very respectable barefoot signal of 150 watts output. I once had a TR-3 Transceiver with the RV-3 External VFO and the AC-3 Power Supply – but it is long ago gone in a trade. One of my fellow club members, in one of the clubs to which I belong, has a very nice example of a TR-3 that works – and that he loves after bringing it back to life. So, I guess it is better said that there are no bad radios – just radios with a different story to tell.

If you are interested in a Drake vacuum tube transceiver – look for a TR-3 or any of the various TR-4's. If a TR-3, make sure it is working. Look forward to QSO's that follow QSO's with each new contact wanting to hear the story of your vintage Drake radio. Drake radios carry bragging rights!! AND, they are all made in the good old USA. The filter in the TR-3 notwithstanding, most Drake radios work and get on the air once you know the power supply is safe. Old Mr. Drake knew how to make long lasting radios!

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

Thanks to Universal Radio for the use of their pictures, to KB9PRF for letting me mention his TR-3, to W9JI for letting me look over his TR-4 and make comparisons to my TR-4C, and, most important, to W9DYQ and K9DJT for keeping me honest by proofing every article.



# FIELD DAY MEMORIES

De Bob Truscott (W9LO)

*The following is a full reprint of an article by Bob Truscott (SK – W9LO) that appeared in the June 2004 ORC newsletter. -Ben Evans, K9UZ*



Sometimes it can be fun, or at least interesting, to look back at past Field Days and think about some of the things that happened. Most of the memories are fond, amusing, or downright funny. They can also be tragic.

I remember the phone (AM in those days) operator at Omaha in 1952 who called CQ FD about 3 times as fast as a TV sportscaster gives baseball scores. You had to be there to appreciate it—I had good ears in those days, but I could figure out what he was saying only by the rhythm in his voice. I guess he thought that if the CW guys sent as fast as they could that he should talk as fast as he could. I don't believe he worked anybody.

Later that night we had the heaviest FD thunderstorm I can ever remember. We disconnected the feed lines from the rigs and dropped them to the ground, and were drawing 2-3" sparks off the ends of them. Lucky----we could have burned up a few receivers that night.

I remember FD at the gravel pit (somewhere in Ozaukee County) in about 1958 or 59. It was the group that later became OZRAD. We had a tower set up close to the tent, with the coax from the beam entering the tent directly behind the operating table. About 9 PM or so, we ran out of liquid refreshment so W9BCK [Ron Yokes] volunteered to go into town to renew the supply. It was raining and the visibility was poor, so he didn't see the guy anchor as he turned his car around. He back into it, causing it to come out of the ground, and the tower to fall. Charlie [Balkwill], K9MAU, was tuning the transmitter at that time, and when the tower fell, the coax pulled the rig right off the table and out of the tent. What a surprise for Charlie.

I remember the year that the 75-meter phone guys, who shall remain nameless, used a balloon to support a vertical antenna. The year was about 1965 (give or take perhaps 5 years), and the place was [Ed Bach] WA9BMA's property on the lakeshore somewhere north of Port Washington. The wind came up, the wire broke, and the balloon went sailing inland, trailing the 200' piece of bare copper wire beneath it. A short time later there was a large area power failure—didn't bother us because we were using generator power, but the electric company and the natives of the area got pretty excited about it. It was rumored that our balloon laid the wire on the cross-country transmission lines, but of course this couldn't happen, could it? (But even if it did, it's not our fault those lines were not insulated.)

I remember the year that W9RXJ [Hal Geise] drove his car over one of the coax feed lines, and wrapped about 20' of it around his axle. (How did he do that?) I don't remember if he pulled the tower down or not.

I remember the year of the baked salt shaker. Ann Berg brought the potatoes, all previously wrapped in foil. We loaded the potatoes in the grill, cooked them, and then added the steaks, brats, or whatever they were. It had the makings of a real feast. When Ann unwrapped her baked potato it turned out to be a salt shaker. It seems that I had wrapped the salt shaker in foil

to keep the salt from spilling out while in transit, and it got mixed in with the potatoes. Have you ever used brown salt? It tasted OK to me.

And finally, I remember the year W9WQ [Joe Bauer] died in the tent. I believe it was 1989, but I'm not sure. We finished the set-up and testing about noon on Saturday, much later than we expected to, so there wasn't time to go out to lunch as we usually did in those days. I shared my brats & chips with Joe while we talked over our contest strategy for the next 24 hours. He said he was feeling pretty good, and hadn't had any chest pains all day. Prior to that none of us knew he had a heart problem. Joe took the first operating shift, and I relieved him at 2:00 PM. He said he was a little tired, and was going to take a rest. He laid down on the cot and went to sleep, while I took over the operating position. He never woke up.

These are some of my Field Day memories. We take the bad with the good. I hope to see you all at Lazy Days on June 28-30 (2004) to build a few more memories, hopefully all fond.

Bob, W9LO

## Storm Spotter Net

De Don Zank, AA9WP, OZARES EC



It is that time of year again when severe convective weather, including wind damage, hail, water spouts and tornadoes begin appearing in southeastern Wisconsin. The local National Weather Office in Milwaukee depends on ground reports from the public during severe weather. As the radar cannot see what is going on at ground level these reports are vital to the forecasting office.

The National Weather Office Milwaukee has responsibility for the following counties:

Columbia	Dane	Dodge	Fond du Lac	Green
Green Lake	Iowa	Jefferson	Kenosha	Lafayette
Marquette	Milwaukee	Ozaukee	Racine	Rock
Sauk	Sheboygan	Walworth	Washington	Waukesha

...and the adjacent coastal waters of Lake Michigan from Winthrop Harbor, IL to Sheboygan, WI.

The Sullivan Committee, SULCOM, is the organization that coordinates incoming reports for the weather office. SULCOM has a HF/VHF station that, by using local repeater sources, receives and passes along the reports to the forecasters in the office. <http://www.sulcom.info> SULCOM has divided the region into three distinct areas. Ozaukee County is in the East Region, MKX-E.

During a severe weather event, the OZARES (Ozaukee Amateur Radio Emergency Services) group will activate to provide ground reports to the National Weather Service Office in Sullivan, Wisconsin. OZARES is one of eleven support organizations that provide reports in the twenty county warning area (CWA).

During a severe weather net, the members will check into the 147.330 repeater to provide local weather conditions. Normally we will have one net control operator and one other member will relay the reports to SULCOM. **Guests are more than welcomed to join us.**

Following certain procedures and protocols helps insure accurate and timely reports. The criteria for a severe weather report are available on the [sulcom.info](http://sulcom.info) website.

The protocol for reporting is the 4 W's. Who, What, When and Where.

**Who** is providing the report.

**What** is occurring (using the severe weather criteria).

**When**, the time of the event: since the weather is moving fast, the NWS office is looking for reports not older than 2 minutes.

**Where**, latitude/longitude, a street address, city, or direction from local town center. And include the County.

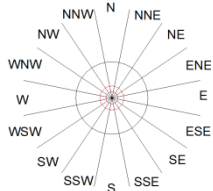
Ozaukee Town Centers have been defined as below: If your home/work location is 0.4 miles Northwest of the Belgium city center reference point, indicate "0.4 miles Northwest of Belgium, Ozaukee Co."

<b>Town</b>	<b>Town Center</b>	<b>Latitude/Longitude</b>
Belgium	Intersection of CTY D & Beech St.	43.5006 -87.8503
Cedarburg	Intersection of Columbia Rd. & Washington Ave.	43.2966 -87.9882
Fredonia	Intersection of S Milwaukee St. & Park Ave.	43.4685 -87.9517
Grafton	Intersection of 11th Ave. & Bridge St.	43.3186 -87.9546
Harrington Beach State Park	End of CTY D @ Lake Michigan	43.4928 -87.7952
Mequon	Intersection of Main St. & Green Bay Rd.	43.2304 -87.9840
Port Washington	Intersection of STH 32 & Main St.	43.3882 -87.8699
Saukville	Intersection of STH 33 & Park St.	43.3838 -87.9414
Thiensville	Intersection of Vernon Ave. & Grand Ave.	43.2368 -87.9799
Waubeka	Intersection of Cigrand Dr. and Memorial Dr.	43.4750 -87.9902

So when some severe weather is approaching, tune over to 147.330 to see if a net is active and please join us.

Who \_\_\_\_\_

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

<p>1. Tornado or Waterspout <i>circle one</i></p> <p>2. Funnel Cloud Looking</p> <p>3. Rotating Wall Cloud</p>	
<p>4. Severe Damage <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <p style="padding-left: 40px;">tree branches greater than 3" dia. snapped, trees uprooted _____ downed power lines</p> <p style="padding-left: 40px;">any structural damage to buildings (includes roof damage) _____ crop damage</p> <p style="padding-left: 40px;">bent, snapped or collapsed light poles or traffic lights _____ sink holes</p> <p style="padding-left: 40px;">cave-ins and mud slides _____</p>	
<p>5. Severe Winds – 58 mph or greater: Speed _____ circle if <i>measured</i> or <i>esti- mated</i></p>	
<p>6. Severe Hail - 1 inch or greater: Size _____ circle if <i>measured</i> or <i>esti- mated</i></p>	
<p>7. Severe Flooding <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <p style="padding-left: 40px;">water over river banks or dams _____ roads, bridges or railroads washed out</p> <p style="padding-left: 40px;">impassable or closed roads _____ water out of banks that causes property damage</p>	
<p>8. Minor Hail – 3/4 inch to 7/8 inch: Size _____ circle if <i>measured</i> or <i>esti- mated</i></p>	
<p>9. Minor Damage <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <p style="padding-left: 40px;">any cosmetic damage to buildings &amp; vehicles _____</p> <p style="padding-left: 40px;">tree branches less than 3" dia. snapped causing power line damage or cosmetic damage to buildings &amp; vehicles _____</p>	
<p>10. Minor Flooding <i>Check all that apply. If the event detail is not listed, then add detail in the Notes Section, below</i></p> <p style="padding-left: 40px;">non-life-threatening / non-damaging water over curb _____</p> <p style="padding-left: 40px;">water out of banks but confined to low lands and bottom lands (<i>not impacting buildings</i>) _____</p> <p style="padding-left: 40px;">water on the roads _____</p>	

11. Visibility - less than 1/2 mile: Distance \_\_\_\_\_ due to precip \_\_\_ fog \_\_\_ blowing dirt \_\_\_ smoke \_\_\_\_\_

12. Rainfall - equal to or exceeding 1" per hour measured over at least 15 minutes

(i. e., at a rate greater than 1/4 inch in 15 minutes)

Measurement \_\_\_\_\_ in (between) \_\_\_\_\_ minutes (start/end time)

13. Minor Winds 40-57 MPH: Speed \_\_\_\_\_ circle if *measured* or *estimated*

When \_\_\_\_\_

Where Address  
Distance/Direction  
Lat/Long

Reference/  
City/  
Intersection

County

**Notes**

# Ozaukee Radio Club

## May 9, 2018 Meeting Minutes

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:32 PM. All the attendees introduced themselves.

### **Announcements, Show-and-Tell, Bragging Rights:**

Tom W9IPR: Bought an FT-2000 in Florida, to replace the FT-1000 that's been used for Field Day.

Nels WA9JOB: Visited Bruce W8RA while in Florida. Saw Bruce's 32-acre home that has five or six tall towers loaded with antennas. If you hear Bruce on the radio when he comes to Wisconsin, say hi.

Gary W9XT: Put together a transmitter to work WSPR on the 630-meter band to be the first club member to transmit on the new band.

Tom KC9ONY: There will be a Simulated Training Exercise in mid-May, called Dark Sky, which will simulate a massive power outage lasting three days. The exercise will take place in seven counties in Wisconsin.

Kevin K9VIN: Picked up mobile coils at the Spring Swapfest for 20 and 40 meters and hopes to use them on the trip to Dayton.

### **Officer Reports:**

Kevin S. (K9VIN) President – The Spring Swapfest was very successful. Attendance was up by about 30 people compared to last year and the tables were sold out. The Field Day tent was sent out to be shortened. Propose “passing the hat” to throw money into at the next meeting to defray the cost. Dayton Hamfest is next weekend.

Pat V. (W9JI), 1st VP – No report.

Robert E. (K4WTH), 2<sup>nd</sup> VP – No report.

Tom T. (KC9ONY), Repeater VP – The new repeater antenna is ready to be installed. Still working with the tower climbers on the logistics, scheduling around Dayton, watching the weather, etc.

Ben E. (K9UZ), Secretary – The minutes of April's meeting was sent by email to members. The link to this month's newsletter was sent in a separate email. There were no questions or comments. Motion to accept the minutes was made by Tom W9IPR, seconded by Chuck W9KR and approved by the members.

Treasurer's Report – Dave N9UNR was not at the meeting, so Robert K4WTH gave the report. He passed out copies of the Balance Sheet and Income & Expenses reports for April. There were no comments. A motion to accept the report was made by Robert, seconded by Stan WB9RQR and passed. Swapfest Income Report – Thanks to Loren for providing the \$50 in dollar gold coins for the grand prize, since our bank doesn't have them anymore. If anyone knows of a bank that sells the gold coins, let Robert know, in case we do it again for the Fall Swapfest. The profit from the Swapfest was \$1,330.25. Thanks to everyone who showed up and participated in the event.

Kevin K9VIN asked Jim K9QLP to mobilize the audit committee for the long-overdue 2017 audit. Kevin will contact audit committee member Sandy W9BTN.

### **Committee Reports:**

Ken B. (W9GA), Field Day – Field Day is the last weekend in June, at Pleasant Valley Park, two miles north of Highway 60, off of Highway I. There will be an extended discussion of the nuts & bolts of the event at the June meeting. We currently have three band captains, but need a 20-meter phone captain since Gary K9DJT had to bow out this year. As of now, our category is 4A. Tent setup is Thursday. Friday will be spent erecting the antennas and testing the equipment, capped off by a great grilled turkey dinner. Attendees bring a dish to pass. Would like to get a cook captain to fry eggs and sausage



on Sunday morning. There will be an organizational meeting at the park on June 2<sup>nd</sup> in the early afternoon. Look for details on the club remailer and on Facebook. Robert commented that he has the ORC computers, all updated, and has the network cabling ready to go. Ken encourages everyone to get involved in Field Day.

Tom R. (W9IPR), Fall Swapfest – The Fall Swapfest this year is on September 8<sup>th</sup>. There will be no conflicting events on that day within 100 miles. We may stay with that timeframe hereafter. Help needed for loading and towing the Scholarship Fund equipment to the event. Scholarship – A few items came in to Scholarship, including a gin pole which could be available to the climbers for the repeater antenna install.

**Old Business:**

There was no old business.

**New Business:**

Curt N9CBS: Reminded members not going to Dayton that HRO is having a Hamfest on May 19<sup>th</sup>.

Nels WA9JOB: The board should consider purchasing some six-foot tables for our events rather than renting.

Jim K9QLP: Regarding “passing the hat” for money for the tent downsizing, the club has plenty of money, so why the need to pass the hat? Instead use the money the club already has. Pat W9JI, by way of clarification, said that the board has already approved the funds for the tent modification, but a few board members spontaneously volunteered to pitch money into the project. Robert K4WTH said that club money is earmarked for the tent.

Robert K4WTH: If you’re going to Dayton, please take photos for the Facebook page.

**50/50 Drawing:**

Bob WI9BOB was the winner of the 50/50 drawing.

**Program:**

Robert K4WTH gave a presentation on Echolink.

**Awards:**

Ken W9GA presented the Turkey of the Year Award to Bill Church KD9DRQ. The person voted Ham of the Year was not at the meeting to accept the award.

**Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a 2-meter quad antenna.

**Adjournment:**

Nels WA9JOB made the motion to adjourn the meeting, which was seconded by Robert K4WTH and was passed by the members. The meeting was adjourned at 9:16 PM.

**Attendance:**

There were 45 members and one guest present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## ORC Meeting Agenda

*June 13, 2018*

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program 1: Solar Cells & Applications
5. 50/50 – Kristian Moberg, KC9TFP
6. Fellowship Break
7. Program 2: Field Day Plans
8. President's Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)

10. Repeater VP Report – Tom Trethewey (KC9ONY)
11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report
13. Committee Reports:
  - A. Scholarship
  - B. Fall Swapfest
  - C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

Return undeliverable copies to

### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

Next ORC Meeting:

#### **Grafton Senior Center**

**1665 7<sup>th</sup> Avenue, Grafton**  
Wednesday, June 13<sup>th</sup> 2018

7:00 PM – Doors open

7:30 PM – Meeting



# The *ORC* Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO

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

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

Volume XXX

July, 2018

Number 7

## From the President

*De Kevin Steers (K9VIN)*



Well, June went out with another successful field day, thanks to so many volunteers. Unfortunately, I had family responsibilities that hindered my ability to be in town that weekend. I look forward to the stories of teambuilding, band conditions, food, and of course the points total.

I am officially mobile HF with my new Wolf River Coil. After a few weeks of poor band conditions, I miraculously broke up a pileup while mobile with a station in northern Bosnia, and another in the Slovak Republic, on 20M. Wow, what a feeling! Clearly the word Mobile peaks operators interests when in a pileup.

On a lark, I bought a mobile HF manual screwdriver antenna at our recent swapfest. I spent only a few dollars for it, and just recently found it in a MFJ catalog, priced at well over \$100. Yahoo. I have since mounted it to my pontoon, and need to tweak it to get from 2M on up to 40M. I doubt I will use it much, but it might be fun to give a local repeater more traffic than it currently gets. Plus, if the word Mobile gets attention on the airwaves, I can only imagine what Maritime Mobile would get 😊.

My tower rotor is still not pointed in the right direction; apparently I needed to take into account the rotor 'stops' when setting up a rotator. Needless to say, next weekend will be another trip up the tower.

73, Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



Last month I discussed the 6 Meter sporadic E (Es) season and how the new FT8 mode might be a big factor this season. Typically, the maximum distance you can get with Es on 6 meters is around 1200 miles. During this time of the year patches of ionization are more common, and often it is possible to get multi-hop contacts. It often takes high power and large antennas to make long distance contacts with this propagation mode.

Experience on the HF bands has shown that it is often possible to make solid FT8 contacts when the band would not support CW or SSB contacts. Would this also happen on 6 Meters, and would long DX contacts be possible with moderate stations? The answer is definitely yes!

I was quite active on 6 during the last month and made close to 400 contacts. So far, I have worked 19 countries, and at least six of them are new ones on the band, increasing my DXCC count on the band to 56. I worked stations in Europe, Africa, and South America, plus many in the US and other North American countries. I heard some Japanese stations but so far have not been able to make a QSO.

I have been keeping a list of new countries heard or spotted on the band that I have not been able to work. That list is about 40. So, my theory that it will be possible to work DXCC with a modest station and FT8 seems to be true. I also picked up a couple of new states. I only need three more on the band. I also worked about 180 grids for the VUCC award. This was done with about 150 watts and a small three element beam, hardly a big gun station.

Contesting is inherently an unfair competition. Someone else will always have a better station, a better location, and better propagation. So, it is hard to really say who is the best contest operator. It would be kind of neat if there were a way to have a level playing field and see how the top operators stacked up against each other. It would sort of be like a ham radio Olympics. Well, there is something like that! It happens every four years, and the next one will be this month. It is the World Radiosport Team Competition (WRTC). Top operators will be going to Germany and will operate the IARU contest. They will be competing as two operator teams. There will be about 60 stations set up. They will be using identical antennas, and the locations are selected to be as identical as possible. Each team will be assigned special call signs about 15 minutes prior to the start. No one will know what teams are using what call sign to prevent help from friends. Each team will have a referee present to ensure no rules are violated.

Potential competitors had to compete in many contests over the last three years and earned points based on how high they placed. There are regional team slots, and there will be operators from around 40 countries participating. The winners get to select their teammate. The

other operator does not have to be from the same area, and there are some teams with members from different countries.

There are also some special youth teams. I think they must be under age 30. One of the youth competitors will be CE2LR. Mathias was in Wisconsin at the end of May and I had the pleasure of meeting and having dinner with him.

As I mentioned, this will be happening during the IARU contest. This means you can get in there and make contacts with the competitors and even compete with them in a way. That is not something you can do in the regular Olympics. Your activity will help make it a success.

The IARU contest is a 24-hour event that starts at 1200 UTC (7:00 AM local) Saturday, July 14. There are a lot of entry classes for single operators. You can enter CW only, phone only, and mixed mode with QRP, Low or High Power. Single-Operators can't use spotting assistance. Single-Operators Unlimited can. That gives 18 different operating classes just for single ops.

The exchange is the signal report and ITU zone. Note this is different than the CQWW Zones. We are in ITU zone 8. You can work each station once per band mode. QSO values range from 1, 3, or 5 points. Working your own zone is worth one point, a different zone on the same continent is worth 3 points, and contacts with different continents are 5 points.

The multipliers are the zones worked per band. Working a zone on CW and then again on phone on the same band does not give you a second multiplier. Special IARU headquarters stations are also multipliers. They will send a signal report and an abbreviation of the name of the country's representative organization. For example, the HQ station for the Radio Society of Great Britain would send 59 RSGB. The ARRL is the Secretariat of the IARU, and NU1AW will be the special call sign for this HQ station. **I have been invited to operate with the NU1AW team, and if you work them on SSB, it might be me.**

Complete rules for the IARU contest are available at <http://www.arrl.org/iaru-hf-championship>. More information on the WRTC is at <http://www.wrtc2018.de/index.php/en/>.

The WRTC is a big deal for serious contesters. Four years ago, the WRTC was held in New England. J. K. George, N3BB, wrote a book on it called *Contact Sport*. The amount of work that went into putting it on was covered along with the competitions and the efforts of the judges reviewing the logs to determine the winners. The size of the effort was incredible. I really enjoyed the book because I knew what everyone was going through and know a lot of the people mentioned in the book, both the competitors and volunteers who made it happen. It is highly recommended reading by anyone with an interest in radio contesting. It is available from Amazon in both hardcover and Kindle eBook.

The big DXpedition of July is the KH1/KH7Z to Baker Island. That was covered last month. It is on as I write this but will end on July 6, which is probably before the newsletter comes out. All the other announced operations are single operator, mostly vacation style efforts and nothing stood out.



If you have not been on 6M, be sure to get on in the next few weeks. It has been a lot of fun. Also get on and make some contacts in the IARU contest and keep an eye out for the WRTC stations, probably with special German call signs.

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## CE2LR Visits Wisconsin

*De Gary Sutcliffe (W9XT)*

CE2LR, who will be participating in the WRTC, was in Wisconsin in late May. He had dinner with some area contesters and DXers. Left to right:

Gary, W9XT; Rudy, NF9V; Jerry, N9AW; Noll, W9RN; Bill, W9LR; Al, WA9BZW; Bob, W9XY; Mathias, CE2LR; Gary, K9GS. W9XY photo.



# THE COMPUTER CORNER

## *No. 245: The Best Antivirus Program is ...*

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)

...probably the one you already have!



According to Majorgeeks.com, they would not have recommended Windows Defender a couple of years ago, but in 2018, they consider it an excellent choice. If you have Windows 10, you already have it. It is free and comes with the operating system. How about that?

Another thing to consider: You cannot safely run two antivirus programs at the same time. They likely will interfere with one another and cause you all kinds of grief, as well as not working to reveal malware properly. So, don't try running Panda Antivirus until you completely uninstall Windows De-

fender. On the other hand, you can run an antivirus program and some anti-malware programs at the same time. That is, you install both and both are running in the background simultaneously. For a specific example, Windows Defender and Malwarebytes (the best current anti-malware program) work together quite happily.

Moreover, Malwarebytes really does everything an antivirus program does, and you can certainly substitute it for Windows Defender (or, better, since it runs happily with Windows Defender, run it concurrently). On top of that, you can get a copy of Malwarebytes (at <http://www.majorgeeks.com>, 15 million downloads there!) that is completely identical to the pay-for version. It will do a nightly (wee hours) scan of your system automatically as well as watching your system the rest of the time, even as you surf the web. After 14 days, it will pop up and ask you if you want to buy it. If not, it will still be there and will still work, but you need to run manual scans by yourself. I really like it and purchased a two-computer copy (Stan's and Nancy's) when they had a sale, about a year ago. And, when that ran out, I popped for another year. But you don't need to pay for it. Between free Windows Defender and the free version of Malwarebytes, you are well protected. On the other hand, I personally really like the sense of security the pay-for version of Malwarebytes gives me, especially for protection from that bad actor, ransomware. (In case you don't already know, ransomware is a viral infection that locks your personal files until you pay their fee – so it holds your files for ransom).

So, there you have it. Nose around the majorgeeks website if you want more information. But you are reasonably safe with Windows 10 as it comes, out of the box. Want to be a little more compulsive? Download Malwarebytes and install and try it for half a month. See what you think.

Happy Computing!

# Ham Radio and Electronics Podcasts

De Gary Sutcliffe, W9XT



We can discuss and learn about ham radio on the air, at club meetings, from magazines and newsletters, and various Internet email reflectors. That hardly seems sufficient. There is so much going on in the hobby. Sometimes we just need even more information.

I have been listening to several different podcasts for the last year or so and thought I would share them with you. Usually I download them to my phone and listen while I exercise or take walks. Sometimes I listen to them on a PC when I am working on project on the workbench. I am

including ones that are audio only since I listen to them as background while doing other things. Popular video podcasts such as Ham Nation are not included on this list. I also included some non-ham radio ones at the end that I listen to but are electronics oriented.

These are not in any particular order. A link for each of them is included.

## Ham Radio Workbench

<http://www.hamradioworkbench.com/>

A bi-weekly podcast mostly covering ham radio projects. Hosts are George Zafiropoulos, KJ6VU, and Jeremy Kolonay, KF7IJZ. They talk about projects they are working on, new products, radio events, etc., of interest to hams. They usually have a guest who discusses some aspect of ham radio. Sometimes they play a recording of some talk from a ham radio conference. That is great since the hosts are west coast hams and attend events we don't normally get to.

This is not overly technical. They spend a fair amount of time talking about the projects they are working on, which is interesting. They cover interesting new test equipment and tools that are useful for the home brewing ham. Each episode seems to be getting longer. Recent ones have been over two hours long.

## SolderSmoke Podcast

<http://soldersmoke.blogspot.com/>

A roughly once-a-month podcast by Bill Meara, N2CQR, and Pete Juliano, N6QW. They talk about building their own equipment, ham radio kits, etc. It is entertaining, sort of like meeting for coffee in the morning. The URL above is for the written blog which usually has a few posts each week. At the top is the link to the latest podcast. The actual page with the podcast archive is not kept up well and always seems to be an episode or two behind. Usually I start checking for new episodes around the end of the month.

## **QSO Today**

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

A weekly podcast by Eric Guth, 4Z4UG. Each week is an interview with a ham who is an expert at some facet of ham radio or has done something interesting. A wide range of topics are covered. Some of the hams interviewed are well known. Others are new to me, usually because they are into areas of the hobby I don't know a lot about. Very well produced.

## **The Doctor is In**

[www.arrl.org/doctor](http://www.arrl.org/doctor)

A bi-weekly podcast by the ARRL with Steve Ford, WB8IMY, and Joel Hallas, W1ZR. Each episode is short, usually about 20 minutes. There is a different technical topic covered each time. Technically they are usually at the basic level.

## **The Amp Hour Electronics Podcast**

<https://theamphour.com>

A weekly podcast by Chris Gammell, covering mostly electronic hardware. About every other week it is co-hosted with Dave Jones from the EEVblog. They discuss things they are working on, new technologies, interesting happenings in the industry, etc. It is not overly technical.

Dave Jones's EEVblog is a popular site for electronics enthusiasts. He covers all sorts of electronic topics in video formats. His occasional rants with his Aussie accent are entertaining. He has some excellent tutorials if you dig for them. [www.eevblog.com](http://www.eevblog.com)

When Dave is not on the podcast, Chris interviews a guest who is doing something interesting in the world of electronics.

## **Embedded.fm Podcast**

[www.embedded.fm](http://www.embedded.fm)

A weekly podcast hosted by Elicia White and her husband Christopher. The hosts are engineers who work on embedded systems. Embedded systems are systems using microcontrollers to perform a specific task. Projects using Arduinos and Raspberry Pi's are embedded systems. Christopher has a ham ticket and occasionally they mention ham radio, but I don't recall him ever saying his call sign. Sometimes they talk about stuff of more interest to practicing engineers. Other times they interview people who are doing interesting, and sometimes wacky things.

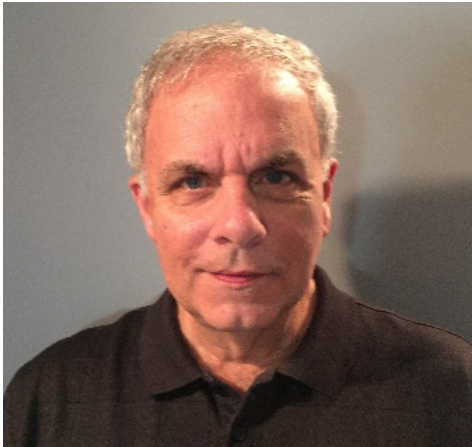
Most weeks they have a guest who is involved in embedded systems as a maker, engineer, entrepreneur, etc. It is usually not overly technical.

Try listening to some of these if they sound interesting. Are there podcasts you listen to that I missed? If so, let me know!



# Vintage Amateur Radio

De Bill Shadid, W9MXQ



After releasing the successful TR-3 Transceiver in 1963, Drake Radio Company came out with an updated version, the TR-4, in 1967. The TR-4 upgraded the filter system to make the filters more competitive and in the process solved some dependability problems with the filters as originally designed for the TR-3. Also, the vacuum tube PTO in the TR-3 gave way to a solid-state PTO in the TR-4. Recall that Drake used variable inductor tuning in their PTO. Most competitors used a variable capacitor for tuning, usually referred to with the term “VFO.”

The TR-4 design kicked off a model that went well into the 1970's and competed successfully against the hybrid transceivers coming from Kenwood, Yaesu, and Sideband Engineers. As mentioned in the article on the TR-3, for a while this design was made in parallel with the much-touted Drake TR7 all solid-state transceiver. The TR-3/TR-4 basic design was very successful and said a lot for the engineering and design talent coming from R. L. Drake Company in Miamisburg, Ohio

This Drake TR-4 article is the second of a two-part series about Drake Vacuum Tube Transceivers. It will also include the specialized six-meter version, the TR-6 Transceiver. I urge you to also read the previous article on the TR-3 for additional information that applies to both radio series.



**Drake TR-4C 80-10 Meter SSB/AM/CW Transceiver and RV-4C External VFO**  
(Part of the Drake Collection at W9MXQ)

The TR-4C was the last major chassis version of the TR-4 series of radios. The TR-4C (pictured above) changed the dial readout design in keeping with the “C” series of Receivers and Transmitters from Drake (the R-4C and T-4XC) in addition to many other improvements. Some of those improvements were also on late versions of the original TR-4. There were two other sub-versions of the TR-4C . . .

- The TR-4CW – included provisions for adding a 500 Hz CW Filter for receive use.



- The TR-4CW/RIT – which include TR-4CW features plus Receiver Incremental Tuning to further enhance the radio's capability on CW.

The RV-4C you see above is virtually identical to the earlier RV-4 except for the different dial mechanism – in keeping with its dual disk epicyclical display which is like the drive and display on the Collins S-Line dial except the dial escutcheon area design. All the TR-3 accessories worked with the TR-4 series as well. That includes the RV-3, RV-4, and RV-4C External VFO Consoles.

Something unique about Drake – and in the industry, to my knowledge – was that the transceiver's power supply could be mounted inside the Remote VFO cabinet. Also unique was the speaker in the Remote VFO Console. Other manufacturers that offered a separate Transceiver, Speaker, and External VFO required the placement of three cabinets on the operating desk. Drake made this possible with only two cabinets.

Here are pictures of the three interchangeable External VFO Consoles offered by Drake, for your comparison . . .



**RV-3 External VFO**



**RV-4 External VFO**



**RV-4C External VFO**

(From the W9MXQ Drake Collection – Past and Present)

Remember that all three of the above units would work equally well with any TR-3, TR-4, TR-4C, TR-4CW, or TR-4CW/RIT Transceiver. The RV-3 and RV-4 are nearly identical. The RV-3 and RV-4 have markings every 25 kHz with 1 kHz (25 total) markings on the dual skirt – like the TR-3 and TR-4 Transceivers. The RV-4C has 1 kHz markings on the dual disk epicyclical display, like the TR-4C series of radios. As with the TR-3 Transceiver, the RV-3 used a vacuum tube oscillator. The RV-4 and RV-4C are solid-state.

There were other differences to be noted – particularly in early and late versions of the TR-4 Transceivers (pre-TR-4C). See below pictures of an early and late TR-4 . . .



### Early TR-4 Transceiver:

See the area in the lower right-hand corner. It is empty except for a small aluminum color dot (it is a tiny circle). This is where the Noise Blanker switch is placed in the later TR-4. No plug-in provision is made for a Noise Blanker in the early TR-4 Transceiver. But one was available – see later in this article.



### Late TR-4 Transceiver:

You can see the placement of the Noise Blanker Switch in the lower right-hand corner. That indicates internal wiring and a chassis connector for the available 34-PNB Noise Blanker. This is the only outward difference in the early and late TR-4. Internally, however, some very early TR-4's had the same 4-Pole Crystal Filter used in the TR-3. Later TR-4 Transceivers used an eight-pole filter.

The TR-4 Transceivers – all models – used three 6JB6 Television Sweep Tubes in the final amplifier section. The three tubes provided an input power of 300 watts PEP on SSB and a bit less, 260 watts, on CW. The radio would provide 260 watts PEP input power on AM with controlled carrier AM modulation providing approximately 75 watts carrier output with no modulation. Output power would be about 150 watts PEP SSB output and about 130 watts CW, key down output. 10 and 15 meters would produce somewhat less. On AM mode, there is a separate detector for clear and pleasant AM audio. Friends on AM, however could spot you as using an SSB radio as they could tune and discover that you had only one sideband. In the end, this is a SINGLE sideband transceiver!

The TR-3 used three 12JB6 tubes in the final amplifier – a major difference with the TR-4 series radios and their 6JB6 finals. These tubes are identical in performance. The 12.6-volt 12JB6 seemed appropriate given that these radios were also designed to run in 12-volt system automobiles. When the final amplifier tubes are a 6.3-volt and there are three of them, there is a bit of filament voltage and current balancing to use a 12.6-volt supply source. It is interesting to study the schematic to see how Drake ran the three 6.3-volt power amplifier tubes in the 12.6-volt power system.

Drake did offer the high performance 34-PNB Noise Blanker for late TR-4 and all TR-4C series transceivers. For TR-3 and early TR-4 radios, Drake had offered a model 34-NB Noise Blanker. Note the absence of a "P" in that model number – meaning that this was not a plug-in device. Drake provided an extensive set of instructions for a complicated installation process. One of these 34-NB Noise Blanker units is installed in a TR-4 owned by my friend, Pat, W9JI. Pat's TR-4 has an added switch in the position shown on "Late TR-4" picture. Many owners installed a switch in that location with a matching Drake knob to make their radio look like a later TR-4. However, Drake's installation manual for the 34-NB Noise Blanker had a different idea. See the picture below taken from the instruction manual front cover for the Drake Model 34-NB Noise Blanker Kit . . .



(W9MXQ Radio Manual Library)

**Picture of the Instruction Manual Front Cover for the Drake 34-NB Noise Blanker Kit**

This book is a rare find. It completely covers the many areas of wiring modifications to tap the i-f of the TR-3 or TR-4. One assumes the “34” means TR-3 and TR-4 but that is hard to tell some 55 years after the fact.

Look at the PLATE control just to the right of the meter assembly and you can see a small (hard to see in this picture) stick-on label that says “ON” on top and “OFF” on the bottom. Also see the lever switch that is added concentric with the PLATE tuning shaft. The 34-NB Kit supplied parts for this location of the Noise Blanker switch. May hams, as discussed, added a switch in the same location as on the later TR-4 and all TR-4C series Transceivers.

Drake had a complete line of accessories for the TR-4 series transceivers that all worked equally well with the earlier TR-3 radio. Unlike other Drake models that had little inter-series compatibility, the TR-3 and TR-4 lines were 100% compatible in all ways for interconnection.

There was a rather interesting change at the time the Drake TR-4C replaced the TR-4 and at the same time the Drake R-4C Receiver and T-4XC Transmitter replaced the R-4B and T-4XC, respectively. Drake made a subtle change in the front panel in addition to moving to an epoxy ink silk screen over the brushed, anodized front panels. Here is an example for you while looking at a late TR-4 and an even later TR-4C Transceiver . . .



**Late Drake TR-4 Transceiver**



**Drake TR-4C Transceiver**

(Pictures from W9MXQ Drake Collection - Past and Present.)

See the aluminum trim around the outer edge of the TR-4 Front Panel and the absence of that feature on the TR-4C Front Panel. Accessories that transcended this change had running changes – for instance the popular Drake MN-2000 Antenna Matching Network and the



L-4B Linear Amplifier were changed – so you can find them with both front panel versions, depending on when they were manufactured. As a collector, I like for all my units to match. Functionally, that is a ridiculous requirement – but that is what I like in any case!

Here is a rather complete setup of major accessories for the TR-3/TR-4 line of equipment. This is as it exists at W9MXQ . . .



**Drake TR-4C Station at W9MXQ**

**Running in the 2017 Wisconsin QSO Party – (Amplifier was not used)**

**Left to Right – Drake Radios**

**MN-2000 Antenna Matching Network, TR-4C Transceiver, RV-4C External VFO, L-4B Linear Amplifier**

**Left to Right – Accessories**

**Shure 444 Desk Microphone, MFJ-422A Electronic Keyer (With Bencher KY-1 Key)  
(You will note that my MN-2000 at the time had the earlier front panel design!!)**

Like the TR-3, Drake offered power, speaker, and accessory options for the TR-4 series of radios. These accessories stayed the same through the entire production cycle of the TR-4 line. Drake even offered a specialized console to use when the TR-4 was mounted in an automobile. For these accessories, please review the pictures, below. Many of these items were updates from similar items offered for the TR-3 Transceiver. Some, however, were later designs and were unique to the TR-4 line.

Drake “4-Line” Accessories that were used with the TR-4 Transceivers . . .



**MC-4 Mobile Console – Installed and Alone**



**MS-4 Speaker Console**



**AC-4 AC Power Supply  
(Mounted in MS-4 or RV-4)**



**DC-4 DC Power Supply  
(For 12 VDC Operation)**



**FF-1 Fixed Frequency  
Adapter**

(Pictures above are from W9MXQ collection items – past and present – except for the MC-4 Mobile Console. MC-4 pictures are from Universal Radio, in Columbus, Ohio.)

Other accessories were also used with the very popular Drake “4-Line” Receivers and Transmitters. These are the subject of an upcoming article. Check these items that, except for the W-4 Wattmeter, are shown in the complete station setup, previously pictured . . .



**L-4B  
Linear Amplifier**



**MN-2000  
Antenna Matching Network**



**W-4  
Wattmeter**

(From the W9MXQ Drake Collection.)

The Drake L-4B Linear Amplifier was preceded by the similar appearance L-4 Linear Amplifier. Drake Amplifiers will be the subject of a future article. The MN-2000 shown here – a recent acquisition – is a later design without the border on the front panel. The MN-2000 is capable of full power at the time of its manufacture – that is, 2,000 watts PEP input. It is not up to the power capability of today’s 1,500-watt output amplifiers in key down modes, such as RTTY. Drake made a lower power version Antenna Matching Network that was called the MN-4. The MN-4 was designed around the power level of the TR-4 with its capability to handle 200 watts PEP output on SSB. The MN-4 had a similar appearance and front panel size to the MN-2000. But the MN-4 lighter in weight and was several inches less in depth.

As mentioned in the TR-3 article, one negative in the Drake designs in early years was their copper plated chassis. A high percentage of these chassis, even with reasonable care, seem to corrode in an odd array of unsightly black and blue-green colors. Some do not do that, however, and it is hard to tell why. I had a Drake R-4B and T-4XB Receiver and Transmitter that I bought new in the late 1960’s that stayed for years nearly pristine. I sold the set to a ham in Chicago who still has it. When I saw it again a few months ago it was still clean and near perfect. But that is not the norm for Drake or other brand radios with copper plated steel chassis



and other hardware. With the introduction of the “C” series radios, Drake moved to a cadmium plated, clear chromate dip steel chassis and other parts. Here are some pictures to show you the difference in the two TR-4 series radios at W9MXQ right now . . .



**TR-4 – Copper Plated Chassis**  
(On loan from W9JI)



**TR-4C – Cadmium Plated Chassis**  
(In W9MXQ Drake Collection)

Relatively speaking, the copper plating is in “good” condition on the TR-4, above left, compared to what one can find on the market. This radio is in good operational condition and is one I hope to add to my collection. This issue faded into history with the later cadmium plating. While good chassis Drake radios can be found in this vintage, it must also be known that this does not impact good operation from the radio. The above left TR-4 works every bit as well as the rather perfect looking TR-4C on the right.

The world seemed to love Drake radios and design. This is proven in an offering from the Brazilian amateur radio equipment manufacturer, Eudgert.



**Eudger Linha Ouro B Transceptor**

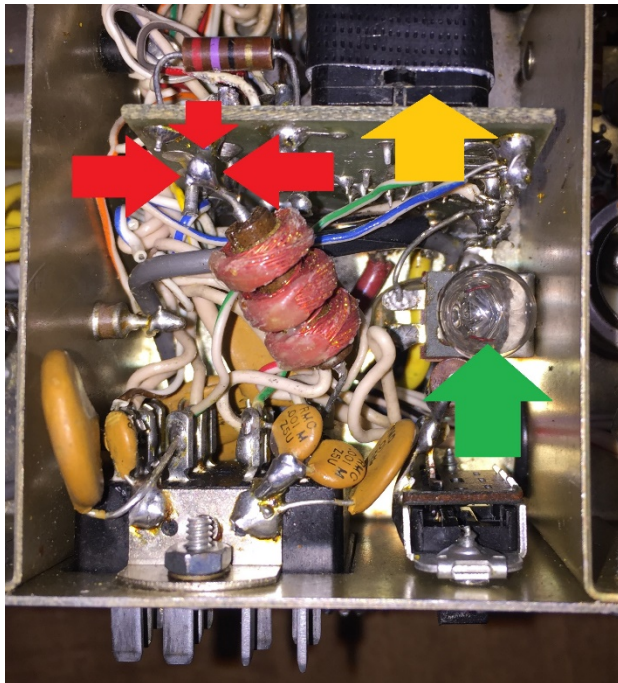


**Eudger Speaker/Power Supply**

As they say, "Imitation is the sincerest form of flattery."

In a little personal note, my TR-4C Transceiver, MS-4 Speaker, and AC-4 Power Supply came from a ham in British Columbia. The RV-4C came from a friend of his in Ontario. The TR-4C worked intermittently when initially tried (after I upgraded the AC-4 Power Supply with new capacitors and diodes). I wanted to get the cabinets refinished so I sent the radio to a well-known Drake repair person. Upon return the cabinets were as perfect as new, the radio was as clean and nice as the day it left Drake. But, the transceiver only worked for the first day back. The intermittent operation had returned just as when I sent it. After a few days I decided to make my own repairs and made some interesting discoveries . . .

**TR-4C Repairs . . .** After returning to W9MXQ from a repair technician, the radio still became intermittent and then became intermittent more frequently. The issue was found after a study of the schematic and the known symptoms. I felt it was related to the Low High Voltage



(about 250 volts which is high voltage for lower level stages). After this analysis and the resulting determination of where to look I measured voltage in active circuits in the radio and found that intermittent operation was tied to low or erratic 250-volt supply. Going from the 250-volt pin on the power supply connector – lower left in this picture I almost immediately found an intermittent, cold, solder joint at the radio side of the 250-volt input choke – in the center of the picture. The cold solder joint was at the point indicated by the three red arrows. For reference you can see the T/R relay (yellow arrow) and the series fuse lamp (receiver input line) (green arrow). Analysis with symptoms while looking at the schematic is a classic form of troubleshooting that reduces the time necessary inside the radio. For me it determines the path to the solution before opening the radio cabinet.



Subsequent issues – after the radio was returned from the technician and after replacing the final amplifier tubes – came to light with the radio when it started making “hissing noises.” That indicated arcing taking place somewhere. A bit of observation with the room lights switched off caused an interesting discovery – a grid to plate intermittent short in one of the final amplifier tubes. I replaced the defective 6JB6 tube and all is now functioning very well.

Moral of this story is . . . **“Repair your own radios.”**

Drake, in about 1968, introduced a variant of the TR-4 for six-meters – the single band TR-6. The unit appears to have used much TR-4 hardware – even down to the final amplifier with its 6JB6 Sweep Tubes. The power capability of the TR-6 with those same tubes in the 50-54 MHz band was the same as on HF with the TR-4. Here are some pictures of the offering . . .



**Drake TR-6 Transceiver**



**Drake TR-6 with the RV-6 External VFO**

**Note identical panel designs – missing only the LSB/USB Indicator Lamps. As you can also see, the silk screen was also unique to the TR-6 and RV-6.**

Most accessories for the “4-Line” worked with the TR-6. But, the TR-6 had two of its own in the 9-NB Noise Blanker and the RV-6 External VFO, pictured above. I have had two TR-6 Transceivers over the years. These are a nicely built, work very well, and hold their own even on today’s bands. One omission in the line was a linear amplifier. But back in those days, a group of former Drake employees started Raytrack Company, in Columbus, Ohio, to make their own version of the Drake L-4B Linear Amplifier. They also had a six-meter version of that amplifier that was reasonably popular. The fact that it connected easily to the TR-6 was almost a given. Raytrack used two Eimac 3-500z triode amplifier tubes in both. I have wondered if Drake ever contemplated a six-meter version of the L-4B. But, it was a limited market.

The TR-6 was expensive. Better prices (but not better performance) came from Swan with the 250c Six-Meter Transceiver and the Heathkit SB-110A. (Not to be confused with the not so good, earlier versions from both companies – the Swan 250 and the Heathkit SB-110.)

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

Thanks to W9JI for loan of his TR-4 (that I hope to obtain) and to W9DYQ, K9DJT, and KC9PIF for keeping me honest by proofing my articles.

# My CW Academy Experience & My CW Operations

De Jeff Whisler WV9X

Before I retired late last fall, I set a goal for myself to be active with the club on Field Day as a CW op. However, my CW skills were very seriously rusty. My last CW contact was in 1993 with OD5/SP7LSE. Over the last few years, I tried various programs and apps. While I re-learned the alphabet, they didn't prepare me for on air activity.

In January, I stumbled on a pair of YouTube videos about CW academy. CW Academy is run by a non-profit group called CW Ops. These wonderful people have the mission of sharing their enjoyment and training in CW with others. They have three levels of training depending on your current state of skill. After some back and forth with the program administrator, I signed up for a Level 1 class.

The classes are held over Skype, a video conference application, and on the air. There is a dedicated volunteer instructor/mentor for each class. Classes meet twice a week for ten weeks. The Level 1 class is in high demand and there is normally a several months wait to get accepted. In my case we met Monday and Thursday evenings at 8 PM for one hour. There is homework in between each class session. For me this was just the structure I needed to get my skills back.

We had five students at the beginning of class. All students were in the same time zone which makes scheduling easier. Our Instructor mentor was Andy WB7DKZ. He led a specific program of instruction and lessons, all carefully designed to get you on the air quickly. For new students they learn code characters sent at 23 WPM with 10 WPM spacing between characters. This makes speeding up easier. I found this approach very helpful to me. Andy was a skillful and very patient coach.

In between classes we had numerous resources available to us, including many code practice audio files, and several documents on how to study and practice the code. We also shared several computer applications to aid us. On my iPhone I loaded an app called Ham Morse. This allowed me to practice head copying during my morning drive time. Ham Morse will send simulated QSO's or callsigns or random characters all in the same format recommended by CW Ops.

Later in the program I used a Windows-based program called RufzXP. This devilish piece of code sends a series of fifty callsigns and you type what you hear. This was good for me because my typing skills were also lacking. If you get the call sign correct, it sends the next one faster. If not, it sends slightly slower. It is constantly pushing you and keeps track of your performance. I also used an online application called Morse Trainer by SC Phillips. It follows the CW Academy lesson plan exactly. I found the "shuffle mode" of reviewing the lessons a lot of fun. Gary, W9XT, recommended Morse Runner. Now I wish I had spent more time with Morse Runner prior to Field Day.

While my performance at Field Day was nothing special, it was a great milestone for me. I am grateful to the club and Gary for allowing me the opportunity to participate even if I did slow down the QSO rate on 40 meters.

I do plan on taking the Level 2 class as soon as my schedule allows. Two big thumbs up for CW Academy. Link to CW Ops: [www.cwops.org/index.html](http://www.cwops.org/index.html)  
Link to Morse Code Application: <https://morsecode.scphillips.com/trainer.html>

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## UPCOMING EVENTS

July 11<sup>th</sup> meeting program – Chuck Curran (W9KR)  
Restoring the Classic Collins KWM-2

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## ORC Membership Meeting Minutes of June 13, 2018

De Ben Evans (K9UZ)



President Kevin Steers (K9VIN) called the meeting to order at 7:30 PM. All the attendees introduced themselves.

### **Announcements, Show-and-Tell, Bragging Rights:**

Bill KD9DRQ: Finally got his tower and antennas up.

Gary W9XT: Brought the transmitter he built for the new 630M band for show and tell.

Dave KC9REP: Still has Android VOIP radios available for sale as he mentioned in the April meeting announcements.

Loren N9ENR: Brought flyers for swapfests all over to the meeting.

### **Program #1:**

After being introduced by Stan WB9RQR, meeting guest Bob Schmid WA9FBO from Colorado gave an interesting presentation on solar cells and their applications.

### **Program #2:**

Ken W9GA gave his presentation about the club's activities for the upcoming Field Day weekend. He explained the dual purpose of Field Day which is to demonstrate the readiness of the amateur radio community to provide communications in case of a disaster, and to compete with other groups for the most contacts and have fun doing it. Ken then talked about the ORC's plans for Field Day 2018 and highlighted the club's past Field Day activities with contact statistics and photographs. Ken said that unless we get a band captain and more operators on



20M sideband, we will not have a 20M phone station and the designation this year will be 4A rather than 5A.

### **Auction:**

There was no auction due to the additional program.

### **50/50 Drawing:**

There was no 50/50 drawing.

### **Officer Reports:**

Kevin S. (K9VIN) President – After serving as treasurer for years and doing a fine job, Dave Barrow N9UNR's plate is full, so the board last month voted in favor of transitioning the role of treasurer to Robert Eskola K4WTH who has been assisting Dave in the treasurer duties for the last several months. Kevin thanked Dave for his service to the ORC, and the membership gave Dave a round of applause. The audit recently conducted for the 2017 books came out clean, and Kevin thanked Dave for that. Kevin then asked Dave to say a few words.

Dave told the group that due to various reasons, he would prefer someone else take on the role as treasurer instead of Robert. In response, Kevin said that Robert had performed admirably as assistant to the treasurer and has the full backing of the board. Robert works for a bank and, while not a CPA, has certain certifications that have to be kept up.

Kevin requested a motion to transition the responsibilities of treasurer from Dave Barrow to Robert Eskola. The motion was made by Chuck W9KR and seconded by Nancy KC9FZK. The motion carried by voice vote. Nels WA9JOB requested a hand vote, which was then taken. The hand vote was four nays, and the ayes were more than three-quarters of the members present.

Pat V. (W9JI), 1st VP – No report.

2<sup>nd</sup> VP – No report.

Tom T. (KC9ONY), Repeater VP – An agreement has been worked out with the Cedarburg Fire Department to exercise their bucket truck as training for them and to help the club with the repeater antenna replacement. Still trying to figure out the date, hoping that it will be by the end of this month. For safety reasons, Tom asks that people don't come out to the site during the installation. The 220 and the 10-meter repeaters will also be turned off for safety. Naomi KC9YES asked that OZARES be notified when the repeater will be turned off because they use that repeater as a backup.

Ben E. (K9UZ), Secretary – A box full of copies of the 2018 ORC directory was brought in for members to take up to three copies for themselves. This month's newsletter was published on Monday which includes the minutes from the May meeting. There were no questions or comments about the minutes. Motion to accept the minutes was made by Stan WB9RQR, seconded by Bill W9MXQ and approved by the members.

Treasurer – No report.

### **Committee Reports:**

Jim A. (K9QLP), Audit Committee – Chuck W9KR, Sandy W9BTN and Jim conducted the audit at Dave Barrow's residence. The only focus was the 2017 books, and everything was in good

order for that year, and all questions asked of Dave were answered reasonably. Sandy should be writing a report on the results of the 2017 audit. Regarding 2018, the audit committee felt that the board should take up the accounting issues that were raised and “the claims made by two different people” and possibly get the club trustee, who is a CPA, involved to help resolve those issues. Kevin pointed out that Robert K4WTH was also present at the audit and knows what to expect.

**Old Business:**

There was no old business.

**New Business:**

There was no new business.

**Adjournment:**

Stan WB9RQR made the motion to adjourn the meeting, which was seconded and was passed by the members. The meeting was adjourned at 9:14 PM.

**Attendance:**

There were 41 members and two guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## **ORC Meeting Agenda**

*July 11, 2018*

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Chuck W9KR, “Refurb of the Classic 1967 Collins KWM-2”
5. 50/50 Drawing
6. Fellowship Break
7. Auction – Stan Kaplan (WB9RQR)
8. President’s Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)
11. Secretary’s Report – Ben Evans (K9UZ)
12. Treasurer’s Report – Robert Eskola (K4WTH)
13. Committee Reports:
  - A. Fall Swapfest
  - B. Field Day
  - C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ??

Return undeliverable copies to:

### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI\* 53012

### **First Class**

Next ORC Meeting

#### **Grafton Senior Citizens Center**

**1665 7<sup>th</sup> Avenue, Grafton**  
Wednesday, July 11<sup>th</sup> 2018

7:00 PM – Doors Open

7:30 PM – Meeting Begins



# The *ORC* Newsletter

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Volume XXX

August, 2018

Number 8

## From the President

*de Kevin Steers (K9VIN)*



Well, where did the summer go? Field Day is behind us and the September Swap is nearly upon us. We are still looking for a food vendor, and have a few feelers out on that topic. Also, Lighthouse Day is nearly upon us, and it is a well kept secret as a low stress way to get on-the-air experience. It is a great event for the whole family to drop in and listen. The date for the International Lighthouse and Lightship weekend is the weekend of August 18th. I believe most activities occur during normal daylight hours and it takes place at the top of the hill, in Port Washington. Port has a lot going on these days, so plan a day trip with

the family.

I have been enjoying listening to 20 and 40 meters in the car on my weekly three hour commutes, but I don't think the bands have been that grand. Usually only a few strong signals to pick out. Soon, I will be doing a test when up north to run into the house and find stations, and then step into the car to see how much of a compromise the mobile antenna really is.

On the bench, not a lot going on. I brought my NC303 receiver up to the cottage, and have yet to find an appropriate location to set it up. With all the dials and switches, I need to disguise it from my youngest daughter who loves to adjust my rigs, when I am out of the room! Lastly, after having a dipole support rope break recently, I have decided to replace my support ropes with stainless steel welding wire. I had bought two reels from someone on craigslist who was liquidating an estate. I now realize I probably have 5 miles of wire, and can probably spare a bit for the supports. Incidentally, the only downfall I have found with using stainless is the inability to solder it. I have not yet tried to weld, but rather, use wire nuts at the Balun.

Cheers and 73s,

K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



For some reason, August has always been a month when my interest in the sky peaked. Part of it was that it is warm in August and I didn't have to drag my telescope out in the snow. Part of it is that August is the month of the Perseid meteor shower. Watching shooting stars cross the dark sky is fun, especially when there are a lot of them. Under dark skies the rate on typical years you can see about 60 meteors per hour.

After I got interested in radio and VHF weak signal work, I learned about something called meteor scatter (MS). Essentially it is a technique for bouncing VHF signals off the ionized trails as bits of interplanetary rocks burn up as they pass through the upper atmosphere. Using MS techniques, contacts on VHF it is possible to make contacts out to about 1200 miles.

I would get on 2M SSB to operate during the Perseid shower. You would set up a schedule with another station within range. You would pick a half hour, decide on a frequency and confirm who would be transmitting when.

The transmission periods would last 15 seconds. One station would transmit on the first and third periods of the minute and the other station would transmit on the second and last period. Both stations would start transmitting the calls. I would say "W1ABC W9XT W1ABC W9XT..." for my 15 seconds.

If I heard him send both calls because there was a favorable meteor, I would change my sequence to repeat "W1ABC W9XT S2". S2 was the signal report that I got both calls. I would continue sending that until I heard "W9XT W1ABC ROGER S2" meaning he got my signal report plus my signal report. I would respond with "ROGER ROGER" and when he got that he would send "ROGER 73" concluding the QSO. If he heard me first, the roles would be reversed. With a half hour schedule, my success rate was about 20%. Not very good considering I would on average spend about 2.5 hours per QSO. Note that moon bounce QSOs on CW would follow a similar format.

Does the QSO sequence sound familiar? If you operate FT8, it should. When K1JT first came out with the WSJT software suite, the primary modes were for VHF weak signal work. One of those was for MS operating. Like FT8 revolutionized HF operating, these modes revolutionized VHF meteor scatter and moon bounce.

In the old days with SSB MS, you would often hear the other station but only for a single word or even a single syllable. These were called pings and lasted only a fraction of a second. With MSK144 the call signs and exchanges are transmitted very quickly, over and over during the transmit period. They can send the exchange fast enough to get through on a ping lasting a few hundred milliseconds.

MSK144 really improves the odds of success. Instead of needing a shower, many stations are successful on 6 Meters during the morning hours (when the earth is in the best position to capture the meteors) on normal days. Showers are even better, especially on 2 Meters where it is a bit harder than 6 Meters.



So, what do you need to give this a try? You may already be set and not know it. If you have FT8 running, the software is already on your computer. You just need to change the mode. You will also need a radio that can do SSB on 6 or 2 Meters. Most newer HF radios now have 6, and a few also have 2 Meters. If you have a small beam for these bands, you are all set. Read the WSJT documentation to find out how to use this mode.

The best times will be the nights of August 11-12, and 12-13, from midnight until about noon for radio work. If you can't use the shower for radio work, go outside if it is clear. Visually this will be a good year since the moon will be near new moon, so its light won't wash out meteors. Another reason to look up this month is that Mars is in its closest approach in about 15 years. Look for the bright reddish "star" in the southeast a couple of hours after sunset.

There are a few interesting DXpeditions in August. The Galapagos Islands will be put on as HC1HC/8. The Galapagos are of course the islands with the giant tortoises and other unique plant and animal life. The contest station HC8N used to be extremely active up until about ten years ago. Since then there has been little activity. This one will be on August 7-10. They will be concentrating on the WARC bands using FT8 and CW. The station will be QRP, so don't expect big signals. The Austral Islands will be activated August 13-22. The callsign will be TX5T. They plan to be on all bands, 160-6 Meters, CW, RTTY, SSB, and FT8.

There are some other operations, but most are single operator efforts. Many are holiday style, meaning they will only be on around other vacation activities.

There are a few contests of note in August. The summer CW and SSB NAQPs are this month. These have been covered many times in the past. CW starts August 4<sup>th</sup>, and SSB on August 18. Both start at 18:00 UTC (1:00 PM local) and run for 12 hours, but you can only operate 10 hours. You exchange your name and state. Multipliers are the number of states, Canadian provinces and North American countries worked per band. Rules are at <http://ncjweb.com/NAQP-Rules.pdf>

NAQP is a great contest to get started in, and also good for small stations. The power limit is 100 watts, and since it is a domestic contest, low antennas work well. Give it a try! An interesting one is the Worked All Europe contest. It starts at 00:00 UTC Saturday, August 11 (Friday night, 7:00 PM local) and runs for 48 hours but you can only operate 36 hours. Off times must be at least 60 minutes.

WAE is basically a contest where Europe works the rest of the world. Send RST and a serial number starting with 001. Only work European stations. Multipliers are the number of European countries worked per band, but you multiply the number of 80 Meter countries by four, 40 Meter countries get multiplied by 3, and 20, 15 & 10M countries get multiplied by 2. Besides QSO points for working stations, you can get extra points for "QTCs." These are reports of previous QSOs to a European station. A station might send something like "QTC?" if he wants you to send some QTCs. You can send up to 10 QSO reports to a station. There are some other rules regarding QTCs, and if you are interested in operating it, you should read the rules. <https://www.darc.de/der-club/referate/conteste/worked-all-europe-dx-contest/en/>

That wraps up August. As summer winds down, there are still some interesting things to do on the radio.

# THE COMPUTER CORNER

## *No. 246: IT WAS A DARK AND STORMY NIGHT...*

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

(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



On the 4<sup>th</sup> of July, I was sitting in my living room with wife Nancy (KC9FZK), watching TV. Suddenly, a flash of light caught my eye – it was a huge lightning bolt in the southeastern sky. Crash! Nancy heard something go “pop” upstairs. The lights flickered and went out momentarily, then came back on. We both ran up to our second story office. Three computers (always on) were up there. They were my main machine (a desktop that I had built about 10 years ago), and two laptops, one of which was Nancy’s main machine. Of course, the laptops were still on since laptops run off batteries

kept charged by a “brick” charger plugged into the house current. A momentary loss of power would not cause them to go down. The desktop, however, was off, and would not automatically come back on since that was an intentional setting I made during its setup. But, even when I turned its power on, it would not start. I carried the wounded soldier down to the basement workshop.

Two more computers live down in the basement. One, a laptop, is the brain of a Winlink station that runs 24/7. The other is a desktop machine used mainly during rebuilding of computers, to snag software from the internet and load the software on CD’s or thumb drives for porting to machines being worked on. The Winlink laptop was still on. The desktop was off but fired up just fine when I turned it back on.

I checked the wounded soldier - my main machine – the desktop from my second-floor office. The power supply had popped an internal fuse, which I replaced, but the supply still would not operate. The supply was clearly toast. I plugged a spare power supply, known to be good (I have a tester that loads all the outlets), into the motherboard. It would not fire up the motherboard, even when all peripherals were unplugged. Ergo, the motherboard was also toast. My wounded soldier was a dead soldier!

You might ask, why didn’t you have your computers on a surge protector? I did; a surge-protecting power outlet for each. Moreover, I have a very large surge protector that was electrician-installed on my main breaker box to protect all circuits in the house. Its three status lights indicated it was A-OK and not blown after the incident. Whatever zapped my main machine must not have come in on the power lines. Likely it had come in on a network cable. If not that, it could only have been a humungous coincidence – simply time for my desktop to die when the lightning struck. I don’t think it was the latter. It must have been a network cable acting like an antenna, bringing in a big surge.

Well, all of that was just background. What I really want to advertise is my backup and networking scheme that saved me from a lot of grief. The scheme might well work for you. I have mentioned it before, but now it is tried and true.

All 5 of my computers have been partitioned so that they have a C drive, a D drive, and an E drive. C is for Windows itself. D is for programs I have installed such as CCleaner, an image

viewer, Microsoft Office, games, ZIP utilities, PDF utilities, TeamViewer and the like. E alone is the exclusive site for saving my creations: letters that I write (in MyDocs), pictures that I take (in Graphics), schematics I devise, and so on. Additionally, there is a special subdirectory (folder) on my E drive named Nancy's Stuff. It contains the entire contents of Nancy's E drive, including all her creations. Similarly, on Nancy's machine, the E drive has a special folder called Stan's Stuff – a complete copy of my E drive.

With a few keystrokes, I can tell my backup software to do its thing. It looks at my E drive and compares it with Nancy's, and changes Stan's Stuff on Nancy's end to be exactly like mine. It also looks at Nancy's machine, E drive, and makes sure the folder Nancy's Stuff on my E drive is the same as hers. Then it goes out to all three other computers on the network and makes sure their E drive is a duplicate of mine. All that takes about 4-5 minutes, fully automated, while I watch. I had just done all that a day before the main machine died.

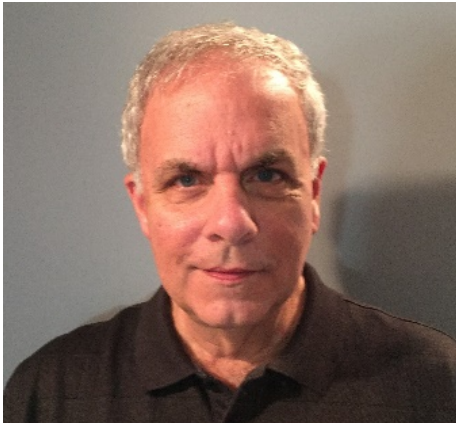
So, it was a simple recovery. I physically moved the laptop to the main position, and continued working, just as if the main computer had not died. I did not lose a single file because I had not changed anything between the last backup and the death of the main machine. The backup scheme worked, and it saved me from grief. Even if I had not backed up for a couple of days, things would not have been too bad.

Even if you do not adopt part or all of my scheme, you should back your stuff up. You will find that your creations do not take a whole lot of space, and you can at least back up by copying files to a CD or DVD. That is an insurance policy that just cannot be beat!

Happy Computing!

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



As you have heard me say, I find it interesting to watch how the manufacturers met the challenge put down by Collins with the S-Line separate receivers and transmitters in 1957. Collins introduced a separate receiver and transmitter first in the 75S-1 and 32S-1, respectively. Only later did they later introduce the KWM-2 Transceiver. The other manufacturers seemed to introduce those product lines in reverse – with the transceiver preceding the separate receiver and transmitter. Was that because the movement of the transceiver as the dominant ham radio tool was recognized? Or, was it just easier to get the transceiver through research and development? We will never know for certain. Hindsight is 20-20 from the perspective of the

early 21<sup>st</sup> century making judgments on what was done in the mid-20<sup>th</sup>. Would you believe that these revolutionary changes are now passing sixty years ago? It gets a little disturbing when you personally remember the event.

In 1964, Drake entered the transceive capable separate receiver and transmitter market after the TR-3 and TR-4 Transceivers (reference two past articles on those fine radios). Drake introduced what became one of the most popular sets of separate radios of all time – the Drake R-4 Receiver and T-4X Transmitter – better known as the “Drake Twins” or the “Drake Separates.” They extended with very similar design through the R-4, R-4A, and R-4B Receivers and the T-4X and T-4XB Transmitters. (There was no T-4XA Transmitter.) While similar in appearance, the R-4C Receiver and to some degree the T-4XC Transmitter were new designs and will be the subject of a future article. Below is a beautiful R-4B and T-4XB station owned and operated by my long-time friend, Roger, K9VSK, of Roanoke, in central Illinois:



**Drake R-4B Receiver**



**Drake T-4XB Transmitter**

**R-4B and T-4XB as in operation at K9VSK**

While Collins set the tone of the market by the mid-1960's, they were pretty much alone in making a receiver with crystal or mechanical bandpass filters. Collins was also alone in making provisions for multiple, selectable bandwidth mechanical filters. The others – particularly the very popular and more economical Hallicrafters, Hammarlund, and National receivers (to name three) – had no such feature other than some rather broad “crystal filters” that had variable bandwidth with very broad ultimate attenuation. The popular receivers of the day used tuned circuit designs to determine bandwidth. Some of these radios had a selection of multiple tuned circuit bandwidths. These were economical and functional but only marginally effective alternatives to the Collins design. These tuned circuit designs gave relatively good performance at a 6dB



bandwidth but had very wide “skirts” in their performance characteristics showing very broad bandwidth performance at -60dB down.

Drake introduced a different design concept that turned out to be the focus for designs in the coming years with most manufacturers. The original R-4 brought an early stage crystal lattice filter after the RF Amplifier stage, and the First Mixer stage, at 5645 kHz. While placed perhaps a bit differently, we know this today as a Roofing Filter. However, the R-4 through R-4B Receivers kept the tuned circuit method of determining final bandwidth with a broad “roofing filter.” That said, this early circuit crystal filter assisted the front end of the radio in fighting strong signal overload before reaching the bandwidth determining circuits in the later 50 kHz i-f.

Any R-4 series receiver could transceive with any T-4X series transmitter – so, again, like in the TR-3 and TR-4 series transceivers, all options worked across all model lines within the different models of separates. But, unfortunately, the conversion scheme of the transceivers was not compatible with the R-4 series receivers and T-4X series transmitters. So, unlike Collins and Heathkit at the time, it was not possible to interconnect the TR-4, for instance, to an R-4 for transceive using the VFO in one of the radios. However, Drake and other brand receivers were easily connected to Drake transceivers for use as separately controlled units.

The Drake T-4X and T-4XB transmitters used the crystal filter method to generate SSB signals and operated CW by unbalancing the balanced modulator to generate a carrier. The transmitters provided for AM transmission as well with low level screen modulation. The transmitter had built-in VOX (voice operated transmit) and could utilize this circuitry to operate semi-break-in for CW. While the transmitters provided sidetone back through the receiver for CW, they were not designed to provide monitoring of transmitted AM or SSB signals.

Drake “4-Line” Accessories were used with the Drake Receivers, Transmitters. and the TR-3 and TR-4 series Transceivers . . . (Small note – the TR-3 was unique in its “3” number. It fits in more precisely as an “early TR-4” than a unique radio model.)



**AC-4 AC Power Supply  
(Mounted in MS-4)**



**MS-4 Speaker Console**



**W-4 Wattmeter**



**L-4B Linear Amplifier  
(2x 3-500z Eimac Tubes)**



**MN-2000  
Antenna Matching Network**

(Pictures above are from W9MXQ collection items.)



Other accessories were also used with the very popular Drake “4-Line” Receivers, Transmitters and Transceivers:



**L-4 Linear Amplifier**  
 (Predates the L-4B)  
 (2x 3-400z Eimac Tubes)



**MN-4 Antenna Matching Network**

(Pictures from other collectors preferring anonymity.)

The Drake L-4 and L-4B (along with the L7 and L75) Linear Amplifiers will be the subject of a future article. The MN-4 Antenna Matching Network (Drake’s terminology for “Antenna Tuner”) was like the MN-2000 except that it was rated for an input power of 300 watts as compared to the 2,000-watt capability of the MN-2000. Front panel design the same size and just slightly different in appearance. The MN-2000 was deeper and heavier.

The Drake T-4X series transmitters used the same 6JB6 final amplifier tube used in the TR-4 series transceivers (recall from earlier articles that the TR-3 used the similar 12JB6 final amplifier). Unlike the transceivers, the T-4X series transmitters used only two of the tubes as compared to three in the transceivers. Instead of 300 watts PEP SSB (260 watts CW) input from the transceivers, the input power of the transmitters was 200 watts PEP SSB and CW. While our less technical ham friends will point out that the T-4X transmitters can run much more input power, Drake always warned that over 200 watts was beyond the linear performance range of a pair of 6JB6 tubes. So, “let the owner beware.”

Drake also had a rather unique group of accessories to allow the “4-Line” equipment to access six and two meters using separate receiving and transmitting converters. Here for reference they are shown:



**Drake CC-1 Converter Console**  
 (Holds Receiving Converters)



**Drake TC-6**  
 (Transmitting Converter)

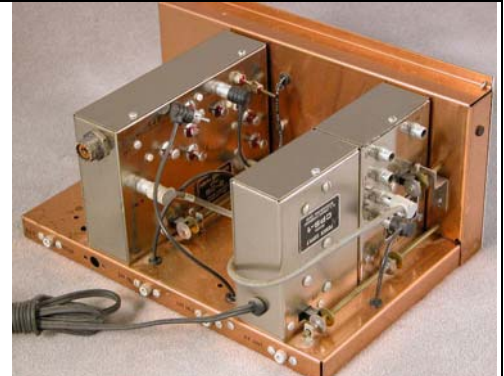


**Drake TC-2**  
 (Transmitting Converter)

(Drake manufactured converters for 6 and 2 meters – but had provisions for others.)

Drake VHF Transmitting Converters (TC-6 and TC-2) used a modification of the T-4X Transmitter to produce very low HF output to drive the conversion scheme in the converter. The TC-6 used the same model 6JB6 final amplifier tubes as used in the transmitter. Input power was 180 watts. The TC-2 used a different tube – the dual tetrode 8643 for an input power also of 180 watts. In both cases these were PEP input power ratings for SSB and CW.

The above shown CC-1 Converter Console held the SC-6 and SC-2 Receiving Converters (the SC-2 is in place in the view here, at the left side of the chassis). The CPS-1 Power Supply is the rear unit to the right on the chassis picture. In front of the CPS-1 is the SCC-1 Crystal Calibrator. Note the excellent condition of the copper plated chassis in this Drake publicity photograph.



A Drake TC-6, TC-2, CC-1, CPS-1, SCC-1, SC-6, and SC-2 all graced the WA9MXQ shack (my previous call) in the days when I was using my Drake R-4B and Drake T-4XB. These devices were dedicated to SSB and CW use – with some people using them on AM as well.

Drake, Heathkit, and Collins used an inductively tuned VFO (more properly said as “PTO” for Permeably Tuned Oscillator) in both the receiver and transmitters. Like Collins, the Drake radios also lacked multi-stage variable capacitors for tuning individual stages in the radios. Again, inductive tuning was used with a rack assembly tuning all stages at once ganged to the PRESELECTOR control on the receiver and the RF TUNE control on the transmitter.

Drake R-4 series receivers continued the use of PASSBAND TUNING that was featured in their earlier 1A, 2A, and 2B (but not the 2C) Receivers. This was much more effective than the Q-Multiplier (REJECTION TUNING) used by Collins – and similarly superior to other competition that only included a NOTCH filter. (The Drake R-4 series also included a NOTCH filter in addition to their very effective PASSBAND TUNING.)

Drake enjoyed a wide customer base with these radios – all the way through the “C” series radios that are the subject of the next article in this series. Drake offered radios in line with the Collins S-Line in performance for not only less money but, in my opinion, were more advanced in technology – especially with the introduction of the “C” series radios (R-4C and T-4XC). To satisfy this demand – which included non-ham radio commercial high frequency radio operations – Drake had some unique versions of the Transmitter.

Commercial customers had little use for a radio that had separate frequency control of the Transmitter. The transmitter could be a slave to the receiver with those customers. However, Drake’s line of Transceivers at the time – the TR-4 series by then – lacked two major features necessary to commercial customers:

1. PASSBAND TUNING and NOTCH Filter features – Interference Control.
2. Ability to cover all frequencies from 1.5 to 30 MHz – General Coverage.

The Drake receiver and transmitter pair could cover the amateur and commercial frequencies used by its global customer base. At that time, Drake did not have a transceiver to do that in their product line. But, their prime competition, the Collins KWM-2A Transceiver and S-Line

separate Receivers and Transmitters could do General Coverage - and had at least some interference control on the S-Line separates. (Collins equipment covered 3.5 to 30 MHz only.)

To counter the need for a lower cost transceiver alternative for commercial customers, Drake had two transmitter models over time:



**Drake T-4 Reciter**  
**Matched the R-4 and R-4A Receiver**



**Drake T-4B Reciter**  
**(Matched the R-4B Receiver)**

“Reciter” would seem to imply – reciting what the receiver told it to say.  
That is, what frequency to be tuned in on the band.

(Pictures from Universal Radio)

To make a more compact desktop concept in this market, Drake made a single cabinet unit using these components:



To the left is the Drake TR-44 Transceiver. This was a Drake R-4 Receiver and T-4 Reciter in the same outer cabinet. (These units had a unique cabinet – not to be confused with separate cabinets fastened together.) These were simply single cabinet mounted receiver and transmitter units – also offered separately. As implied above, the TR-44 initially shipped with the R-4 Receiver but later units had the R-4A Receiver.

Drake apparently sold enough of these units into the time of the R-4B and T-4B series of separate units that they introduced a later version of the single cabinet pair as you see here:

To the right is the Drake TR-44B Transceiver. This unit was like the TR-44 but used the later R-4B Receiver and T-4B Reciter. Apparently, Drake decided with the later T-4B Reciter that additional ventilation was necessary. You can see here, and in the separate T-4B picture, above, that the panel space occupied by the VFO in the T-4X and T-4XB now had a screen mesh allowing more air flow into the transmitter. (Research so far shows that no TR-44C, using R-4C and a T-4C, ever existed.)



The receiver and transmitters in the TR-44 and TR-44B were still separate units without a common bandswitch control or early stage Preselector and RF Tune Controls.



For both the TR-44 and TR-44B the separate AC-4 Power Supply and MS-4 Speaker were necessary options for most users. The AC-4 did not fit into the open VFO area of the T-4 or the later T-4B. As with the stand-alone models, the R-4, R-4A, or R-4B used in these “transceivers” has their own internal power supplies.

The Drake R-4, R-4A, and R-4B – along with the T-4X and T-4XB were, as mentioned previously, able to receive and transmit from 1.5 to 30 MHz – extending across the HF spectrum (with some slight adjustments in the 5 MHz area to accommodate i-f frequencies). While the radios both had conventional fixed band positions for the 160-10 meters, it was possible to add optional range crystals to both for other coverages in 500 kHz portions of the HF spectrum. The receiver could hold ten 500 kHz range crystals while the transmitter could hold four. These ten and four, respectively, were in addition to the standard ham band range crystals. Unlike Collins equipment, the Drake receivers and transmitters did not require any re-alignment to cover bands other than the traditional ham bands.

I have used and later collected Drake equipment since acquiring a new Drake R-4B and T-4XB in the 1970's. It is some of my favorite ham radio equipment. I have found Drake equipment that had been poorly cared for, rusty, scratched, and dented. But, after making sure it is connected to a good power supply and making sure it is free of defective electrolytic capacitors, it will immediately power up and make contacts. It is one of the three brands of radio that I collect that spring to life with little or no effort – those being Drake, Hallicrafters, and Swan (in alphabetical order).

Using Drake receivers is a joy with their circuit design yielding very low band noise. I am reminded of Roger, K9VSK, and me, back in the 1970's when we worked together at Gates Radio Company, Quincy, Illinois. We would be comparing our respective Drake TR-4 and Swan 350c transceivers. I never failed to be impressed by the comfortable listening with the TR-4 in Roger's shack. It was not that the two competitors could not hear the same signals – it was just more comfortable with the Drake. “Good work, Roger, in showing me that comparison back in those days – I never forgot it.”

Next month we cover the Drake R-4C Receiver and T-4XC Transmitter. To quote the famous Drake Collector and Restorer, Ron Baker, WB4HFN, right from the Home Page of his Drake Equipment Website - <http://wb4hfn.com/DRAKE/DrakePageHome.htm>- you can see his message:



In many ways, Drake raised the bar to a point that DX friends of mine use the Drake R-4C Receiver and the T-4XC Transmitter to this day in active DX Contesting and chasing DX. Starting as stripped to the bone at delivery – when full option set was added, the R-4C Receivers know few equals. We will discuss what Drake learned making the earlier R-4/A/B and T-4X/B line that culminated with this remarkable pair in next month's installment.

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

Thanks to K9VSK for his pictures and comments (and his friendship), to WB4HFN for the closing picture, and to friends like W9DYQ and K9DJT who proof my articles.

## **UPCOMING EVENTS**

**Membership Meeting – August 8, 2017**

**Ozaukee Radio Club Fall Swapfest at Fireman's Park – Sept. 8<sup>th</sup>**  
**Contact Tom Ruhlmann at 262-377-6945 to volunteer to help**

**We need 4 more (2 shifts of 2) at the gate and 4 more (2 shifts of 2) more to assist with parking. Also could use a few to load etc and sell from the scholarship tables. Looks like we may also need a couple at the concession.**



# Minutes of the August 11, 2018 Membership Meeting

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:30 PM. All the attendees introduced themselves.

## **Announcements, Show-and-Tell, Bragging Rights:**

Pat W9JI: Brought to the meeting a 6-meter antenna, called a Moxon beam, which he built and tested successfully.

Clive K9FWF (guest): The Orlando ham radio club, to which Clive belongs, hosts a hamfest every February. Attendance is about 20,000, second only to the Dayton Hamvention, according to ARRL. Please consider coming down for it if you've had

enough of Wisconsin winter.

## **Program:**

Chuck W9KR gave a presentation on his experience with refurbishing a 1967 Collins KWM-2 transceiver.

## **50/50 Drawing:**

Jeananne N9VSV was the winner of the 50/50 drawing.

## **Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a Geiger counter, two laptop computers with Linux installed, and two transceivers.

## **Officer Reports:**

Kevin S. (K9VIN) President – The Board is working on the treasurer transition and a new budget. Updates to come.

Pat V. (W9JI), 1st VP – No report.

Robert E. (K4WTH), Facebook Page – Facebook page is still going strong. Pictures of the installation of the new repeater antenna were posted.

Tom T. (KC9ONY), Repeater VP – The new repeater antenna finally went up on June 16<sup>th</sup> with the help of the Cedarburg Fire Department. Jim K9QLP helped coordinate it. CFD agreed to do this because the ORC is a 501(c) (3) and the ORC repeater system is important for communications in the community. Because of the fire department's good gesture, the Board decided to donate \$500 to the department. Jim reported that the department was very happy to receive this donation at their meeting.

We're looking for signal reports from users of the repeater. The coverage seems to be a little better. We are received better in Newburg and West Bend, up in the west-northwest area.

Ben E. (K9UZ), Secretary – The minutes of June's meeting was sent by email to members and is also in the newsletter on the website. There were no questions or comments. Motion to accept the minutes was made by Nancy KC9FZK, seconded by Stan WB9RQR and approved by the members.

Robert E. (K4WTH), Treasurer – The profit and loss report for June was emailed by Ben to the members. The reports show both the club and the scholarship accounts, the balances in each and interest earned, and what was spent. Also shown is what was spent on Field Day and for what. If anyone has any receipts from Field Day that didn't get reimbursed, see Robert. A mo-

tion to accept the Treasurer's report was made by Gary, seconded by Stan and passed by the members.

**Committee Reports:**

Ken B. (W9GA), Awards - Ken presented the Ham of the Year Award to Gary Drasch K9DJT. This is the second time Gary has received this award.

Ken B. (W9GA), Field Day – Not all the information has been collected to do a full Field Day wrap-up, but we ended up with around 2,600 QSOs, which is down a bit from the average of earlier years. Participation and attendance were good, and five stations were run (two CW, two phone and one phone & digital). Think about participating at next year's Field Day. The tent wasn't ready in time, but K&D lent us a canopy that worked out fine. After the details are gathered, Ken intends to present them at next month's meeting and put an article in the newsletter.

**Old Business:**

There was no old business.

**New Business:**

Stan WB9RQR: The programs at upcoming meetings will be as follows:

- August - Gary W9XT, "Fundamentals of HF Propagation and Characteristics of the HF Bands"
- September – Bernard Barr K9JAT, "Grounding and Resonances"
- October – OPEN
- November – Vic WT9Q, the FLEX-6600 Software-Defined Radio
- December – OPEN

Note that October and December are open to anyone who has a topic to present.

Tom KC9ONY: Mark your calendars for the International Lighthouse Lightship Weekend August 17-19. Come and operate HF and make contact with other lighthouses. People are needed for setup and tear-down.

**Adjournment:**

The meeting was adjourned at 9:10 PM.

**Attendance:**

There were 37 members and five guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## ORC Meeting Agenda

*August 8, 2018*

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Gary Sutcliffe W9XT, “Fundamentals of HF Band Propagation”
5. Fellowship Break
6. 50/50 Drawing
7. Auction – Stan Kaplan (WB9RQR)
8. President’s Report – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. Repeater VP Report – Tom Trethewey (KC9ONY)
11. Secretary’s Report – Ben Evans (K9UZ)
12. Treasurer’s Report – Robert Eskola (K4WTH)
13. Committee Reports:
  - A. Fall Swapfest
  - B. Field Day Wrap-Up
  - C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

Return undeliverable copies to:

### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

Next ORC Meeting:

#### **Grafton Senior Citizens Center**

**1665 7<sup>th</sup> Avenue, Grafton**  
Wednesday, August 8<sup>th</sup>, 2018

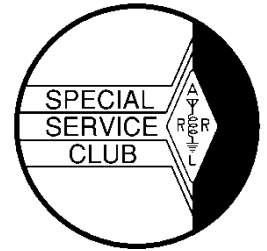
7:00 PM – Doors Open

7:30 PM – Meeting Begins



# The *ORC* Newsletter

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Volume XXX

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Number 9

## From the President

*de Kevin Steers (K9VIN)*



It has been a quiet month in the shack, taking in the last of our summer weather. How in the heck can it already be Halloween season? Speaking of summer weather, I certainly hope that the high winds or heavy rains did not impact any of your radio equipment, etc. It is heartbreaking to see an entire basement's contents stacked on the terrace for trash pickup.

I was not able to attend the Lighthouse Day, where hams around the country, and the world, try to contact lighthouses, and vice versa. Lately it has been a joint effort with LeFrog, and we operate next to the lighthouse in Port Washington, high above the harbor. Weather was good, and it was a great opportunity to bring the family, and listen along or jump on the air, using the Club's call sign. Be sure to put it on your calendar for next year, in early August.

The Fall Swap was this past weekend. I want to thank Tom Ruhlmann W9IPR for all of his leadership through these perennial events. I also want to thank those that showed up early and volunteered as parking attendants, table movers, food and coffee vendors, ticket sellers, and of course manning the tables for the scholarship fund sales.

I also want to thank those that stayed late to help to unload up at the barn. The day brings a bit of hard work, but also fellowship that is hard to come by in this day and age.

Get your antennas shored up folks, winter is a-comin'.

73, K9VIN  
Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



As we move into September and the equinox, HF conditions start to improve. When we have sunspots, it is good to start seeing 10 and 15 meters starting to open into Europe and the Far East. Since we are in the bottom portion of the sunspot cycle, we can't expect much out of those bands but the lower bands will improve as we have longer hours of darkness and QRN from thunder storms declines.

How do you know when certain bands are going to be open? Certainly, if you are very active for many years, you will have a good feel for it. What if you don't have that experience?

There are several computer programs available that do propagation forecasting. You enter information like the station location(s), solar conditions, dates & time, frequencies, etc., depending on the program, and you will get charts, maps or other information on the best times to operate.

Some of the more popular programs are Ham Cap (<http://www.dxatlas.com/hamcap/>), W6ELProp (<http://www.qsl.net/w6elprop/>), and VOACAP. You can download VOACAP, but the easiest is to run it off the web at <http://www.voacap.com/>. This last site also has links to download it if you choose.

A new one that I have not had a lot of time to play with is ITURHFProp. It is a web site that you can go and set up to the end points you are interested along with station info like antenna and power. Then you can select from several different outputs. It is worth spending some time playing with this one. <http://www.predtest.uk/>

Keep in mind these are predictions. Some of them will give you predictions for the month. It is sort of like getting a prediction for the weather for the month of September. You will get the average highs and lows, the number of inches of rain, etc., but that might not be accurate for what will actually happen on September 16.

Last month I went to the Society of Midwest Contesters annual SMC Fest. It is a must-attend event for contesters. Besides myself, ORC members K9DJT, W9GA, and W9MXQ attended. I gave a presentation on antenna signal take-off angles, and how they relate to the arrival angles of the signals. You might get 10 dB gain from your beam, but you can lose 20dB if the signal is arriving at the wrong angle.

The PowerPoint slides for this presentation are posted at [www.w9xt.com](http://www.w9xt.com). Go to the bottom of the ham radio page. There is a section for talks I have presented. It is the first on the list. The slides for my August ORC talk are also located there.

Speaking of my August presentation, while I was giving it, there was a widespread power outage for parts of Dodge, Washington and Ozaukee Counties. Power was restored by the time I got home. We have the TV, phone and Internet package from the cable company. The phone and Internet were out when I got home. The phone came back by morning, but not the Internet. Because the outage was so wide, the cable guy didn't show up until late Saturday afternoon. When the cable guy finally arrived, he measured the signal going into the house. It was over



20dB below spec. He said that the cable to the house went bad and started to lay out a new one. It is over 300' between the box at the road and the house (which he said was longer than the limit).

Having messed around with coax cable and RF signals on them for nearly 50 years in ham radio, I suggested he check the output of the box first. It was not putting out the power it should. The experience of troubleshooting antenna systems saved some wasted effort with the cable system. Unfortunately, it took over a week for the cable company to find the real cause of the problem. There was a Tee connector way down the road that failed. Like the Tee coax connectors we use, these used a spring mechanism to make the 3<sup>rd</sup> contact. These are always a source of failure in cheap connectors. In this case, the plastic housing holding the spring-loaded pin cracked, and the pin was not making a good connection. It had been underground for probably 20 years, and they had long ago switched over to a newer design.

I mentioned in last month's column I planned to work some meteor scatter during the Perseid meteor shower. Unfortunately, without the Internet, I could not set up schedules so I didn't get a chance to do it. I did listen a bit on the 6M calling frequency. There was a lot of activity and lots of stations making contact, but my primary interest was 2M.

DXpeditions pick up a bit in September. The one I am most interested in is Kyrgyzstan, with the call EX0PL. A large group of hams from Poland will be putting this on until September 10. I don't have a lot of information on this one, but only have it confirmed on one band, so I hope to work them on several bands.

Mayotte will be activated by a group of Czech Republic hams from September 21 to October 6. They will be using the call TO6OK. Operation will be on 160-10 meters, CW, SSB, RTTY, and FT8.

A group of mainly Italian hams will activate 9X0T from Rwanda from September 26 to October 10. They will use the call 9X0T on 160-10M, CW, SSB, and RTTY. 9X0Y will be active on 20M FT8 only.

VK9XT (you have to love the call!) will be active from Christmas Island September 29 through October 6. 160-10 meters, CW, SSB, and digital. Christmas Island is another anomaly in my log book, only having confirmed on 20 Phone from back in 1985.

As usual, there are a few single ham operations. Mostly they are holiday style and working them requires being on the air when they decide to operate.

The September ARRL VHF Contest is September 8-10 (UTC). Work other stations on the VHF/UHF bands and give your grid square for the exchange. This one does not start until 1:00 PM local time, so you have plenty of time to go to the ORC hamfest in the morning and still get home in time. Rules at <http://www.arrl.org/september-vhf>.

The other big contest is the CQ WW RTTY DX contest. It runs September 29-30. These are UTC dates, so it starts on Friday night at 7:00 PM local time. You can use the 80-10 meter bands. Unlike the CW and SSB versions of this contest, you can work US stations for QSO points. These are worth one point each. Contacts with non-US stations in North America are worth two points, and stations outside North America are worth three points.

Stations other than US or Canadian stations send a signal report and zone. The rest of us will send the signal report, zone, and state/province. (599 04 WI for us). The multipliers are the sum

of countries, zones and states per band. There are many operating classes based on the number of ops, power level, assisted/non-assisted, etc. Rather than taking the time to go over them here, check out the complete rules at <http://www.cgwrrty.com/rules.htm>. If you are interested in increasing your RTTY country totals or finishing up digital WAS, this is a good opportunity.

The annual W9DXCC convention in the Chicago area is on September 15. This is a bit event for DXers in the Midwest. <http://www.w9dxcc.com/>

That wraps up September. As summer ends, the radio season begins.

## THE COMPUTER CORNER

### No. 247: Adware

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We have all seen it. You go online with your favorite browser, and suddenly, ads slide in from the sides, pop up over what you want to see, and generally act to distract you from your intended task. Sometimes they bug you so much you forgot what you intended in the first place because of their incessant intrusions and your efforts to close them. These are ads by advertising supported software, or adware for short.

So, this is unwanted advertising, thrown on your screen without your permission or consent. As an aside, the definition for a computer virus put forth many years ago is a program that does something to or with your computer without your permission or consent. So, we are really dealing with a type of program that has been around for a long time – a computer virus. There are just a couple of differences between a virus and adware.

A computer virus is a bad actor that often damages your data or programs, sometimes even when that was not the writer's intent. Adware is out to flash unwanted ads in your face, thus generating revenue for the developer. In other words, people write programs to infect your computer with popup ads, and they get paid for doing it. You may see ads for bogus miracle weigh loss schemes, warnings about your virus-infected computer (when it really isn't infected with anything other than the adware), phony dietary supplement ads, and the like. Some would say that it is just good, old fashioned advertising, but it is not. Anything done without your express consent and permission should be illegal and not supported. If it were up to me, I would levy a \$100 fine on the advertiser for each instance of an unwanted popup displayed without permission. That would help stop it!

Signs that you are infected with adware (thanks to Malwarebytes for this list, and for solving some of the problems of adware and other viruses):

1. Advertisements appear in places they should not be.
2. Your browser homepage has changed without your permission.
3. Web pages you visit are not displaying as they typically do.
4. Clicked links take you to unexpected sites – different than you expected.
5. Your browser slows down markedly.
6. Your browser suddenly sports new toolbars, plugins or extensions that you did not ask for.
7. Your machine starts automatically installing unwanted software packages.
8. Your browser starts crashing a lot.

How did you get infected? One way is to download an infected program (the same way you can get infected with a virus by downloading an infected program). The other way is called a **drive-by download**, wherein just visiting a site lets the adware burrow in to your machine without your permission. Either way, you are hooked.

What to do? First, install an anti-popup program into your Firefox, Chrome or other browser. Adblock Plus, Adblocker Ultimate, DuckDuckGo Privacy Essentials are free and easy to incorporate into your browser. Another solution is to clean your machine, kill any existing infections. For a simple adware removal tool, install and run AdwCleaner by Malwarebytes. For the ultimate answer, install and run Malwarebytes Antimalware (free) and run a scan. It will find any PUP (Potentially Unwanted Program), including those that feed ads, and will clean them all up. Its free for 14 days and will watch your back automatically during that time. After 14 days, it still works just as it did before, but you must run it manually each time. Pay their fee and you have the professional version that is totally automatic (I did!). It will prevent future infections, even as you browse. Go to [majorgeeks.com](http://majorgeeks.com) for any programs mentioned in this article.

So, fight back! Kill those pain-in-the-rear ads, all of them. The computer belongs to you! Happy Computing!

## September QST mag features ORC

de Tom Ruhlmann, W9IPR

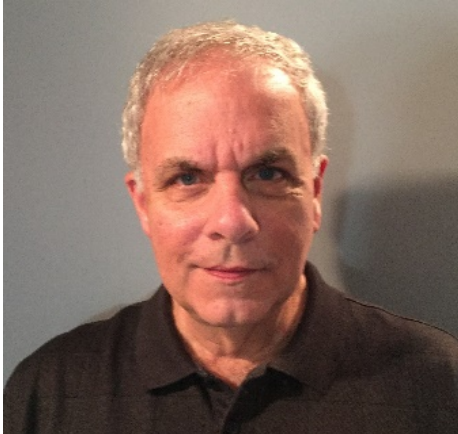
I hope you are an ARRL member and got the September issue of the QST magazine. This issue has 145 pages and the ORC is prominent on three of them. On page 100 is a photo of Emily Palm (KC9VEM), who is the 2018 recipient of the ORC \$2000 scholarship. She was also awarded the scholarship in 2017. More on that next month.

On page 103 is a review of the book “Ham Radio is Alive and Well” as authored by ORC past president Gary Drasch (K9DJT). Gary has done a great job on this book and it is a great read for the experienced and new Ham as well. I really enjoyed it. He brought back many memories and introduced me to the digital modes as well. Again, it is a great read and I am sure he can provide copies upon request or you can purchase it via Amazon.

On page 104 is reference to an article in the September 1993 issue (25 years ago) of QST titled “The Contest Card” as written by ORC contesting columnist Gary Sutcliffe (W9XT). Gary is a retired electrical engineering now but has his own small company providing voice/CW message keys, K9AY receiving antenna termination switching units, LED lighting for rotors and a variety of other interesting products.

# Vintage Amateur Radio

de Bill Shadid, W9MXQ



The introduction of the original Drake R-4 Receiver and the T-4X Transmitter proved to be a big success for the R. L. Drake Company. The R-4 Receiver developed into the R-4A and then the R-4B models with incremental improvements. At the same time, the transmitters moved from the original T-4X Transmitter (which was marketed both with the R-4 and the R-4A) and later the T-4XB Transmitter to match up with the R-4B Receiver.

The “B” series receivers and transmitters all used the technology Drake introduced with the front-end crystal filter supplanted with tuned circuit filtering for final bandwidth control. This technology reached its best performance examples in the R-4B and T-4XB. We affectionately know this final version of this set as the Drake Twins, or specifically, the “Drake B-Line.” We use these references to this day. Drake had developed the standard Noise Blanker in the R-4 line to its furthest point in the R-4B. But, times were weighing in on the Drake Twins and something had to be done to keep them competitive.

Drake’s response to the demand for a new radio resulted in one of the most respected and well-designed radio receivers and transmitters of the time. The receiver performs well even today – that is, up to the limitations now solved with microprocessors and totally solid-state circuitry. Enter the revolutionary, Drake R-4C Receiver and T-4XC Transmitter. Hands down, the star player in this pair was the receiver, the R-4C.



**Drake T-4XC Transmitter and R-4C Receiver  
with Drake MS-4 Speaker Console**

W9MXQ Radio Collection

The R-4C Receiver turned out to be a very expensive product for the time. So, for Drake to place it in a competitive position, they made many features optional that had been standard equipment with the R-4, R-4A, and R-4B. But, at the same time, the optional components that were added to the base radio made it superior to its predecessors. The options included a Noise Blanker and a wide selection of Bandwidth Filters.

The optional Bandwidth Filters were Eight-Pole Crystal units following the standard crystal front-end (roofing) filter. These very effective units replaced the wide skirt tuned-circuit filters in the earlier R-4 versions. These filters were available in 250 Hz, 500 Hz, 1500 Hz, 4000 Hz, and 6000 Hz bandwidths. Including the standard SSB filter, the R-4C could hold a total of five filters. (Very early R-4C radios held only four filters.) The R-4C that resides at W9MXQ is equipped with the SSB Filter, a 4000 Hz filter (Wide SSB and AM use), a 1500 Hz filter (Narrow SSB and RTTY use), a 500 Hz filter (CW and RTTY), and a 250 Hz filter (CW).



Like the original T-4X and T-4XB Transmitters., the T-4XC used separate eight-pole crystal filters for USB and LSB SSB generation. Drake used Crystal Filter SSB Generation as did most companies in early SSB – only Hallicrafters used Phasing SSB Generation of the major producers – but only in their very early SSB radios. Collins used Mechanical Filters which equate more with the Crystal Filter process than the Phasing process.

The R-4C Receiver had an optional NB-4 Noise Blanker that far surpassed the standard equipment Noise Blanker incorporated into the original R-4, R-4A, and R-4B Receivers. The NB-4 was able to be effective on a much wider variety of noise than the earlier examples. This included acceptable performance against the Russian Woodpecker and some types of power line noise not eliminated by the earlier receiver noise blanker circuits. The NB-4 was an outgrowth of the very effective 9-NB Noise Blanker that was optional on the Drake TR-6 Six-Meter Transceiver.

In my opinion – shared by many – the Drake R-4C Receiver with its variety of Filters and the Noise Blanker provided a communication tool far advanced, in many ways, to all its competition. In fact, I know of at least one personal acquaintance in the local DX Community still using the “Drake C-Line” as his main station for working DX. His choice is still shared by many. As my future article on the much-praised Drake TR7 Transceiver will point out, the Drake R-4C in combination with the Drake T-4XC was never surpassed by its replacement “7-Line” product line in down and dirty, drag out the weak signal DX operation. Both the “C-Line” and “7-Line” designs exist at W9MXQ and I concur with this feeling – without reservation.

All Drake “4-Line” Accessories were used with the Drake R-4C Receiver, T-4XC Transmitter, as well as the Drake TR-4C series Transceivers of the day (as well as the earlier models in the “4-Line” designs). Shown again with this article are the popular accessories of the time. . .



**MS-4 Speaker**  
(AC-4 Power Supply Inside)



**W-4 Wattmeter**



**MN-4 – 300 Watt**  
**Antenna Matching Network**



**L-4B Linear Amplifier**  
(2x 3-500z Eimac Tubes)



**MN-2000 – 2000 Watt**  
**Antenna Matching Network**

Pictures from the W9MXQ Radio Collection (MN-4 Picture from WB4HFN)

The MN-4 Antenna Matching Network has a rather interesting history. Late in the product life cycle of the “C-Line” radios, Drake introduced the TR7 line of transceivers and other “7-Line”



products. In that line there were also Antenna Matching Networks including the 2000-watt MN2700 and the 300-watt MN75. To accommodate buyers of accessories for their still new Drake "C-Line" twins (and the TR-4C series transceivers) Drake made a version of the MN75 Antenna Matching Network to match the R-4C, T-4XC, and the TR-4C. It was the MN-4C. Look at these pictures for comparison . . .



Drake MN75 Antenna Matching Network designed to match the Drake TR7 Transceiver series of products. It had a capability of running 300 watts SSB/CW input power from the radio.

Drake MN-4C Antenna Matching Network designed to match the Drake "4-Line" equipment. Electrically it is identical to the MN75. Note color and cabinetry to match the "4-Line" equipment.

Photos: WB4HFN

Antenna Matching Networks (Drake's fancy terminology for "Antenna Tuner") were very popular products. As the TR7 and its separately styled accessories were introduced, there was determined to be a need for a matching antenna tuner for recent, or earlier, buyers of the Drake "4-Line" separates or the TR-3 and TR-4 series of transceivers. Ultimately few of these seem to have been made – or at least few reach the used market, today. That said, even the original MN-4 Antenna Matching Network is difficult to find. More will appear on the MN75, and its higher power sister, the MN2700, in a later installment.

Note: You may see here a slight model number issue that would appear to be a typo. It is not. Drake used a dash in its model numbers through the "4-Line" equipment. So, the receiver and transmitter were the R-4C and T-4XC, respectively. The transceiver was the TR-4C. But, with the introduction of the "7-Line" this changed, and the dash was omitted. So, while the TR-4C used a dash in its model number, the TR7 did not. This extended to the accessories. So, the MN-4 became the MN75, for instance. Drake remained true to this system and when they made the MN75 into the MN-4C they put the dash back in its place.

Other accessories were also used with the very popular Drake "4-Line" Receivers, Transmitters, and Transverters. By the time of the new "C-Line" radios, however, the line of transverters had vanished as strong contenders for weak signal VHF/UHF stations (SSB and CW – and later, Data) radios with very high performance began appearing from Japan. Interestingly, however, transverters have remained popular from European manufacturers.

In many ways, the Drake T-4XC Transmitters differed in only small items from its earlier versions, the T-4X and the T-4XB. It still used a pair of the 6JB6 final amplifier tubes and ran an input power of 200 watts PEP SSB and CW – netting 100 watts, nominal, output on both modes.

The Drake transmitters in this series had a good quality AM modulator incorporated so the T-4XC (along with the T-4X and T-4XB) could produce a relatively good quality AM signal.

The R-4C Receiver inherited the inductively tuned VFO (more properly said as “PTO” for Permeably Tuned Oscillator) from the earlier versions of the receiver. As mentioned in the previous article on these twins, the Drake radios (like the Collins radios of the time) lacked multi-stage variable capacitors for tuning individual stages in the radios. Again, inductive tuning was used with a rack assembly tuning all stages at once ganged to the PRESELECTOR control on the receiver and the RF TUNE control on the transmitter.

Drake R-4C series receivers continued the use of PASSBAND TUNING that was featured in their earlier receivers. This was much more effective than the Q-Multiplier used by others. Like the earlier Drake R-4 series radios, the R-4C included a NOTCH filter in addition to their very effective PASSBAND TUNING. The PASSBAND TUNING was more effective in the R-4C due to the much sharper bandpass filters in the i-f system.

The Drake R-4C and T-4XC were essentially general coverage and could transmit and receive continuously from 1.5 to 30 MHz in the HF spectrum.

Note: There were some work-around issues close to the system i-f in the 5 MHz area. It is difficult – but not impossible – to use these radios on the 60-meter band.

In addition to great strides in i-f filtering and noise control in the R-4C Receiver, Drake made significant strides in the incorporation of solid-state circuitry in both the R-4C and the T-4XC. They also made a significant upgrade in the dial readout mechanical system making it much easier to read frequency. This feature also spread to the TR-4C series Transceivers. Frequency readout on the “C” series radios was much easier and more precise. Time was running out for vacuum tubes at Drake – the R-4 had 13 tubes that progressed to 6 tubes in the R-4C. The balance of the circuitry had moved to solid-state devices by the time of the R-4C. The T-4XC also benefited from this shift. All this allowed for lower current consumption and less heat as the line progressed through its life cycle.

Separate receivers and transmitters – models that could be interconnected to allow for transceive operation – were becoming rare when the “C-Line” was released. Kenwood and Yeasu also had separate receivers and transmitters in that time frame, but the Drake system was on the market after Kenwood and Yeasu left the scene and focused totally on transceivers. Use of these separate (receiver and transmitter) systems required a lot of interconnection. The VFO systems had to be switched between receiver and transmitter. Lower level i-f systems were interconnected to provide for best on frequency performance between the two radios, as well as transmit/receive antenna switching, indicator lamps to show which VFO was active, etc. The “C-Line” had simplified these interconnections compared to the earlier Drake “4-Line” separates but did require interconnection for. . .

1. Mute Line – allowed for receiver standby during transmit.
2. Anti-VOX – allowed for low level receiver audio to inhibit transmission caused by receiver audio.
3. Injection – Connects the R-4C Premixer System to the T-4XC.
4. Carrier Oscillator – Provided a means of connecting the T-4XC Carrier Oscillator to the R-4C. This phase locked the two units to insure same frequency operation when transceiver operation is used on either VFO.
5. PTO Lamp – allowed for the VFO in use to illuminate showing which was in control of operating frequency.
6. Antenna – this connection feeds the antenna line from the T/R relay in the transmitter.

There are other connections for the system, such as antenna input to the transmitter, ground, and all the items we are used to seeing. But, this was the beginning of the end for the separates concept – replaced by sophisticated transceivers with dual receivers (and more than “dual” these days) and the need for only an antenna and ground connection as well as a microphone and/or key.

We cannot leave the transition to the “C” series Drake radios without details on the improved dial mechanism and the change in front panel design.



R-4B (common to the R-4 and R-4A) front panel showing the tuning dial with the single clear disk handling tuning to 25 kHz marks. Note then the main tuning knob with 1 kHz registration marks – 25 of them on the knob skirt. Calibration of the 1 kHz dial skirt required moving the knob while holding the skirt in place to zero against the calibrator. The 25 kHz upper dial window readout is adjusted using the red lever to the right of the readout.

Notice the trim (satin clear aluminum) around the edges of the front panel. That feature is missing on the R-4C Receiver, below. This difference is present on all “C” series radios – and later accessory pieces. For instance, the MN-2000 Antenna Matching Network front panel changed after the introduction of the “C” series equipment.



R-4C front panel showing the dual disk clear dials for the readout. The 1 kHz marks are on the front clear disk while the 100 kHz markings are on the rear of the two clear disks. Holding the unmarked skirt of the tuning knob while turning the main dial allows for adjustment of the correct frequency. You can see that both units provide measurement accuracy to better than 1 kHz, but with the R-4C, one merely watches one readout area (vs. two with the R-4B).

Upper Picture: K9VSK  
Lower Picture: W9MXQ

Knob layout changes rather significantly between the R-4/R-4A/R-4B and the later R-4C. Efforts were made with the R-4C to use any filter with any mode. Mode and AGC settings were more flexible with the R-4C than with the earlier receivers. Separating the common shaft Bandwidth and Passband Tuning controls on the earlier receiver with separate controls on the R-4C cause the R-4C to combine the AF and RF gain controls onto a concentric shaft. These were separate controls on the earlier receivers. My personal feeling is that the position of those controls – especially the AF Gain control – on the earlier receivers – was better ergonomics. Not all R-4C users would necessarily agree with me on that point, however.

The R-4, R-4A, and R-4B Receivers allowed for 10 extra 500 kHz coverage ranges between 1.5 and 30 MHz – in addition to the five crystals covering the 80, 40, 20, 15, and 10-meter bands. (Note that 160 meters appeared on the main band switch, but its range crystal must be accessed from the accessory 10 optional crystals.) The R-4C was similar but had 15 accessory crystal positions. The T-4XC was also general coverage but had only 4 accessory crystal positions in addition to the standard ham bands. This was identical to the accessory crystal availability on the T-4X and T-4XB.

During the run of the “C-Line,” Drake introduced a rather revolutionary accessory, the FS-4 Synthesizer. The unit provided output for all necessary injection frequencies allowing the R-4 and T-4X series radios to run from 1.5 to 30 MHz. The FS-4 could feed the receiver and transmitter simultaneously – so only one unit was required. This now very rare accessory would also be made to work (with an internal oscillator crystal replacement) with the Drake SPR-4 and Drake 2C Receivers).



W9MXQ Photo

This FS-4 is part of the “C-Line” station at W9MXQ. Today the FS-4 units are very hard to find for sale. The unique crystal required for “4-Line” receivers and transmitters is no longer obtainable so an FS-4 buyer must be certain that the unit is not setup for SPR-4 or 2C receiver use. This is rarely easy to determine because in many cases the FS-4 units are traded repeatedly, and the seller has no idea of its internal set-up.

Those familiar with the R-4C Receiver know that there were at least four changes in the radio over its life cycle. One of them, the third of the four (that we know about), involved an additional position for selectivity options, a changed front panel, and the addition of a crystal filter position on the radio’s chassis.



The upper picture (to the left) shows the original R-4C front panel. Near the upper center of the panel you will see the Mode Switch with four position for AM, SSB, CW 1, and CW 2.



The lower picture shows the later (after the third revision) R-4C where the Mode Switch has five positions for AM, SSB, CW 1.5, CW 500, and CW 250.

In the later receiver the CW positions relate to specific filters. The CW 1.5 position is very handy for “Narrow SSB” reception in times of heavy QRM.

Upper Picture: W9DYQ  
Lower Picture: W9MXQ

The four updates that are known to us today involved other significant changes that were not always visible. Many updates involved improvements in i-f capability. Some involved mechanical changes inside the radio that improved inter-stage shielding. Looking at a top view of the inside of an early and late R-4C shows much added shielding over the entire i-f tuning area in the center of the chassis.



Much of what you read in my previous article about the R-4, R-4A, R-4B and the T-4X and T-4XB relate also to the R-4C and T-4XC. And, small pieces of the previous article are repeated here. Most important of that repetition is the picture below that appears on the WB4HFN website for Drake radio collectors and appreciators. He says it all in this picture that chronicles all lines of Drake radios – so it is worth repeating . . .



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

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

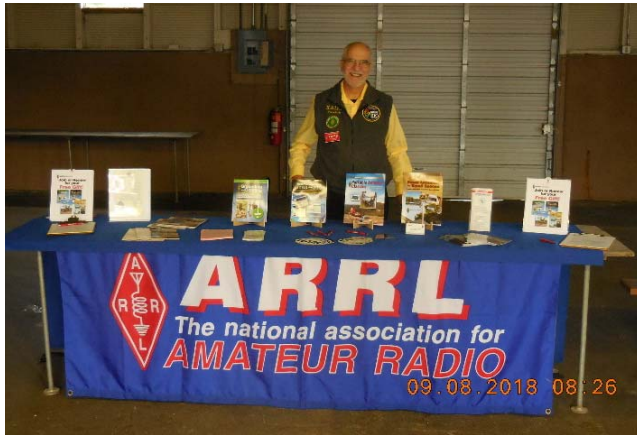
Thanks to W9DYQ, K9DJT, and KC9PIF who have proofread this article.



# ORC Fall Swapfest – a great success

De Tom Ruhlmann (W9IPR)

Great weather, great facility, great coffee & pastry, great buys on great equipment, great conversations and great help – what more could we ask for? The 13<sup>th</sup> annual ORC Fall Swapfest was a real success and we had good attendance as a result of the good weather and no event conflicts.



Pat, (W9IRB), our ARRL section leader was here and he brought a few Technician License Manuals to support our upcoming license class starting Sept. 15th. The attendance was our best yet with two rows filled with vendors and the browsers' parking area was full. Bill Church, Nels Harvey and Pat Ruhlmann did a great job pushing the coffee and pastry while Mike Harrington handled all the announcements and drawings. It was a great time, ending at noon, and we put approximately \$440 in the club treasury and \$490 in the scholarship fund account.

My special thanks to Jim Albrinck who arranged for the park and handled the event gate ticket sales, and the following others who helped in so many ways and made the event a success:

Ed Rate, Ken Boston, Gary Sutcliffe, Tom Trethewey, Loren Jentz, Mike Harrington, Bill Church, Nels Harvey, Ben Evans, Bill Schnell, Robert Eskola, Tom Nawrot, Kevin Steers, Stan Kaplan, Nancy Stecker, Kristian Moberg, Dick and Kate Holt, Curtis Smith, Vic Shier and Pat Ruhlmann.

# International Lighthouse Lightship Weekend 2018

de Tom Trethewey (KC9ONY)



On Friday, August 17, 2018, members of the ORC and LeFrog radio clubs gathered in the rain to load up LeFrog equipment for use for the International Lighthouse Lightship Weekend. It wasn't supposed to rain as much as it did. We were delayed by about 90 minutes, but the rain finally stopped.

Surprisingly, it was not as wet in Port Washington as it was in Cedarburg. We started around 2:30 pm, with the sun coming out, and under warm, muggy conditions. Setup finished about 5:30 pm, thanks to Loren N9ENR, Tom AA9XK, Steve W9MCU, and Mark AB9CD, the tower was put up safely and antennas tested. We also set up an area for 1.2 GHz and UHF D-STAR.

Saturday morning, the band conditions were not in our favor. We had a tri-band beam (10/15/20m) and were not making many contacts. The D-STAR tent was using 1.2 GHz to access the internet, though we had already downloaded the database for the HF logging into the N3FJP's Amateur Contest Log program. It worked great. Around 4:30 pm, things started to pick up. We had planned to stop at 5 pm, but thought we'd let the operators continue for a while. About 25 contacts were had, including DX to Spain and Italy! This was Fred W9KEY's first time at the lighthouse event as well as not having logged with anyone before. He also did some operating. It was close to 8 pm, when they finally pulled the plug. Radios were packed up, as we did not have a place to store them overnight at the lighthouse as in the past. The weather was a bit warm, but thankfully, no rain.

Sunday morning, another first-time lighthouse operator and new ham Robert K4WTH arrived with donuts and orange juice. Again, conditions were not good on 20 meters. Stan WB9RQR was with Robert, and Stan only made one contact. He said 40 and 80 were much better, but we only had the 10/15/20 beam. The D-STAR tent became a rag-chew area, which was fine because in the past, if others were talking near the HF radio, it was hard for the operators to concentrate. The North American QSO Party was going on, so it was hard to grab a frequency.



Things picked up after the Collins Net around 11 am or so. Lighthouse "rookies" Robert K4WTH and Fred W9KEY started to get a pileup going. Apparently, someone had "spotted" us on a spotter's website. Both Fred and Robert said it was exciting and seemed to be having a great time, so we decided to let them continue while we tore down the D-STAR tent. They went until about 1 pm, when another Net came up 500 kHz away, and the QRM caused them to stop. That was good, as it takes time to safely take down the



tower, and pack things up. I believe we were finished at the 1860 Light Station by 4:30 pm or so. After that, we had to get back and unload the tower sections and radio gear.

Overall, we logged 96 contacts, which was less than in some previous years, but I would still say it was a success. Everyone who attended said they had fun, whether it was operating, rag-chewing, or helping with setup and teardown. Thank you to Tom AA9XK, Robert K4WTH and Amanda, Mark AC9CD, Steve W9MCU, Loren N9ENR, Kate KB0SIO, Dick AB0VF, Fred W9KEY, Roland KB9TMB, Tony AB9PN, Greg KB9BU, Bill AC9JV, Tom W9VBQ, Stan WB9RQR, Nancy KC9FZK, Julia KB9WBQ, and Nels WA9JOB for coming out to support, operate, rag-chew, and help make this a fun event.

## **Wisconsin Parks on the Air debuting Sept. 15<sup>th</sup>**

Have you heard about the first annual **Wisconsin Parks on the Air?**

It's coming on Saturday, September 15, 2018 from 11 am - 6 pm.

For the flyer, contest rules, WIPOTA park designations, a list of all parks in the Wisconsin Park System, and activated (participating) parks, see <http://wipota.com/>.

"The purpose of the Wisconsin Parks on the Air (WIPOTA) operating contest is to promote public awareness of ham radio within Wisconsin's beautiful state park system.

"The objective of WIPOTA is to have competing stations operate from as many Wisconsin parks as possible and work hams in other WI parks, as well as hams not located in a park in any state, province or country."

Other states do this. Why not Wisconsin? This could be fun!

73, Tom KC9ONY

**Saturday, September 15<sup>th</sup> – License classes start at Tom Ruhlmann's home at 9 AM – call Tom at 262-377-6945 to enroll.**

# Ozaukee Radio Club August 8th Meeting Minutes

Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:29 PM. All the attendees introduced themselves.

## **Announcements, Show-and-Tell, Bragging Rights:**

Tom W9IPR: Showed the group an 813 power amp tube from a 1942 BC-348 receiver and a melted CFL light bulb.

Gary N9UUR: Made a QSO in Lithuania on 6 meters.

Mike KD9GCN: Saw and took pictures of an AM CW (13 MHz?) radio attached inside a B-17 plane that he flew in in Oshkosh at

the Air Show.

Kevin K9VIN: A reminder of the 2-meter net held every Tuesday night at 8:00 PM.

## **Program:**

Gary W9XT gave a presentation on the fundamentals of HF propagation.

## **50/50 Drawing:**

Curt N9CBS was the winner of the 50/50 drawing.

## **Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a 12-volt battery float charger, a Dell Inspiron computer with Linux Mint installed, a 2-meter transceiver, and a pair of Vietnam-era army walkie-talkies.

## **Officer Reports:**

Kevin S. (K9VIN) President – The Fall Swapfest is coming on Saturday, September 8<sup>th</sup> at Firemen's Park. Also, if anyone wants to volunteer for the vacant position of Second Vice-President, please see Kevin.

Pat V. (W9JI), 1st VP – No report.

Tom T. (KC9ONY), Repeater VP – No report.

Ben E. (K9UZ), Secretary – This month's newsletter has been posted on the website which includes the July meeting minutes. A question was asked if a notice is sent when the newsletter is posted, to which Ben responded that a mass email is sent to members at the same time the newsletter is posted. If you're not getting the emails, write your email address next to your name on the meeting attendance sheet. Motion to accept the minutes was made by Robert K4WTH, seconded by Jeananne N9VSV and approved by the members.

Robert E. (K4WTH), Treasurer – The profit and loss report for July was emailed by Ben to the members. If anyone has any receipts from Field Day that weren't turned in, please do so. A motion to accept the Treasurer's report was made by Kristian KC9TFP, seconded by Stan WB9RQR and passed by the members.

## **Committee Reports:**

Tom R. (W9IPR), Classes – Tom will conduct classes for Technician and General Class license exams. It will be seven sessions long, held on Saturdays, 9 AM to noon, at Tom's house and will begin September 15<sup>th</sup>.

Tom R. (W9IPR), Fall Swapfest – We need volunteers! Please sign up! We're not using an outside group for concessions this time, so members are needed for that. It will probably be mainly donuts and coffee. Is there somebody with a second trailer to haul stuff from the

barn? We have prizes from ARRL and we'll have a \$50 gift certificate from HRO rather than the gold coins. There will be an organizational meeting at Tom's house on August 15<sup>th</sup> at 7:00 PM.

Ken B. (W9GA), Field Day – Thanks again to people who participated in Field Day. We had a number of people come through and help with the setup and teardown. We were a bit short on operators and didn't reach the goal of 3,000 QSOs but we managed to get a good number of contacts and hit almost all of the bonus points. The approximate breakdown is about 1,500 CW, about 1,100 phone and 28 digital. Scoring is about 10,300.

**Old Business:**

There was no old business.

**New Business:**

Tom KC9ONY: Regarding the Lighthouse Event, we still haven't gotten permission from the lighthouse people to erect the towers. Tom AA9XK will talk to somebody and get it straightened out. Assuming it's a go, an email will be sent out. Setup Friday afternoon August 17<sup>th</sup>, operate 8 to 5 Saturday and 8 to noon Sunday. Location is the 1860 Light Station Museum in Port Washington.

Stan WB9RQR: "Give me your old computers, don't throw them away. If they're too old, I'll recycle them and wipe the hard disk or take it apart. Otherwise, I'll fix them and bring them for auction."

**Adjournment:**

Nels WA9JOB moved to adjourn the meeting, seconded by Curt N9CBS, approved by members. The meeting was adjourned at 9:10 PM.

**Attendance:**

There were 39 members and three guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary



## **ORC Meeting Agenda**

*September 12, 2018*

1. 7:00-7:30 PM – Network & Rag-Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Bernie Barr K9JAT, Grounding & Resonances
5. Fellowship Break
6. 50/50 Drawing
7. Auction – Stan Kaplan (WB9RQR)
8. President's Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)
11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report – Robert Escola (K4WTH)
13. Committee Reports:
  - A. Fall Swapfest
  - B. FCC License Classes
  - C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

Return undeliverable copies to:

### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

#### **Next ORC Meeting:**

Grafton Multipurpose Senior Center

1665 7<sup>th</sup> Avenue, Grafton  
Wednesday, Sept. 12<sup>th</sup>, 2018

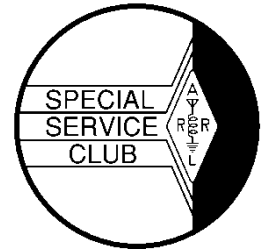
7:00 PM – Doors Open

7:30 PM – Meeting Begins



# The *ORC* Newsletter

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Volume XXX

October, 2018

Number 10

## From the President

*de Kevin Steers (K9VIN)*



First frost is near, and the time is now to freshen up the antennas and re-secure things for the cold months ahead. I am hoping to get up my tower soon to slide my Butternut Butterfly beam higher up on the mast pole, to make room for an 11 element 2-meter beam. There is so much to do when I am up there, and a specific order in which everything needs to be done, that I am making a list for my helper on the ground to read off to me. You see, I am easily distracted, and would be certain to miss something important. I expect I will be on the tower for over an hour the way it is, and I get tired just thinking about it.

I am hoping to set up my National 303 receiver in the kitchen up at the cottage soon, and am racking my brain as to how to fish a wire into that side of the house. There is an RG59 wall outlet that goes to an unused satellite dish, and I am tempted to give that a shot, for starters, by clipping a long wire to the satellite end of the coax.

The only thing on the bench, while electronic in nature, is not ham radio related. I am trying to breathe life back into a Wisconsin Robin 2-stroke gas engine that apparently has too weak of a spark. I am going to reach out to one of you to borrow a meter that can test the capacitance of the condenser. Unfortunately, condensers are not available for this motor, so I am trying to understand if I can just throw any old condenser at this motor, or if a specific rated condenser is required.

I hope everyone was able to get over to Superfest at HamRadioOutlet last month. I expect a few folks will have updates during our upcoming meeting on October 10. Also, please provide updates if you participated in the WIPOTA, Wisconsin Parks on the Air. It was a great opportunity to dust off the HF rig and help folks rack up points.

Cheers and 73s,

K9VIN, Kevin

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



October is generally considered the best month for HF propagation for stations in the Northern Hemisphere. We are past the summer and the absorption that goes with it. Longer nights after the equinox improve low band propagation. QRN from summer thunderstorms is down, also making it quieter, especially on the lower bands.

Unfortunately, the lack of sunspots means the higher bands will be poor. The Solar flux the last week has been around 67, which is about as low as it gets. Openings on 15 meters will be spotty, and 10 meter openings will consist of brief weak signals to South America. FT8 may save the day on these bands. FT8 allows digging out signals 15-20 dB below the threshold needed for copying CW and even more

for SSB.

Propagation guru K9LA spoke at the W9DXCC convention on where we are in the solar cycle. Carl thinks we are probably a year or two away from the minimum. He has done a lot of investigation on how the ability of the digital modes to dig out weak signals help us make contacts when we can't make them with traditional modes. Carl thinks contacts to Europe may be possible on 15 meters and maybe even 10 meters this fall and winter with FT8. One problem with supposedly "dead" bands is that we tend to just quickly tune across a band and decide it is dead and move down in frequency. If no one is making noise, we don't know the band may be open. Don't be afraid to call CQ on FT8 and let it run for 5 minutes or so. You never know who may answer.

I have been talking about propagation a lot the last few months in this column. I have a couple of more resources on the subject for you to check out. The first is the book "Propagation and Radio Science." The author is Eric Nichols, KL7AJ, and the ARRL publishes it. It is also available in Kindle format from Amazon. <http://www.arrl.org/shop/Propagation-and-Radio-Science/>

I learned a lot from this book. Parts of it are not an easy read, and I plan to read it again soon to get a better understanding of what was said. This is a must read for anyone serious about understanding propagation.

The other resource is a website by VE3EN. <http://www.solarham.net/> At various times I have talked about solar indices, aurora zones, sun spots, etc. All this info is available on the web, but this site has it all in one place.

DXpeditions pick up in October, partly because of improving propagation conditions in the fall, and partly because of the biggest contest in ham radio, the CQ WW DX Phone contest the last weekend of the month.

A lot of the DX activity is taking place in the Pacific. A group of New Zealand hams will be operating from the island of Niue on October 5-16. The call will be E6Y. They will be on 160-10 meters.

Palau, T88, will be activated by a group of Japanese hams October 4-9. Each one has their own call and will be on 160-6 meters, CW, FT8, and SSB. Another Japanese ham will be on Palau on October 17-24 using T88SM.

Probably the biggest DXpedition of the month is to Ducie Island. The call will be VP6D. They will be active October 20 – November 3. This multinational team will have seven stations and operate 160-10 meters, CW, SSB, and digital modes.

The VK9XT operation to Christmas Island mentioned last month is currently active as this is being written. So far, I have been unable to work them. They will be there until October 6.

However, a group of British hams will be there from October 17-30. They will have four stations and operate 160-10 meters, CW, SSB, and FT8. They will be operating FT8 in the new DXpedition mode, so be sure to update your software and understand how to use FT8 variation. If that is not enough, VK9XQ will be on briefly at the start of November.

Nauru will be on the air as C21GJ until October 12. This is a 6 meter moon bounce operation. Ken, W9GA, will probably be the only ORC member getting this one!

Chatham Island, ZL7X, will be active October 16-24. Another Japanese group will activate it October 16-30. 160-10 meter, CW, SSB and FT8 with a focus on the low bands and FT8.

Vanuatu will be on as YJ0GC October 15 – November 4. 160 – 6 meters, CW, SSB and RTTY with a focus on the low bands.

Norfolk Island will be represented by a couple of groups. They will overlap and be on from October 9 – 19. The first is a couple of Japanese hams using VK9/home call. This is a holiday style operation. The second is a group of US and New Zealand hams with individual VK9 calls.

The Pacific is not the only place for some interesting operations this month. Africa has a few nice ones too. Burkina Faso will be on the air as XT2SZZ October 24-29. They are there primarily for the CQ WW contest.

A group of European hams will be on from Zimbabwe as Z23MD from October 26 through November 6. Their five stations will be on SSB, CW, and RTTY.

Some single operator African efforts include TT8KO from Chad October 9-21. Another is Ivory Coast, TU5MH by a German ham October 20-29. Meanwhile, 5H3MB will be active from Tanzania October 24 through November 28.

As mentioned, some of the DXpeditions are for the CQ WW Phone contest October 27-28 UTC. That is 7:00 PM Friday, October 26 local and runs 48 hours. You work the world on phone. The exchange is a signal report and CQ zone. We are in zone 4. QSOs with other North American countries are worth two points. Contacts with stations in other continents are worth three points. US stations are zero points, but you can work them for zone and country multipliers.

There are a lot of entry categories based on power levels and use of spotting networks. Within all these are all band or single band entries. Check out the rules at [www.cqww.com](http://www.cqww.com) if you are interested in competing in this one.

Keep an ear out for other contest DXpeditions the week before CQWW. They will be on the air checking their equipment and propagation before the contest. They will also be active on the WARC bands.

The biggest state QSO party is the weekend of October 6-7. It is the California QSO Party. It starts at 11:00 AM local on Saturday the 6<sup>th</sup>. The goal is to work the different California counties. You can work each station once on CW and once on phone on each band.

Phone contacts are worth two points and CW contacts are worth three points. For us, the CA counties are multipliers. CA stations will send a serial number and their county. We will send a QSO number and our state.

If you operate and send in a log, you can get a participation certificate. Log into their site a few weeks afterwards, and you can download and print out the certificate. If you are really ambitious and score in the top 20, you win a bottle of California wine!

Full rules are at [www.cwp.org](http://www.cwp.org). Each CA county has a four letter abbreviation. It is a good idea to download the list of abbreviations before the contest.

Of course, there are a lot of smaller contests and state QSO parties this month.

That wraps up October. There are lots of things to do on the air this month. The weather will be getting colder so get going on those fall antenna projects.

## THE COMPUTER CORNER

### *No. 248: What a Buy!*

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



In the Computer Corner article before last (#246, IT WAS A DARK AND STORMY NIGHT), I told about the demise of my main computer, a desktop, during an electrical storm on the 4<sup>th</sup> of July 2018. The storm did no damage to the other four computers that were on at the time (three laptops and a desktop). Only my main machine was damaged; both the power supply and the motherboard were toast as confirmed by several electrical and substitution tests.

I was working traffic (parking) during our Ozaukee Radio Club Regional Fall Swapfest on 8 September 2018, but I had time to peruse the merchandise from time to time. I spotted a motherboard on the table of N9CBS, Curtis Smith, one of our ORC members. “How much” I asked. “Make an offer” he replied. “Three bucks” I responded. “Done” said Curt. I had the prize!

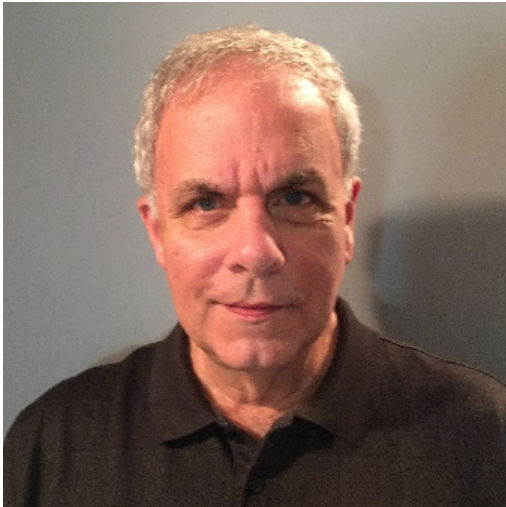
I took it home, replaced the button cell battery found on all motherboards to power the CMOS memory, and found some general memory sticks (RAM) for it, too. Then I put the motherboard in my main machine carcass, along with a good used power supply from my stock. When I fired it up, everything worked perfectly! Even the hard drive was fine, with all my files intact (that didn’t really matter; they all had been duplicated – see #246 for those details). But the point is, I had been made whole again by Curt and the Swapfest. Thanks, Curt!

Happy Computing!



# Vintage Amateur Radio

de Bill Shadid, W9MXQ



For months we have discussed the movement in amateur radio marketing stemming from the Collins introduction to lightweight (for the time) desktop high-frequency radio equipment. This month we are going to move off that path for a bit. Back in 1977, while the guest<sup>1</sup> of ***Ham Radio Magazine*** at the Dayton Hamvention, I came across a brand-new offering from HyGain Electronics. They were showing their model 3750 HF Transceiver. HyGain, by then a shadow of its former self after a disastrous corporate decision to push into the North American Citizens Band Radio market, was near bankruptcy. Trying to move back to its ham radio roots, HyGain partnered with National Radio of Japan (known as Panasonic<sup>2</sup> in the west) to re-brand one of their premium market transceivers – known in

Japan as the National RJX-1011D. So, this month we are going to talk about this incredible radio and my experience with the product in my shack.



**HyGain 3750 160-10 Meter SSB/CW Transceiver  
(Panasonic/National RJX-1011D)**

W9MXQ Photo

The 3750 Transceiver was in a large market of 180 to 200-watt RF input radios in a variety of price ranges. This radio was right along with them – at the high end of price – with a solid-state radio working with a vacuum tube driver and final amplifier section. The 3750 had an input power of 200 watts that was provided by two S2002 Tetrode Power Amplifiers. These unique Japanese tubes were custom made for this radio – a point that is now problematic. They closely resemble 6LR7 Sweep-Tubes – and some have noted that the 6KD6 Sweep-Tube is also compatible. But, the S2002 design had very heavy interior components and was what I would describe

as a true transmitting tube using a Sweep-Tube concept design. S2002 tubes, however, are virtually unobtainable today. One of these S2002 tubes was heavier than any Sweep-Tube I have ever worked with. As I recall, they were heavier than a 6146B.

The use of unique numbers by Japanese manufacturers of radio equipment used this number system in other radios. The model 6146 tetrode was widely known in Japan as the S2001 and was later updated to be the S2001A. This convention was later eliminated, and late vacuum Japanese tube final amplifier radios used the 6146B nomenclature as we did in the West.

HyGain provided a matching External Speaker and External VFO unit for these radios as shown here . . .



**HyGain Model 3854 External Speaker**



**HyGain Model 3855 External VFO**

W9MXQ Photos

The bronze anodized finish aluminum panels on these radios and accessories were quite striking, visually. But, several manufacturers used colors other than dark gray or black without long term success. This radio in Japan, under the National name, was identical in color and in all things other than the logo for the company name.

My first experience with these radios was at the previously mentioned 1977 Dayton Hamvention at the HyGain booth. The radio was sitting on display – center stage in the booth – receiving Morse code transmitted from elsewhere in the convention center. Its golden tones receiving CW were the number one selling point right away. The cost, however, was in the thousands of dollars so buying one then was out of the question. Even today, a good version of the transceiver alone can demand well over \$1,000.00. But, it has been year since I have seen one. I do know where several of these fine stations reside. I patiently wait!!

Using the 3750 was a pure joy. I have had three complete sets over time. They are not easy to find because only about 300 radios, quite a few less 3854 Speakers, and far fewer 3855 External VFO units were made. I was very fortunate to have my sets of these radios at different times. Most recently was perhaps five years ago. The pictures shown in this article are of the last set – and I regret that I do not have a front on photograph of all three pieces together. However, I do have an edge-on view of that same station that you can see here . . .



### HyGain 3750 Complete Station in about 2010

Left to Right are the 3854 Speaker, 3750 Transceiver, and 3855 External VFO  
 (Note also the Astatic D-104 Microphone and Nye-Viking Straight Key  
 W9MXQ Photo

The above picture was snapped to prove the existence of this bronze wonder station to a fellow Ozaukee Radio Club member who did not believe that a radio of this color every existed.

The radio had very effective eight-pole 2.4 kHz and 400 Hz crystal filters (SSB and CW, respectively) but generally lacked any good QRM fighting tools other than an excellent Notch Filter that was useable on both SSB and CW. It had two features that were beneath the radio's dignity, in my opinion – one was a completely useless Noise Blanker and the other a similarly ineffective Speech Processor. The Speech Processor was no loss for its poor operation, however, as speech audio system produced some of the most consistently complimented SSB audio of any radio I have ever owned and operated.

The 3750 was marketed before the WARC Bands were offered so it is not useable on 30, 17, and 12-meters – much less 60-meters. It did include WWV at 10 MHz on its own band positions one could certainly tune the 30-meter band. I have heard that there were users that activated the band position for transmit but I never did more than read that it had been done. The manufacturer never did produce a WARC enabled version of this radio. It was replaced with an all solid state National (Panasonic) RJX-810D. One of those was in my collection for a time – but it was not the performer of the 3750. Here is that later radio for your reference . . .



National (Panasonic) RJX-810D HF Transceiver that replaced the HyGain 3750 (National RJX-1011D) in the Japanese market. We did see some of them here from NCG (Comet) under the model 10/160M.

(RigPix Photo)

The 3750 existed at a time when digital readout was just becoming popular. Popular, yes, but not so easy to incorporate in those days. Let's look at the front panel, around the VFO Dial and Digital Readout, to see how digital readout was accomplished in this radio . . .





To the right of the VFO Knob, see the Bandswitch and that it is set in the 3.5 (MHz) position. A bandswitch hard wired line turned on the left panel readout to show the first digit of “3” as you can see. Now, looking at the dual readout (INT for Internal) and MEMORY – EXT (for External) four place readout plus decimal point. The VFO is tuned to 3.856.0 MHz. If the 3855 External VFO was installed and activated, it’s frequency would read out on the right hand four place readout plus decimal point – at EXT – also relying on the “3” to indicate the band. You can see lever switches to the right and left of the sub-readout just above the VFO Dial that gave a rough view of the area of the band being tuned. That left lever switch acticated the internal crystal calibrator – with calibration of the VFO being possible with a control elsewhere on the front panel. The lever switch to the right was a switch to activate a memory (scratch pad) to reference a point the operator wanted to remember on the main radio VFO. This control would over ride the right side readout of the External VFO.

In my several home station installations with the HyGain 3750/3855/3844 combination I also used the Drake L7 Linear Amplifier. They were a nearly perfect match in heightIn reality, the 3750 worked better with the Drake L7 than its design partner, the Drake TR7 Transceiver. For the record, the 3750 was a far superior performer than the Drake TR7 on the bands. (With the exception of the poorly executed Noise Blanker in the HyGain!)

The American company, KLM, imported a slightly narrower version of this radio (same color, knobs and dial panel) that was 6-meters only for SSB and CW. I have never seen one of these except in some advertising – but for your reference I have included a picture of it as it appeared in National Radio format. It looked a bit different as the KLM radio – but only in terms of the logo for the branding. My picture is not color correct – it was a perfect color match for the HyGain 3750.



To the left is the National RJX-661 Six-Meter SSB/CW Transceiver. This was marketed in the United States and Canada by KLM and used the same RJX-661 model designation – but branded KLM. This was an all solid-state, 10-watt output radio.

Note that there was no digital readout.

Matsushita Photo

From what I can determine, the RJX-661 was quite a popular radio, globally – especially outside the United States.

I became good friends over the years with the project manager assigned to the partnership between National Radio and HyGain that fostered the 3750. After HyGain was purchased by Telex (before later merging into MFJ) my friend became Amateur Radio Products Manager of Telex. He is now a Silent Key. For many years, a fellow in northern Wisconsin held and marketed all the remaining parts and service inventory for the HyGain 3750 and its accessories. We still occasionally talk. One of my 3750 sets was once part of the HyGain sales group and was used as a show item at HyGain's corporate offices. Telex did not continue any of the RF products that HyGain had produced later in its independent life – and that includes the Galaxy radio line that HyGain had purchased from World Radio Laboratories – tied into what we old-time hams know of as Globe Radio. Did anyone catch a whole new line of radios for future articles?

Founded in 1949, at its peak, HyGain was a multi-million-dollar corporation with several thousand employees<sup>3</sup>. Currently it is a \$17.4 million-dollar subsidiary of MFJ Enterprises and has 75 employees<sup>3</sup>. So, it goes on – but nobody there knows about the 3750.

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

<sup>1</sup>From the late 1970's until into the 1990's I was part of the Editorial Staff of Ham Radio Magazine.

<sup>2</sup>Panasonic and National are part of the large Japanese conglomerate, Matsushita Electric Industrial Co., Ltd. Using the National name, they were once one of the largest manufacturers of ham radio equipment in the world.

<sup>3</sup>Wikipedia – HyGain.



# ORC Ham License Class

de Tom Ruhlmann (W9IPR)

There are three students in the ORC license mentoring class; Robert Eskola, working for a General Class license, Brynn Weisling of Colgate and Dan Gelleck of Grafton, both working for a Technician Class license. So far, we have covered radio signals, equipment fundamentals and basic electricity, circuits and components. Next we will be covering antennas and propagation.

Last week we went to the HRO Superfest. We and the vendors did a great job of educating us on a variety of topics. I was so impressed by the COMET exhibit I ended up buying their antenna analyzer. Anyone want to buy my MFJ? Plus, Robert Eskola, our Treasurer, won the Yaesu FT-991A transceiver. That should be motivation enough to get the General Class ticket.

## Recently Donated Items for Sale

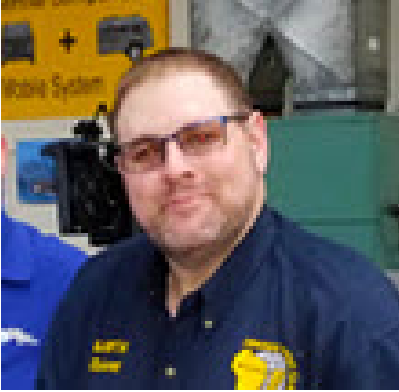
Kenwood TR7930 2-meter mobile transceiver	Average Value \$46
Kenwood TR7950 2-meter mobile transceiver	Average Value \$46
Kenwood PS7A power supply	Est. Value \$30
Kenwood TS-130S HF Transceiver	Average Value \$160
Kenwood PS-30 power supply	Average Value \$73
Kenwood AT-130 antenna tuner	Est. Value \$85
Kenwood MC-50 microphone	Average Value \$60
ICOM IC 720 HF Transceiver (no12 vdc power supply)	\$200

The average value is based on eBay sales of the same item. All items purchased come with a 30-day money-back guarantee. If interested in any of the above items, contact Tom Ruhlmann at 262-377-6945.

**October 10<sup>th</sup> meeting program – Patrick Volkmann, W9JI will give a presentation on a new digital mode called FT-8 which was developed for weak signal reception as during this lull in sunspot activity.**

# HRO Superfest Wrap-up

de Robert Eskola, K4WTH



If you didn't get a chance to get over to HRO Superfest over the September 28-29 weekend, you missed out on a lot of action. Several vendors were in attendance such as West Mountain, Icom, Yaesu, Radiowaves, and many others. This year, there was an opportunity to win not one, not two, but three high-quality radios given away by the big three radio makers – Yaesu, Icom and Kenwood. The fest started middle of the day on Friday and went until about 5 PM the following Saturday. The winners of the grand prizes of radios were picked on Saturday at 4 PM.

Several members of the ORC were in attendance, either helping out at booths, promoting, or walking around enjoying the sights. I personally would like to thank all the people who stopped by to help me get away from the ORC booth to enjoy the different vendor booths and to grab a quick lunch. Without your help, I would not have been able to get away to enjoy the sights and sounds this event had to offer. If you weren't in the market for a new radio, you could have had your pick of many seminars, such as by Yaesu on Fusion and Wires X and making sure your float charger and maintainer is compatible with the specific batteries you have in your setup. I learned so much about the differences in batteries, it was astounding.

Special thanks to the Boy Scouts who made sure each and every person was well fed with hot dogs, brats and donuts in-between meals to keep us going, plus a great selection of drinks to keep you hydrated along the way. I know I had several comestibles to keep me in the game and greet potential new members.

At our ORC booth, as you can see from the picture on the next page, we had a few fun and interesting teasers to showcase how well the ORC uses technology to reach its members. Featured was our website page which offers viewers all kinds of information about the Ozaukee Radio Club, such as our next club meeting and featured presentation, and how to sign up to become a member of ORC. Alongside our website, we also featured our Facebook page. If you didn't get a chance to come down to Superfest, check out the photos of the event on our FB page.

Prizes were in abundance at this event. The Ozaukee Radio club gave away two one-year memberships to our club, one winner each day of the fest. Congratulations go out to our two winners, Jerold Rauth and Nancy Stecker, who will each be receiving a 2019 membership, compliments of the club, for coming out and supporting the event. Several others previously had their tickets drawn, but the ticket holders were unresponsive in our attempts to contact them. Drawing of names was kept impartial by our resident third party two-year-old who picked our winners. A special thank you goes out to her mother in drawing the winners.

Several ORC members won prizes given by the hour, included antennas, mugs, hats and jackets. As to the grand prizes, I, Robert Eskola, am living proof that you can actually win a radio, as I won my very own Yaesu FT-991A. A very special thank you to Ham Radio Outlet for picking my name.

If you came out just to cruise around the booths, enjoy the company of others or find yourself in one of the many seminars, you shouldn't have been disappointed at this event. A picture of our booth is listed both on Facebook and shown below. Should you want to check out other booths that you may have missed, log onto our Facebook page ([facebook.com/orcwi](https://facebook.com/orcwi)) to see the other great booths that were at the event.

One thing is for sure - I know I plan on attending next year's Superfest, if only to keep current on the latest and greatest innovations and trends happening in the world of ham radio.



**Ozaukee Radio Club Meeting Minutes**  
**September 12, 2018**

**Ben Evans (K9UZ), Secretary**



President Kevin Steers (K9VIN) called the meeting to order at 7:31 PM. All the attendees introduced themselves.

**Announcements, Show-and-Tell, Bragging Rights:**

Tom W9IPR: Portable band saw is working.

Stan WB9RQR: 1) Pat W9JI, as of February, will be the new program chairman. 2) As Stan wrote in the "Computer Corner" article, lightning took out his main computer. At the Fall Swapfest, he bought a motherboard for \$3, put it in his disabled machine, put in memory and a new power supply, and the machine works great.

Mike KD9GCN: Mike tried but couldn't get Indianapolis on 40 meters for the last Indy race, but the Virgin Islands suddenly came booming in like the guy was next door.

Gary D. K9DJT: His book "Ham Radio is Alive and Well" was reviewed favorably by QST magazine. Tom W9IPR commented that the book is a good read.

Ken W9GA: Ken and others went to the SMC Fest in central Illinois. There were interesting presentations, particularly one about grounding, given by Ward Silver, who wrote the book, published by ARRL, on the subject.

**Program:**

Bernard Barr gave a presentation on grounding and resonances.

**50/50 Drawing:**

Gary S. W9XT was the winner of the 50/50 drawing.

**Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a Toshiba laptop computer with Linux Mint installed, a Dell OptiPlex desktop computer with Linux Mint, and two mag-mount antennas.

**Officer Reports:**

Kevin S. (K9VIN) President – Thanks to all for a successful Fall Swapfest.

Pat V. (W9JI), 1st VP – For the purpose of the club inventory, if anyone is in possession of club keys, let Pat know.

Tom T. (KC9ONY), Repeater VP – No repeater report. Thanks to Todd for providing a pointer to use for the presentations. Thanks to all for attending the Lighthouse event. This coming weekend is the first Wisconsin Parks on the Air event. Tom will be operating with LeFrog at Latham Peak 11 AM to 6 PM Saturday.

Ben E. (K9UZ), Secretary – This month's newsletter has been posted on the website which includes the August meeting minutes. Motion to accept the minutes was made by Robert K4WTH, seconded by Gary K9DJT and approved by the members.

Robert E. (K4WTH), Treasurer – The profit and loss report for August was emailed by Ben to the members. There was light activity on the accounts. A motion to accept the Treasurer's report

was made by Stan WB9RQR, seconded by Vic WT9Q and passed by the members.

**Committee Reports:**

Tom R. (W9IPR), Fall Swapfest – Tom gave a special “thank you” to those that worked the Swapfest, either as a vendor or that otherwise helped with the Swapfest. This Swapfest was the best we’ve had; the weather was good and most importantly there were no conflicts with other swapfests. Stan wisely checked the parking area and directed the vehicles away from the east side parking which was muddy. The end results were \$460 in the club treasury and \$490 in the Scholarship treasury. Two items were sold from equipment donated by Jerry (KA9KIS) MacNab’s widow, Judy, for an additional \$200, so the total going into the Scholarship Fund is \$690.

Tom R. (W9IPR), Classes – Classes for Technician and General Class license exams will start this Saturday at Tom’s house. If members or someone they know are interested in the classes, they should call Tom.

Tom R. (W9IPR), Barn – Working on thinning out the junk in the barn. There is a pile of aluminum outside the barn that is destined for the scrap dealer unless somebody wants it. The aluminum tubing might make for good antennas. If someone is interested in the emergency government radio equipment, they can pick it up; otherwise, they’ll go to the next municipal electronics disposal pickup. If anyone wants to help straighten out the barn, let Tom know.

**Old Business:**

There was no old business.

**New Business:**

There was no new business.

**Adjournment:**

Robert K4WTH moved to adjourn the meeting, seconded by Stan WB9RQR, and approved by members. The meeting was adjourned at 9:08 PM.

**Attendance:**

There were 35 members and three guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary



## **ORC Meeting Agenda**

*October 10, 2018*

1. 7:00-7:30 PM – Network & Rag-Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Pat, W9JI – FT-8 Digital Mode
5. Fellowship Break
6. 50/50 Drawing
7. Auction – Stan Kaplan (WB9RQR)
8. President's Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JI)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)
11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report – Robert Escola (K4WTH)
13. Committee Reports
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

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### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

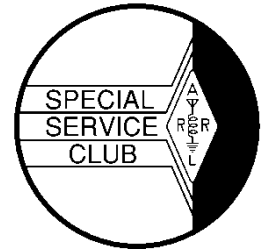
#### **Next ORC Meeting:**

Grafton Multipurpose Senior Center  
1665 7<sup>th</sup> Avenue, Grafton  
Wednesday, Oct. 10<sup>th</sup>, 2018  
7:00 PM – Doors Open  
7:30 PM – Meeting Begins



# The *ORC* Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO

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

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

Volume XXX

November, 2018

Number 11

## From the President

*De Kevin Steers (K9VIN)*



Well, this month's article will likely be a short one. With unexpected travel and two different car breakdowns, I have yet to get things straightened around on my tower. I am beginning to gather all my warm weather clothing, and pray for a warm spell the next time I am up north to toil.

Meanwhile, I finally replaced my 2M rig in my car, and I use the Green Bay repeaters on my travels to the north woods. Apparently, my antenna had broken, and my old rig did not let me know that, so I burned it out during a long conversation in traffic on my way to Dayton.

I sure wish more folks tuned in to the .97 club repeater. I monitor on my drive home from work, but rarely does anyone respond. Amusingly, during a recent QSO with Brett in Green Bay, he noted that the 10-minute conversation was likely his longest on 2M, and I laughed and told him that I could smell the heat of my 2M radio for the first time ever.

I continue to chase down noise issues in my Volvo on my HF rig, and my next attempt is to install high quality Coax, rather than the Radio Shack grade RG58 that is in there now. The noise is so loud, that I only hear a small fraction of stations that are on the air. I trust that will be a life-long struggle.

I am going to make a concerted effort this winter to make at least one HF contact every day. I am also going to call CQ on quiet bands in hopes of drumming up some action. Though my equipment is pretty old, I trust that the folks with newer equipment, and especially Pan Adapters, etc, will be able to see my CQ visually and come chase me down. One can only hope.

Lastly, please make an effort in 2019 to volunteer to help with our number of events such as Field day, Light House Weekend, and our two swapfests. So much of our planning and work gets done by the same individuals every year. We need more than one person to understand how each of the events is planned, etc, and with more volunteers, it means less work for everyone.

Cheers and 73s, K9VIN

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



October ended on a tragic note. Well-known contester, Rev. Paul Bittner, W0AIH, died in a tower accident. I met Paul in the 1980's. He was a real gentleman with an incredible enthusiasm for ham radio and an even more incredible amount of energy. Paul was 84 and still doing tower work on what is perhaps the largest ham antenna farm in the world.

I visited his 120 acre QTH near Eau Claire in the late 1990's on my way back from a trip to Minneapolis. Paul was so excited to show me around. I counted 50 towers 100' or taller.

Being a Lutheran minister, Paul could not just write a check for his station. Many of his towers were obtained from commercial radio stations that had towers they wanted to be taken down. The tower was his if he took it down and hauled it away.



W0AIH QSL card showing Paul Bittner's antenna farm

Paul also made his antennas. One of my favorite stories about him is he signed up for the local community college machining courses every semester so he could use their equipment to build antenna hardware.

Paul was one of a kind. He invited me to operate a contest at W0AIH a few times. I never could fit it in, something I will always regret. Val, NV9L, of Ham Nation fame, made a really nice short video tribute to Paul. You can see it here: <https://tinyurl.com/y7qjuauy>

The longer nights and low sunspot counts of November mean the low bands will be hitting their peaks shortly. I have not been able to spend much time on the air on those bands yet, but I have been setting up my rig to monitor 630 meters with the WSPR beacon system.

After we got the band just over a year ago, I would let the rig monitor the WSPR beacons all night every couple of weeks. These get sent to a website where they go into a huge database. In the morning I would go to the web site and query the database for a list of unique callsigns my station decoded the night before. The best months were December and January. I would frequently get a copy on a station from Hawaii and the Cayman Islands. I never heard Europe. So far this year I have decoded stations from France, Germany, and Australia. I don't know if there are more effective stations on now or better propagation. I have heard over 80 unique calls, using WSPR, CW, and JT9. Building antennas for that band is a huge challenge, and I am slowly making progress on mine. One of these days I will be able to report my first QSO on that band.

Flipping the calendar to November, we are now in the contesters "Hell Month" where you have a month (actually seven weeks) of major contests every weekend but one. Serious contesters can burn out with two weekends of CQWW DX contests, two weekends of ARRL Sweepstakes, followed by the ARRL 160 and 10 Meter contests.

The ARRL Sweepstakes and CQWW DX contests were covered in detail last month, so there is little point in rehashing them again this month other than the dates for the remaining modes. The phone installment of the Sweepstakes starts at 2100 UTC, Saturday, November 17<sup>th</sup>. It ends at 0300 UTC on Monday the 19<sup>th</sup>. Those are 3:00 PM Saturday to 9:00 PM Sunday night, local time.

The CW installment of the CQ WW contest starts at 0000 UTC Saturday, November 24<sup>th</sup>. It runs for 24 hours and ends at 2359 Sunday, November 24<sup>th</sup>. That is 6:00 PM Friday night until 6:00 PM Sunday night local. Yes, that is the Thanksgiving weekend.

The ARRL 160 Meter contest normally starts in December. By a quirk in the calendar, it starts this year on Friday, November 30<sup>th</sup> at 2200 UTC (4:00 PM local) and runs until 1600 UTC (10:00 AM local) on the following Sunday. This is a CW-only contest. QSOs with stations in the US and Canada are worth two points and stations from other countries are worth five points. We send a signal report and our ARRL section, which is WI for us. DX stations send only a signal report. ARRL sections and DX countries are the multipliers. Entry classes are QRP, low power (150 watts or less) and high power. Each power level has two classes: Single Operator, in which the use of spotting networks is not permitted, and Single Operator Unlimited which allows spotting networks.

160 meters, or Top Band, is a challenging but interesting band. Getting an antenna up can be tough for small lots. If you have a tower or tall trees, an inverted L can be put up and is effective. I have seen designs for trap inverted L's for 80 and 160M. The trap reduces the overall length somewhat. Some hams with an 80 meter dipole have shorted the coax connector and fed it with a tuner to get on the band.

The November calendar has a few DXpeditions of interest. Probably the most interesting one is Iran with a group of Russian hams putting on three stations using the call EP6RRC. They will be on 160-10 meters using CW, SSB, and FT-8. Tonga will be activated as A35EU November 16-27. They will be on 160-10 meters. Modes will be CW, SSB, RTTY and some FT-8.

A number of contest DXpeditions will be on for the CQWW CW DX contest, including PJ7AA operated by Wisconsin ham Tom, AA9A. The Caribbean is a popular destination for these operations. Operations from P4 (Aruba), KP2 (US Virgin Islands), V2 (Antigua) and probably many others, have been announced from that region. No doubt there will be other operations from other parts of the world. If you are not into contesting, these stations are often on the air a few days before the contest testing out their stations.

That wraps up November on the air. Happy Thanksgiving!

## Interesting stories about CW operators and its history

*De Ray Totzke (W9KHH)*



Ray's Shack – Circa?

Morsum Magnificat (MM), a Danish publication from Autumn 1986 (MM1) to March 2004 (MM89), is available for free download. MM deals with Morse Code history, operation, and stories of operators in wartime, commercial operators on land and at sea, and much of amateur radio.

Whether you are a CW operator or not, by straight key, bug, paddle, keyboard or devoted to phone operation only with no CW device to be found in your shack, you will find much of interest. Good reading when the bands are dead or when a break is needed from the excitement and agony of the pile-ups or the depression of a rig dying in mid-QSO.

Google "Morsum Magnificat" or go to <http://www.n7cfo.com/tgph/Dwnlds/mm/mm.htm> to download one or all of the eighty-nine issues plus MM Special Publications.

Read on - di-di-dit dah-di-dah dit dit



# THE COMPUTER CORNER

## No. 249: Update on HiBit Uninstaller

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

(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



Last February (CC No. 240, “Uninstallers: Geek and Hibit”), I wrote about two new free pieces of software that were very good at their job. You can get both at <https://www.majorgeeks.com>. One of the two, Geek Uninstaller, remains the simplest, quickest uninstall software on the planet. The other, HiBit Uninstaller, is really the best at how thoroughly it cleans up after the uninstall process is done. But HiBit has added some features that expand its abilities and now make it the rival of CCleaner!

CCleaner is no slouch. Its ability to clean the file system and the registry, and uninstall unwanted programs is legion, and that is why it has been downloaded over 2.5 *billion* times since its inception. It is safe to use, albeit a bit conservative. But, that conservative nature is what protects all of us users from doing any damage when it cleans your machine. So, CCleaner deserves kudos, and no Windows machine should be without it, up to now.

HiBit Uninstaller has several tricks up its sleeve that make it at least a rival of CCleaner, and I think it can replace it. First, HiBit comes as a portable program. That means there is no need to install it. Just download the program (*HiBit Uninstaller Portable.exe*) from Majorgeeks, double-click it, and the program will run. It will show you an alphabetical listing of all your programs, except for any very recent additions, which are always listed first. You can select those you wish to uninstall, and the program will do that for you. It will then scan your file system including the Registry and present you with any entries for you to give permission to delete them. When all finished, you have truly cleaned your machine of that program you were out to delete.

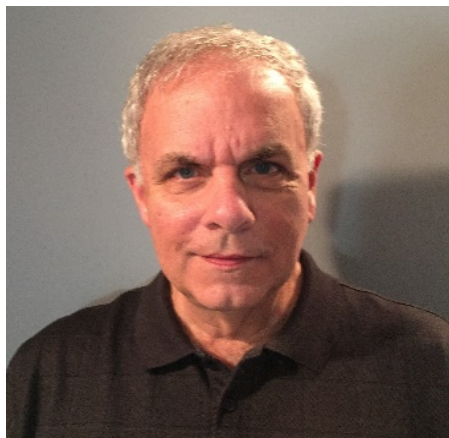
But the next trick will expand your power immeasurably. If you look closely, you will see a rather unobtrusive word, Tools, on the HiBit menu. Click that, and you are presented with several excellent cleaning options. First is a Registry Cleaner that seems to do a better job than CCleaner. Next is Junk Files Cleaner that also seems more thorough than CCleaner. These are followed by an Empty Folder Cleaner, a Shortcuts Fixer and a File Shredder. All handy from time to time in your efforts to spiffy up the file system on your hard drive by identifying and correcting problem areas. None of these are present in CCleaner.

There are more. The list of tools seems never to end. There is a Process Manager, Startup Manager, Services Manager, Scheduler Task Manager, Context Menu Manager and System Restore Manager. And even this is not all. But, I will leave you to find and explore the additional possibilities by yourself. Take it from me, it will be worthwhile.

Happy computing!

# Vintage Amateur Radio

De Bill Shadid, W9MXQ



Some months ago, earlier in this series of Vintage Amateur Radio Articles, I talked about “The Day the Universe Changed,” a phrase coined by historian, James Burke,<sup>1</sup> and how it related to the Collins Radio Company introducing the game changing S-Line 75S-1 Receiver, 32S-1 Transmitter, and the KWM-2 Transceiver. As you have seen in my various articles, this triggered a response from nearly all the established, and some new, amateur radio equipment manufacturers. While there were a lot of products and many versions of the Collins concept of the new age in radio equipment, perhaps no one went after the concept more intensely than The Heath Company – or as we know them, Heathkit. So, for this article we will start the discussion of the extremely popular Heathkit “SB-Line.”

Heathkit, in 1965, introduced the first of their competitive radios with the SB-100 Transceiver<sup>2</sup> in direct competition to the Collins KWM-2. The radios were nearly identical in specifications and even physical size and layout. Heathkit even used the concept of a permeability tuned oscillator – variable inductance tuned oscillator or PTO – for the VFO rather than the more common capacitively tuned oscillator. This was a hallmark of Collins’ design. (Actually, in the ham radio field of the time, both Heathkit and Drake followed Collins’ lead in this circuitry.)

The SB-100 was a 180-watt input SSB and CW Transceiver – just as was the Collins KWM-2. The two radios were nearly identical in size – but the Heathkit enjoyed a very large monetary savings for the amateur radio operator by being offered only as a kit to be assembled by the user. The Heathkit SB-100 was priced at only a fraction of the cost of the Collins KWM-2 back in 1965. And, Heathkit was widely known for the design quality of its kits with their “We won’t let you fail!” business philosophy.

Here is the operating Heathkit SB-101 Transceiver at W9MXQ: (The SB-101 superseded the SB-100 but they are very difficult to distinguish from each other as noted later.)



Heathkit SB-101 (successor to the SB-100) with SB-600 Speaker. Shown with HP-23 AC Power Supply mounted inside of the SB-600 (out of view)  
(W9MXQ Shack Photo)

To get a better idea of the physical similarities in the front panel controls and physical size of the Heathkit SB-101 and the Collins KWM-2, look at these two radios at W9MXQ for your reference:



**Heathkit SB-101 HF Transceiver**



**Collins KWM-2A HF Transceiver**

Both Radios – W9MXQ Radio Collection

One difference visible in the above views is the main tuning dial. You will note the band spread dial at the top of the readout area on the Heathkit along with the main tuning dial calibrated 0-500 (for a 500 kHz band segment). The upper, horizontal, dial indicated a rough approximation of the moving across the 500 kHz tuning range. The lower, round dial showed the exact, down to 1 kHz markings, of the place in that range. The round dial included a spiral “gear” that moved the indicator on the horizontal drive. Well assembled radios showed a very accurate mechanism with good linearity across the 500 kHz range.

Collins used a different, but no less effective, dial mechanism with two disks in an epicyclical drive mechanism. You can see the numbers in the dial and see a separate disk with white colored, opaque covers to only allow certain numbers to show in different revolutions. So that dial would move from 1-200 kHz over multiple revolutions with only the correct 10 kHz numbers showing as the knob was turned. Also see that Collins used 0-200 ranges instead of the 0-500 range for the individual bands. So, for instance, on 40 meters, the Heathkit would scale from 7.000 MHz to 7.500 MHz whereas the Collins, with its 200 kHz ranges would cover 40 meters in two band positions – 7.000 to 7.200 kHz and 7.200 kHz to 7.400 kHz. This is perhaps a bit inconvenient but on a band like 10 meters, it could get very inconvenient.

The reason for the narrow band coverage on the Collins radio addressed an issue with analog tuning of the day – linearity. The Collins design allowed for perhaps a single setting with the crystal calibrator at any place in the 200 kHz range and the readout would be accurate, or darn close, along the entire range. The typical 500 kHz range used by Heathkit (and most other manufacturers of the day) was not so linear along a 500 kHz run in frequency range. Heathkit was better than some of the others but Collins did have the right idea – even if it was a bit inconvenient.

Both radios use a similar final amplifier arrangement with loading set at a range of 50-75 ohms impedance – designed to feed modern coaxial cable. These radios would not work well with linear amplifiers that did not have a tuned input network. So, the modern, at the time, SB-100 and its successors, did not work well with older Heathkit Linear Amplifiers, such as the HA-10 Warrior. The final amplifier tubes used in the SB-100 Series Transceivers were two of the very popular 6146A or 6146Btetrode final amplifier tubes for an input power of 180 watts PEP SSB and CW. Like the Collins KWM-2, these radios were not really designed for AM operation. Output power was a nominal 100 watts. Tuning of the driver and final amplifier stages of the transmitter section of the transceiver was relatively straight forward and easy even for today’s amateur operators to master.

Heathkit provided a complete line of accessories for the SB-Series Radios (including a complete line of separate receivers and transmitters<sup>2</sup>). Most of the most popular accessories appear in the pictures, below . . .





**SB-200 1.2-Kilowatt Linear Amplifier<sup>3</sup>**



**SB-220 2-Kilowatt Linear Amplifier<sup>3</sup>**



**SB-640 External VFO**  
(Heathkit Catalog)



**HP-23(x) AC Power Supply**  
(for SB-100 Series Radios)



**HP-13(x) DC (Mobile) Power Supply**  
(for SB-100 Series Radios)  
(HP-13 Assembly Manual)



**SB-600 Speaker Console**



**SB-610 Monitor Scope**



**SB-620 Spectrum Scope**



**SB-500 Two-Meter Transverter**  
(Heathkit Catalog)



**SB-630 Station Console**



**HD-1410 Electronic Keyer**



**SB-650 Digital Readout**  
(for SB-100 Series Radios)  
(Heathkit Catalog)

(Pictures, unless otherwise noted, are from W9MXQ Photographs)

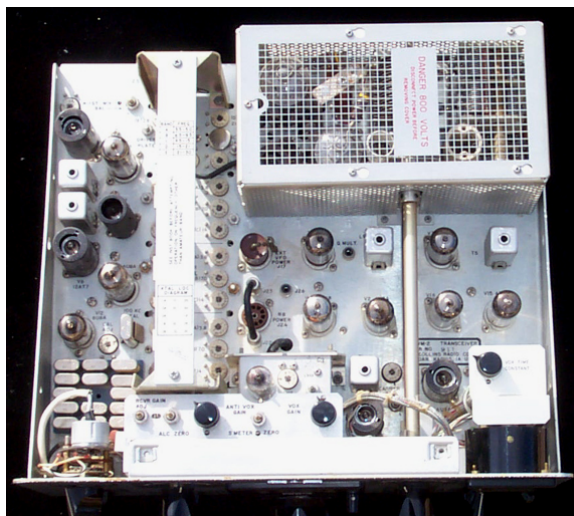
Virtually all the accessories were compatible with most other brands of radios of the day, except for frequency related items such as the SB-640 External VFO, the SB-620 Spectrum Scope, the SB-500 Two-Meter Transverter, and the SB-650 Digital Readout. But some enterprising hams found ways around even that restriction. The SB-200 and SB-220 Linear Amplifiers were some of Heathkit's most popular products and operate today in large numbers<sup>3</sup>. As implied earlier in this article, the sizes of the Heathkit items, including the transceiver itself, matched the Collins sizing almost perfectly. The only difference for a good match was the green on green colors of the Heathkit vs. the gray on gray colors of the Collins.

There are some simplicities in the Heathkit design. In the left picture below, see the overall main circuit board that contains all vacuum tube and interstage wiring – there are few interconnection wires in this transceiver, as you can see. The Collins, in the right picture below, has a clean and overall classically simple appearance, perhaps enhanced by the metal chassis color compared to the brown circuit boards in the Heathkit. Also note the multistage ganged variable capacitors at the left center of the Heathkit. These are replaced by a multistage ganged group of variable inductors in the Collins radio that are visible under a cover running from the front to the back of

the radio just to the left of center in the view shown below. Collins had a much more elegant (and expensive) design. Collins was good at small details – such as the way the top cover of the power amplifier shield was affixed. Note that the fastening screws would be loosened then the cover would slide left then lift off – without the need to remove (and perhaps misplace) those screws. Collins equipment is full of such fine touches in design.



**Top Interior View  
Heathkit SB-100 Series Transceiver**



**Top Interior View  
Collins KWM-2 Transceiver**

(W9MXQ Collection Pictures)

Both radios have a lock down top cover that swings open from a hinge along the rear of the cabinet. The illustration of the Heathkit, above, has the radio sitting in the cabinet with the top open so you can just spot the hinge at the right, rear. The Collins picture shows the radio completely removed from its cabinet – with no hinge visible. The Heathkit top fasteners were on the upper left and right sides of the top cover. The Collins cover locked down along the front edge of the top cover – you can see the fastener holes toward the front in the above picture of the Collins radio,

There were three versions of the SB-100 Transceiver. They were known by the following differences . . .

- SB-100 Transceiver (1965-1967) – the initial release of the radio. Effectively duplicates most performance specifications of the Collins KWM-2.
- SB-101 Transceiver (1967-1970) –The SB-101 added the ability to switch in and out a 400 Hz CW filter. That switch is ganged with the RF Gain control on the front panel. The SB-101 added some additional phono jacks on the back to more easily accommodate the SB-650 Digital Readout and the SB-500 Transverter.
- SB-102 Transceiver (1970-1975) – this model is the most numerous. The SB-102 improved sensitivity from 1  $\mu\text{V}$  to 0.35  $\mu\text{V}$  by replacing the RF Amplifier 6AU6 with a 6HS6. (6HS6 tubes are hard to find today so many SB-102's have reverted back to the direct plug-in replacement 6AU6.) There was a kit offered at the time to convert the SB-101 to an SB-102<sup>5</sup> with the increased sensitivity of the later model.

There was no SB-103 offered for sale, but Heathkit made a quantum leap with the introduction of the all solid-state SB-104<sup>3</sup> that we will talk about it a future article.



The one item that can impact finding a good SB-100, SB-101, SB-102, or any Heathkit, is to remember that most of them are assembled by the owner. So, finding a used one puts the buyer at the mercy of the talent and care of the original builder. Look carefully for damaged components, burned wires, and quality of soldering. While the SB series were economical, they were not cheap. So, given the size of the initial investment, it is not impossible to find finely made equipment. My SB-101 Transceiver and my SB-200 Linear Amplifier were expertly assembled. (In fact, my SB-200 is a very rare, factory assembled unit<sup>4</sup>.) However, I have three HP-23 AC Power Supplies at W9MXQ. One is very well done (and is used with my SB-101), the second is sloppily wired and stored for parts, and the third one was so poorly made it caught fire in its initial test! That last one is destined to be completely rebuilt with perhaps only the original power transformer, chassis, and hardware being left in the finished unit.

If there is one Heathkit failing it is in the area of color matching. Especially the darker (front panel) green they used over the years. It is not unusual today to encounter an SB-100 Transceiver, an SB-600 Speaker, an SB-640 External VFO, and an SB-200 Linear Amplifier in a vintage station with all showing distinctly different shades of front panel green. In my opinion as a collector of many brands, Hallicrafters and Collins were the best at color matching over the long term. National and Heathkit may have been among the worst. At the same time, we must remember that this is not a reflection on the technical quality of their products.

Heathkit leveraged the SB-100 series designs to make the very economical HW-100 and HW-101 series HF Transceivers<sup>3</sup> that we will cover in the future. That is a most interesting story. Late versions of the Heathkit catalog (the Heath Company in Benton Harbor, Michigan) always said that the HW-101 Transceiver was most popular and numerous ever made. They are still present in abundance and can be found at almost every hamfest that I attend.

Remember that the Heathkit SB-Line Transceivers (along with the separate SB Line Receivers and Transmitters, when carefully built, were the equal of or were superior to any of the fully assembled competitive units on the market at the time.

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

A special note of thanks to my proofreader, Bob Bailey, W9DYQ.

#### **Credits and Comments:**

<sup>1</sup>[https://en.wikipedia.org/wiki/James\\_Burke\\_%28science\\_historian%29](https://en.wikipedia.org/wiki/James_Burke_%28science_historian%29)

<sup>2</sup>The first of the SB-Line was the SB-110, 6-Meter Transceiver – that was an SB-100 look alike. Due to some supplier issues it was released about six months ahead of the SB-100.

<sup>3</sup>Subject of a future article.

<sup>4</sup>Factory wired SB-101 Transceivers and accessories such as the SB-200 Linear Amplifier can be spotted by their serial label which instead of, for instance, “SB-200,” it will say “SBW-200.” A factory wired SB-101 would be identified as an “SBW-101.” This was a marketing idea by Heathkit to attract customers who wanted the Heathkit radio but did not want to build it. Also, at that time, there were specialists around the country who would, for a fee, assemble any Heathkit for a paying customer.

<sup>5</sup>The SB-102 update for the SB-101 did not accommodate a change in the front panel model number.

# Ozaukee Radio Club October 10, 2018 Meeting Minutes

Ben Evans (K9UZ), Secretary



First Vice-President Pat Volkman (W9JI) called the meeting to order at 7:32 PM in place of President Kevin Steers (K9VIN) who was not at the meeting. All the attendees introduced themselves.

## **Announcements, Show-and-Tell, Bragging Rights:**

Robert K4WTH: We had a booth at HRO Superfest. Robert was the winner of the Yeasu FT-991A radio.

Gary K9DJT: Bought a Tarheel multiband antenna, with a controller to easily switch between bands, and installed it on his vehicle.

## **Program:**

Pat W9JI gave a presentation on the relatively new FT-8 digital mode and live-demoed it on HF.

## **50/50 Drawing:**

Bill L. KD9HLN was the winner of the 50/50 drawing.

## **Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a 2017 ARRL Radio Amateur's Handbook, a Larson antenna for 2m and 440, a backup hard drive, and a Dell Inspiron computer with the latest Linux installed.

## **Officer Reports:**

Kevin S. (K9VIN), President – 1<sup>st</sup> VP Pat (W9JI) gave the President's report in Kevin's (K9VIN) absence. Nothing to report except that there will be an executive board meeting later this month.

Pat V. (W9JI), 1st VP – No 1<sup>st</sup> VP report, but as the new Program Chairman, Pat encouraged members to consider presenting a program at an upcoming meeting about a subject in which they're expert, anything they've done or a subject related to ham radio. The program schedule is wide open for 2019.

Robert E. (K4WTH), Treasurer – The profit and loss report for September and the amended summary for the Fall Swapfest was emailed to everyone. A motion to accept the Treasurer's report was made, seconded and passed by the members. Since Dave Barrow (N9UNR) has moved to Illinois to an assisted living apartment, Robert will be sending email requests to members to verify their addresses and phone numbers, even if there'd been no change of either for most members. The verification process is for the 2019 ORC roster.

Tom T. (KC9ONY), Repeater VP – Nels (WA9JOB) has been upgrading the controllers and radios at the remote sites. Grafton and Port Washington have been done. Belgium will be next. Upgrading at Mequon will not be done until the new tower project there is complete. According to Jim A. (K9QLP), that project has been delayed; antennas probably won't be moved over to the new tower until late winter or early spring. The 440 there has been fixed and is working. Germantown is a little hard to get into, so there's no telling when that will be done.

Wisconsin Parks on the Air last month was a fun event. The results haven't come in yet.

Ben E. (K9UZ), Secretary – This month's newsletter has been posted on the website which includes the September meeting minutes. Motion to accept the minutes was made, seconded and approved by the members.

**Committee Reports:**

There were no committee reports.

**Old Business:**

Ken (W9GA): Regarding the status of the Field Day tent modification, Ken was contacted by the K&D tent company about a month ago. They said they're hesitant to work on shortening the tent because they're afraid of the liability in case of damage that may occur during the work. As an alternative, K&D offered a used canopy tent similar to one that was used at the last Field Day. Ken has yet to go down there to look at the canopy tent and make an offer for it if it looks good, but plans to do so before winter sets in. The board has set a budget for the shortening of the existing tent, so Ken will try to work within that budget for a solution to the tent issue, whether shortening the tent as previously planned or going with the used canopy. Ken said he'll provide an update at the next meeting.

**New Business:**

There was no new business.

**Adjournment:**

A motion to adjourn was made, seconded and approved by the members. The meeting was adjourned at 9:08 PM.

**Attendance:**

There were 36 members and three guests present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## **ORC Meeting Agenda**

*November 14, 2018*

1. 7:00-7:30 PM – Network & Rag-Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Vic WT9Q, The new Flex Radio 6600 (SCR)
5. Fellowship Break
6. 50/50 Drawing
7. Auction – Stan Kaplan (WB9RQR)
8. President's Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JI)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)

11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report – Robert Escola (K4WTH)
13. Committee Reports:
  - A. FCC License Classes
  - B. Scholarship Project Review
  - C. Other
14. OLD BUSINESS
  - A. Field Day tent
15. NEW BUSINESS
  - A. ORC Scholarship Endowment to ARRL
16. Adjournment to ?

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### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

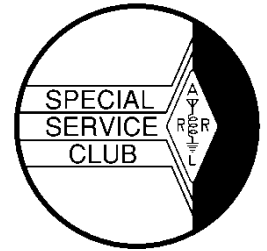
#### **Next ORC Meeting:**

Grafton Multipurpose Senior Center  
1665 7<sup>th</sup> Avenue, Grafton  
7:00 PM – Doors Open  
7:30 PM – Meeting Begins



# The *ORC* Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



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Volume XXX

December 2018

Number 12

## From the President

*de Kevin Steers (K9VIN)*



My, where has the time gone? It seems that years pass much more quickly the older I get. I am just completing two years as president of the club and it feels like it went by in a blink. Part of the reason it felt so quick is based on the amount of help I receive in keeping this well-oiled machine going. I am SO thankful for the volunteers who make this job easy, and I look forward to building on the recent accomplishments that we are all part of. If you have not taken your turn as President, I recommend volunteering on the Board, and removing the mystery from the role!

With the holidays upon us, not a lot of operating to speak of. Mostly listening around the bands, for short periods. I have enjoyed more 2M QSOs, now that I have a solid rig and antenna after many years of going without. And as I write this I notice that one of my dipole legs is coiled up on a snow drift, which gives me something to do tomorrow. I do want to make the time to listen to the bottom of the bands for CW at a

speed I can copy, to help me get better at copying. I guess cold weather is good for something ☺

Not much so speak of on the bench these days. More cookie and candy making with Mom than anything else. Soon, though, I will be testing the adjustments to my rotator, and praying for warmer weather. Until then, enjoy the snow, and stay on the warm side of the door, as Mr. Barrow is known to say.

Cheers and 73s,  
K9VIN  
Kevin



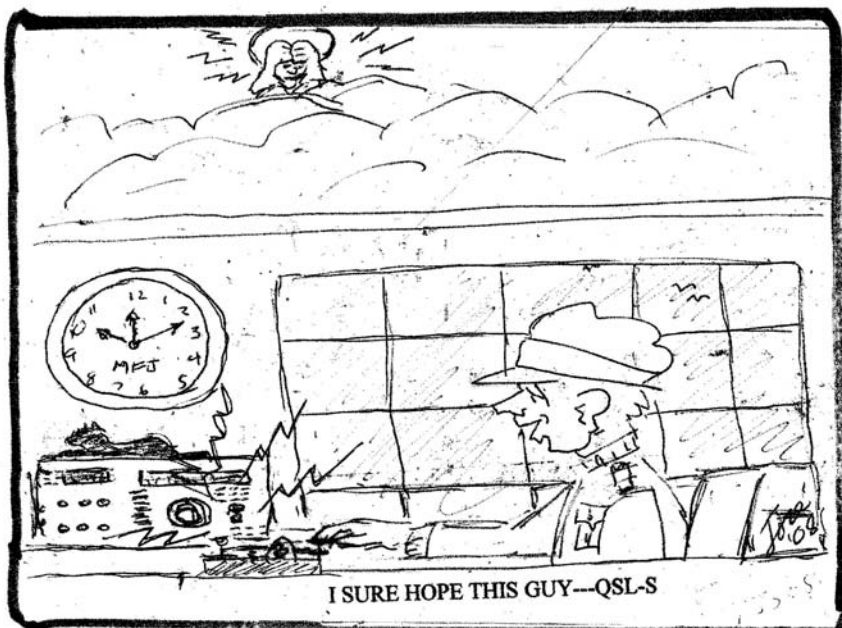
## Florian “Joe” Sturmburg, Jr., SK

Joe was a member of the ORC and eventually joined the Wisconsin Amateur Radio Club to avoid the longer night drives from Menomonee Falls.

Joe's interest started in 1935 with a crystal set he received as a Christmas gift. He graduated from Wauwatosa H.S. in 1943 and joined the Marines. He then served as a radio operator in combat in Saipan, Tinian and Okinawa. In peacetime he served as president of the 2<sup>nd</sup> Marine Division Association.

Joe was involved in chemical sales for over 35 years and served as President of the Wisconsin Chem Group. Upon retirement, Joe founded his own company, Mountain Technologies, and provided environmentally friendly lubricants.

In 1979, Joe got into HAM radio and he was quite content with his Novice license since it gave him all the frequency he needed for his CW operations and he collected well over 1000 QSL cards over the years. He is shown above at his station with his constant feline companion who stays warm on his FT990.



Joe's granddaughter has been greatly influenced by him, and she is presently studying for her Technician license.

As an ORC member, Joe was a frequent contributor of cartoons to the newsletter. To the left is his portrayal of a QSO with GOD and his hope for a QSL card. I am sure they have much to talk about, but Joe will be missed by all who knew him.

# DX'ing & Contesting

*De Gary Sutcliffe (W9XT)*



FT8 is probably the biggest thing to hit ham radio in the last few years. I never saw anything take off so fast in the hobby. The reasons are easy to understand. It allows stations to make contacts with low power and under poor conditions.

It is possible to make contacts about 24 dB below the noise level. If conditions barely allow completion of an FT8 QSO with your 100 watts, you would need to increase your power to about 2 KW to make that QSO on CW, and much more for SSB. FT8 operators learned they could work DX with small stations and wire anten-

nas. Actually, they could always work DX with such stations. An old high school friend of mine has 5BDXCC that he worked with dipoles and a vertical with 100 watts. FT8 just makes it easier. I have worked about 165 different countries in the last 18 months and know guys who have many more.

There are a couple of disadvantages to FT8. First, a QSO is pretty slow. It takes about a minute and a half to make a contact. Also, it is very limited in sending anything but the canned messages. There are upgrades to improve on these limitations.

The first one was Version 1.91, which at the time of writing is the currently latest version. It added a mode for DXpeditions and is called Fox & Hounds mode. It essentially allows DXpeditions to make multiple QSOs at the same time.

First of all, the DXpedition (Fox) is supposed to move off the standard FT8 frequencies. They will be transmitting in the lower 1 KHz of the pass band. The rest of us need to call the DX station above 1 KHz. When it recognizes you calling, it sends a message for you to transmit on a specified frequency below 1 KHz. You need to allow the WSJT program to control your radio to do this. It all happens automatically.

The QSO will progress more or less as usual, except the DX station might be sending a few exchanges and telling a couple of callers where to transmit in the same transmit period. Besides making multiple contacts at a time, the frequency-shifting reduces the problems of multiple stations calling on the same frequency, resulting in QRM and the need for repeats. I have worked a few DXpeditions with this mode, and it is pretty slick.

The other change is to allow more flexibility in sending messages. Earlier versions could not handle portable or weird long call signs. If for example, you worked W1AW/KH6, they would call CQ with the full call. You would enter the full call into the program window, but most of the exchanges would only transmit W1AW.

The new version also handles FT8 contest QSOs. There was an FT8 contest last weekend, mostly as a test to see how it worked. Apparently, it did work well, and some stations made

over 500 contacts. I was operating the 160M contest so I didn't try it out. The ARRL announced that FT8 would be a valid mode in the RTTY Roundup next month.

Version 2.0 will handle the messages and long call sign issues. It is in beta right now. The general release will be out about December 10. Everyone should upgrade when the general release comes out. The old version should not be used after December 31. Besides the new features, the new version is supposed to be about 1 dB more sensitive. I don't know too much about the message thing and how long they can be at this time.

Note that Version 2 is incompatible with older versions. I installed the beta version 2. I can see lots of signals on the waterfall, but it only decoded a few. That will change quickly after December 10.

The fall contest season ends this month. The ARRL 160 meter contest was on November 30-December 2. Propagation was pretty good, but the big storms that came through really raised the noise levels. The QRN was S9 +20dB all weekend, making it difficult to work any but the stronger signals. Even my Beverage and K9AY receive antennas, which are designed to reduce noise, didn't help much on Friday night. They did help a bit Saturday night.

This weekend is the ARRL 10M contest, on December 8-9, UTC. In local time it starts at 6:00 PM Friday night and runs for 48 hours. You can only operate 36 hours, but that will be a lot more than you will want to do. There will be little or no F-layer propagation since we are near the bottom of the sunspot cycle. There may be short openings to the Caribbean and South America. Signals will typically be weak.

What we want is sporadic E (Es) openings. Es is more common around May through July, but there is a second season in December and January. Unfortunately, it is not as good. Still, it can make the contest a lot of fun. My best contest hour ever came during a 10M contest at the bottom of the sunspot cycle. We got a great Es opening and I made 250 contacts in a single hour. The bottom line is you need to be at the radio a lot and be ready for when the band opens. You never know when Es will show up. Propagation to the south will come and go, although that is more likely in the late morning and during the afternoon.

The exchange for us is a signal report and our state. There are a lot of classes: CW only, SSB only, mixed mode, high power, low power, QRP, unlimited, etc. Check out the rules at <http://www.arrrl.org/10-meter> if you are interested. Remember, 10M is the only HF band Technician class hams can operate phone.

This has been one of my favorite contests since it started in the mid 1970s. I have only missed a couple. It is a lot more fun when we have a lot of sunspots when it is like a DX contest. This year will be like a VHF contest. If we get some good Es, it is possible to make 500 or more contacts. Or, if it is like last year, it will be very slow. Last year I made only 106 contacts and finished in second place in the US in my category.

DXpeditions are down in December. There will be some vacation style ones for hams traveling during the Holidays. There is one interesting one that may happen this month. Earlier this year, I talked about the DXpedition to Bovet Island (3Y). The group spent about \$800,000 to spend a couple of weeks there. When they got to the island, the weather prevented them from landing right away. Then they had engine trouble and had to leave for safety reasons. They spent a month on the boat in heavy Antarctic seas. It was not a pleasant trip.



There is a group of primarily Polish hams currently in Cape Town, South Africa preparing for an attempt at Bouvet. They are very secretive about it, dates, etc. Every few days they put out a press release. The last couple of releases mentioned that they were doing cold weather emergency training. They also announced they were looking for a couple more ops. You had to be able to be gone for at least a month and have cold weather experience. I don't think just living in Wisconsin is good enough for the last requirement. Let me know if you are interested and I will put you in touch with them.

It all seems really strange to me. This is a very difficult and expensive place to go, and an extremely dangerous place. The ops on the last one even discussed what they would do if someone died. It is not a place you go without extensive preparation and years of planning. Normally, expensive DXpeditions request donations to help with costs, but I am not aware of any such requests for this one.

Bouvet is #2 on the all-time needed list, following only North Korea. So, if they do pull it off, it will make a lot of DXers happy. Time will tell.

Wishing you all safe and happy times during the Holidays.

## **THE COMPUTER CORNER**

### **No. 250: Reminiscing – The ORC Computer Course.**

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664  
(262) 268-1949 [wb9rqr@att.net](mailto:wb9rqr@att.net)



Did you know that the ORC had a computer course? Yep, back in 2001 – 2003. Attended by notables such as Ken Christiansen (N9WH, SK), Nels Harvey (WA9JOB), Ed Rate (AA9W), Tom Ruhlmann (W9IPR), Kevin Steers (K9VIN), Dick Scarvaci (K9CAN, SK), Gabe Chido (was WI9GC), Vic Shier (now WT9Q), Mike Matthies (WJ9O, SK), Gregg Lengling (W9DHI) and others. One adult offspring of a member took the course and later became head of what we now call Information Technology at a major US corporation. The course seemed to fill a need for her in the work world, and for the others to help them understand and use computers.

Each of the eight sessions had a lecture, a lab, readings in an assigned text (Mueller's Upgrading and Repairing PCs) or other homework, and often there was a demonstration. For example, the first lecture was on hard drives, their types, master/slave, MBR, FAT, partitioning and formatting, and hard drive physical characteristics (platters, heads). The first lab had pairs of students (two to a machine) partition and format a previously wiped hard drive, and then add MS-DOS 6.22. Everyone had to show they completed the task by having the hard drive boot properly. The instructor demonstration was to show a running hard drive with its cover removed, followed by having the drive seek files at the beginning or end of a platter, so the students could see the heads moving to each site and watch the screen for what the heads found. For homework, each student took home a hard drive to completely disassemble it into its com-

ponents. At the next class, they had to be ready to explain what each component did in the function of the hard drive.

The second session was on components – motherboards, controller cards such as video and sound, serial and parallel ports, USB and Firewire. The lab was to completely tear down their lab computer, then build it back up again and demonstrate that it could boot up. Some troubleshooting was included. And the POST and CMOS setup was demonstrated.

Third, the lecture was on memory, SIMMs, DIMMs, type and installation, and memory management. The lab was to install Windows 98se and to make a startup disk. Also, to modify Windows to boot directly into DOS. The instructor demo was to bench setup a motherboard with a power supply and have it start, and demo checking voltages. Homework was to completely disassemble a CD-ROM drive. As was the case with the hard drive disassembly, students had to be prepared to explain what each part did.

The fourth week lecture was on virology. Definitions and types, scanners and the like. In the lab, student infected the MBR of their machines with a virus (!Yep!) and then proceeded to sterilize it with FDISK.

The fifth week was on floppy and CD-ROM disks – type, installation and formats. In the lab, students damaged a floppy and examined the results. They also examined the contents of the Win98 startup disk. Homework was to completely disassemble a floppy drive, and be prepared to explain what each part did.

Sixth was maintenance backups, surge suppressors, UPS units and advanced troubleshooting. In the lab, tools for troubleshooting were examined (SYSCHK for DOS and System Tools for Win98).

Next was sound cards and how they work. In the lab, students investigated the utility of sounds in computing, and they also became familiar with the Windows calculator.

The eighth lecture was on software – Windows 98 and other operating systems. In the lab, students used FDISK to bring their hard drive to its original, pristine state. Then they tidied up Stan's computer workshop.

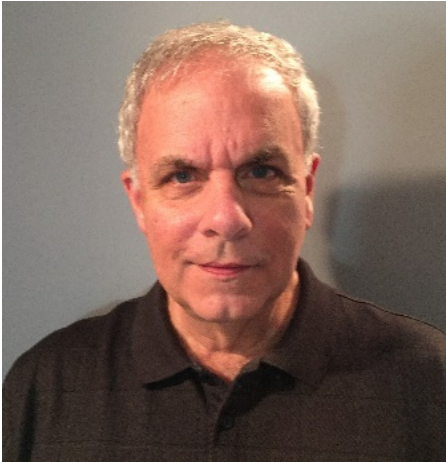
The required text was the only cost associated with the course, and students were free to get their book wherever. It was great fun for me and student feedback seemed to show it was worthwhile for those who attended.

Happy computing!



# Vintage Amateur Radio

de Bill Shadid, W9MXQ



I know, in this series of articles, I repeat my basic theme almost monthly – the concept of a table-top radio station as introduced by Collins in the late 1950's – the S-Line Separate Receivers, Transmitters and Transceivers. Last month we talked about the move by Heathkit to compete in this concept with the SB-Line. Truth be known, I was out of date order here in talking first about the SB-100 and its successors, the SB-101 and SB-102. In 1963, two years before the introduction of the SB-100, Heathkit introduced the beginning of the SB-Line of separate Receivers and Transmitters with the SB-300 Receiver. About six months after that introduction, Heathkit introduced the matching SB-400 Transmitter. So, with this article we continue the discussion of the extremely popular Heathkit "SB-Line."

Here is the operating Heathkit SB-401 Transmitter and SB-303 Receiver in operation at W9MXQ. They are shown with the SB-600 Speaker and SB-200 Linear Amplifier<sup>1</sup>.



Heathkit SB-401 Transmitter and SB-303 Receiver  
Shown with HDP-121A<sup>2</sup> Microphone SB-200 Linear Amplifier, and HD-1410 Keyer  
(W9MXQ Shack Photo)

The SB-401 and SB-303 superseded the original SB-400 and SB-300 models. Most differences are detailed in this article. Here is how the series progressed:

Model	Function	Introduced	Discontinued	Compatible With	Technology
SB-300	Receiver	1963	1966	SB-400/401 Transmitter	Mostly Vacuum Tube
SB-301	Receiver	1966	1970		All Solid State
SB-303	Receiver	1970	1976		
SB-400	Transmitter	1964	1967	SB-300/301/303 Receiver	Mostly Vacuum Tube
SB-401	Transmitter	1966	1975		

So, just like the station you see in my personal ham shack, pictured above, the oldest receiver model could be paired for transceiver use with the newest transmitter model, and vice-versa. You can also see that the first receiver preceded the arrival of the first transmitter and the last receiver was on the market longer than the last transmitter. This was common for the time. Receivers were generally a bit more popular in those days than transmitters. There were, at the time, companies like E. F. Johnson that made only transmitters – so one could assume that a buyer might buy, for instance, a Heathkit SB-301 Receiver to work with a Johnson Viking Invader<sup>1</sup> of the time.

Like Collins and Drake, Heathkit used a permeably tuned oscillator (PTO) for frequency control – unlike the capacitor tuned VFO used by Hallicrafters, Swan, Galaxy, National, and most other companies in the field at the time. Heathkit, however, called the PTO an LMO for Linear Master Oscillator. This was to emphasize their focus on the linearity of the oscillator circuit and associated mechanical system. As I have often mentioned as a reminder, this is a little confusing in terms of how the VFO is described. One refers to the variable frequency control system in a radio as the VFO – which is correct whether capacitor or inductor tuned. If you think this is confusing, you are right!

Like Collins, but unlike Drake and Hallicrafters, Heathkit used the same conversion scheme in their transceivers and their separate receivers and transmitters. So an ingenious ham could use an SB-300/301/303 Receiver to work together with one of the SB-100/101/102 Transceivers to transceive on the transmitter or the receiver LMO. This did require a bit of engineering on the part of the user – but such practice was common at the time. At the end of this article I will touch on one such experience with an SB-300 Receiver and an SB-100 Transceiver.

Here is the original product offered in this line:



**Heathkit SB-300 Receiver**  
W9MXQ Shack Photo



**Heathkit GD-125 Q-Multiplier**  
W9MXQ Shack Photo

This is the original Heathkit SB-300 Receiver, introduced in 1963. Like the Collins 75S-1, it was devoid of any kind of interference control system. In fact, Heathkit never added any such circuits to the SB-300 series. Collins, however, added Rejection Tuning (a Q-Multiplier) beginning with the 75S-3 model. Heathkit offered compatible Q-Multiplier products like the model GD-125 and other similar models.

Special Note: Connections to run the Heathkit GD-125 plug-n-play with the Collins KWM-2 Transceiver were on the KWM-2's chassis.

One exception to what I mention above about interference control was the unique offering of an Automatic Noise Limiter (ANL) circuit in the SB-301 Receiver only. This feature was absent from the SB-300 and the SB-303 Receivers.

The SB-300, as well as the later SB-301 and SB-303 all covered the high frequency (HF) spectrum (80 through 10 meters) in 500 kHz ranges. There were four such ranges to cover 10-meters. Since all the SB-300 and SB-400 series units were pre-WARC band units, they do not cover the 30, 17, or 12-meter bands. Unfortunately, the SB-300 lacked a way to monitor WWV to verify dial accuracy. That was corrected in the SB-301 and SB-303 with the addition of a 15.0 to 15.5 band position and resulting access to 15 MHz WWV. In my opinion, this was a design error – with 10 MHz being a much better choice for more opportunity to find WWV access in a wider variety of propagation. But Heathkit followed the design practices and features of Collins and the S-Line and its similar band position of a 14.8 to 15 MHz band position.

The SB-300 and SB-301 had factory assembled, vacuum tube LMO units included with the kits – no assembly of this critical device was required of the builder of the kit. In the last version, the SB-303, this pre-assembly practice was retained but, by then, the LMO was of solid-state design. The LMO design was remarkably linear with less than a 400 Hz error in linearity at any point within a 100 kHz range on the LMO. The SB-300 and SB-301 Receivers included a 100 kHz Crystal Calibrator. The SB-303 Receiver had a calibrator as well, but it was selectable 25 kHz or 100 kHz.

Special Note: A separate receiver would be necessary to make this alignment with the SB-300 model which had no access to WWV. This was a flaw in the SB-300 which was, as noted above, corrected in the SB-301.

In their time, the SB-300 series radios were competitively sensitive. The SB-300 and SB-301 were rated as having a better than 1uV for 15 dB signal plus noise-to-noise ratio. The SB-303, however, improved this performance greatly. It offered a better than 0.25 uV for 10 dB signal plus noise-to-noise ratio. This was in keeping with the performance improvement in a similar timeframe coming from the sister SB-102 Transceiver product. It is interesting to note that while this performance still exists in a SB-303 Receiver today, an older SB-102 Transceiver may not perform as well if its 6HS6 RF Amplifier Tube has been replaced. The 6HS6 tube is almost “unobtainium”<sup>3</sup> today and is often replaced with the 6AU6 tube used in the RF amplifier of the original SB-100 and SB-101 Transceivers (and the SB-300 and SB-301 Receivers). The solid-state devices used in the SB-303 are most likely still functioning.

All the SB-300 series radios (SB-300, SB-301, and SB-303) were very competitive in selectivity with 8-pole crystal filters possessing an excellent shape factor. They are effective even on today’s bands. Also, Heathkit offered a variety of optional CW and AM filter bandwidths. Today, such filters are still available from third party suppliers such as INRAD<sup>6</sup> and others. Heathkit brand filters often appear on the used market.

The SB-300 and SB-301 radios had 6 and 2-meter converters offered that could be mounted to the back of the receivers. These were the SBA-300-3 for 6-meters and SBA-300-4 for 2-meters. These were switched into the circuit with a switch accessible through the opening top cover of the cabinet on the SB-300. They were not accessible from the front panel. The SB-301 model improved this by adding a front panel control to access the converters. The SBA-300-3 and SBA-300-4 Converters did not last into the time of the SB-303 Receiver but the access to up to two of what had to be third party converters was accommodated and switched from the receiver’s front panel. A limited amount of 15 VDC current was available from the SB-303 rear panel to power an outboard converter. The SB-303 was solid-state and therefore unable to supply plate and filament voltage to an external converter. Heathkit apparently did not feel there was enough market demand to design and market solid-state converters to support the SB-303 Receiver.

Worthy of note was the addition of a RTTY mode position on the SB-301 and SB-303 Receivers. By this time, most RTTY operation was handled by AFSK (Audio Frequency Shift Keying) rather than true FSK (Frequency Shift Keying). The receiver’s passband in RTTY mode was adjusted for best offset to allow for effective audio recovery to feed an AFSK decoder.

I am always amazed by little things like the model breakdown of the SB-300, SB-301, and SB-303 models. What happened to the missing SB-302? Similarly, there was an SB-100, SB-101, and SB-102 Transceiver with the next model being the solid-state SB-104. What happened to the SB-103? I guess I assume there is a closet somewhere with those mystery models – never to go to production. I suspect that models were in transition between vacuum tube and solid-

state designs. Could there have been a later version of the vacuum tube SB-301 under development as an SB-302 that never happened? Did Heathkit take the solid-state leap and bring out the SB-303 instead? We have no way to know – but it is fun to think about.

While not part of this article, it is worth mentioning that there was a Short-Wave Listener (SWL) version of the SB-300 Receiver, the SB-310 (1967 to 1972), and a similar unit parallel with the SB-303 Receiver, the SB-313 (1972 to 1975).

The other part of this article is focused on the transmitter side of this product line . . .



**Heathkit SB-401 Transmitter**  
W9MXQ Shack Photo



**SB-400/401 Differences**  
See text for explanation.

The SB-400/401 is matched in size to the SB-300/301 Receivers and are all identical in size to their Collins competition.

Like the Collins competition and the SB-100/101/102 Transceivers, the SB-400/401 Transmitters use a tank circuit that is set to a narrow range of antenna loading range of 50 to 75 ohms impedance – designed to feed modern coaxial cable. So, like in the earlier article about the SB-100 Transceiver, and its successors, they did not work well with older Heathkit Linear Amplifiers, such as the HA-10 Warrior<sup>1</sup>. The final amplifier tubes used in the SB-400 and SB-401 Transmitters were two of the very popular 6146 or 6146A tetrode final amplifier tubes for an input power of 180 watts PEP SSB and CW. These radios were not really designed for AM operation<sup>4</sup>. Output power was a nominal 100 watts – dropping to 80 watts on 10 meters. Tuning of the driver and final amplifier stages of the transmitter section of the transceiver was relatively straight forward and easy even for today’s amateur operators to master<sup>5</sup>.

The major difference between the SB-400 and SB-401 Transmitters was the addition of convenience circuitry for switching between transceive operation and separate frequency control of the receiver and transmitter. Note in the illustrations above on the transmitter. To the right you will see the SB-401 front panel with a ganged control for MIC CW LEVEL and FREQ CONTROL (short for Frequency Control). Note the ability to switch between LOCKED (REC) and UNLOCKED. This is charted as . . .

FREQ CONTROL Setting	Frequency Control is Handled By . . .	
	On Receive	On Transmit
LOCKED (REC)	Receiver	Receiver
UNLOCKED	Receiver	Transmitter

Later in the evolution of radio convenience features, frequency could be controlled by the receiver or the transmitter or one could transceive using frequency control from either unit. These earlier radios had less flexibility.

The chart above reflects the operation of any of the three receivers (SB-300, SB-301, and SB-303) and the SB-401 Transmitter. This is not the same with the earlier SB-400 Transmitter. The



SB-400 Transmitter interconnects with the receiver but lacks the front panel switch. The above shown control has no concentric FREQ CONTROL function switch on the SB-400. One must open the top cover of the SB-400 to change a jumper cable. While identical in function, it was a huge difference in convenience!!

Two other differences were:

1. The SB-401 did not come with range crystals to determine band – it utilized the same crystals that were in the matching receiver. That was a move allowing a reduction in price of the SB-401 compared to the SB-400. But the crystals were offered optionally for a buyer not using the SB-300/301/303 Receiver.
2. The SB-401 added a sidetone level control to make CW monitoring more comfortable to a wider range of listeners with different preferences and hearing.

Also, it is important to say that the SB-400 and SB-401, unlike their competition, had internal power supplies. The SB-100, SB-101, and SB-102 Transceivers had an HP-23 model Power Supply usually tucked away inside the SB-600 Speaker. That speaker cabinet was empty (or unnecessary) when used with an SB-400/401 equipped station.

As I related in the article on the SB-100/101/102 Transceivers, the Heathkit SB-Line radios, when carefully built, were the equal of, or were superior to, any of the fully assembled competitive units on the market at the time – including the Collins S-Line.

Remember earlier in this article that I told you about a personal experience with an SB-100 Transceiver with an SB-300 Receiver? Some years ago, I owned an SB-100 Transceiver and an SB-300 Receiver. I did not have an SB-640 External VFO for the SB-100. The LMO in the SB-100, the SB-300, and the SB-640 External VFO were identical. So, to me it seemed that using the SB-300 Receiver as a separate VFO for the SB-100 Transceiver was feasible. I developed an external box that brought the SB-100 and SB-300 LMO output to a common point and routed the signals through a switch circuit that allowed:

1. Transceive with the Receiver LMO.
2. Transceive with the Transmitter LMO.
3. Receive with the Receiver LMO and Transmit with the Transmitter LMO.

There was also other switching involved for muting the receiver during transmit and the development of a system of a lighted pushbutton select switch bank and associated relays (rather than a rotary switch) to make this switching convenient. It worked for me for several years. I wonder if that switch box is still working out there somewhere??!!

The SB-Line internal circuitry allows many ideas to be applied to how the radios are used to suit one's own special needs. For a while I even toyed with dual receive with such a system. But, at the time, I could not master the mixing circuitry required.

Heathkit provided a complete line of accessories for the SB-Series Radios. The most popular accessories for the receivers and transmitters appear in the pictures, below:





**SB-200 1.2-Kilowatt Linear Amplifier<sup>1</sup>**



**SB-220 2-Kilowatt Linear Amplifier<sup>1</sup>**



**SB-600 Speaker Console**



**SB-610 Monitor Scope**



**SB-620 Spectrum Scope**



**SB-500 Two-Meter Transverter**  
(Heathkit Catalog)



**SB-630 Station Console**



**HD-1410 Electronic Keyer**



**SB-650 Digital Readout**  
(for SB-Series Radios)  
(Heathkit Catalog)

(Pictures, unless otherwise noted, are from W9MXQ Photographs)

These accessories have been used by Heathkit and other brand users for years and continue to be popular in ham stations to this day.

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

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is also the previous owner of several of my pieces of Heathkit equipment.

**Credits and Comments:**

<sup>1</sup>Subject of a future article.

<sup>2</sup>The HDP-121A used at W9MXQ is a bit later than the vintage of the radios in this article. You can see this in the beige color of the microphone body – a later color scheme used by Heathkit. The HDP-121 (without the “A” suffix) is green like the series of equipment covered here.

<sup>3</sup>“unobtainium” is a word used by collectors – in radio and other areas of interest – to indicate that there is no supply of the item left to find – or at least very, very difficult to locate. Collectors measure their success in their ability to find things that are called, “unobtainium.” I have several items in my collection that others would call, “unobtainium.”

<sup>4</sup>AM operation was not accommodated in the SB-400 and SB-401 Transmitter but was accommodated in the SB-300/301/303 Receivers. (AM mode on the SB-400/401 was covered in third-party modifications.) AM on the receivers supported the idea that the receivers were purchased by hams using other brands or models of transmitters – some of those were earlier Heathkit transmitters that did operate AM.

<sup>5</sup>Most ham radio operators of today are accustomed to solid-state final amplifiers. These radios do not require tuning of the tank circuit.

<sup>6</sup>INRAD, a part of Vibroplex Corporation, can be reached at <http://www.inrad.net> on the internet.

## Christmas Gift?

De Nels Harvey, WA9JOB

I was recently visiting in Seattle for Thanksgiving, when my son and I needed a starting capacitor for a fan. We went to a store called Vetco (Vetco.net). This store is across from Radio Shack, Olson Radio (Remember that one?), and Allied Radio. After browsing the shelves, which held Arduinos, heat shrink, scopes, wire, meters, Raspberry Pi tools, and much, much more, we bought an exact replacement cap. After checking out, an older gentleman motioned me over to another counter, where he showed me an emergency lithium battery pack and jump starter by Zamp Solar. It comes with adaptors for many computers, and has two USB ports. It



also has jumper cables to start a car!

My sister recently had a dead battery in her car, and someone pulled out one similar to this, and started her car! This one was going for \$70.00, so I bought one. Check it out on amazon.com. I'm very impressed with it, but don't ask how I got it home on the airplane.

73, Nels, WA9JOB

## Volunteers Needed for Monthly Programs

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 [w9ji@arrl.net](mailto:w9ji@arrl.net) to discuss your idea for a program.

**Ozaukee Radio Club**  
**November 14<sup>th</sup> Meeting Minutes**  
**De Ben Evans (K9UZ), Secretary**



President Kevin Steers (K9VIN) called the meeting to order at 7:32 PM. All the attendees introduced themselves.

**Announcements, Show-and-Tell, Bragging Rights:**

Tom R. (W9IPR): Finished his feed-thru for the basement window.

Jeananne (N9VSV): Congratulations to Robert and Gary for upgrading to General Class.

**Program:**

Vic (WT9Q) gave a presentation on his newly acquired Flex Radio 6600, which he can control remotely from anywhere. Later

in the meeting, he live-demonstrated the use of the remote interface to rotate his antenna at home.

**50/50 Drawing:**

Bob S. (WI9BOB) was the winner of the 50/50 drawing.

**Auction:**

Stan WB9RQR conducted the auction. Many items were sold, including a Kenwood 2-meter 5930 transceiver, a Dell Optiplex desktop computer with Linux Mint "Sylvia" installed, some "super-magnets", and a router.

**Officer Reports:**

Kevin S. (K9VIN) President – No report.

Pat V. (W9JI), 1st VP – No report.

Tom T. (KC9ONY), Repeater VP – Nels, Jim and Loren went to KK and LL and swapped out the remote site. Also, the noisy cable for the 440 repeater was replaced. Please use the repeaters; there are three of them and there is very little activity on them.

Ben E. (K9UZ), Secretary – This month's newsletter has been posted on the website which includes the October meeting minutes. Motion to accept the minutes was made by Bill S. W9MXQ, seconded by Stan WB9RQR and approved by the members.

Robert E. (K4WTH), Treasurer – The profit and loss report for October was emailed to everyone. A motion to accept the Treasurer's report was made by Stan WB9RQR, seconded by Kristian KC9TFP and passed by the members. Robert is going to collect all the members' updated information including address, phone and email address so that everyone's info is current for the upcoming 2019 ORC roster.

**Committee Reports:**

Tom R. (W9IPR), Scholarship – Tom gave a review of the history and operation of the club's Scholarship Fund (SF) Program and a proposal to restructure it. Below are the main points made in Tom's presentation and in responses to questions from members:

1. Over the last 20 years, the SF raised over \$80,000 primarily through the sale of donated

- equipment and parts, and \$22,000 has been given in Scholarship awards.
2. The SF was first formed in 1997 by donations totaling \$600 from Stan, Ed Frac and Dave Knaus (SK) plus matching funds. The original Scholarship Committee was composed of Stan, Dick Scarvaci (SK), Dave Knaus and Ed Rate.
  3. Half of the club auction proceeds go to the SF. The other half goes to OZARES.
  4. The objective of SF was to award \$1,000 per year to a Wisconsin youth who attends an accredited four-year higher education program and who has a ham radio license. In 2017, the amount of the award was raised to \$2,000.
  5. For the first 18 or 19 years, the Scholarship Awards were administered by the Foundation for Amateur Radio. Last year, the club opted to transfer the administration of the awards to the ARRL. The ARRL charges a fee of 1% of the award amount to administer the awards (for example, \$20 for a \$2,000 award).
  6. So far, no award has gone to an Ozaukee County resident. This is because the Scholarship Program is statewide and so far, no one in Ozaukee County has applied or qualified. It is planned to form a new committee to create a Youth Education Program that would support local STEM and other education projects and scholarships.
  7. The SF money is currently invested in CDs which in recent years have yielded very little return. The original purpose of putting the money in CDs was so that the money was safe; however, while the return years ago was at a decent rate, today it is near zero percent.
  8. So we asked ourselves, "With so much money (about \$65,000) in the fund, couldn't we get a better rate of return?"
  9. Several months ago, we started looking into the ARRL Foundation as an alternative to how the SF money is now invested. The money is given to the Foundation as endowments, for them to invest on our behalf. The typical investment breakdown for the ARRL Foundation is 60% bonds and 30% stocks.
  10. The ARRL specifies 4% as the goal on the rate of return. The performance in recent years of the Foundation fund was: 2015, -1%; 2016, +6%; 2017, +8%. Although there can be down years, in the long term, the return evens out to positive.
  11. As an example, an investment of \$25,000 yielding an average of 4% a year would grow by \$1,000 a year (enough for a substantial scholarship award). Thus, through the ARRL Foundation endowment, it's possible that our Scholarship awards, given the amount of money currently in the SF, can be self-funding in perpetuity. The awards can continue long after the club and its members are gone.
  12. The characteristic of an endowment is that it continues to award scholarships as per the last instructions by the entity endowing the money until the money is gone. As a club, we control the amount and frequency of the awards. The money, once endowed, can't be returned.
  13. Who manages the money? The ARRL treasurer started managing the Foundation investment two years ago. He has a doctorate in economics, and he answers to the ARRL board of directors regarding the investments.
  14. There is no fee for managing the investment. The only fee charged is 1% of the money awarded in scholarships as administered by the ARRL.
  15. The Scholarship Committee met and reviewed the ARRL Foundation as a possible instrument for the Scholarship funds. We agreed that we would be much better off moving our funds to the ARRL Foundation in the name of the Ozaukee Radio Club as an

endowment for the ARRL to handle and manage.

16. The endowment to the ARRL would have the following advantages: 1) it would assure that the ORC Scholarship would continue long after our members are gone; 2) it would remove the funds from the club domain and thus from the controversy of how the money is to be used; 3) the club would still have control over how the funds are awarded.
17. There will be a motion under New Business to move \$60,000 from the current Scholarship Fund to the ARRL Foundation over a period of about 20 months.
18. Interest in the Scholarship Program would increase if it were more locally oriented. With the money left over after the endowment, and with income to the SF from that point forward, we could use these funds to support STEM education in local schools or award scholarships locally.
19. The proposed endowment, if approved, would not jeopardize the club's 501(c)(3) status. Money earned by the SF going forward can be added to the Foundation fund at any time.

Gary B. (N9UUR) commented that the concept of the endowment sounds great, but the idea of one person managing the money is unsettling. Tom responded that the ARRL treasurer who manages the funds is responsible to the ARRL committee that oversees him, and that it's not uncommon for an investment fund to have one, sometimes two managers. Jim (K9QLP) commented that in organizations such as ours, there are members who have "sticky fingers" with regard to how the club's money is used; it is better to entrust it to someone else. Jim said that if we can't trust our money to a large and reputable organization like the ARRL, then why are we paying them dues?

#### **Old Business:**

Ken (W9GA): Regarding the status of the Field Day tent, Ken reported that K&D has offered for sale a used white canopy and is working to get sides for it. The plan is to acquire this new tent and bring it to the shed. K&D will be trying to keep the price around the same as the original price to modify the existing Field Day tent, which they decided not to do because of liability concerns. The poles and stakes from the existing tent can be used with the canopy. K&D volunteered to haul the existing tent back to the club shed. The canopy with the sides should be ready any day now.

#### **New Business:**

Pursuant to the proposal as outlined by Tom (W9IPR), Pat (W9JI) made the following motion: "The Ozaukee Radio Club (ORC) approve the creation of a scholarship endowment fund with the ARRL Foundation with an initial donation of \$20,000.00 from the Ozaukee Radio Club Scholarship Money Market Fund (-02). This initial donation would be followed with a \$28,000.00 donation derived from the 2 year jump up CD (-41) which matures 10/08/2019.

"These first two donations would be followed by a third donation of \$12,000.00 derived from the 30 month CD which matures 7/26/2020. The total donation to the endowment through 9/2020 would then be \$60,000.00.

"Any residual funds in the ORC Scholarship Account could then be used toward the endowment or local youth education programs/projects."

The motion was seconded by Stan (WB9RQR). Tom noted that the ORC Board of Directors unanimously voted in favor of the motion. A question was raised as to whether the proposal should be separated into three motions, one for each donation. Tom responded that if there was



a change of heart or the market goes south, a motion can later be made to reconsider or amend the action made at this meeting, but it's important that we approve the entire plan as proposed.

After much discussion, the members voted to approve the motion. Ken (W9GA) thanked Tom and Ed for their work on the Scholarship Program over the years.

**Adjournment:**

A motion to adjourn was made by Stan (WB9RQR), seconded by Vic (WT9Q) and approved by the members. The meeting was adjourned at 9:35 PM.

**Attendance:**

There were 34 members and one guest present at the meeting.

A copy of the attendance sheet is available upon request in PDF format. Please contact Ben Evans via email at [ben@evansengsolutions.com](mailto:ben@evansengsolutions.com) for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ  
Secretary

## ORC Meeting Agenda

*December 12, 2018*

1. 7:00-7:30 PM – Network & Rag-Chew
2. Call to Order & Introductions
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program: Scott Ruesch, W9JU, SATERN.
5. Fellowship Break
6. 50/50 Drawing
7. Auction – Stan Kaplan (WB9RQR)
8. President's Update – Kevin Steers (K9VIN)
9. 1<sup>st</sup> VP Report – Pat Volkmann (W9JR)
10. Repeater VP Report – Tom Trethewey, (KC9ONY)
11. Secretary's Report – Ben Evans (K9UZ)
12. Treasurer's Report – Robert Escola (K4WTH)
13. Committee Reports:
  - A. FCC License Classes
  - B. Elections
  - C. Other
14. OLD BUSINESS
15. NEW BUSINESS
16. Adjournment to ?

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465 Beechwood Drive  
Cedarburg WI 53012

### **First Class**

#### **Next ORC Meeting:**

Grafton Multipurpose Senior Center

1665 7<sup>th</sup> Avenue, Grafton  
Wednesday, Dec. 12<sup>th</sup>, 2018

7:00 PM – Doors Open

7:30 PM – Meeting Begins