The *ORC Newsletter*

The

SPECIAL SERVICE CLUB

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

Web site: **www.ozaukeeradioclub.org**   **Facebook: facebook.com/orcwi**

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From the President
de Pat Volkmann, W9JI

We recently had a Club member offer to match donations to the ORC at the rate of $0.50 for each dollar donated. The member, who wishes to remain anonymous, will donate up to $300 in matching funds. Prior to the matching offer we had about $350 donated towards our goal of $1250. That goal was set to help offset the cost of the replacement amplifier for the repeater, which was purchased earlier this year. If Club members donate an additional $600, the matching funds will allow us to reach our goal.

This generous offer comes at the time when our normal source of Club income, the Spring and Fall Swapfests, have been cancelled. Expenses such as insurance, rent and the repeater continue as usual. Your donation to the Club, in any amount, will help. Those who wish to donate will find a special PayPal donation link on the Club web page, or you may directly access the link HERE, or you can send a check to the Club Treasurer, N9UUR.

At our last in-person meeting we set up a Committee to survey our member's interests regarding the Club repeater system. That effort has been stalled by the Coronavirus. Our Club Trustee Mike Harrington, along with the Repeater Committee, will put together the survey and then present the results to the Club at the October meeting.

We have had our meetings on Zoom for about 6 months now. The video meetings seem to be working out well, allowing us to stay in contact with each other. There are some Club members that were regulars at the in-person meetings but haven't joined us for the video meetings. Please reach out to anyone that you haven't heard from in a while and encourage them to attend a meeting. The same goes for anyone that you know of that may be interested in joining the Club or just attending a meeting.

Michael Schultz WH6ZZ sent me an email inviting ORC members to work him in the Hawaii QSO party coming up later this month. I've included Michael's email in an article in this month's Newsletter.

One of the outbuildings at my QTH is a log cabin that was built in the late 1800's. This building houses my shack during the warm months. This fall we will be starting some maintenance on this building which will include new windows, updated electricity and a number of minor repairs. The first step in this project was to take down the 75' tree that holds up my main HF wire antenna. The tree died a couple of years ago but I was in no hurry to remove it as it was such a great support for the antenna. The tree and antenna are now down and the search is on for a replacement antenna. I don't know what that will be but I hope to have something in place in the next couple of months.

Pat Volkmann, W9JI

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THE COMPUTER CORNER
No. 269: Linux Mint 20
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It is here now and was first available for download at the end of June 2020. Version 20 will be supported through 2025; it is based on Ubuntu 20.04 and uses the Linux 5.4 kernel. It comes in several flavors, but the most popular is Linux Mint 20 Cinnamon 64-bit, nickname Ulyana, which I recommend. Actually, you need not worry about the bit count since Linux Mint 20 is only available in 64-bit. Don't try upgrading or replacing this version on a 32-bit machine; it will not work.

So what are the minimum needs for your computer? Sixty four-bit as already mentioned, plus 1 GB RAM (2 GB would be better and is recommended, though just one will work), at least 15 GB disk space (though at least 20 would be better), and at least a 1024 X 768 pixel screen.

What's new? Here is the big picture, with admittedly few details:

1. Marked performance improvement with a new file manager named Nemo.

2. Completely refreshed color schemes for a more vibrant color representation.

3. A new graphical user interface (GUI) tool, named Warpinator, for sharing files across your local network. This may well be the major enhancement that will attract the most users as the new release becomes better known. It will undoubtedly outperform the woeful, klutzy file-sharing capabilities of Microsoft Windows.

4. Better integration of electron apps. These are cross-platform desktop applications.

5. Improved multi-monitor support. For example, if you work with a laptop and it also has an exterior monitor attached, you will be able to select separate resolutions for each.

6. Much improved handling of Nvidia cards and settings (about time!).

So how do you get it? First, you need to consider approaches, and there are two:

Approach 1. Upgrading to this new version from an older one means working for quite a while using the web as a source tool. This is not a simple process and it will take some time (meaning over one hour minimum, and perhaps more). I would suggest you think instead about copying all your old creations onto a CD or other media, then wiping the drive and installing the new version 20 by using an active copy from DVD (see ahead, Approach 2). Then, when done installing Version 20, copy all your old files to the drive to finish the job. This may well take less time than upgrading and it avoids getting through part of the upgrade process only to discover you must install from an active copy after all. On the other hand, when upgrading works, it works well. Yes, I have personally done it both ways. You can start the process by going to this site for instructions (print them):

https://www.zdnet.com/article/how-to-upgrade-from-linux-mint-19-3-to-the-latest-version-mint-20/

Once you have the instructions in hand, follow them to the letter to maximize your chances of completing the update with no glitches. Don't skip any steps!

Approach 2. Installing from an active DVD involves downloading an *iso* file containing the new Linux, then burning an active DVD from that on your machine. Then you can install the new version from the burned, active DVD. Alternatively, you can burn a copy to a thumb drive if you have one that has enough capacity. In either case, when you boot with the DVD or with the thumb drive, Linux will ask if you want to overwrite all files on the machine's hard drive or just the old Linux files. If you have a dual-boot machine (Linux and Windows), it can do this without touching Windows or the dual-boot choices when you turn on your machine. To get the .iso file, go to https://linuxmint.com/download.php and be sure to follow the cinnamon link. Download the 1.8 GB *iso* file and use it to burn a new DVD, then pop this newly burned DVD into your machine and reboot to start the process.

In summary, converting to Linux 20 is not a snap, but it is worth it in the end.

Happy computing!

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Upcoming ORC Monthly Meeting Programs

September – ORC Repeater System Overview, Tom Trethewey KC9ONY
October – *Open*
November - YU7EF 6M Beam Construction & 6M DXing, Ken Boston W9GA
December - *Open*

Home Brew Night
At the July meeting, several people asked to hold off on Homebrew Night as they had some projects planned but not ready yet. Let me know when you have your projects ready. October is open so far. Maybe we can do it then.

If you would like to share your project, send me some information on what you have done. It can be a PowerPoint presentation (3 slides max!) or some pictures. You still have plenty of time to work on something.

Creating a Presentation
Almost all of our presenters use Microsoft's PowerPoint to organize and present their information. If you don't have access to or aren't familiar with Power Point, there is an alternative. The Open Office package contains Impress, which is similar to PowerPoint. Impress is easy to use and available at no charge. You can check out OpenOffice here: http://www.openoffice.us.com/

The monthly program is the highlight of the Ozaukee Radio Club meeting. We are fortunate to have a number of very talented people in our club, many of whom have shared their knowledge through a presentation. Share your expertise and experience with the club. Programs can be on any topic that is ham radio related. Contact Pat Volkmann W9JI at w9ji@arrl.net to discuss your idea for a program.

Vintage Amateur Radio

de Bill Shadid, W9MXQ
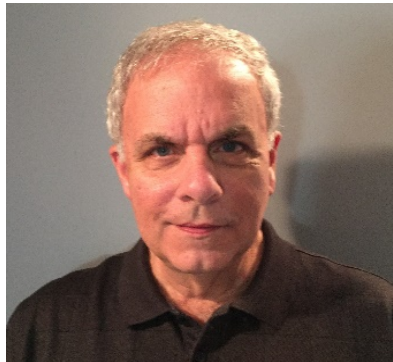
Examples of rare amateur radio equipment have always been a fascination of mine. Radios that perhaps go through many years of design and development only to come to the market with the wrong timing, the wrong features, deployment or manufacturing issues, or one of many other things that can plague the process from inception to market.

Examples come to mind of a few such products. One is the Hallicrafters FPM-200 HF Transceiver. The first true hybrid radio, the FPM-200 used solid state technology for all but voltage regulators, the driver, and the two 6146 final amplifier tubes. Costs escalated for the unit and it failed on the market. I have never seen one of these transceivers, but they were illustrated in Hallicrafters advertising in the 1950's and were far ahead of their time. Hallicrafters had them in numerous special events and even a few DX-Peditions.

This is a picture of the Hallicrafters FPM-200 HF Transceiver as eventually marketed. Fewer than 100 are thought to have been made[1]. With numerous germanium transistors it would be remarkable (but not impossible) that a working unit could be found today.

RigPix Photo

Another such rare piece of equipment would be the E. F. Johnson Avenger HF Transceiver from about 1969.

This is a picture of the E. F. Johnson Avenger HF Transceiver. This radio perhaps had fewer than 20 examples made[1]. However, these do appear for sale occasionally. Note the two incorporated VFO's.

RigResource Photo

The example rare radio for more discussion in this article are the Inoue IC-700 Twins. They take their place along with the two above – perhaps similar in volume to the Hallicrafters FPM-200 and almost certainly more than the E. F. Johnson Avenger.

In 1967, and more actively in 1968 and 1969, Inoue (say, In'-Oh-Way) attempted to market a set of twins (matching separate receiver and transmitter) of hybrid design. To start with, Inoue had been making VHF and UHF FM Transceivers for sale for some time in the North American market. Inoue in this time sold a relatively small receiver, the IC-700R, and a style matched transmitter, the IC-700T. Look at this rather unique pair and see if the package shows you a design concept that was part of these radios' design:

Inoue IC-700 Twins
IC-700T Transmitter and IC-700R Receiver
Shown with the IC-700PS AC Power Supply/Speaker Console

W9MXQ or KE9PQ Photo

This pair – if you notice – is absent a VFO knob on the transmitter. This radio is similar in concept to the Drake TR-44 where a Drake R-4 is in the same cabinet with a Drake T-4. The T-4 was like a Drake T-4X, but it did not have a VFO. It relied on the VFO in the R-4 to control the station frequency. Here is that Drake radio:

Rigpix Photo

These are the combined Drake R-4 Receiver and the T-4 Reciter (Transmitter without a VFO[5]) in the same cabinet – the model TR-44. To my knowledge these were not available as separate units – other than the fact that the R-4 Receiver was available as a stand-alone unit. This pair required the AC-4 Power Supply and MS-4 Speaker units. The T-4 was known as a Reciter – meaning it used the frequency established by the R-4 Receiver. This radio was updated later using the R-4B Receiver and T-4B Reciter – referred to as the model TR-44B.

The concept in the Inoue Twins was that they operated off the IC-700R Receiver. The Receiver did include RIT so there could be a slight variance (+/- 5 kHz) on Receive. No XIT (transmitter incremental tuning) was available. The Drake unit had no RIT – like the popular TR-4 Transceiver of the time.

The IC-700R Receiver is all solid-state but suffers from overloading – not untypical of Japanese receivers of the time. For as good as equipment as Japan produces now, that was not the case in the early days of solid-state when the American manufacturers produced credible solid-state designs while the Japanese were just not up to the same technical level. (To be fair in this assessment, the Japanese produced high performance vacuum tube radios in the same period – competitive in every way.)

The receiver covers 80 thru 10-meter bands (no WARC Bands). It also receives 10 MHz WWV via a special setting of the Preselector when the receiver is in the 28 MHz band position. The

receiver (and therefore the transmitter) can be crystal controlled with positions for three crystals provided as a part of the bandswitch.
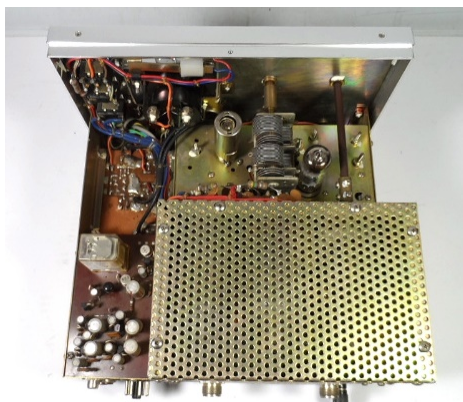

This is an interior view, viewed from the rear, of the IC-700R Receiver. Note the large shielded box with the tuned circuits for the i-f system. You can also see the 9 MHz i-f filter. The power transformer is visible – see notes about that in the main text. To the right on the back panel is a seven-pin connector used with a cable to provide control connections to and from the IC-700T Transmitter. Note that some former owner marked bands near the i-f tuning adjustment ports.

W9MXQ or KE9PQ Photo

The power supply built into the IC-700R is two way. It is accessed by the 8-pin octal connector on the left rear of the chassis. While the manual with the IC-700R notes that the receiver works from 12 VDC or 240 VAC. This unit meant for the North American market has an undocumented 120 VAC transformer installed in place of the 240 VAC one documented. See the octal connector at the left rear – the connector wired to that connector is wired for a 12 VDC source or a 120 VAC one. Documentation for these units is sparce and gets much more sparce after the receiver.

As noted above, the IC-700T transmitter has no included VFO, so it had to be connected to the IC-700R for transceive operation – its only option. There were two interconnections between the units. First was a coaxial cable between VFO in the receiver to the transmitter that is handled with a low loss coax connection between phone jacks on both units. Also, as mentioned above is a Control Cable that connects to a seven pin miniature socket on each chassis. This connector is a seven pin tube socket connector. The plugs are identical to the External VFO connectors used by Kenwood on their hybrid transceivers. The IC-700T Transmitter used a pair of then common 6146B tubes in the final amplifier, a 12BY7A driver tube, and a 12AU6 tube as a buffer tube feeding VFO signal from the VFO in the receiver to the transmitter circuitry.

This is an interior view, viewed from the rear, of the IC-700T Transmitter. The large shielded and ventilated box at the right rear houses the two 6146B finals and the tank circuitry. You can also see the 9 MHz i-f filter. The other two tubes are visible between the PA compartment and the front panel. Power connections are through the octal chassis plug just visible at the left side of the rear panel. You can see two SO-239 sockets – the one on the right is for the antenna connection and the one on the left is there to feed antenna signal to the receiver. There is no cooling fan for which there are some comments in the text.

W9MXQ or KE9PQ Photo

The transmitter produces 150 watts input PEP on SSB and CW. This provides an output of about 70 watts – with a bit less on 10 meters. Like the receiver, the transmitter covers the 80 thru 10-meter bands – not including the WARC bands. This is lower than most radios of the time

which had an input power in excess of 200 watts. However, tight physical size and the lack of a cooling fan likely put design restrictions on the transmitter.

Interestingly, the receiver bandswitch for 10 meters had three positions while the transmitter covered all three of those positions with one position. That is understandable.

The IC-700R Receiver and the IC-700T Transmitter are setup with the IC-700PS AC Power Supply/Speaker Console, pictured in the center of the pair in the station picture, earlier in the article. The interior of the unit is as shown here:

W9MXQ or KE9PQ Photo

This is an interior view, viewed from the rear, of the IC-700PS AC Power Supply/Speaker Console. You can see the voltage doubling rectifier board for the nominal 500 VDC high voltage used by the final amplifier tubes and the nominal 250 VDC "low high voltage" produced for the tubes other than the final amplifier tubes. This is mounted over the North American version power transformer. Also provided were bias voltage for the final amplifier tubes, filament voltage for the transmitter vacuum tubes, and 12 VDC for the solid-state stages. There is a 120 VAC convenience outlet for the IC-700R Receiver.

Here is a rear panel picture of all three units in the IC-700 Station:

IC-700T Transmitter   **IC-700PS Power Supply**   **IC-700R Receiver**
IC-700 Station Rear Panel Views

W9MXQ or KE9PQ Photos

For interconnections – and somewhat repetitive from above – there are three octal connectors present for power distribution within the setup. The octal connector on the transmitter is to connect power from the one octal connector on the power supply. The one octal connector on the receiver determines (by its wiring) the power supply used (12 VDC or 120 VAC). If 120 VAC, then it can be plugged into the convenience outlet present on the back of the power supply (next to the fuse and AC cord). The control cable connects between the 7-pin miniature sockets at the left side of the transmitter and the right side of the receiver. The VFO feed cable from the receiver to the transmitter is connected to the phono sockets seen at just left of center on the receiver and to the right on the transmitter. Finally, there is the terminal strip on the back of the power supply for connection to its integrated speaker. That speaker line comes out of a 1/8" speaker connector on the receiver rear panel, right side.

For some panel specifics, please note the two illustrations, below:

IC-700R Receiver:

Note upper center BAND SELECT switch and see the "28-10" position. When in that position and with the PRE SELECT control can be tuned to 10 MHz for receipt of 10 MHz WWV. The BAND SELECT has the A, B, and C crystal positions. The receiver includes AM and AM with Automatic Noise Limiting plus SSB and CW. The RIT controls +/- 5 kHz excursions from the indicated dial position (receiver only). The ring on the back of the TUNING knob can be turned to adjust for dial calibration. The main dial (above the TIUNING knob) shows rough calibration in 50 kHz segments while the adjustable ring indicates kHz either 0-50 or 50-100, depending on main dial starting point.

IC-700T Transmitter:

Immediately can be seen the lack of a VFO knob – depending on the receiver frequency. Since no information or manuals seem to exist on this radio, one must use caution and known techniques for tuning a tube final amplifier. Current should be held to (dipped at) 200 mA, at the most. Note that FUNCTION does not include AM mode even though the receiver does include that mode. VOX GAIN must be moved to the off, or PTT position to allow the transmitter to work on PTT operation. The microphone (MIC) connector is an odd (but readily available) three pin model. Transmitters like the IC-700T require extreme care in tuning. They are delicate, close to the edge on power capability, and easily damaged if the user is careless or inexperienced.

The IC-700PS is shown between the IC-700T Transmitter and the IC-700R Receiver in the complete station setup earlier in this article. Here is a closeup view of the front panel:

IC-700PS AC Power Supply/Speaker Console:

This power supply in the North American market came with a 120 VAC (only) power transformer and a fixed two wire AC Cord. Unlike radios today which accommodate 100 VAC (Japan), 120 VAC (North America), 220 VAC Center Tap (many areas) and 240 VAC non-Center Tap (also many areas). Likely with the low volumes the power supplies were custom made for market being supplied. Note the neon pilot light and the push/push on-off switch. That switch did not control the utility outlet on the rear panel intended to supply the IC-700R Receiver with AC power.

Icom also provided a 12 VDC Power Supply for the IC-700T Transmitter, it was a model IC-700PSDC. Recalling that the IC-700R Receiver was capable of 12 VDC operation as connector option, the IC-700PSDC would allow the complete station to operate mobile or portable on bat-

tery power. Here are some pictures of the IC-700PSDC – the only information I have on this unit:

IC-700DCPS DC Power Supply:
This power supply augmented the IC-700PS AC Power Supply when operation from 12 VDC was desired. The three views here are of the cable, the assembled power supply, and the connections available.

Rigpix Photo

Inoue, known to all of us, today, as Icom (see details, below) produces much more sophisticated radios. And, yet, as a long-term user of many Icom HF radios[2], I can "hear the IC-700R" in every one of them.

In the early 1970's, Inoue (In'-oh-way) changed their name to Icom. Inoue was the name of the founder of what became Icom. The company had been a well-known producer of VHF FM equipment (and continue to be into the present time). Inoue, now Icom, was founded in 1954 by Tokuzo Inoue,[3] who remains as leader of the company. Asian companies at times do change their names to a more global format – that is perceived to be a positive for their marketing organizations. Here is the progression:

Inoue Logo
Most often this was red or silver, but also blue. The logo often included the text, "Inoue Communications Equipment" or "I.C.E." adjacent to the logo. Check the red Inoue logo on the front panels of the IC-700R and IC-700T.

Early Icom Logo

Current Icom Logo

The logo change for Icom from the Inoue logo with the word, "Icom," changed during the production cycle of some radios. For instance, all Icom IC-751 Transceivers have the Early Icom Logo and so do early IC-751A models. Late IC-751A models, however, carry the Current Icom Logo.

As said at the beginning of this article, these are extremely rare radios. As it happens, I know of two complete sets that are available as of this writing. If you are interested, contact me and I can set up contact for you with their owner. These are true collectables and not for the casual collector to plug in and get working to make contacts on a whim. Their greatest value may well be knowing you have them!

Special thanks go to Bob, W9DYQ, for his proof-reading. And, I appreciate that you read my articles. Remember that I am open to questions and comments at my email address, W9MXQ@TWC.com. Also, for this article, I owe a debt of gratitude to Mark Olson, KE9PQ, Nationwide Radio[4], for his assistance in this set of IC-700 Twins.

Notes:

[1] Estimates of radio sales volumes are difficult to determine. Suffice it to say that I have a lot of different friends in the industry and they have knowledge I do not possess. Production volume comments from the most credible sources. Some are retirees from the specific companies or otherwise not willing to be quoted specifically. However, for the IC-700R Receiver, I can, quote Fred Osterman, N8EKU, in his book, *Shortwave Receivers Past and Present*, (Universal Shortwave Research. 4th Edition © 2014) where he lists the Inoue IC-700R as "Extremely Scarce."

[2] Equipment I have or have had (only two remain with me) from Icom were the IC-751A, the IC-775DSP, the IC-756PRO, the IC-756PROII, the IC-756PROIII, IC-706 (original), IC-746, IC-726, IC-746PRO, and the IC-7410. I am an experienced Icom user and have respect for many of their features.

[3] Credit: Wikipedia <http://www.wikipedia.com> - search for "Icom."

[4] Nationwide Radio <http://nationwide-radio--amp-amp-amp--eq-sales-llc.mybigcommerce.com/>.

[5] In this article, the term VFO is used to describe a tunable frequency control. The VFO in the IC-700T was a capacitor tuned oscillator. In the Drake R-4 and R-4B that VFO was actually a PTO, that was tuned with a variable inductor.

W9MXQ ©2020

Project of the Month©
de Gary Drasch, K9DJT

Building a Simple Dipole

Last month I showed how to build a center insulator for my Field Day/ emergency dipole antennas. This month it would only be appropriate to show how to build the dipole itself. Anyone who knows me, or has read my book, *Ham Radio is Alive and Well*, is aware of how I feel about hams purchasing a wire antenna. Building a wire antenna is one the most simplistic things us radio amateurs can build. Not to mention the money saved.

There are only a few things required. The first, and most important, is the formula of: $L = 468 / f_{MHz}$. That is the total Length (L) in feet of the dipole, is equal to 468 divided by the frequency (f_{MHz}) in megahertz you prefer to operate at. That is the exact same formula all the commercial wire antenna manufactures use. (Don't let them know I leaked it to you.) You will also need some type of tape measure, a pointy thing like an awl or icepick, wire cutters, pliers, knife or wire stripper, solder, and a soldering iron or gun. If you don't know how to solder, learn. There are plenty of people in the club who are willing to teach you. Just ask.

OK, that is the knowledge and tools required. What about the materials? Let me see. We need an insulator at both ends and one in the middle. There isn't anything special about this stuff other than one material will maybe last longer than another. Insulators may be made out of PVC pipe, flexible pluming pipe, cut-up plastic bread boards, commercially available plastic or

ceramic. It doesn't matter…nor does it affect the performance of the antenna. As far as wire goes, what do you have lying around? You probably could buy an adequate length at the club's Scholarship Auction or from Tom, W9IPR, for 25 cents! Again, it doesn't matter. You can use solid-drawn cooper, stranded copper, copper-clad welding, or stainless steel wire. It can be insulated or not. Use what you have. If it matters, use what looks good or stealthy to you. Now having said that, technically, an engineer who looks for mouse crap in the pepper will tell you that the diameter of the wire, and insulation on the wire, does make a difference, and he or she is correct. It does. But not so much to prevent a ham from designing and building their own antenna. The same goes for the type of wire. Technically, stranded wire will survive wind longer than solid-drawn. But ask yourself, how sharp are the bends of a copper wire during a wind

storm? They sure aren't at right-angles! I'm still using some of the same solid-drawn wire I used when I returned to the hobby in 2010, and it will most likely last until I croak.

A 20 meter dipole is what I need to add to my arsenal of emergency/Field Day antennas. I already made the center insulator last month so all we need to do now is calculate the length of the two wires, fasten the end insulators, the center insulator, and solder. Using the formula, I'm going to divide 468 by 14.050 MHz which equals 33.3 feet for the total length of the antenna. (I chose the CW portion of the band for this antenna because if required to use PHONE, it can easily be shortened rather than made longer.) Because we require two separate wires, we need to divide the total length by 2. That equates to 16.65 feet per wire. I'm now going to convert the .65 foot to inches by multiplying .65 times 12 inches which equals 7.8 inches. Seeing .8 of an inch is so close to ¾ inches, we're going to make each leg 16'-7¾." That would normally be the measurement used between the hole of the end insulator and the hole of the center insulator. But wait a minute! What about the additional 6" of stranded wire coming from the center insulator? There is 3" on the shield side and 3" on the center conductor side of the connector. Those will actually become part of the antenna length and need to be subtracted from each side. Therefore our wires will be 16'-4¾" from the end insulator hole to the hole of the center insulator.

What I've found to be the easiest way to do this is to first attach an end insulator to the wire coming off of a spool or coil. You simply pass a few inches of the wire through the hole of the insulator and bend it around back to itself and closely wrap three or four turns. You might want to use a pliers to tighten the wrap. Whatever is left over can either be snipped off or wrapped further down. Now put an awl or

icepick through the hole of the end insulator, where the wire is attached, and push into the ground. Also fasten the end of your tape-measure to the awl. (Mine has a loop which I also pass the awl through.) Now lay out the wire alongside the length of the tape-measure, and find 16'-4¾". Right at that point, bend the wire 90 degrees. Measure 4-1/2" from the bend to-

wards the spool and cut the wire. Now measure from the bend towards the attached insulator 1-1/2" and from that point strip the insulation including the 4-1/2" towards the cut end. There should now be 6" of bare wire. Relocate the 90-degree bend and put the wire through the hole of the center insulator tight to the bend. Bend the loose end back around and wrap to itself. Wrap the end of the stranded wire coming from the connector to the wrapped antenna element and solder. Repeat the same steps on the other side and you have yourself a dipole ready for deployment.

This happens to be the way I've built wire antennas. Some other old guy will likely have his own way to make them. Neither is right or wrong; only different. The main thing you need to follow is the formula which is common to all of them including the commercially built ones.
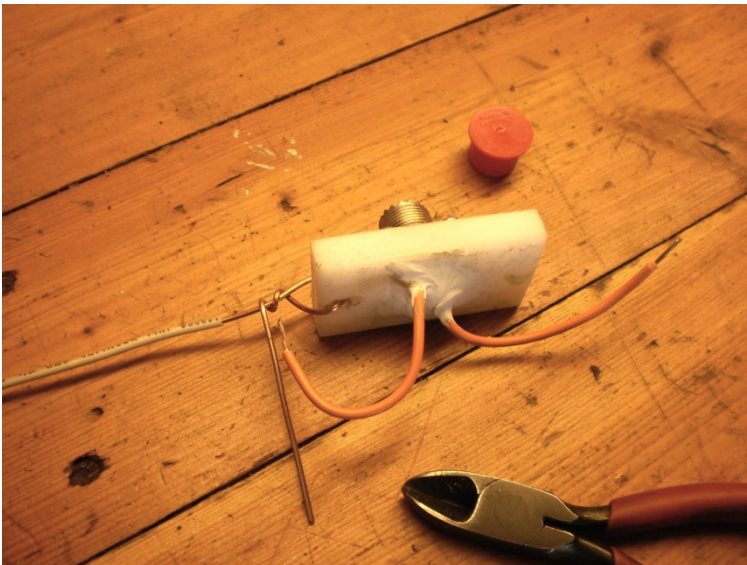
This is a technical hobby in which we can all make some of our own stuff and actually use it to communicate. That's the magic of the experience! It's a reason to imagine and build!

If you have a project you've built, please share it with the club. If you dislike writing, send me some pictures, we can talk on the phone, and I'll write it up for you.

Catch you on the bands!

73, Gary
K9DJT

DX'ing & Contesting
De Gary Sutcliffe (W9XT)

The spring and summer fun on 6M that I have covered in the last few columns appears to be over for the most part. The band is not opening every day as it did earlier in late spring and early summer. The openings are not as long and tend to be limited to the Gulf Coast. I worked over 250 different grids this season, and 29 countries, several of which were new ones. I know Ken, W9GA, picked up a few new ones.

Ken's big goal is the FFMA award. It is named after Fred Fish, W5FF (SK), the first ham to contact and confirm 6M QSOs in every grid containing land in the continental US. It is an exceedingly difficult award, and only a dozen or so have accomplished it. Ken is down to his last dozen or so of the 488 required grids.

My main interest on 6M is chasing DXCC. Unfortunately, DX openings are rather rare here in Wisconsin. Watching the PSKReporter maps, it is obvious that we are a state too far north and/or too far west most of the time. In between I chased new grids, and Ken turned me on to the FFMA.

Many of the grids are very rare, especially some out west. No one lives there in many cases, or no one is active. Others just include a sliver of land, the rest of the grid being water. So how does one work these grids? It turns out that it is often the same way HF DXers work many new countries – someone goes there to active them.

Ken turned me towards a part of the hobby I sort of knew existed but did not know was as active and big. There are locations on the web where the information on 6M activity is discussed. Ken clued me into the ON4KST website. I have used it for the low bands but didn't notice there were 6M chat rooms as well. I found out about some grid DXpeditions by W7GJ. Lance is a big-time 6M guy and usually makes a couple of trips per year to put on rare countries on 6M EME. With the international travel restrictions, he decided instead to go on several grid DXpeditions in the Montana area. He loaded his truck with camping gear and radio equipment and headed out. In some cases, he operated from grid lines, giving out two grids at a time. Lance's operations put a few rare ones in my log.

There is another opportunity in August for those interested in VHF. That is Meteor Scatter (MS). When a meteor enters the atmosphere and burns up, it leaves a trail of ionized gas. These trails reflect radio signals. Depending on the size of the rock, and the frequency, the reflection can last from a few milliseconds up to a minute or so. The path remains open longer on lower frequencies for a given trail. Most meteors are the size of grains of sand and produce short bursts, well under a second. Contacts up to about 1400 miles are possible.

Meteors continuously rain down on the earth. If you go out in a clear moonless night, you can usually see several per hour. Radio meteors are more frequent. Several times a year, the earth's orbit crosses the path of a comet. Comets are globs of ice, dust, and small rocks. As the ice vaporizes, the dust becomes the tail we see, like with Comet NEOWISE, which made an appearance this summer. The larger pieces spread out over time along the orbit. When the earth passes through the orbit, we get an increase of meteors, called a meteor storm. In some good years, some storms can produce 150 meteors per hour but are usually much lower than that.

Meteor showers are named from the star constellation that they seem to appear from. One of the best is the Perseids because meteors from debris from the Swift-Tuttle comet appear to come from the constellation Perseus. Meteor showers will have a peak date. This year it is the night of August

11-12, although the peak is pretty broad. There will be Perseid meteors useful for MS contacts by the time you read this, and for maybe a week afterward.

So, what does it take to make MS contacts? Well, if you have been making contacts on 6M FT8, you have all you need. If you are on the digital modes and have a rig capable of SSB on 6M or 2M, you are all set. A big antenna and high power are not needed. Power is useful, but big beams can actually be less effective because of their narrow beamwidths. I once worked a station in Florida who was running 12W, and a 7-element homebrew Yagi mounted on a step ladder. That was on 2M.

You do not use FT8 for meteor scatter. FT8 is designed to dig deep into the noise. Meteor signals are often loud, but usually very short. Instead, load up WSJT and set the mode for MSK144. MSK144 is designed for sending the exchange extremely fast to take advantage of short bursts, most well under 1 second long.

Operating is similar to FT8 in that you alternate transmitting and receiving for 15 seconds. You do not spread out with MSK144. Just set the rig for the frequency listed by WSJT-X. With luck, while you are receiving there will be a short burst from another station calling CQ. It can be at any point in the 15 second period, or it can last several seconds or so. Click on the decode, and your computer will try to make a contact like how you do with FT8.

There are nuances in operating. I suggest you read the WSJT-X manual section on operating MS. There are also web sites explaining operating techniques. A good site to check out is www.pingjockey.net. It is a chat site for coordinating MS contacts. Many contacts are done with schedules, which you can arrange on the site. Or you can just learn about other QSO attempts, and listen for them.

The best time to work MS is after midnight. Before dawn is a great time, but you can make contact later. This summer, I made a 6M MS contact about 8:30 AM local. There was not even a shower going on. A lot of MS contacts happen using random meteors on 6M, which is the easiest band.

Most of the time it takes several sequences of transmission cycles to get to the next step in the QSO. The more meteors, the sooner a suitable one will pass by to complete the sequences.

Meteor scatter is an interesting mode. Give it a try.

There are not a lot of big contests in August and early September. A new one is the Worldwide Digi DX Contest. It is for FT4 and FT8 QSOs. The exchange is you are your grid. QSO points depend on the distance, with longer distant QSOs being worth more points. Multipliers are the two-letter grid blocks.

There are many entry classes, high power, low power, and QRP. Also, all band and single band within each power class. It starts Saturday, August 29, at 12:00 UTC (7:00 AM local) and runs for 24 hours. More info at https://ww-digi.com/rules/

The first big one in September is the ARRL September VHF Contest. This the same format as the June contest. It starts at 18:00 (1:00 PM local) UTC Saturday, Sept. 14, and runs until 0259 UTC Monday (9:59 PM Sunday night local). Rules are at http://www.arrl.org/september-vhf

As the last few months, there really are no DXpeditions in the next month.

Fall is going to be here before you know it. It looks like we will not be back to normal from the COVID-19 thing anytime soon. Get to work on those antenna projects because you might be spending a lot of time in the shack this winter.

An Invitation from Hawaii

By Pat Volkmann, W9JI

If you live in Hawaii, where do you go for your vacation? Why, Wisconsin of course! Michael Schultz WH6ZZ stopped in for a visit at the ORC last summer. He sent me a message offering to set up skeds for Hawaii and an invitation to participate in the Hawaii QSO party later this month. Here is Michael's email:

Aloha Pat,

I enjoyed attending a few ORC meetings last summer while I was on vacation in Wisconsin. Unfortunately, the Covid has kept me home here in the middle of the Pacific Ocean this year, but I do enjoy reading the ORC Newsletters, and I'm looking forward attending meetings and outings next year.

*Perhaps ORC members might be interested in the Hawaii QSO party on August **22-24**. The Hawai`i QSO Party (HQP) is an event to promote HF operation with the unique Hawai`i destination in the Pacific. Hawai`i is an ARRL DXCC entity as well as the nation's 50th state needed for the ARRL WAS Award, as you may know.*

Many Hawaii Hams will be on-the-air for the QSO Party from 0400 UTC Aug 22 through 0359 UTC Aug 24, 2020. Stations must be worked only on the 10, 15, 20, 40, 80, and 160 meter bands. All digital modes (RTTY, FT8, FT4, PSK, whatever) are considered "digital" so there are three modes to use: CW, Phone, Digital. More information can be found at: **https://www.hawaiiqsoparty.org/**
I'm looking forward to QSOs with ORC members then (and anytime actually) using SSB, JS8, (and maybe FT8 or PSK31) on 20 Meters. (Thank you Don Lesch K9KOI for the Double Bazooka inspiration! It is my primary HF antenna). Although 14.250 is the suggested QSO Party SSB frequency, if it is piling up, I'll be on an adjacent freq.
Hopefully, the sun will cooperate and we'll have some excellent conditions.
Aloha and 73….
Michael Schultz

WH6ZZ QSL Card

Ozaukee Radio Club
July 8, 2020 Meeting Minutes

de Ken Boston W9GA

This ORC meeting was conducted via an online (internet) connection using the ZOOM app. Prior to the meeting start, those members who were able to access the 'waiting room' via phone or computer/webcam were then introduced into the meeting space hosted by Pat W9JI. At that time, various audio and video connection issues were addressed for the members before the meeting began.

ORC President Pat Volkmann W9JI officially initiated the meeting at 7:33 PM. Introductions were recognized when members checked into the meeting, to a go-around was not conducted.

Committee reports:

SWAPMEET: As reported from a recent ORC Board of directors meeting, by a vote of 7-0 (1 abstain) the August 29th outdoor swapfest has been cancelled. Sadly, the coronavirus remains an issue, and although the fest is staged outdoors, it was felt that there remained some risk, and attendance would be very low.

REPEATERS: Tom KC9ONY discussed the activity on the system, and hoped to see more use on the 222 and 440 MHz systems in the future. The Tuesday night net remains active at 8:00 PM, and also is linked to the 222 system.

Pat W9JI: Had several items to present. He asked that if anyone knows of some Ham who would like to join the ORC Zoom meetings, they get in touch with him for an invite. He mentioned that the donation button has been added to the webpage for those who would like to support the club due to the loss of revenue. ORC is also part of the Amazon 'smile' program, which can add some small revenue when members buy on Amazon.

Stan WB9RQR has been handling some online auctions of various computer items. Watch for his emails and respond quickly if you're interested.

Gary W9XT mentioned the upcoming "virtual ham expo" to be held on August 8-9 via Zoom. It is being presented by the "QSO today" podcast crew, and features 70 speakers, and also includes exhibitors. Entry is free for any early applicants. See the link in the ORC newsletter in W9XT's column.

Gary N9UUR presented his Treasurer's report, sent via email. Expenses were low, and little income was noted.

Ken W9GA referenced the minutes of the June meeting. Bill W9MZQ moved to accept, Stan WB9RQR seconded, motion passed.

Program:
W9JI had input from 10 members on their FD effort, and showed slides and heard comments:

W9MXQ: 1D	0.5K score
WT9Q/AE9MY: 2D	5.0K score
N9UUR/N9VSV: 2D	2.0K score
K9QLP: 1D	126 score
W9XT: 1D	5.8K score
W9KEY: 1D	2.4K score
W9GA: 1Eb	2.0K score
AC9WL: 1D	600 score
W9JI: 1D	???
K9DJT: 1D	1.9K score

Adjournment:
30 (+1) members (unique callsigns) were logged in. Contact Ken W9GA to obtain the list.
Bill W9MXQ moved to adjourn, Ken W9GA seconded the motion, and motion carried.
Meeting ended at 9:10 PM

Respectfully submitted,

Kenneth Boston W9GA
Secretary

ORC Meeting Agenda

September 9, 2020

1. 7:20 – 7:30 PM – Check-In and Introductions
2. 7:30 PM Call to Order – President Pat Volkmann (W9JI)
3. Announcements, Bragging Rights, Show & Tell, Upcoming Events, etc.
4. Program – ORC Repeater System Overview, Tom Trethewey KC9ONY
5. President's Update – Pat Volkmann (W9JI)
6. 1st VP Report – Ben Evans (K9UZ)
7. 2nd VP Report – Bill Church (KD9DRQ)
8. Repeater VP Report – Tom Trethewey (KC9ONY)
9. Secretary's Report – Ken Boston (W9GA)
10. Treasurer's Report – Gary Bargholz (N9UUR))
11. Committee Reports
12. OLD BUSINESS
13. NEW BUSINESS
14. Adjournment

Meeting Note:

For the foreseeable future, we will be holding the meetings via the Zoom Videoconferencing platform on the same evening and time as we had the in-person meetings. Details will be emailed via the ORC remailer usually about an hour and a half before the start of the meeting.

Return undeliverable copies to:

The ORC Newsletter
524 Alta Loma Drive
Thiensville, WI 53092

First Class

Next ORC Meeting via Zoom
Sepember 9, 2020

7:00-7:20 PM – Check-In
7:30 PM – Meeting Begins