



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

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Volume XXXI

May, 2019

Number 5

From the President

de Kevin Steers (K9VIN)



Welcome to spring in Wisconsin. I am looking forward to the ORC Swapfest and hope to see you all there. I will be there Friday noon, and could use help in setting up the vendor stalls.

Well, I finally have had some luck on 2 meters on my drive up north on Friday evenings. One evening, I passed another ham and motioned 146.52 to him, and low and behold, about 10 minutes later, he joined me on simplex for a 20-minute QSO (his wife needed to find his mic under the seat). More recently, about 50 miles south of Green Bay, I was not only able to hit the 147.12 repeater (antenna is up 600+ feet) and had a pleasant QSO with a bus driver killing time waiting for his Wausau track meet to end. What are *you* doing to drive 2-meter traffic?

My HF antenna on the car has challenges most of the winter, and I think I found the problem. There is an aluminum 90-degree PL-259 elbow at the bottom of my setup, and it hits concrete occasionally when aprons are steep. Well, it recently disintegrated from all the salt and water that got under my coax wrap. I am now looking for a steel PL-259 that will do a better job of sealing out the elements. Now it works like magic every time I press the tune button. I recently had a mobile contact with Madrid, and I am certain it was because of the other guy's stellar antenna and power, certainly not mine!

I picked up a dual-receive mobile rig at a recent ORC auction, and will be trying to use it as a cross-band repeater to see if I can simply use an HT on my pontoon to hit the house, and have the signal re-broadcast to a local repeater in northern Wisconsin. Then I can focus my attention on toying with HF on the pontoon. Maritime Mobile /MM!

Last note, please think about options for a replacement for our shed. We are losing three stalls of storage for trailers, and we are desperately seeking a new home for that field day equipment. Consider any empty garage space you may currently have.

Get on the Air!

Cheers and 73, K9VIN
Kevin

Silent Key: Robert (Bob) Krubsack, WQ9N



Bob was one of the very early members of the Ozaukee Radio Club and continued as a member after he moved to Brookfield. He was part of that era of Bob Truscott, Gary Sharbuno, Sus Musashi, Dave Knaus, Dick Scarvaci, Hal Geise, Roger Zaun, Tom Oehler and Leon Rediske, all of whom were instrumental in shaping the ORC into what it is today.

Bob passed away at age 88 due to complications of cancer. He was a graduate of Lutheran High and UW-Milwaukee. He retired after 35 years as an electrical engineer at Wisconsin Electric.

Beyond his amateur radio activities Bob was a volunteer at Habitat for Humanity, Meals on Wheels, Elmbrook Hospital, Lindenwood Farms and his church.

DX'ing & Contesting - New digital mode! FT4!

De Gary Sutcliffe (W9XT)



Well, just when you figured out FT8, a new one comes out. Joe Taylor, K1JT, along with K9AN and G4WJS, are at it again, this time with FT4. FT8 has been a boon for making contacts when conditions are unable to support traditional CW or SSB contacts. It has opened the door to successful DX'ing for hams with minimal stations.

It is not uncommon to work stations close to 20 dB below the noise with FT8. With JT65 I have worked moon bounce stations with signals approaching 30 dB below the noise. You might be able to detect a signal by ear at around -12 dB, and a few very good ops can copy slow CW down to about -10 dB, so you can see that run-of-the-mill FT8 signals are very, very weak. One of the ways this is accomplished is by low signal rates and long transmission periods, along with accurate timing and short, fixed format exchanges and forward error correction techniques.

These techniques are okay for casual contacts and picking up new DXCC countries. What didn't work so well with FT8 was its use in contests when you want to make contacts quickly. The long transmission periods meant low rates. FT8 was allowed in a recent RTTY contest. Although preliminary indications showed more ops were using FT8 than RTTY, RTTY operators had much higher scores because they could work stations faster, and thus make more contacts. FT4 is designed for contesting. It fixes some of the issues that hindered FT8 in contests.

The transmission time sequence for FT4 is 6 seconds compared to 15 for FT8. It uses 4-tone frequency shift keying. The bandwidth is only 90 Hz, less than the 500 Hz or so for FT8. It is

much less than the 2 KHz or so bandwidth of conventional RTTY. The downside is that the shorter period means that it won't dig into the noise as far. Still, it will be about 10 dB better than conventional RTTY, helping smaller stations. The narrow bandwidth will also help smaller stations because the band won't be dominated by a relatively small number of big guns. All in all, it should be possible to make around 100 QSO/hour under the right conditions with FT4.

A beta version was released on April 29. I installed a copy that night and found some other stations running it on 14.080. I made a couple of contacts. Since I am used to 15 second transmission periods, it was kind of weird to see the QSOs completed so quickly. One thing I noticed was that when I heard a station calling CQ and double clicked on his call, I had to call him a few times before he came back to me, even though no one else was calling. I'm sure that will be fixed by the time of general release in the middle of July.

I'm sure this is going to be a lot of fun in contests. It may also become a partial replacement for FT8 in casual operation. It will be a tradeoff between ops who want to make a lot of contacts versus work weak ones.

If you are interested in testing FT4, you can download a copy from the WSJT-X site. Since it is a pre-release version, I put it in a directory separate from the last general release. Practice "contest" sessions for FT4 are scheduled for May 9, May 14 and June 5 at 0100 UTC on 7.090. Before trying it on the air, read the info at http://physics.princeton.edu/pulsar/k1jt/FT4_Protocol.pdf. K1JT also gave a talk at a radio club recently where he talked about FT4 and some other interesting things. You can view it at <https://www.youtube.com/watch?v=2Pd7zB40xdY>. It is well worth watching even if you are not interested in getting on FT4.

May is not a big contest month. The one big one is the CQ WPX contest. It starts at 0000 UTC on May 25 (7:00 PM Friday, May 24 local time) and ends 48 hours later. Single ops can only operate 36 hours. You send the signal report and a serial number. The multipliers are the call sign prefixes, like W9, WA9, WB9, K9, KA9, KB9, etc. There are a lot of them so don't spend much time trying to work a strange one. There are plenty of common ones that are worth just as much. QSO points depend on if the QSO is between stations in the same country, different countries on the same continent, or separate continents. It also depends on the band. Check out the rules at <https://www.cqwpw.com/rules.htm> for full details. This can be a fun contest, but I have a hard time spending a lot of time on the radio on a holiday weekend at the start of the summer season.

Another interesting May operating event is Armed Forces Day. This event allows hams to contact military stations. The military stations will transmit on frequencies outside the ham bands. We, of course, must stay inside our bands. Armed Forces Day is May 18, but the radio event will be held on May 11 to avoid the Hamvention®. You can get a list of the military stations on the air at <http://www.usarmymars.org/events/armed-forces-day>. They will announce what frequency they will be listening to.

DXpeditions are a bit light this month too. The Maldives in the Indian Ocean will be activated by a pair of Japanese hams using separate 8Q7 calls May 7-10. They plan on using CW and FT8 on 160-8M.

Several single op efforts are often part of a vacation or business trip, and operation is often sporadic. I usually don't go into detail on them for that reason.

During May, we get some interesting propagation over the pole to Asiatic Russian and a number of the former Russian republics on 20 meters. I spent many fun nights on CW working one station after another. It would start at around 10:00 PM or so local time and would sometimes last

well after midnight. There seemed to be an unending supply of stations waiting in line to work me. But, alas, that was at times when we had sunspots, so it has been a few years since I did this. Well, FT8 to the rescue! I have been on a couple of nights recently and had the same thing happen, but with FT8 and its ability to open bands closed to other modes. I worked one Asiatic Russian station after another, along with a few Kazakhstan and some other former Russian republics. Even with FT8, the openings don't happen every night but check the band once in a while, and you might hit a good night.

The other big thing in May is when the spring sporadic E (Es) season starts. This allows QSOs on 6 meters to go out to about 1200 miles. Es does not require sunspots to occur. Sometimes there will be multi-hop conditions, and it is possible to work into South America and Europe. Signals can be strong on single hops, but multi-hop paths can be weak and short lived. The different Es patches must line up just right for it to happen. W9GA compares them to a multiple ball pool shot.

FT8 makes it much more possible to work the multi-hop QSOs. I originally got on FT8 to work new countries on 6M. I had been stuck at about 50 countries since the early 2000s, the last time we had enough sunspots to support F2 propagation on the band. I hoped this might be my shot to complete DXCC on the band. Last year I worked 19 different countries on 6M with low power and a small three element beam. I'm looking forward to picking up some more this spring.

If you don't have 6M, you can also do it on 10M. That band will be open more often than 6M. If you are chasing WAS on the band, this will be a good place to start. If the band opens up well, drop down to CW and SSB. You will be able to work stations faster along with rag chew contacts.

So, even without a lot of DXpeditions and contests, there is a lot to try out this month.

See you on the air.

THE COMPUTER CORNER - No. 254: IPv4 and IPv6 (revisited)

Stan Kaplan, WB9RQR 715 N. Dries Street Saukville, WI 53080-1664
(262) 268-1949 wb9rqr@att.net and Ben Evans, K9UZ, Secretary, Ozaukee Radio Club



Last month, our ORC Secretary Ben Evans (K9UZ) mentioned a problem he had recently with getting into a site he was supposed to have access to. It seems that the server that gives access was looking at his IPv6 address and not his IPv4 address. It turned out that server wanted an IP something like this: 198:103:99:16:33:100:17:3, an IPv6 number. Instead, the server got an IPv4 address, like 208.101.7.150. Basically, his computer just gave the wrong address to the server. Ben did some additional research and sent me the following in a recent email. This clears it up, partially, and gives us all a way to check our IPv6

connection (see below). Thanks, Ben, for the extra work. You deserve the by-line I have added for you.

Stan: Earlier this week, I was again prevented from accessing the administrator part of our ORC website because something changed my IPv6 address. Brian (N9LOO) suggested disabling IPv6 connections, which I did, and my connection was immediately restored.

I researched this problem as much as time allowed, and apparently IT administrators have run into internet connectivity problems ever since IPv6 began to be used. Their short-term solution is to disable IPv6 on their computers, just as I did on mine.

I don't know who or what is to blame. Microsoft Windows? My router? My ISP (which is Spectrum)? Or maybe the webhost?

Apparently, the computer user that uses the internet only to browse is unaffected. I should add that Microsoft discourages Windows computer users from outright disabling IPv6 connections because doing so might cause certain components of Windows not to function properly in addition to losing access to websites that use only IPv6. Microsoft prefers that you download a fix from their website which tells your computer to "prefer IPv4 over IPv6". You can test your IPv6 connectivity and check your IPv6 address (if you have one) by going to this website: <https://test-ipv6.com/>.

Although most of us have dynamic IP addresses for the old Version 4 protocol, it sometimes happens that they don't change very often. My IPv4 address has been the same since I took over the club website administrator duties, 15 months ago. However, IPv6 addresses change regularly, as this evidently is a privacy feature of the new protocol. But what website administrator wants his/her connection to the webhost server to be constantly interrupted by IPv6 address changes? This requires changing the IP address specified in the administrator directory in order to maintain access to the administrator part of the website.

Before IPv6 takes over completely, although it may not get there for some years, we can only hope administrators get useful guidance from someone, anyone (be it Microsoft, our ISP or our webhost) to keep us connected.--Ben

Happy Computing.

Vintage Amateur Radios

de Bill Shadid, W9MXQ



This month we are moving back to a classic brand in ham radio through the early 1980's, the R. L. Drake Company of Miamisburg, Ohio. Drake, widely known for the very popular R-4 and T-4X series separate receivers and transmitters and perhaps even more so for the TR-3 and TR-4 series Transceivers. We have covered those models in earlier columns¹. This month I want to talk about one of Drake's last high frequency transceivers and their first one using all solid-state circuitry. This would be the very popular model TR7.

The TR7 was rather revolutionary in appearance back at the time of its introduction in 1977. It had clean lines, an uncomplicated front panel, and all solid-state design with a very durable final amplifier. Compared it to its competition, the TR7 was a step in a new direction:



Drake TR-7 Transceiver

(One of two working TR7s – plus a TR7A – in the W9MXQ Collection)

Drake was well known not only for its receivers, transmitters, and transceivers but also for a fine line of accessories to complement their radios and those of other manufacturers as well. Drake's Linear Amplifiers – like the L-4 and L-4B models – were known for being some of the best in the industry. They also offered a line of Antenna Tuners – like the MN-4, the MN-4C, and the MN-2000. As you have seen in earlier installments about Drake equipment¹, these accessories also included Dummy Loads, and Remote Antenna Switches. Drake even entered the VHF and UHF-FM transceiver market with their own designs as well as equipment from partner in Japan. Some of you may remember such radios from Trio (Kenwood) (TR-22, TR-22C, TR-33C, and TR-72) and Marker Luxury (ML-1).

Drake marketed a complete line of accessories to match their new solid-state TR7 Transceiver. They duplicated the accessories they manufactured in the days of the R-4 Series Receivers, The T-4X series transmitters, and the TR-3 / TR-4 / TR-4C series transceivers. Here is a look at a fully equipped Drake TR7 station that is typical of the late 1970's and early 1980's. This station is in regular operation, today, at W9MXQ:



Drake TR7 Line Station with Accessories

Left to Right – MN-2700 Antenna Matching Network, TR7 Transceiver, RV7 External VFO, and Drake L7 Linear Amplifier

Also Shown Left to Right – P75 Phone Patch, WH7 Wattmeter, MS7 Speaker SP75 Speech Processor – along with 7077 Desk Microphone (W9MXQ Collection)

Not shown above in the complete station picture are other accessories that complimented or replaced what is shown. The 300-watt Drake MN75 Antenna Matching Network was an alternative to the 2,000-watt MN2700. The 1,000-watt Drake L75 Linear Amplifier (with an internal AC Power Supply) was an alternative to the 2,000-watt L7 (that had a floor mounted AC Power Supply). Drake also marketed a PLL based, external VFO called the RV75 that was a step ahead of the RV7 in stability. See pictures, below:



Other Drake Accessories:

- Upper Left: Drake L75 Antenna Matching Network
- Above: Drake L75 Linear Amplifier
- Left: Drake RV75 External VFO

Going back a bit, now, by the mid-1970's the domestic (USA) manufacturers were getting concerned about the move to all solid-state radios – at least in the concept. By that time, Swan/Cubic, Drake and Heathkit were the market leaders. Collins was playing along with successful, if dated, designs. At that time, I was a Drake user with a new R-4C Receiver and T-4XC Transmitter. But those radios were aging in design – even though the much touted (to this day) R-4C Receiver a mostly solid-state design and very competitive. In the mid-1970's, Drake was working hard to replace its aging TR-4 series transceivers. The Drake TR-4C, the last model series of that transceiver, did not share the advanced design of the separate R-4C and T-4XC radios. Drake was fast losing market share to more modern designs from other manufacturers.

The TR-4C series was a mostly vacuum tube design with the only real significant move being the change from a vacuum tube permeably tuned VFO in the TR-3 to the more modern and stable solid-state version in the TR-4 line. To be sure, Drake was trying to keep the TR-4 competitive as they came out with a version (TR-4CW) that added a switchable CW Filter, and later a version (TR4CW/RIT) that added Receiver Incremental Tuning to make operating more convenient.

Drake was seeing significant “feature competition” from the Japanese products coming from Kenwood, Yaesu, and soon from Icom. The result was a revolutionary design – the concepts of which are with us to this day from many manufacturers.

The step to a complete solid-state design was fraught with risk, or so Drake thought. Fears of problematic and/or failed designs that had already been seen on the market from others were in front of Drake’s management. Drake’s engineers were heavily into vacuum tube designs and lacked the expertise to give the company’s management confidence in managing the risk of such products. Those issues were seemingly solved by hiring the Designer of the solid-state Heathkit SB-104 Transceiver from the Heath Company as well as another fellow who would later be the founder of Cincinnati Microwave (maker of the Escort Radar Detector) to lead the TR7 design^{2, 3}.

Drake’s TR7 final amplifier was exceptionally well designed and stood the test of time. Likewise, the matching PS7 AC Power Supply was a massive analog unit that was virtually indestructible – and very heavy. Both the TR7 and the PS7 could be equipped with the plug-in FA7 Fan unit to allow the transceiver and power supply to run full power, continuously.

The real claim fame with the TR7 was “Up Conversion” in the radio’s i-f circuit. The TR7 has a first i-f in the 40 MHz range that virtually eliminated “birdies” in the conversion process and even eliminated the old 9 MHz i-f so common in early SSB designs that were the reason that 160-80-40 meters were lower sideband and 20-15-10 meters were upper sideband. (That is, either side of a first i-f of 9 MHz, if you will.) If you ever wondered why we have the LSB and USB split the way we do, you heard the answer here! You might also credit McCoy Electronics – makers of some of the first commercially available 9 MHz center frequency Crystal I-F Filters used in very early SSB Transmitters. There will be more about the TR7 conversion scheme in a follow-up article.

As the market for the TR7 matured and the competition was increasing, Drake made a marketing decision to move to the TR7A model. There was essentially no difference from very late TR7’s and the newer TR7A – and actually, for some reason lost to time, the two were made in parallel for a time. The TR7A was a TR7 with the following options made standard equipment (as noted by WB4HFN⁵):

1. The NB7 Noise Blanker was included.
2. The SL500 500 Hz CW Filter was included.
3. A by-pass resistor was added to allow for AM operation using the Roofing Filter for bandwidth control.
4. A surge protector was added to the receiver front end to protect the radio from static charges.
5. An unused Phono Connector on the back panel was wired to provide low level audio input.

Here are a couple of pictures of the TR7 and TR7A models to show the minimal outward difference between them:



Drake TR7 HF Transceiver

(W9MXQ Collection – and like the one in the W9DYQ Collection)

(This W9MXQ TR7 is mid-production cycle – the W9DYQ TR7 is very late in the production cycle)



Drake TR7A HF Transceiver

(W9MXQ Collection)

If you noted that nothing is different besides the model number (upper right-hand corner) you would be correct. (Well, you sharp eyed readers might notice the two radios are on different bands and modes!!) For the most part – with a few exceptions, like an updated and more linear PA Pre-Driver and a redesigned Noise Blanking on later TR7's and all TR7A's. All TR7's from the first ones to the very latest TR7A's are nearly identical with those exceptions – other than standard equipment as described earlier.

It would be incorrect in these model and time comparisons (that is, TR7 compared to the TR7A or a very early TR7 to a very late TR7) not to consider that technical updates are done with any brand or model of radio without announcement. So, it is incorrect, across the board, to assume that an early serial number TR7 is the performance equivalent of a very high number TR7 or a TR7A.

As a user of several TR7's and TR7A's in my time collecting it appears correct to look for a unit perhaps several thousand into the production cycle. But, I must also say I have known users of very low serial numbers that experience no problems. Serial numbers of the TR7 do not end and restart with the TR7A. They progress as if the model never changed from one to the other. There appear to have been 10,800 to 10,900 TR7's built with another 1,400 to 1,500 TR7A's following that. So, while TR7's in general are perhaps easy to find, it may be just as true that TR7A's are a bit rare. This is according to information on the WB4HFN website⁵.

At the time of the TR7's introduction the TR-4 series were certainly highly respected products in the marketplace. They may have been old school designs, but they worked very well and had a following that gave credit to the Drake name. To give you an idea of how Drake met that product challenge – that is, competing with its own existing reputation, here is a chart to show the differences in common specifications between the very popular TR-4 / TR-4C and the TR7 / TR7A:

Specification	TR-4 / TR-4C	TR7 / TR7A
RF Power Input (SSB)	300 watts PEP	250 watts PEP
RF Power Input (CW)	260 watts (Key Down)	250 watts (Key Down)
RF Power Input (AM)	100 watts (Carrier)	80 watts (Carrier)
Sensitivity	<0.5 uV for 10 dB S+N/N	<0.5 uV for 10 dB S+N/N
Frequency Coverage	80-10 Meter Ham Bands (No WARC Bands)	160-10 Meter Ham Bands (With WARC Bands) (0-30 MHz Receive Only)
Duty Cycle	Not Specified	Continuous (with FA7 Fan)
Selectivity ⁶	2.1 kHz (Standard)	2300 Hz (Standard) 1800 Hz (Optional) 500 Hz (Optional) 300 Hz (Optional) 4000 Hz (Optional) 6000 Hz (Optional)

Drake changed its product nomenclature with the release of the TR7. See that there is no “dash” in the model number – that it, it is TR7, not TR-7. Drake struggled with this nomenclature internally because it is not unusual to see the old “dash” appear in Drake literature and even some advertising with the TR7 or its accessories. So, where the old model was the TR-4, the new model was the TR7. Where we would see model number MN-2000 written, we see model MN2700 in the new model. This went on throughout the model line. Also, Drake had a lower cost HF transceiver (a subject for next month) called the TR5. Drake tried in many cases to show accessories that were intended for both lines by using model numbers showing both the “7” and the “5” in the number. That gave us the RV75 External VFO, the MN75 Antenna Matching Unit, the L75 Linear Amplifier, the SP75 Speech Processor, etc. But other products intended for both lines were not so marked. That would include, for instance, the L7 Linear Amplifier that worked perfectly well with the TR7 or the TR5 Transceivers. Or, similarly, the RV7 External VFO that worked with both models. It is pretty darn confusing if you ask me! (But, alas, nobody ever did ask me!)

Next month we will do a part 2 of this story with information about:

1. More functional details on the TR7 line – including its conversion scheme.
2. Information about the TR5 Transceiver.

Special thanks go to Bob, W9DYQ⁷, for his proof reading and reference to his very late production TR7. Bob is also owner of a fine set of Drake C-Line separates. I appreciate that you read my articles. Remember that I am open to questions and comments at my email address, W9MXQ@TWC.com.

Reference Notes:

1. See previous articles in the ***Ozaukee Radio Club Newsletter*** about the Drake R-4 and T-4X (August 2018), the Drake R-4C and T-4XC (September 2018), the Drake TR3 and TR-4 (June 2018), and the one about the Drake TR-4 and TR-6 (July 2018).
2. Book Reference: ***A Family Affair, The R. L. Drake Story***, by John Loughmiller, KB9AT. ©2000 by Loughmiller.
3. A small note about John Loughmiller, KB9AT. I (W9MXQ) once illustrated and did schematic diagrams for articles in ***Ham Radio Magazine***. In that past life I have done such documentation for articles that Loughmiller did for that magazine.
4. “Antenna Matching Network” was Drake’s fancy name for Antenna Tuner.
5. http://www.wb4hfn.com/DRAKE/DrakeArticles/TR7_Comparison_Article/TR7_Identity-03.htm
6. The TR-4 Transceiver had only the 2100 Hz filter for all modes. The TR-4CW and later TR-4CW/RIT had an added, selectable 500 Hz CW Filter. The TR7 / TR7A Transceivers allowed for the SSB Filter (2300 Hz) (Standard on all models) and any of the five other (optional) filters shown up to a total of three. There are two operating TR7 Transceivers at W9MXQ plus one TR7A. One TR7 and the TR7A have optional filters including the 1800, 500, and 4000 Hz units. The other TR7 has no options installed at this time – this unadorned TR7 is the one pictured at the opening of this article.
7. Bob, W9DYQ, and I have had a strong personal, radio, and family relationship for most of our adult lives. We collect vintage radios in tandem and openly share items that, at any one time, seem of most interest to one or the other of us. Bob, and his wife, Deb, KAØPBV, are accomplished CW DX’ers. During our too infrequent visits together, I am sure my nonham wife, Jean, feels she is soundly outnumbered! At least at my QTH, there are no arguments over who gets access to the radio! Adding to this closeness, my early career work was with Bob’s father, Ted, the original W9DYQ. My wife, Jean, worked with Bob’s mother, Elizabeth, for many years.

Project of the Month© *DDS-VFO Project*

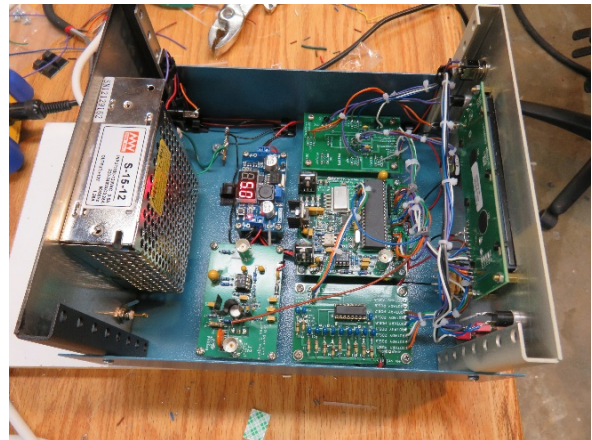
de Gary Drasch, K9DJT and Chuck Curran, W9KR



Our contributor this month is Chuck Curran, W9KR. He did a beautiful job in constructing a solid state VFO for his Collins KWM-1 which he describes below.

I have always enjoyed operating the older vacuum tube Ham gear from the 1950 to 1970 time period. The big drawback I was constantly facing was needing to have the gear turned on and warmed up, so that it wasn't drifting all over the place. Most of the gear required no more than 25-30 minutes to become stable, but my Gold Dust Twins would drift, especially the transmitter. It would take up to eight hours for it to calm down and stay on one frequency! That was my favorite equipment, so a solution was needed to this problem.

A discussion took place in early March during several emails on the Collins Collectors List Server. It was on several people who had made circuit boards to allow Hams to build a modern, solid state VFO that was drift free. One person mentioned was Jim Hagerty, WA1FFL, who had designed a nice VFO and sold circuit boards and parts he had bought in volume. Just Google WA1FFL and see his web site. I thought about it and then decided to build a new VFO for my Collins KWS-1 transmitter. I had to do this without modifying the KWS-1 in any way, otherwise it would become almost worthless to a true, died in the wool Collins collector. Collins made this new VFO goal very easy. All I had to do was pull out the KWS-1 VFO tube, then plug the new VFO into a BNC test jack located on the output of the original tube based VFO! Very easy with no modifications required.



The above is a picture of the completed VFO, which I completed the week of April 15th. This VFO is built on one circuit board, but since I wanted to drive vacuum tubes, needed a larger display, and wanted to cover 80-10 meters, the result was a five circuit board assembly. The resulting assembly is shown below, a few days before it was completed.

The construction effort was fun and at the end it actually worked, with a measured drift of 0.31 Hertz over a 6-hour period. That check was done with a HP 5335A Frequency Counter. I will be doing a club presentation later this year, showing all of the steps required to build this unit. In the meantime I will be using it when I don't have the time to let the original VFO warm up!

UPCOMING EVENTS

Membership meeting – May 8, 2019

ORC Monthly Programs

May – Gary Sutcliffe W9XT – Construction Techniques for Electronics Projects

Breakfast at Jim's Grille – Saturdays at 7:00 AM

A Notice from Tom, KC9ONY

There will be a FREE Storm Spotter Training Class at HRO Milwaukee. This class is for Hams Only! No registration needed, but again for **Hams Only**.

Presented by: Milwaukee Area Skywarn Association
<http://www.mke-skywarn.org/schedule.htm>

Where: Ham Radio Outlet, 5710 W. Good Hope Road, Milwaukee, WI
<https://www.facebook.com/HROMilwaukee>

When: Saturday, May 11, 2019, 1 pm - 3 pm, including 10 - 15 minute break

Class conducted by Skip Voros WD9HAS and Gregg Schulz W9AWX. Other training events are being scheduled around the area by the National Weather Service. You can find local NWS training events here: <https://www.weather.gov/mkx/spotter-schedule>



Amateur Radio Operators Only

Storm Spotter Training Class
May 11th, 1:00 PM (Saturday)
HRO/Ham Radio Outlet Store
5710 W. Goodhope Rd, Milwaukee, WI

Instructors: Skip/WD9HAS and Gregg/W9AWX
2 Hours, including 10-15 Min Break

The advertisement features a blue background with a black banner at the top. Below the banner, the text is centered and uses various colors and bolding for emphasis. At the bottom, there are four images: a Kenwood handheld radio, the Milwaukee Area Skywarn Association logo (a stylized orange and black eye shape), the Amateur Radio Emergency Service logo (a red circle with a white diamond and lightning bolt), and a Kenwood car radio with a microphone.

Peek at the 2019 ORC Spring Swapfest



Ozaukee Radio Club

April 10, 2019 Meeting Minutes

de Ben Evans (K9UZ), Secretary



President Kevin Steers (K9VIN) called the meeting to order at 7:36 PM. All the attendees introduced themselves.

Announcements, Show-and-Tell, Bragging Rights:

Bill S. (W9MXQ): Found a new Drake TR7A still in the box.

Jim A. (K9QLP): Contacted Tom (W9IPR) at Sun 'n' Fun on 14.245.

Kevin S. (K9VIN): While driving north on I-43, passed a ham, directed him to 146.52 and had a 20-minute QSO. The man was a friend of Leon Rediske (K9GCF/SK).

Program:

Peter C. (W0NG): Peter discussed and showed pictures of the grab-and-go ham radio kits that he put together. Peter also talked about how he converted portable gasoline generators to propane.

50/50 Drawing:

There was no 50/50 drawing.

Auction:

Stan (WB9RQR) conducted the auction. Many items were sold, including a ladder line, Cat 5 cable, a power/SWR meter, a "can-tenna", and three mag-mount antennas.

Officer Reports:

Kevin S. (K9VIN), President – Nothing to report.

Pat V. (W9JI), 1st VP – No report.

Tom T. (KC9ONY), Repeater VP – Nels, Jim and Tom checked out the Mequon receiver site. There was a bad hum in the audio, probably induced by a power supply somewhere in the shack. Nels did what he could to reduce the noise, but another visit is necessary. The Germantown site isn't working. A visit will have to be coordinated, as this site is on private property.

Ben E. (K9UZ), Secretary – The minutes from the March meeting are in the newsletter. Motion to accept the minutes was made by Bill S. (W9MXQ), seconded by Gary D. (K9DJT) and approved by the members.

Robert E. (K4WTH), Treasurer – Ben (K9UZ) gave the Treasurer's report, as Robert wasn't in attendance. Stan (WB9RQR) moved to accept the report, which was seconded by Bill S. (W9MXQ). The motion was approved by the members.

Committee Reports:

Spring Swapfest – Kristian (KC9TFP) said the swapfest plans are ongoing. Jim (K9QLP) pointed out that the next ORC meeting isn't until after the swapfest, so planning has to be completed with a meeting of volunteers if necessary.

Old Business:

There was no old business.

New Business:

Tom T. (KC90NY): The severe weather test alert scheduled for Thursday is postponed until Friday due to a severe weather threat on Thursday. Maker Faire Milwaukee runs from September 13 through 15, 2019. It would be a good idea to have a ham radio booth there.

Adjournment:

A motion to adjourn was made by Nels (WA9JOB), seconded by Stan (WB9RQR) and approved by the members. The meeting was adjourned at 9:15 PM.

Attendance:

There were 28 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 for a copy.

Respectfully submitted,



B. Benjamin Evans, K9UZ

Secretary

ORC Meeting Agenda

May 8, 2019

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order – Kevin Steers (K9VIN)
3. Introductions
4. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
5. Program: Gary Sutcliffe W9XT – Construction Techniques for Electronics Projects
6. Fellowship Break
7. 50/50 Drawing
8. Auction – Stan Kaplan (WB9RQR)
9. President's Update – Kevin Steers (K9VIN)
10. 1st VP Report – Pat Volkmann (W9JI)
11. Repeater VP Report – Tom Trethewey (KC9ONY)
12. Secretary's Report – Ben Evans (K9UZ)
13. Treasurer's Report – Robert Eskola (K4WTH)
14. Committee Reports:
 - A. Spring Swapfest
 - B. Field Day
 - C. 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 Multipurpose Senior Center

1665 7th Avenue, Grafton, WI
Wednesday, May 8th, 2019

7:00 PM – Doors Open

7:30 PM – Meeting Begins