



TMRA Amateur Radio Beacon

March 2021



From the Prez, Steve W8TER

Our local ham club, The Toledo Mobile Radio Association has recently within the past few years, been installing and changing over to Icom's DSTAR repeater system and to Yaesu Fusion. There has been some questioning as to the reasoning behind this venture.

The changing of the repeaters goes along with the changing of the new hams coming into the amateur radio community. Switching to a new mode or changing how something functions is part of the progression. Ham radio has switched from Spark Gap CW to AM Voice to SSB to FM to Packet radio to Software defined radio to Internet connecting to Digital to Software mode. There will come a time when the experimenters will develop something new and different again. There is a saying that goes "If it ain't broke, don't fix it!" "If you need to fix it, make sure you know how to use it!" The second part of that quote is seldom if ever used. It does emphasize the need for the experienced to teach the inexperienced. It is a two way street for old and young when it comes to elmering. Spending the time to include and educate those who do not understand will go a long way.

There is a somewhat familiar quote from a movie script that hauntingly makes sense..."If you build it they will come." Either way you look at it, those who want to experiment and play with radio will likely be attracted to whatever the most current trend is because they have already played with most everything else. Those on the cutting edge should keep in mind that those who are NOT up to speed on the latest and greatest may want to be. Take the time to be an elmer anyway you can.

Thanks for listening.

Steve W8TER

Don't Forget--- March is the month when you can renew your membership in TMRA for the next sixteen months for \$25!

The best way to do this is to use the TMRA store at

www.tmrahamradio.org/store

where you can use Paypal even without a Paypal account. Choose a \$20 membership and \$5 for a family member and we will sign you up!



ARES News

From Tim, KD8IZU

boxcar@toast.net.

And April 25th, mark this date on your calendar, this will be our first event of the season - the Glass City Marathon is on. They are running with all water stops at this point. We are not taking volunteers yet, just making you aware of the event.

There is an app on the IO Group to renew your Lucas County ARES Membership, this app will also allow you to sign you up for ARES alerts and get info to get state ID when there is a emergency deployment. Please fill it out so we can keep our records up to date if you are a

Lucas County ARES Member.

If you go to the Ohio Section newsletter at ARRL-Ohio.org under Skywarn there are several sites listed for Skywarn Spotter Training. The Lucas County Siren Net is always the first Friday of the month, we run a net on the 147.270 repeater starting around 11:45 a.m. with the sirens going off at noon.

The Lucas County ARES Meeting is held on the fourth Saturday of month. Keep an eye on the ARES IO Group and listen to the ARES in Brief Net on Sunday night at 7:30 P.M. for any changes.

The ARES in Brief Net is ran on Sunday nights at 7:30 P.M. on the 146.940 repeater and on the fourth Sunday of the month 147.270 repeater. This Net is where ARES puts out their announcements and your chance to enter your voice.

From March 2021 QST, FCC Reduces Proposed Amateur Radio Application Fee to \$35

“The FCC has agreed with ARRL and other commenters that its proposed \$50 fee for certain amateur applications was “too high....”

Using the argument that amateurs provide important services to the public, the FCC countered that emergency communications are voluntary “and the Amateur Service is not an emergency radio service.”

CQ Magazine in January also noted that (in the *ARRL letter*) volunteer examiners save the FCC lots of money but that does not seem to have been considered either.

A Few Thoughts About SWR, Impedance, and Antenna Tuners

Bruce AA8HS, editor

What does an antenna tuner do? It keeps your HF rig or amplifier happy! That means that it presents an acceptable Standing Wave Ratio (SWR) and impedance to your radio. That is usually an SWR of 1.5 or below and an impedance of about 50 ohms. It does this with the use of a matching network. This is usually an adjustable coil and two capacitors. While showing an acceptable impedance to your radio, it passes as much power as possible to the antenna although some degree of mismatch between the antenna and radio may be present. Modern tuners, whether automatic or manual, can handle an impedance of 5 to 500 ohms up to about 600 watts SSB with lower limits at higher than this. Any power that is not radiated (because of a mismatch) goes towards heating the coax.

Tuner adjustment

One of the ways that I adjust my manual tuner is to connect my antenna analyzer to the transmitter connector on the tuner and then adjust for best SWR and impedance combination at the frequency where I intend to operate. I write the settings for transmitter adjustment, antenna adjustment and inductance down on a chart for future reference. Although the weather may change the settings slightly, this process usually works OK without retuning the tuner. But what about measuring the SWR and impedance from the antenna directly? Why would you want to do this? Depending on your antenna setup, you mostly likely do not have antennas resonant at 80, 60, 40, 30, 20, 18, 15, 12, and 10 meters. If you wanted to try working all of these bands with either digital or SSB modes, some tuning may be required in the shack. This may not be the case with the StepIR or some vertical antennas which are tuned differently or tuned outside.

Power loss according to mismatch

In any case, measuring and documenting the SWR and impedance will give you an idea of how much signal you are losing on receive and how much power loss on transmit. The chart below shows how much this can affect performance of your system:

SWR Reading	% OF LOSS	ERP*	Power Output in Watts	Power Loss in Watts
1.0:1	0.0%	100.0%	100.00	0.0
1.1:1	0.2%	99.8%	99.8	0.2
1.2:1	0.8%	99.2%	99.2	0.8
1.3:1	1.7%	98.3%	98.3	1.7
1.4:1	2.8%	97.2%	97.2	2.8
1.5:1	4.0%	96.0%	96	4.0
1.6:1	5.3%	94.7%	94.7	5.3
1.7:1	6.7%	93.3%	93.3	6.7
1.8:1	8.2%	91.8%	91.8	8.2
2.0:1	11.1%	88.9%	88.9	11.1
2.2:1	14.1%	85.9%	85.9	14.1
2.4:1	17.0%	83.0%	83	17.0
2.6:1	19.8%	80.2%	80.2	19.8
3.0:1	25.0%	75.0%	75	25
4.0:1	36.0%	64.0%	64	36
5.0:1	44.4%	55.6%	55.6	44.4
6.0:1	51.0%	49.0%	49	51
7.0:1	56.3%	43.8%	43.8	56.3
8.0:1	60.5%	39.5%	39.5	60.5
9.0:1	64.0%	36.0%	36	64
10.0:1	66.9%	33.1%	33.1	66.9

* ERP = Effective Radiated Power.

So when I connected my 160 meter dipole to my antenna analyzer at 5357 Khz (60 meters), the SWR was about 9.0! This means that 64 per cent of my power went towards heating the coax. Since I have a 1:1 balun in place (a UNUM), that was also heating up. It also meant that there was a significant loss in received signal. If you are running FT8, it can mean the difference between hearing a foreign station or not. For FT8, you could raise your power level to compensate although there are better ways to deal with this. For SSB, an S unit is a power factor of four so 9.0 dB is not exactly one unit. It still could represent the difference between hearing another station or not.

As Steve KC8TVW has said during the Technician classes, the better way to handle this is to address your antenna issues to get a better match. In further testing, I learned that my 80 meter dipole had an SWR of less than 4.6 and an impedance of 25 ohms. My modified G5RV (ZS6BKW) showed an SWR of 3.6 with impedance of 18 on 60 meters. Although there are other factors such as the radiation pattern of the antenna, the one with lowest SWR is most efficient. However, the tuner matched all three antennas with no problem.

Antenna issues

It all depends on what you want to accomplish. If it is being able to operate CW or digital modes on all HF bands then there are some antennas that you may want to consider. If you have the space and supports for it, a fan dipole will provide coverage on several bands. A quick check of the vendors showed that some will support 80, 40, 30, 20, 15, and 10 meters and others include 17 meters. You can always build your own and include a 1:1 current balun to keep signal off the coax. You can make your own UNUM from RG-8X or RG-8 coax wound around PVC pipe or by using 4 feet of RG-316 coax wound around a 140-43 toroid (for 600 watts or less); use 6 feet of RG-303 around a 240-43 toroid for 1500

watts. Some hams have also had luck with off center fed (OCF) antennas to cover multiple bands. The Comet CHA-250B is expensive and can be lossy on 80 meters but definitely produces a low SWR from 80 to 6 meters. Three fifteen-foot-long radials at a 45 degree angle from the base of the antenna may improve efficiency and the higher that it is placed, the better.

Another popular way to use one antenna for multiple bands is to use a 9:1 balun with an end fed antenna. Ron N8RLH has used this at Field Day. For 80 meters, the length of wire can extend beyond 90 feet with specific lengths of coax being required. Palomar Engineering sells a 9:1 balun used up to 500 watts (300 watts for SSB) with instructions on their site. The table below shows my results with a ZS6BKW (modified G5RV) on all HF bands using FT8 frequencies; your results may be different:

Band Frequency SWR impedance

80 meters	3.573	1.4	49
60	5.357	3.6	18
40	7.074	2.1	32
30	10.136	2.0	26
20	14.074	2.3	22
18	18.100	2.2	52
15	21.074	3.1	17
12	24.915	1.8	41
10	28.074	1.9	36

As you can see, most of the SWR's are not that bad but the tuner needs to correct the impedance mismatches.

Lastly, WSJT-X software offers band hopping for WSPR mode. WSPR mode consists of a two minute transmission and is used basically for propagation testing with less than 5 watts. It can also be exciting to see your signal being reported in Europe with so little power and to receive numerous foreign stations in WSPR mode. With band hopping, you tell the WSJT-X software which bands you want to transmit and listen to depending upon the time of day. To get this to work, I had to choose at least one band for transmit. I let it run for 24 hours using all bands except for 160 and 60 meters using the ZS6BKW antenna and 5 watts. I received signals and was heard on every band in the list. Most of the signals received and heard were on 20, 30, 40, and 80 meters since these are the most active ones.

Good luck!

73

<https://hamwaves.com/decibel/en/index.html>

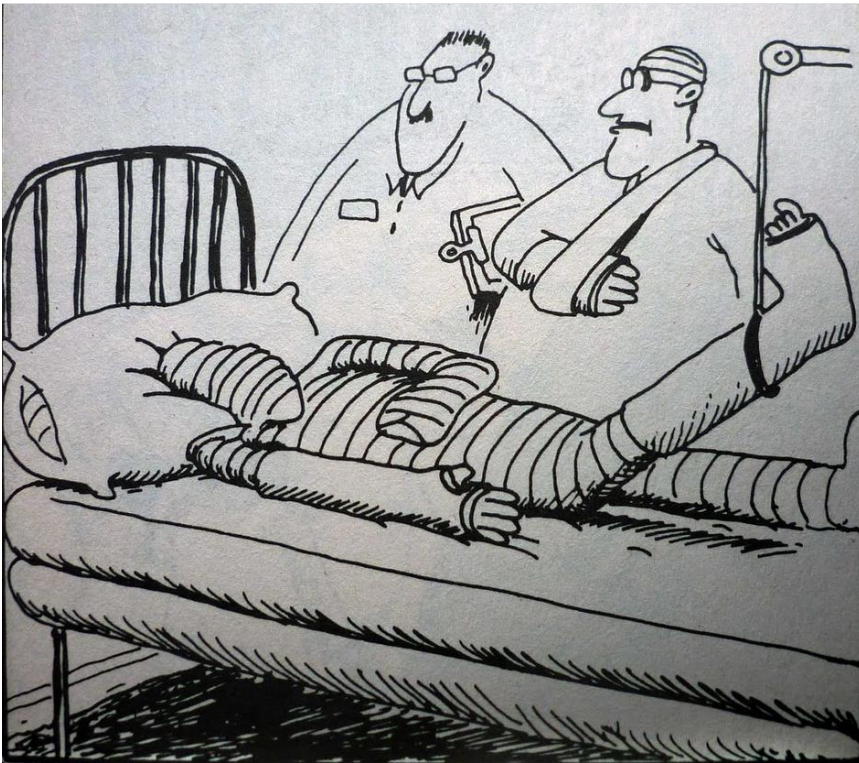
<https://www.ad5gg.com/2018/04/02/antenna-tuners-matching-and-swr/>

<https://ham.stackexchange.com/questions/14665/impedance-ratio-vs-swr>

<http://www.packetradio.com/pdfzips/SWRvsPowerNwatts.pdf>

Balun Basics, by W1IS and KC1DSQ, *CQ Magazine*, February 2021.

Ham Radio Humor



**...and then he tried to take the cat
off the top of his amplifier.**



From Scott KE8CQC

How does a ham apologize?
In remorse code.



I CLEANED UP MY SHACK
AND NOW I CAN'T FIND
ANYTHING!

HAM RADIO OPERATOR

🔊 N. [HAM RA-DI-O OP-ER-A-TOR]

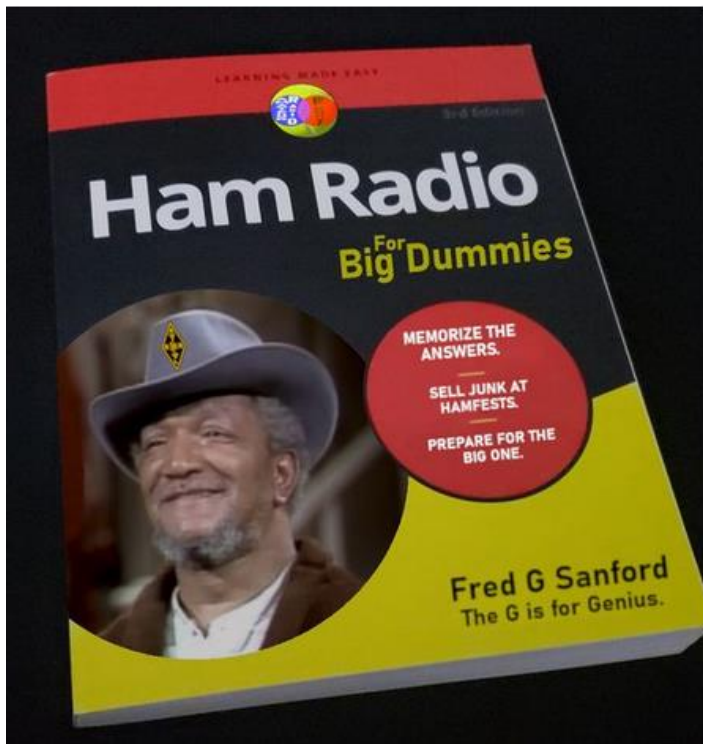
1. A person who solves problems you can't.
2. One who does precision guess work based on unreliable data provided by those of questionable knowledge.

SEE ALSO WIZARD, MAGICIAN

**GUESS THE ANIMAL CORRECTLY AND
YOU CAN BUY ANOTHER RADIO. NO GOOGLE!**



ngfip.com



Greetings, welcome to "Dale's Tales" for March 2021

Dale's Tales for March 2021

SPECIAL ADVANCE ANNOUNCEMENT: The plans are approved for a GREAT LAKES DIVISION ARRL CONVENTION this year. DX Engineering will be hosting the event at their facility in Tallmadge, OH on August 7 in conjunction with their DXE Hamfest. Plans for special meetings and forums will be announced as soon as those events are confirmed. Save the date!

SCHOOL ROUNDUP: The recent School Club Roundup looked like a real roundup for school clubs in the Great Lakes Division.

In the Middle/Intermediate/JR High contest category, the winner was K8LPS, the Columbiana Clippers Amateur Radio Club in Ohio. In the Sr. High category, the Dixie Heights HS in Kentucky, K4YDH brought

home third place and the College/University category, and W8EDU from Case Western Reserve in Ohio, brought home the third-place position in that category. Our most sincere congratulations go out to all. It is really neat to see a renewal of activity in school and college clubs and so many heavy hitters in the Great Lakes Division.

CONTEST COMMITTEE: I am pleased to report to you that the Great Lakes Division's vacancy on the Contest Advisory Committee was recently filled by President Rick Roderick K5UR who appointed John Comella N8AA of Fairfield, OH to serve as our representative in handling contest-related matters.

APPOINTMENTS: Vice Director Scott Yonally N8SY and I received Board appointments on ARRL Standing Committees for the coming year. The Board re-elected me to the Executive Committee and I was appointed to serve on the HF Band Planning Committee. I will also be assisting with the newly created Investment Management Committee. Scott highlights his appointments in "Scott's Stuff" below. At times it does not seem like much but some of these committees meet weekly. Combining that with the many radio club Zoom meetings that each of us currently attend, the weeks do get rather busy. We all hope to be back very soon with regular in-person sessions.

SCOTT'S STUFF: Comments from your ARRL Vice Director Scott, N8SY.

Wow, February has been cold and miserable out, but I have been so busy with meetings that I have hardly had time to notice it much. As many of you have read in the Board Meeting Minutes, I was assigned as the Board Liaison to the Public Relations Committee. We have been busy with several new projects that you will be hearing more about in the coming months. I was also asked to be a part of a special working group that the CEO, David Minster has put together, it is the Field Organization Working Group. Our primary objective is to document "best practices" for the Field Organization, helping create new tools and ideas for Section Managers and their staff. We have already had several meetings and we have got some great ideas in the works. More on that as time goes on.

Ok, let's switch gears... I had a dilly of a computer problem recently and if it were not for the fact that I have backups of all my files, I would be starting over, literally from scratch trying to recreate everything that is stored on my computer. This mess all started when I got a message from Microsoft that my Windows 10 had an update ready to install and it wanted me to reboot the computer to start the process. I discovered a while back ago that you never let Windows just update your computer automatically. You can lose everything without even knowing what happened that way. I got everything ready and I went ahead and rebooted the computer and that is when all the fun started. It stalled and rebooted a half dozen times and then finally the dreaded "BLUE" screen appeared. I tried several times to get the computer to reboot thinking it would clear itself, but to no avail.

Luckily most newer computers have a recovery system built into the hard drive just for these types of situations. Unfortunately to get this feature to work you usually need to wipe a large part of the "C" drive clean. The "C" drive is also where your personal files are usually stored. This means that all your personal files are gone, permanently, unless you have backed them up somewhere else. Since I have all my files stored on a portable drive as well as in the clouds, I did not lose a thing. Oh, I did have to go back and re-install all my programs which is a pain, but that is just a minor pain compared to what life would be like without all my files.

Please, if you have a computer and what you have stored on it is important to you, make sure that you do backups on a regular basis.

Portable hard drives are very dependable and cheap now days. You can buy a 4-terabyte portable drive for less than \$90. That is more storage space than most folks can use in a lifetime. Think of just how many pictures, music, or special emails that you may never get back if you did not have a backup of them.

That is going to do it from here. Let's keep our fingers crossed that we all get together at the DX Engineering / Great Lakes Convention in August!

--73, Scott Yonally N8SY, Vice Director, Great Lakes Division

HAMFESTING: As you can see from the growth on the Hamfest Schedule, clubs are making their best efforts to return their hamfests to the calendar. Several early-in-the-year swaps have been postponed, but some clubs are adjusting their timetables and setting their hamfests up with different configurations and planning them for dates later in the season.

For the latest detail on regional hamfests, check the ARRL web page at:

<http://www.arrl.org/hamfests-and-conventions-calendar>. PLEASE NOTE THAT WE STILL HAVE SEVERAL CANCELLATIONS ON THE SCHEDULE.

Here is the current listing of Great Lakes Division ARRL Sanctioned hamfests for 2021. Please note that all are subject to change, so please stay current by checking the sponsoring club's web page before making your travel arrangements.

On the 2021 Great Lakes Div. ARRL Sanctioned Hamfest calendar:

03/06/2021 - Cave City Hamfest, Cave City, KY -- CANCELED

03/07/2021 - WINTERHAMFEST, Elyria, OH -- CANCELED

04/25/2021 - Athens Hamfest, Athens, OH -- POSTPONED

05/21/2021 - Dayton Hamvention, Xenia, OH -- CANCELED

06/05/2021 - Fulton County, Wauseon, OH

06/12/2021 - Luce Co Yooper Hamfest, Newberry, MI

06/20/2021 - Monroe Hamfest, Monroe, MI

07/10/2021 - Mansfield Mid Summer Trunkfest, Mansfield, OH

07/18/2021 - Van Wert Hamfest, Van Wert, OH

08/07/2021 - DX Engineering Hamfest & Great Lakes Div Convention, Tallmadge, OH

08/28/2021 - Cincinnati Hamfest, Cincinnati, OH

09/11/2021 - Greater Louisville, Shepherdsville, KY

09/18/2021 - Cadillac Hamfest, Cadillac, MI

09/18/2021 - Richmond Hamfest, Richmond, KY

09/19/2021 - Adrian Hamfest, Adrian, MI

09/26/2021 - Cleveland Hamfest, Berea, OH

12/04/2021 - Fulton Co Winterfest, Delta, OH

12/05/2021 - L'anse Creuse Swap, Madison Hgts, MI

If you club plans to request ARRL Hamfest Sanctioning, they should do so well in advance of the planned Hamfest date, as this allows adequate time for QST Listings. QST announcements require a 3-month lead time.

If a swap is cancelled or the date is going to change, please notify ARRL HQ. We work together with the HQ staff to verify all new date selections in the hope of mitigating date conflicts.

Be sure to invite your ARRL Officials as soon as your date is set. Things do require some advanced planning, especially under the current travel restrictions.

It should be noted that there has been a change in the way ARRL contributes to your ARRL sanctioned hamfest efforts. Please carefully read the e-mail from ARRL Headquarters confirming your sanctioning as IT CONTAINS IMPORTANT DETAILS REGARDING PRIZES.

73, Stay safe.

Light up those bands!

Dale Williams WA8EFK
Director
Great Lakes Division
wa8efk@arrl.org

Did you know?

- The **Lucas County ARES Informational Net** is every Sunday at 7:30 pm on 147.270.
- The social net is every Sunday at 8:00 pm on 147.270.
- The **FLDigi Net** meets every Tuesday night at 7:30 PM at 147.27 MHz
- **Six Meter Nets** meet every Wednesday and Thursday at 9:00 PM (EST). The Thursday night Net is on 50.255 USB. For more information contact Dan, KE8UE, at dlcunn@sbcglobal.net. The Monday night 6 meter Net is at 9 PM on the TMRA 6 meter repeater.
- The **Lucas County Siren Net** is the first Friday of each month from 10:30 to 11:30 AM on 147.270 + W/103.5 PL and 442.850 + W/103.5 PL.
- The **Lucas County Hospital Net** is the first Saturday of the even numbered months at 10:00 AM.
- The **NORC Net** is the first Saturday of each month. This net typically meets at 11:00 AM on or around +/- 7.200 MHz LSB.
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- **Ron, N8RLH**, has ham gear from the estates of silent keys. Contact: 419-345-6382 or rlhornbeck@att.net.

- The **TMRA apparel store** is now open. Contact Gold Medal Ideas at <http://www.goldmedalideas.com/tmra>.
- The calendar at the **TMRA website**, www.tmrahamradio.org, lists numerous ham radio activities each month.
- TMRA has a **Facebook** page and an **Instagram** page, which can be accessed from an icon on the TMRA website or at <https://www.instagram.com/tmrahamradio/>.
- Don't forget to select TMRA as your Organization of choice for **Kroger Cares** and **Amazon Smile**. This results in a donation to the club as a portion of your purchase. Instead of typing in the URL www.amazon.com, you must use smile.amazon.com.
- There is a 900 Mhz net Saturday nights at 9 pm on the TMRA 900 Mhz repeater.
- There is a simplex two meter net on 144.22 Mhz USB Friday nights at 8 pm.

Editor's Note: Beginning with the February 2019 issue, The Beacon will no longer produce a print version for mailing. The Beacon understands this change may inconvenience some club members and regrets that it is necessary.

You may contact the Editor of *The Beacon* by emailing to: AA8HS@ arrl.net or writing to:

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