The ORC Newsletter

Official publication of the Ozaukee Radio Club, Inc. Email all contributions to the editor, Ben Evans, K9UZ. 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 XXXII	April, 2020	Number 4

From the President

de Pat Volkmann, W9JI

By now we've all had a couple of weeks of staying closer to home. For some, that might not be a big change from what they are used to but others may still be trying to adjust. I have been self-employed since 2005 so working from home is nothing new for me. I've also been a ham for almost 50 years and learned a few things about setting up a comfortable shack. Here are some of the things that I've learned that may be useful to you during extended confinement in your home.

Set up a schedule. It's very easy to start thinking that you have plenty of time to get things done. A schedule puts some structure around your day and helps you to realistically judge how much time certain tasks are going to take. You can keep track of things on a piece of paper, on the calendar app on your phone or however you want to do it. Determine what level of detail you need and start planning things out. Block out time for meals, exercise, video chats and getting on the radio.

Comfort is very important. I replaced the chairs in my shack with real office chairs years ago. I built all of the tables that I use for radio equipment (seven of them), so I was able to adjust the height and other dimensions to suit me. Take a look around your shack and see what you can optimize to improve your comfort and efficiency. Look at the lighting, ergonomics and arrangement of equipment.

Set some goals. Along with scheduling, goals will help you structure your time to be more productive. This might be a good time to actually do some of those things that you have been thinking about getting done. Maybe it's time to learn CW, master a new tech skill, try a new mode, check into the Tuesday night 2 Meter net or just commit to making one contact a day.

Stay in touch with your friends. To that end, we are going try a video club meeting this month. Information on the meeting has been posted on the email reflector and website. Additional information will be posted as the meeting times draws closer.

I hope that you are all doing well. This is a strange time for all of us and it won't be over for a while. Your ham radio hobby may be just the ticket to getting through the pandemic with a bit less stress.

I'm interested in hearing from you on how you're handling your time at home. I'll share the interesting or creative responses with you next month.

Pat Volkmann, W9JI

DX'ing & Contesting

De Gary Sutcliffe (W9XT)

Another running of the Wisconsin QSO Party is in the books. We had a pretty good ORC turnout. I got preliminary scores from AC9JV, K9DJT, K9QLP, K9VIN, N9UUR, W9JI, W9KEY, W9MXQ, W9XT, and WT9Q. I hope I didn't miss anyone. Thanks to everyone who participated.

The 2020 score is better than the ORC score submitted last year and higher than the club that won last year. A break-down of last year's top three clubs and our 2020 preliminary score is shown below. Unfortunately, I was unable to get any information on our opponents' scores. I can usually at least a few scores.

WiQP Club Score Comparison				
Club	**2019 Score**	**#of Ops, 2019**	**2020 Score**	**#of Ops, 2020**
Hidden Valleys ARC	214,552	10	?	?
Ozaukee Radio Club	194,642	7	239,469*	10
West Allis RAC	175,200	14	?	?

*Claimed. Will go down.

The 2020 score is the claimed score. All of our scores will be reduced a little bit for busted calls, wrong county, or something. Based on that, our lead over the winning score from last year is not that large. If the Hidden Valleys ARC got a few more ops on or had a member with a higher score this year, we could be beaten.

The WARAC, the WiQP sponsors, always get a good turnout of its members. They could have rallied the troops and be in the running also. Now you know why I was trying to get everyone to operate and send in their logs no matter how big or small. A single contact or two could be the difference.

A big shout out goes to Fred, W9KEY. The WiQP was his very first contest, and he entered the Rookie category. He made a very impressive number of contacts, and I am sure he will run away with the Rookie award. Great job Fred!

We had Murphy strike with one of our members. His logging program had a problem, and it only logged CW contacts correctly. Phone contacts were logged as CW, and the frequency was logged as the frequency of the last CW contact. I know of another ham (not an ORC member) who had a similar problem. Thus, the phone contacts would not be valid because they were improperly logged.

He wrote the contest sponsors and explained what happened. The logs will be cross-checked, and the phone contacts will be flagged as bad. Hopefully, they will allow the CW contacts to count, but he might be disqualified. I did not include his results in the above score. I hope he will get partial credit, and our score will go up.

Now that we are required to stay home, have you been on the air more? Participation in contests seems to be higher, and the bands seem a little busier than usual. I played around for a

few hours in the WPX Phone contest at the end of March. I was surprised to work so many Italian and Spanish stations considering what they are going through right now.

Besides canceling ham radio club meetings and hamfests, COVID-19 has had another effect. There will not be an upcoming DXpedition section in this month's column. All the big ones have been canceled and probably the small ones too. Some have been rescheduled to the fall, some to next year, and others are in limbo.

April is a slow month in contests as well. There are no major ones scheduled. There are usually a state QSO party or two every weekend if you want to work on the WAS award or collect counties.

So, this month's column is much shorter than usual. With the forced confinement, spend a little more time on the air. Ham radio is a great way to stay in touch. It was nice to be able to say hello to a few friends in other countries in the WPX.

In 1665 Isaac Newton had to work from home because the University of Cambridge was closed during the plague. He developed calculus and formulated his theory of gravity while working from home at this time.

You don't have to set your sights quite so high, but maybe you can make an advancement in your ham radio hobby. Try a new mode or band. Dust off an old radio and get it back on the air. Build some piece of equipment from an old *QST* article, or maybe by building a kit. Start studying for a higher license class. Learn CW if you don't already know it. Build an antenna that you can put up in a few weeks when the weather warms up. If you have not made a contact recently, get on the air! The possibilities are endless!

Ham Radio Reading List

de Pat Volkmann W9JI

Recently, I've seen at least a dozen reading lists that point out books that someone on the Internet thinks will help me pass the time while staying at home. Except for a Science Fiction list, none of them were lists of my kind of reading material. I thought I would put together a list of some ham radio and technology related resources for you.

The first is the Internet Archive (archive.org). This is a huge collection of books, magazines, music, art, software, movies and a bit of everything else. Much of the Internet Archive content is organized in "Collections", which are just groups of similarly themed materials. There is good search function that helps find things on the site. You can read content via the site's on-line reader or download to your computer. Here are a few things to search for on the Internet Archive:

- 73 Magazine (Amateur Radio Today) – 514 issues of 73 magazine
- Ham Radio Magazine – 269 issues of Ham Radio Magazine
- GE Ham News – 102 issues, May 1946 – Spring 1963. GE Ham News was a small format bulletin that GE used to advertise their tubes. Includes lots of home brew projects using GE tubes.
- The Fun of Ham Radio – by Robert Hertzberg W2DJJ, full text of the book.

- 101 Easy Ham Radio Projects – by Brown & Kneitel, full text of the book.
- QST Magazine – lots of old QST magazines from the teens, 20's and 30's
- Callbook – Before QRZ.com this was how you found a ham's address. Look yourself up.

The American Radio History site (www.americanradiohistory.com) is another huge collection of magazines and books. Virtually every issue of every magazine on radio and television that was ever published, going back to the 1920's. This collection is so big that it can be hard to find things (the web site claims that there are almost 2 million pages). If you know the name of the magazine that you want to look for there is an alphabetical index on the home page. If you want to browse there is an index of magazines by category. This archive also contains many technical books and service manuals. Here's a few examples:

- Radio-TV Experimenter - https://www.americanradiohistory.com/Radio_TV_Experimenter.htm/
- Radio Craft - https://www.americanradiohistory.com/Radio_Craft_Master_Page_Guide.htm
- Popular Electronics - https://www.americanradiohistory.com/Popular-Electronics-Guide.htm
- RCA Ham Tips - https://www.americanradiohistory.com/RCA_Ham_Tips.htm

This website is dedicated to Thomas "Tom" Russell Gentry, W5RG (SK). It contains scans of his extensive QSL cards of his contacts, with over 5,700 cards. There are also a lot of pictures of hams and their stations that were sent to him with the QSL card.

- http://w5rg.donretzlaff.com/index.php

If you are interested in old QSL cards, Bob Green W8JYZ has assembled a collection of over 54,000 cards. There is also some related content that makes for interesting reading.

- http://oldqslcards.com/

That should be enough to keep you occupied for a while!

THE COMPUTER CORNER

No. 265: USB Again

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I have written about **U**niversal **S**erial **B**us three times in this column in the past, and have the feeling that I am not done yet even after this time! USB has become so valuable to most users that it is natural for it to expand, improve, and evolve. The past articles were:

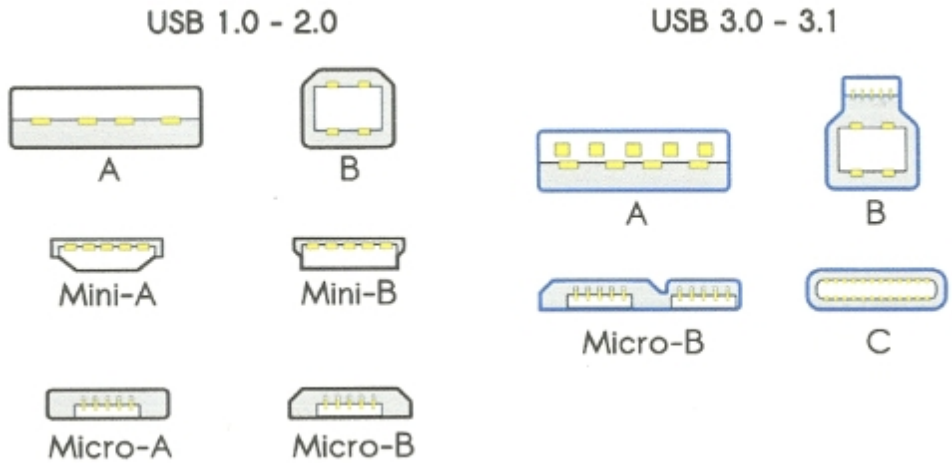
#131 USB Aug 2006 What is it for?
#184 USB July 2013 What is it and how does it work?
#210 USB HUBS Aug 2015 What are hubs and which ones to purchase.

USB was developed first in the early 1990's to replace the parallel (printer) and serial ports. Old computers had one PAR and one or two SER ports built in, and if you needed more than that,

you were out of luck unless you added more cards to supply more ports. With USB, you could have theoretically up to 127 devices on a single USB bus. Now it is common to have several or even many physical USB ports on a new machine.

Early USB connectors had only 4 contacts, a lot better than 9 needed for serial connectors or the 25 used for parallel (typically printer) connectors. When more contacts than 4 were needed as the usefulness of USB expanded (as in USB-3, where 9 or more contacts were used, study the diagrams below), clever engineers set it up so that when an old 4-contact device was plugged into a socket, it would not make contact with the additional USB-3 only contacts buried deeper in the socket, so it became backward compatible. All kinds of devices began to use the USB ports. Today they connect with keyboards, pointing devices such as mice and other gadgets, digital video and still cameras, printers, portable media players, disk drives, network adapters, and they even serve as battery chargers for cell phones and other devices that like to suck electrons from the computer to fill their own reservoirs. USB ports have become plentiful, but we always seem to need more as our uses increase. And, their configuration has changed.

USB 1 through 2 come in an A configuration, a B configuration, a mini-A, a mini-B and a micro-A and micro-B, as shown by these six cable images on the left from Wikimedia.



In all the cable images, yellow bars or boxes represent copper contacts. USB 3, shown in the four cable images on the right, are always highlighted by a bright blue plastic insulator (rather than black or neutral colored), just as shown. First released in late 2008, USB uses a SuperSpeed transfer mode which boils down to as much as about 3.2 gigabits per second delivered to the application. That is pretty darn fast, and is facilitated by multi-lane operation over existing wires that were intended for flip-flop capabilities in the type C connector (although hard to see and count in the diagram shown in this article, the type C connector has 24 copper contacts).

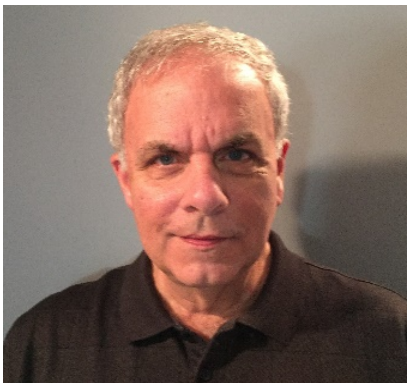
But, we are not done! The USB 4 specification was released 29 Aug 2019 and it supports 40 gigabit per second throughput! That probably means a future desktop you purchase will connect to its monitor via a USB port rather than a thick, heavy video cable or even an HDMI port. The saga never ends. Until the next update on USB ...

Want to look at the old USB articles? Did you know you can download an Index, and all the Computer Corner files from our website? Yep. Give it a try.

Happy Computing!

Vintage Amateur Radio

de Bill Shadid, W9MXQ



This As a collector of Vintage Radios, I am often described by fellow collectors as focusing on Drake and Hallicrafters. To a great degree, that is true – and perhaps especially true of Drake. But, a lot of Collins and National equipment lives in my collection as well. For a radio collector who is somewhat older nowadays, the light weight of Drake radios is a Godsend. (Perhaps apart from the power supply for the Drake L-4B and L7.)

Drake is a fascinating company – perhaps because I once lived a short distance from their Miamisburg plant, perhaps because I visited that plant, and perhaps because many models of these fine radios remain effective even on today's radio bands. The Drake R-4C Receiver and T-4XC Transmitter are widely supported with third party accessories and improvements to this day. The TR7, TR7A, and TR5 transceivers enjoy a wide following[1] and accessories in current production that rival those from Drake during their active years.

Perhaps even more than the Drake separate receivers and transmitters (R-4 and T-4X series), I have a fascination with the Drake transceivers – those being the TR-3, TR-4, TR-6, TR-4C Series, plus the solid state TR7/TR7A and TR5. Except for the six-meter TR-6, all these transceivers exist in the W9MXQ collection. Several TR-6 transceivers have come and gone over the years[2].

Drake's Transceivers fall into several categories: [3]

1. The Traditional 9 MHz i-f Transceivers (Vacuum Tube w/some Solid State)
    - Drake TR-3[4]
    - Drake TR-4
    - Drake TR-4C Series
        - TR-4C
        - TR-4CW
        - TR-4CW/RIT
    - Drake TR-6
2. The Up-Conversion (48.05 MHz i-f) Transceivers (Solid State)
    - Drake TR7 Series
        - TR7
        - TR7A
3. The Traditional 5.645 MHz Transceiver (Solid State)
    - Drake TR5

For this installment, we are going to talk more about the last transceiver from Drake, the TR5, and an earlier version of that transceiver, the TR-5. Some considerations:

1. What was the original TR-5 transceiver? (Note the dash in the model number.)
2. Was the TR5 really a low cost TR7? (Note no dash in the TR5 model number here.)
3. Why did the VFO in the TR5 turn backwards – as compared to the TR7?
4. What feature in the TR5 stood out at the time it was introduced, in 1982?

Note the similar nomenclature with the earlier TR-5 (with a dash in the model number) and the later TR5 (without the dash in the model number – more in keeping with the "dash-less" model designations starting with the TR7).

So, what was the TR-5 transceiver? First, when searching for this model, the search engine used will generally find the Drake TR5 – not the original TR-5. (Again, be aware of the use of the "dash" in the model name.) It appears from what can be found that Drake did consider a replacement for the last of the TR-4C series, the TR-4CW/RIT, in the form of a hybrid transceiver referenced as the TR-5 – a natural progression from the TR-4 moniker. It had a familiar Drake look in this picture:

Drake TR-5 Transceiver[5]. See following text for more explanation for details of this transceiver.

Very little is known about it and information I have gathered from conversations is that it was a solid-state radio except for a driver and final(s). One can presume, but not be certain, that it contained the same driver and finals as the TR-4C series. A look at the then current TR-4CW/RIT example (plus a repeat of the TR-5 picture) shows layout features that changed:

Drake TR-4CW/RIT
WB4HFN

Drake TR-5

The VFO placement changed rather substantially with the move from the right side of the radio to the left. The PA compartment is on the rear left in all TR-3 and TR-4 models but appears to be on the rear right on the TR-5 (check the ventilation opening at the right rear of the TR-5 picture). The change from the dual horizontal Plate Current and S/AGC meters in the TR-3/4 to the more conventional metering in the TR-5 would have been welcomed by this writer and many fellow collectors that I know.

It is difficult to determine all the control functions on the front of the pictured TR-5. And, for prototypes it is hard to tell if the controls shown were acting in accordance with their dial legend markings. Beyond the VFO control, perhaps the Tune and Load Controls as well as what appears to be a Preselector/Drive Control; the rest is a guess with some easier than others.

There has always been some conjecture that perhaps Drake and Hallicrafters worked together as Hallicrafters slowly exited the ham radio market. Their corporate owners, Northrup Corporation (now Northrup Grumman), were moving more into military electronics. Hallicrafters had by that time approached the end of the line by marketing their last amateur radio transceiver, the FPM-300 Mark II. I have never come to a personal conclusion on the possibility of the TR-5 being a repackaged FPM-300. Look here at the two radios (again with the TR-5 Picture repeated):

Hallicrafters FPM-300 Mk II
W9MXQ

Drake TR-5

The placement of the PA and VFO on both units is similar. I can see some control relationships as well. But we likely will never know the story of any collaboration and/or intentions. I have always felt that the FPM-300 had more of a Drake look than a Hallicrafters appearance. Check this comparison of the second to last Hallicrafters radio to the final one – the FPM-300 compared to the SR-400 Cyclone:

Hallicrafters FPM-300 Mk II Safari
W9MXQ

Hallicrafters SR-400 Cyclone II

W9MXQ

That FPM-300[10] ***does not*** have a Hallicrafters look! But it ***does*** have a Drake look!

So, time moves on and the TR-5 became the radio that never was. I leave this subject with a disclaimer. I do not know for certain if my own rationale for the TR-5 and the FPM-300 is true. I am a long-time collector and have seen a lot of things and heard a lot of stories and have enough time in grade to make an educated guess. But, to paraphrase the intro line from an old television detective show[6], “There are a million stories in ham radio – this has been one of them.”

So, Drake moves on – and knows that an all solid state radio is in their future and continue with the development of their yet to come flagship, the TR7 Transceiver – destined to change how amateur radio equipment was to move into the 21st century. The TR7, part of an earlier article, entered the market in 1977 and the TR-5 project is history.

The TR7 line grew in the late 1970’s to include the R7 Receiver and a whole line of accessories. As 1980 approached, the TR7 was a performer but was aging and lacked some of the features of the Japanese competition. As you have learned from this series before, Drake began to work on the successor radio, the TR8. Apparently, at this same time, Drake felt the need to field a lower cost transceiver. But, what do we call it? The work on the TR8 was apparently in process and the idea of a lower cost transceiver hitting the market as the TR9 before the deluxe TR8 seemed to be a problem (I assume). So, what to do?

Design goals of this new transceiver seemed to focus more on the features of the old TR-4C series than the TR7 or upcoming TR8. To my knowledge, no real information exists on the details of the new transceiver's development, suffice it to say that the decision was to name it the TR5 – back to the use of the "5" in the series. This number was never used in a transceiver actively marketed by Drake. The earlier TR-5 development did not come to light for some years – so it seemed okay. TR-3 and TR-4 were taken, TR-6 was taken with a six-meter dedicated transceiver, TR7 was taken, TR8 was taken and under development, and I can imagine that TR9 was off the table.

And yet, there is more. Many people for have believed for some time h that the TR5 was a cost reduced TR7. In my opinion, that was not true. Let us look at Drake's two main radio transceiver architectures and compare them with the TR5:

		Radio		
Item	**Feature**	**TR-4CW/RIT (the last TR-4C)**	**TR7/TR7A**	**TR5**
1	I-F Frequency	9.000 MHz	48.050 MHz	5.645 MHz
2	Dial Direction	Left Turning Up Frequency (back-	Right Turning Up Frequency	Left Turning Up Frequency (back-
3	RIT Control	Yes	Yes	Yes
4	WARC Bands	No	Yes	Yes
5	Optional Filter	Yes	Yes (Multiple)	Yes (One)
6	General Cover-	No	Yes	No
7	Digital Readout	No	Yes	Yes
8	RF Power Out-	150 watts (Nomi-	150 watts (Nomi-	80 watts (Nominal)

Now we can check the main features, by the number, to see where there are similarities:

1. I-F for the TR-4 series, at 9.000 MHz fit early convention in SSB generation. The conversion scheme led to bands below 9.000 MHz being on Lower Sideband and bands above 9.000 MHz being Upper Sideband. I-F filters for different bandwidths were readily available at 9.000 MHz center frequency. The TR5 was the same except that Drake did not want to use 9.000 MHz filters – rather the 5.645 MHz filters they used in the TR7 line. Switching circuitry in the radios of the day made the decision to be LSB or USB easy at no matter what i-f was used. So, the TR5 was more like the TR-4CW/RIT than the TR7.
2. This was a negative, but Drake copied the TR-4CW/RIT and let the dial tune backward for the TR5. In the end, for this one, the TR5 was more like the TR-4CW/RIT than the TR7 for all the wrong reasons.
3. All three transceivers had RIT – so no comparison here. For reference, only the quite rare last version of the TR-4C, the TR-4CW/RIT had the RIT feature.
4. This is not a necessary comparison. The TR-3 and TR-4 models did not have the WARC bands because they did not exist when the models were marketed.
5. All three transceivers had slots for optional filters – so not a real comparison here. For reference, only the last two version of the TR-4C, the TR-4CW and the TR-4CW/RIT, had the ability to access one optional filter – as did the TR5. So, the TR5 was the same as the last two TR-4C models, the TR-4CW and the TR-4CW/RIT. (The TR7 has three optional filter bandwidth slots.)
6. The TR-3 and TR-4 Series radios and the TR5 did not have General Coverage Receive (or Transmit). The TR7 did offer that General Coverage feature. So, the TR5 was more like the TR-4CW/RIT than the TR7.
7. The TR-3 and TR-4 Series radios did not have Digital Readout. The TR5 and TR7 Series did. That was the sign of the times and not a comparison for this analysis.

8. RF Power Output was a serious issue with Drake and the TR5. The TR5 did have what were probably lower cost PA transistors that could not match the power level of the TR7 Series radios[7]. So, what was Drake thinking? The lower cost of the PA Transistors and the lower cost of the PS75 AC Power Supply (see details below) probably drove Drake to make the decision to opt for the lower power output. As history has shown, this was a marketing error.

So, checking the above you can see that the TR5 is more of a solid-state version of the TR-4CW/RIT than a cost reduced TR7. The confusing thing about the TR5/TR7 radios is that they look so much alike – but only on a fast glance. They are completely different radios. Here they are together – along with what I see as the predecessor to the TR5, the Drake TR-4CW/RIT (picture repeated from earlier in the article):

Upper: Drake TR5 HF Transceiver
Lower: Drake TR7A HF Transceiver
(Both with MN7 Speaker and 7077 Desk Microphone)
W9MXQ

Drake TR4CW/RIT
HF Transceiver
(Last of the TR-4C Line)
WB4HFN

The TR5 was not a successful product for Drake. It was expensive, the power output was low in comparison to customer expectations of at least 100 watts and the dial turned the wrong direction. That last issue was on the older TR-3 and TR-4 series radios but somehow the digital readout on the TR5 aggravated the issue with the frequency on the readout going up while the dial was turned to the left. I can attest to that being aggravating on my TR5 – and on my TR-3, TR-4, and TR-4C to a point. On the earlier radios, the left rotation moving up in frequency was duplicated on the analog dial that also went up when tuning the dial to the left. So, it really was not as bad a mental issue as it was on the TR5.

It is widely publicized among Drake aficionados that the TR5 included the digital (PLL) VFO included in the Drake RV75 External VFO as the standard internal VFO in the transceiver. This is incorrect – the TR5 has a regular PTO[9] just like the TR7 – and for that matter one very similar to the ones Drake had used in their radios for years. My use of the TR5 seems to indicate it being more stable than the TR7 and TR7A that sit beside it in the collection. However, that is a subjective comment that if true is more tied to late circuit improvements in the old design than to any significant stability improvement.

The Drake TR5 and TR7 series radios shared many cabinet components. The Wrapper (Drake's name for the wrap-around top and sides) were identical and interchangeable. However, the TR7 Wrapper has speaker openings on the left side while the TR5 Wrapper has no such openings – the TR5 speaker is bottom mounted. The end trim pieces on the front panel are identical. The front extrusion and panel inserts are overall size and design identical but punched differently. The TR5 has no backup analog readout where the TR7 Series does have a back-up analog readout. (For a very short time at introduction, the digital readout in the TR7 was optional.) The Digital Readout was the DR7 and at first a digital readout equipped TR7 was called a TR7/DR7.

Generally, the accessories offered for the TR7 series also worked with the TR5. There is only one exception to which I am aware – and it was never marketed. I am speaking of the Drake RV5 External VFO. Here is a picture of that accessory in prototype form:

WB4HFN

The Drake RV5 External VFO was never produced, as noted in the text. However, it was identical to the RV7 except for tuning direction. I am reasonably sure that this prototype unit was made from pieces of an RV7.

Using the RV7 with the TR5 works correctly except for the nagging reverse tuning. It is even worse with the RV7 because the TR5 and RV7 VFO's are tuned opposite from each other.

At the time of the introduction of the TR5, Drake also introduced a cost-reduced AC Power Supply that, while it would work with the TR7 Series, it was more suited to the lower power requirement of the TR5. This was the very well-built Drake PS75. It was a lightweight sister to the 25 Ampere Continuous Power Drake PS7. The PS7 was designed to work with the original TR7. The PS75 was very dependable at about 15 Amperes, with peaks to 25 Amperes tolerated. Drake warned that running CW above a drain above 15 Amperes (like with a TR7 running full power) could produce "CW signal quality degradation."

Drake PS75 Rear Panel View
(PS75 on top of Drake PS7)
W9MXQ

Drake PS75 Front View

W9MXQ

Both the PS7 and the PS75 brought out 12 VDC at 1 Ampere for accessories. Also, both power supplies brought out connections for Linear Amplifier Control and Transmit AGC from the TR5 or TR7. (The PS7 shown has since been equipped with the optional FA7 Fan Kit.) These are both analog power supplies and quite heavy.

The PS75 is quite rare – nearly impossible to find. The TR5 at 300 units produced and with the production of PS75 at not nearly 1:1 in build ratio so those would be difficult to find by default.

The TR5 itself is extremely rare. Most TR5 owners that I know run their radios with a PS7 Power Supply just because they are easier to find.

Worth mentioning is the fact that the TR5, for whatever its foibles, provided some of the best receiver noise figures of the time. The TR7 was a leader in being a quiet receiver and was superior[8] to the far more expensive Collins KWM-380 of the time. The TR5 was superior in receiver performance to both more well-known radios. The TR5 also possessed quite capable, if a bit noisy, CW QSK. I find the TR5 to be comfortable to use on CW and its 80 watts of output power never presents a problem. I use my TR5 barefoot all the time – having tested it only once to confirm its operation driving a Drake L7 Linear Amplifier.

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

A special note of thanks to my proofreader, Bob Bailey, W9DYQ. Bob is a bit more than a proofreader as he often adds commentary that makes it into the article.

Credits and Comments:

[1] The TR5 Transceiver is very rare as Drake radios go – with perhaps less than 300 ever having been made available to the ham radio public. The Drake TR7 and TR7A, along with radios from Ten-Tec, were perhaps the last of the American made, competition grade radios before the current generation of new manufacturers in this country.

[2] Six meters has never been a focus at W9MXQ. Perhaps it is antenna related. I hope to change that one day in the future. One of my good friends, Ken, W9GA, is an avid six-meter aficionado and I believe that he holds DXCC on that band. Ken's expertise in all thing's VHF, UHF, and beyond is enviable. So, perhaps another TR-6 is in my future!

[3] The TR-3, TR-4, TR-4C, TR5, TR7, and TR7A are part of the W9MXQ Collection.

[4] The TR-3 is more of an early TR-4 than a different model number. I presume that it got its "3" designator as a follow on to the 1A and 2 series Receivers and 2NT Transmitter popular at the time. There are a lot of similarities between the TR-3 and the early TR-4 transceivers. One big point was that the TR-3 used three 12JB6 finals while the TR-4 and all subsequent 4 series transceivers used three 6JB6 finals.

[5] The TR-5 picture is from LA6OP.

[6] The television show was "The Naked City," 1960-1963 television series, © Screen Gems Television.

[7] The final transistors in the TR5 were MRF455 devices – capable of about 70 watts per transistor. Given a safety factor it is likely that Drake legitimately felt the radio should be rated little more than one of them. The 80 watts was probably correct.

[8] The performance comparisons can be found from data found in published Collins and Drake Literature and Operating Manuals.

[9] The "VFO" in the Drake TR5 is essentially the same as the one in the TR7, the TR4, and the R-4 & T-4X series radios. Reference the Drake TR5 Instruction Manual, Section 4-1, "Injection and Counter Circuitry," page 4-1. © R. L. Drake Company.

[9] The original FPM-300 had no marketing name. However, the FPM-300 Mk II was called the "Safari." This was like the use of the "Cyclone" name for the SR-400 Series Transceivers. Reference "Radios by Hallicrafters," Chuck Dachis, ISBN 0-7643-0807-6, © 1999 by Dachis. Pages 95 and 98.

W9MXQ

The Magic Antenna Discovery

de Woodrow Shadid, WA9MXQ

In a ham shack far, far away in Normal[1], Illinois, at what must be a long, long time ago – like February 1979 – things were changing at WA9MXQ. My QTH was ideal with cooperative neighbors in a brand new house, a super nice all Drake station only a year old, a tower with a four element tribander at 55 feet, above that were stacked VHF long boom 2-meter horizontal weak signal antennas, and great wire antennas on 160, 80, and 40. I was the Purchasing Manager in a business unit of 3M Company making electronic equipment for radio broadcast stations. Life was good and topped off with a regular string of famous recording artists visiting our business unit to revel in us and our over-the-top studio playback and recording equipment. I mean, some of these visitors were hams, like Bob Heil[2], Ronnie Milsap, Joe Walsh, and more. Did I mention that life was good? But, in the business world, as all of us have learned, that means that life is about to change!

Well as it happened, I was offered the position of Logistics Manager (that means purchasing and a lot more stuff!) of a much larger 3M business unit in the automotive business end of the company. A substantial promotion. This was much faster pace than the broadcast audio business and was coupled with a move to Columbus, Ohio – a city of one million instead of the 100,000-person metro area that I was leaving. Life in the suburbs. The beams and tower are all bundled and nested and in the garage at the new house. The shack is now on the second floor of the four-bedroom house and here I am sitting on the patio looking at my vertical antenna, the first installation of a GAP antenna, from the fledging GAP Antenna Company, installed in the state of Ohio[3].

It was pretty hot that sunny Sunday afternoon in April – first day of the month – and the first sunny Sunday since working at the new plant. Frankly, I was darned tired – business was booming, and this was the first Sunday our management team had not been sharing duties with production management to give them some time off. I was sitting there wondering where my boxes with coax were stored – watching that yet to be connected GAP Challenger Antenna standing watch in the back yard. Gee, that cold Yuengling beer tasted mighty good. Yuengling, you ask? Remember, this is Ohio. I sat there, on the lounger, next to the picnic table, kind of feeling the warm sun in my face, thinking about the antenna, wondering about my coax, and letting my thoughts wander, wander, wander.

Suddenly, I got this fantastic idea. My old Field Day rig, my Swan 350c, was in the garage in a box I could identify, also there should be a coax jumper in that box, and there somewhere would be my Unique Products Random Wire Tuner, some antenna wire. So, I sat the Swan, and the tuner on the picnic table on the patio. I threw out the random wire on the concrete patio, made my coax connections, connected the wire antenna to the tuner, and was peaking the receiver noise on 20 meters.

Wow!!! Twenty meters is really packed with signals – how can these twenty or thirty feet of wire be that sensitive? There is Antarctica with the American and the Danish sites both on the air and both way over S9. Asiatic Russia – at this time of day – and 20 over 9? Japan, and Taiwan? I've

never even heard Taiwan! What is going on? Ah, I know, hearing is one thing but transmitting and being heard is quite another. That's the end of this story, right?

No way; let's see – that SWR bridge must be somewhere around here. The bug had bitten! I had no intention of transmitting when I started this little exercise. But S9+ signals from Taiwan? I sure need to at least try! Ah, there it is – the trusty old Knight Kit SWR Bridge. It has been sitting on a garage shelf here, and before that in Illinois for a few years and is a tad dirty – but luckily it seems fine and there is that short piece of coax I need to insert between the rig and the tuner. Hmmmm, wonder how close I can safely be to that wire here on the patio? Nah, cannot be a problem, the rig is only putting out 50 watts – sure need to look at those finals before Field Day this year!

I found my CW straight key…and…and…and…surely there is a microphone in this garage!! Ah, there it is – my trusty Astatic D-104. Gee, sure was lucky I was not stranded in Ohio with just a key!

So, here is the supporting cast:

Swan 350c HF Transceiver
WA9MXQ

Unique Products (UPC)
Random Wire Tuner
WA9MXQ

Allied Knight Kit P-2
SWR/Power Meter
WA9MXQ

Astatic D-104
Desk Microphone
WA9MXQ

Random Antenna Wire
And Coax
WA9MXQ

The tuner worked great – always did. Here we are on 14.240 with 1:1 SWR – and the signals are even louder when adjusting the tuner with the transmitter. "BM1AAC in Taiwan, this is WA9MXQ in Ohio, do you copy." He was 20 over in Columbus, Ohio, surely even with this antenna I could get at least an S2 – there was almost no noise on the band. "WA9MXQ, this is Ping Tsun in Taiwan. You are S9 plus here in Keelung." What a great signal – what are you running there in Ohio, Woody?" He just laughed at me when I said I was running 50-watts to about 35 feet of wire laid out on my concrete patio and said, "Okay not to give me the real details, 73 and DX to you." Right away, right on frequency, I get a call, "Hey, WA9MXQ, this is John, VP8CEN – you are S9 at Dignan Airport down here in the Falklands. Do you copy?" "Sure do, John, you are 59+10 here in Columbus, Ohio." This time I just told him I was running 50 watts to a wire antenna – seemed like a fairy tale to mention a wire on a concrete patio.

About then my neighbor came over. That was Jack, a fellow I recently learned had a long interest in ham radio and was an Engineering Professor at Ohio State University. He arrived, carrying his own bottle of Yuengling beer, just to see what was going on. Jack was structural engineer and was quite amazed at my description of what was happening. By then I had worked sixteen more countries, including Singapore, Thailand, South Africa, Kenya, and Australia. Jack related studying a new theory on the Ionospheric Propagation of Concrete at Ground Level and how such slabs, were excited by RF and, as such, radiated with a high degree of gain at a low angle of radiation. He said it was called “Portlandic Seismic Vibrational Propagation (PSVP for short).” He said, however, that the research had been stymied by strong lobbyists from companies like HyGain, Mosley, and Cushcraft that felt that loading concrete patios might falsely deter their sales of antennas. Falsely? Immediately, I thought of upstart GAP Antenna and how this was going to ruin their long-term strategic plan!

Jack did my logging while we worked the world. At just over 120 countries we decided to take a break and get another beer.

Oops, almost spilled what was left of my now mighty warm beer as I tried to convince my body to let me get out of the tangled web of the lounger – being so close to the picnic table and all. Suddenly, there was a voice!! A voice? Jean (XYL) was standing there on the patio with a plate of burgers to go on the grill. She was chiding me for sitting there with a beer and in the sun for the past several hours in the lawn chair lounger. In defense, I said, “Hey, Jack and I are working DX here!” To which she replied, “Jack?” “Jack who?” “We don’t know anyone around here named Jack!” “And, while we are at it, what are you doing out here blurting out things like, you’re 20 over in Columbus, Ohio?” “Twenty over what?”

Oops, again!! Where is the radio? Where is the wire? But, there’s the GAP Challenger standing alone in the yard. There is the picnic table beside me so why and I’m sitting on the side of the lounger looking away from the table? Hey, there is no wire on the patio. And, indeed, who is Jack, anyway? Did he say, PSVC? Do I know him? Again, Jean tries to get me back into the regular world with a question, “Do you want to help me with the lid on the grill?” (Our grilling process is well established in our marriage by then. I control the grill’s lid and she is in control of the cooking.)

What happened?

Indeed, my mind had played the ultimate April Fool’s Day trick on me. I never left the lounger – the setup, the QSO’s, the DX, the sound of the band, the research into RF Radiating Concrete, and even Jack were products of my day-dream imagination. The radio was still securely packed in the garage.

Happy April Fool’s Day, Woody!!

Credits and Comments (back to reality):

[1] Yes, by God, there is a Normal, Illinois, the town of my childhood.

[2] Heil Sound, as we know it today was then only making sound equipment for performing artists.

[3] The GAP Antenna Company was new back at the time of this story. WA9MXQ was their first sale in Ohio and with agreement would have potential customers in the east call for a recommendation.

Tech Tidbits

de Ben Evans, K9UZ

Jay Bares, KB9JNJ, sent a helpful and easy tip for getting more height for your mag mount antenna using just a form-fitted piece of sheet metal and a ladder.

Explains Jay, “Ben, this is pretty goofy but I made a mag mount antenna tripod from a piece of sheet metal and a little giant ladder. I hammered the sheet metal into a shape that would hook onto the top steps when I folded the ladder out, painted it, mounted it on the ladder, stuck the antenna on and had a 9 foot high tripod. Like I said, goofy.”

Goofy, maybe, but pretty handy. Maybe Jay can figure out how to securely mount the ladder on top of a vehicle for mobile operation! ;)

If you have a “tech tidbit” you’d like to share in this newsletter, feel free to send it to me at ben@evansengsolutions.com. Please remember to include photos.

Ozaukee Radio Club
March 11, 2020 Meeting Minutes

de Ken Boston W9GA

ORC President Pat W9JI called the meeting to order at 7:31 PM, introductions followed for the gathered members.

Announcements:

KD9GCN Mike, read to us a letter from Adam KD9KIS who won the 2019 scolarship award given out by the ARRL on behalf of ORC. W9DHI Gregg mentioned his experience with running a mesh network for WIFI use at his QTH. Nels WA9JOB talked about info he gleaned from old newsletters of the club, and the need for a club historian. Tom KC9ONY mentioned that he had a conversation with Cindy Douglass KA9PZG. Stan WB9RQR mentioned that Nancy KC9FZK has the shingles and is out of commission for some time. Gary K9DJT received an old ORC cloth patch from Ron Yokes W9BCK's estate. It used to be placed on shirts/jackets in the early years. It was given to club historian Stan Kaplan, WB9RQR.

Program:

The program tonight was presented by Vic WT9Q on his project in erecting a Butternut vertical in his backyard for use on the low bands. He reviewed several types of vertical options, showing how he zeroed in on the Butternut HF2V as his choice. He also described the installation process, with ample slides of the ground wiring.

Break: The membership took a 10 minute bio break.

Upon reconvening, the 50/50 action was held; Gary K9DJT was the winner, of a $9.50 prize.

Auction: Stan WB9RQR then conducted an auction; a Toshiba laptop, 2 Dell laptops, Bag of fans, an ARRL antenna book, a Zenith Transoceanic radio, a modem and misc cables and items were sold.

Committee reports:

There was no 1st VP report.
There was no 2nd VP report.

Repeater VP Tom KC9ONY has received the 100 watt amplifier and will be installing it soon.

Secretary W9GA, Ken, presented the minutes for the February 2020 meeting via a link to a dropbox. Greg W9DHI moved and Kevin K9VIN seconded to accept minutes; motion passed.

Treasurer Gary N9UUR discussed dues and who has paid, whether others can be reminded, and presented the months balance sheet. Bill W9MXQ moved and Vic WT9Q seconded for approval, motion passed.

There was no scholarship report.

Ken W9GA presented the Awards as a result of the recent balloting; Kevin K9VIN winning the Ham of the Year award, and Fred W9KEY winning the Turkey of the Year award.

Tom KC9ONY, Spring swap fest; has mentioned that he has received some cancellations, and has sold a limited number of tickets. At the time of the early march meeting, the hamfest is still on, but a wait and see approach will be followed as to cancelling or rescheduling the fest.

Ken W9GA has reserved the Pleasant Valley location for the club activity of the ARRL Field day event, held every June. If the virus pandemic is contained, there will be a field day, although the final format will be dependent on events.

OLD business: Gary W9XT reminded the members of the upcoming WI QSO party and solicited club members to participate and file a log showing the ORC as their club affiliation.

NEW business: As of this meeting, a total of 65 members were signed up on groups.io, and Gregg W9DHI urged all to update their profile info on this site. Several members/officers are assigned to be moderators for this list.

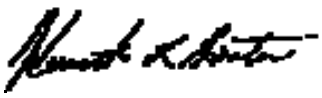
Gary, K9DJT, reported that K0GHT, Dave Lechelt, is an SK. Nancy, KC9FZK, will handle the ARRL donation in his name. He will sadly be missed.

Tom KC9ONY reported that the repeater survey committee has Fred W9KEY, Mike KD9GCN, Tom W9IPR and Gregg W9DHI joining him in the committee.

Adjournment: After a reminder by Stan WB9RQR to clean up the room, a motion to adjourn was made by Bill W9MXQ and seconded by Gregg W9DHI, motion carried and the meeting was adjourned at 9:20 PM

33 members were present. Contact Ken W9GA to obtain the list.

Respectfully submitted,



Kenneth Boston W9GA
Secretary

ORC Meeting Agenda

May 13, 2020

1. 7:00 – 7:30 PM – Network & Rag Chew
2. Call to Order – President Pat Volkmann (W9JI)
3. Introductions
4. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
5. Program
6. Fellowship Break
7. 50/50 Drawing
8. Auction – Stan Kaplan (WB9RQR)
9. President's Update – Pat Volkmann (W9JI)
10. 1st VP Report – Ben Evans (K9UZ)
11. 2nd VP Report – Bill Church (KD9DRQ)
12. Repeater VP Report – Tom Trethewey (KC9ONY)
13. Secretary's Report – Ken Boston (W9GA)
14. Treasurer's Report – Gary Bargholz (N9UUR))
15. Committee Reports
16. OLD BUSINESS
17. NEW BUSINESS
18. Adjournment to ?

April Meeting Note:

As most of you know, our regular meeting on April 8th at 7:30 PM is cancelled. We are going to try a virtual membership meeting on the same evening and time via the Zoom videoconferencing app. Details can be found on the club website. We hope many of you can join us!

Return undeliverable copies to:

The ORC Newsletter
524 Alta Loma Drive
Thiensville, WI 53092

First Class

Next ORC Meeting:

Grafton Multipurpose Senior Center

1665 7th Avenue, Grafton, WI
Wednesday, May 13th, 2020

7:00 PM – Doors Open

7:30 PM – Meeting Begins