



The
Wave Bender



December 2019



AWARD WINNING NEWSLETTER

WRARC PREZ PRO TEM

Greetings, as I write this tonight the election for the officers has been held and our leadership for the next two years has been chosen. I want to congratulate our new officers and wish them the best. They have some great ideas, and I look forward to working with them over the next 2-years. One thing that impressed me is, there were no bad candidates, and this was evidenced by the fact that the presidents race was decided by just one vote.

As I end this term as President, I wish to thank everyone for their support and assistance in keeping WRARC on track, and having a very successful year with our Public Service Events. This is not something that is done by one person. The President can put forward an idea, and the Board refines it. Then it is carried out to the satisfaction of the groups we volunteer to assist, by all the Hams who are our members, independents, and members of other clubs that all come together to fulfill the vision of what Public Service by Ham Radio Operators is all about.

I hope that everyone had a great Thanksgiving and will have a Merry Christmas this year, as well as a happy, healthy and prosperous New Year. This will be my last article as President, again I wish to thank all those that worked so hard to make my job look easy.



73 Bob, N8RCM



Hi, Jane. Here are the election results from 11/19.

President- Chris Monske, WF8U
Secretary Mike Cibella, KC8UNR
Treasurer Bob Kramer, KE8HHH
3-year Trustee Ray LaShure, K8NVY

73, Maureen

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2019 Officers:

- President:** Bob Mitzel, N8RCM n8rcm@wrarc.net
- VP:** Maureen Stein, KD8NXS kd8nxs@wrarc.net
- Secretary:** Stan Adamski, KB3WPD kb3wpd@wrarc
- Treasurer:** Rose Marko, KD8TII kd8tii@wrarc.net
- Past President:** Bob Mitzel, N8RCM n8rcm@wrarc.net
- Trustees:**
 - Darrin Cannon, N8DMC n8dmc@wrarc.net
 - Roy Haren, KD8IJF kd8ijf@wrarc.net
 - Steve Fabry, KC8SOY kc8soy@wrarc.net

Appointed Positions:

- Social: Maureen Stein, KD8NXS
kd8nxs@wrarc.net
- Publicity: OPEN
- Nets: Steve Fabry, KC8SOY
kc8soy@wrarc.net
- Classes: Chris Monske WF8U
kd8ely@gmail.com
- Testing: Darrin Cannon, N8DMC
n8dmc@wrarc.net
- Newsletter/Web: Jane Avnet K8JAA
k8jaa@wrarc.net
- Historian: Rose Marko, KD8TII
kd8tii@wrarc.net
- Badges: Darrin Cannon, N8DMC
n8dmc@wrarc.net

Officer's Meeting:

December 10 2019, 7:00 P.M. At Eat 'n Park,
Austintown, Eat 'n Park,
5451 Mahoning Ave
All members welcome

Members Meeting:

December 17 2019, Davidson's
3636 Canfield Rd., Cornersburgh
Speaker: None

OTHER IMPORTANT WEB SITES

THE ARRL EXAM SEARCH PAGE

<[HTTP://WWW.ARRL.ORG/FIND-AN-AMATEUR-RADIO-LICENSE-EXAM-SESSION](http://www.arrl.org/find-an-amateur-radio-license-exam-session)>

OHIO SINGLE SIDEBAND NET

<[HTTP://WWW.OSSBN.ORG/INDEX.HTML](http://www.ossbn.org/index.html)>

ANTENNA HEIGHT ABOVE AVERAGE TERRAIN (HAAT) CALCULATOR

[HTTPS://WWW.FCC.GOV/MEDIA/RADIO/HAAT-CALCULATOR](https://www.fcc.gov/media/radio/haat-calculator)



<http://www.wrarc.net/>

FROM OUR VP

Greetings to all as we enter the last month of the year. Another one flown by! We cannot look back on this year without addressing the things we experienced during this time. In looking back on this year, it was certainly one of many changes, rough bumps, and loss. To overcome, but overcome we did and we have come out stronger for it. The change over in the presidency in the spring was a rough bump. We have survived all of the happenings surrounding that time. We all felt bad to experience that time, but the caveat is that the role of President is more clearly defined now and the proper uses of some of our tools, such as the QST system in particular, is more established as well. We all realize that the proper way to address any club issues is through the processes set out by our bylaw and SOPs. We will be moving into next year much stronger as a club.



Some of our changes were the timings of two of our major Public Service Events. This was the first year that we did two of them, The Peace Race and The Youngstown Marathon, only two weeks apart. We came out strong in those areas too. Many thanks to everyone who participated in our various WRARC events all year long. For anyone who hasn't yet come out for any of them, maybe 2020 will be your year. We are all needed! Everyone is important! We also experienced loss - the passing of one of our founding members - Dave Beatty, KC8WY/SK, in Aug. We miss him and miss hearing his voice on the radio. Our best wishes continue to go out to Liz and the rest of Dave's family. This in turn has led to another recent change - the moving of the 145.270 repeater to Steve, KC8SOY's, home in North Lima. There may be a few adjustments that this new locale may bring for some of us to work through to get into the repeater. It WILL all happen.

As I write this article, we are coming up on elections for President, Secretary, Treasurer, and one Trustee. We have all good people nominated for each position and we will enter into 2020 with a strong and capable board. I am optimistic that we have good times ahead this coming year. Installations for the new officers will be at the After the Holidays party in January. By the time you read this, the election will be behind us, and we will know who is entering each position. I wish good luck to all.

Speaking of the After the Holidays Party, I will be booking that with Davidson's right after our November general meeting. I will book it for Sunday, January 12, 2020, the second Sunday of the month, as long as it is still open. We will keep our usual 3:00 P.M. start time and keep the same format as well. That format is that everyone orders individually from the menu and each party pays its own bill that day - no need to pay ahead. This party is for our families, friends, and any other guests as well as club members. All I need is a head count to give the restaurant. I will have a sign up sheet at the December general meeting on the 17th. You can also call me at 330-398-1303 or e-mail me at <mfstein@zoominternet.net> to let me know how many are coming in your party. I need to give the head count a week before the party. If you call or e-mail, please also give me a phone number and e-mail address in case I need to contact you about anything party related.

We hope that the two little dirty words - one four-letter word beginning with "S" and one three-letter word beginning with "I" - stay away. I will let you know the date for sure as soon as it's booked, by QST, by the Friday night nets, Facebook, and word of mouth. Our speaker at the December 17 meeting will be Wes Boyd, W8IZC, speaking on the history of the Technician License, and the history of the repeaters in this area.

In closing, I hope everyone had a happy Thanksgiving. Wishing you all happy holidays in December, whichever ones you celebrate.

73, Maureen, KD8NXS

THERE WAS ONE NEW MEMBER PAUL GUGLIOTTI, KD8DEL,
AND ONE RETURNING MEMBER NOAH KINDL, N3DZH,
VOTED IN AT OUR NOVEMBER MEETING.
GIVE THEM A BIG WRARC WELCOME WHEN YOU SEE THEM AT A MEETING.

WHAT'S COMING UP?

- Dec. 07 YL Breakfast - PTBD
- Dec. 03 #Giving Tuesday
- Dec.10 Board Meeting - Austintown Eat 'n Park
Members welcome
- Ham Community Breakfast - Austintown Eat 'n Park
- Dec. 17 Members meeting 7:00 P.M.
- Dec. 24 Ham Community Breakfast - Austintown Eat 'n Park
- Dec. 25 Merry Christmas
- Dec. 31 New Years Eve

- Jan. 01 **2020 Happy New Year!**
- Jan. 04 YL Breakfast - PTBD
- Jan. 12 After the Holidays Annual Dinner/Meeting 3:00 P.M.



After the Holidays Annual Dinner/Meeting

3:00 P.M.

at Davidson's

Sunday, January 12, 2020

Contact Maureen

SAVE THE DATE!



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CONTACT WRARC ELMERS WITH YOUR QUESTIONS - QUESTIONS@WRARC.NET

Fabry, Steve KC8SOY
 Haren, Roy KD8IJF
 Williams, Russ NR8W

Yaesu FT8900, FT8800, Mobile
 ???
 Electrician, tele-data, Amateur
 Extra

kc8soy@yahoo.com
 harens@juno.com
 rwiliams@neo.rr.com

Articles from members for the Wave Bender are encouraged. They must be received by the editor by the 20th each month. Please send your articles to: k8jaa@arri.net, and put WRARC on the subject line of your email. You may also send your articles to the editor: Jane Avnet, 1440 Skyhawk Pl., Wright City, MO 63390

Join us for the WRARC Friday night Net 9:00 P.M.
 KD8DWV - 145.270, PL -110.9
 Upcoming Net Control Operators

Dec. This could be you

If your name has never been on this list
 Contact Steve, KC8SOY to take a turn at Net Control
 330-774-6346



WRARC Simplex Frequency 146.565

Mahoning County ARES® Nets

1st Monday 8.40 PM ET W8QLY Repeater - 146.745 (PL 110.9)

&

3rd Monday 8.40 PM ET W8QLY Repeater - 146.745 (PL 110.9)

ARES thanks MVARA for the use of their repeater

W8SGT is facilitating The Ohio HF net every Tuesday - 7:00 PM

The net is run from the State of Ohio EOC on the

Ohio ARES Admin frequency 3875 kHz LSB

moves to 7240 Khz after 20-min.

All are welcome to check in.



The Ohio ARES/OES Digital Emergency Net held every Tuesday at 8:00PM.
 held on 3585 kHz USB.

Please note all digital communications are Upper Side Band.

<http://www.http://ohden.org/> for net details. Net Manager Gary NJ8BB



Thanks & 73 to all of our members (and others) look forward (hopefully) to getting this newsletter every month, so keep sending those articles, jokes, and suggestions! sending those articles, jokes, and suggestions! Thanks goes out to this month's contributors; KD8TII, N8SY, W5YI, the ARRL, FaceBook, and the World-Wide Web.

THANK YOU FROM ROSE

Here it is, the end of an old year and the start of a new year with new Officers, and one new Trustee to replace the existing Trustee and Officers of which I am one.

When I accepted the position of Treasurer in 2016, it was a position I knew I would love doing, because bookkeeping is something I always wanted to do, and still love doing. This position gave me that chance. But now, my four-year term is ending, and I look forward to assisting our new Treasurer and the other new officers the best way I can.

I would like to thank the other outgoing officers and trustees for their hard work and determination in keeping this club alive during the turmoil earlier this year, especially our immediate past President, Bob Mitzel N8RCM, for taking over as the interim President through the end of this year. He has done an excellent job and will be missed. In keeping with this part of my article, I would also like to thank all the previous officers and trustees that I worked with the past four years for all their help in guiding me through my position as Treasurer.

Although Maureen has one more year as Vice President, I would like to thank her for taking on the responsibilities of doing her job as well as the President's in the absence of Bob who is on medical leave, and also my job as Treasurer also being on medical leave. She, along with the rest of the officers, has done an excellent job.

I would like to thank all the volunteers from our club, and any outside Ham Radio Operators who have helped us during the events we assisted in over the past four years. I really enjoyed working with them. I learned quite a lot from them.

Before I end my article, I want to remind everyone that Maureen is, and will be, accepting dues renewal until such time as our new Treasurer takes over that job. The dues can be accepted until January 31, 2020. I hope everyone continues to stay with WRARC to see what new changes will take place in the coming years with our new officers.

In closing, I would like to say that I hope to be healed enough to celebrate with everyone at our annual After the Holiday Party next year in January.

Until then, I hope everyone has a very Merry Christmas and Happy New Year.

73 Rosemary Marko, KD8TII
WRARC/Treasurer

Here is a thought for the month:

"Keep life moving forward, looking backward is only for time travelers."



**Semi-Monthly
Ham Community
Breakfast
Second and Fourth
Tuesdays
9:00 A.M.
Eat 'n Park Restaurant
in Austintown
Join Us!**

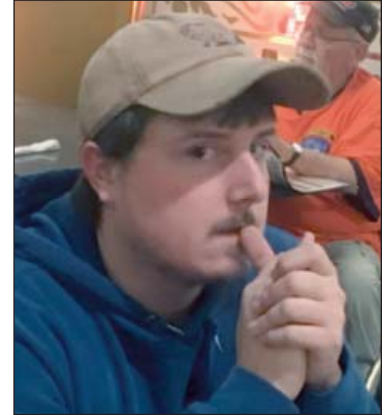
THANK YOU FROM CHRIS

Greetings to all,

I would like to start by saying thank you to our membership for entrusting me with the position of club president. I am truly honored to have been elected as the new face of our great organization, and I look forward to working with every one of you.

With that being said I bring some new ideas and embrace of old ones all with the idea to benefit and grow our club. I do not officially take office until January so I've got much planning ahead of me so I can serve to the best of my ability.

I have been a licensed amateur radio operator since October of 2006 and over that time I have been able to achieve my Amateur Extra license. I hold many interests in this great hobby some of which include wire antenna building, HF digital modes such as PSK31, WSPR, FT8, ect. , emergency and event communications, and operations on some of the lesser used bands. I have assisted teaching licensing classes and have even taught classes in the past, something I would like to do again. Some other things I've done has been to install many different mobile radio stations, something made easy for me since I've got some automotive repair training and experience from my personal work history.



Anyway enough about myself since I'm sure a majority of you have known me for some time now. So back to my new position in our club, I would like to extend an open invitation to all members to contact me if ever they need assistance with something radio related or not. I would also enjoy if anyone that has any ideas for our new board to tackle, or even concerns about the new administration and even issues you may have with some current club activities. I am here to listen and work with everyone to do whatever we can for the benefit of our club. It goes without being said that organizations work best when everyone works together.

Again a great many thanks to all of you and I am looking forward to working with you in the very near future.

73 de WF8U Chris
WRARC/President elect



THANK YOU FROM STEVE



At the November WRARC meeting we said thanks to Ray, K8NVY, for the awesome job he has done as our Net Control for the past two Marathons. Ray is a true Ham Radio Operator and a great friend, and a great club member. Thank you Ray, for everything you do for the Ham Radio Community.

All of the Ham Radio Operators did a great job for the past Marathons Thank you from the WRARC, and myself, great job! We only had one fatality during the last Marathon a tree had fallen over the race course. But our net control did what he was trained to do report it immediately to the race officials and with in 10-min they were there to clean up the tree that had fallen

I want to say Thank you to Chris, WF8U, Darrin, N8DMC, and Noah, KC3CAV, for all of the help getting the repeaters here to my house. Everything went as I planned from start to the finish here in the new repeater room. I could not have got this done

with out them.

73 to all KC8SOY, Steve 🌸

2019 YOUNGSTOWN MARATHON IS BEHIND US

Our last Public Service Event of 2019 is now behind us and it was another job well done by all. A big thank you goes out to everyone who came out in the very early morning (cold, damp, windy, and dark) to work this event.

Club members who came out were: Chris Monske, WF8U, Steve Fabry, KC8SOY, Darrin Cannon, N8DMC, Stan Adamski, KB3WPD, Kevin Stein, KD8NXX, Dave Moore, KE8ALR, Ted Filmer, KD8IJE, Matt Campbell, W8MIN, Russ Williams, NR8W, Aiden Divelbiss, W0TIS, Bob Kramer, KE8HHH, Ray LaShure, K8NVY, Donna Haren as scribe, Roy Haren, KD8IJF, Betsy Kramer, and Maureen Stein, KD8NXXS.



Special thanks go to some very wonderful non club operators who graciously came out to help. They are as follows: Scott Wilton, KE4UHC, Bob McCully, AB8OP, Noah Kindl, N3DZH, Brandon Benson, KD8NXP, and John DeCutis, KE8LJH.

Most of us were on strategically located tactical call station locations. Ray, K8NVY, served as net control from home and Donna did a great job again of scribe. Roy, KD8IJF, worked very hard the day before to put out our locator flags once again and both he and Steve, KC8SOY, worked hard to place each operator into a specific position. They all know their jobs well and perform them well too - Kudos!

We missed having Bob Mitzel, N8RCM, Rose Marko, KD8TII, and Roy Dyckman, KD8JMO, out there with us. Hope you are all doing well.

The event went well with no major mishaps to any runners. One woman could not finish the race due to a possible broken toe. Her situation was called in and she was transported back to the start/finish area. The biggest thing was a fallen tree near Lake Cohasset that blocked the race course for a short time. It was called in and a park crew was sent out to remove it. Our operator who was positioned there helped to clear part of it away before they arrived so that the runners could get by. It slowed them down a little, but it was removed efficiently. The wind was a big factor that day. We were very lucky that nothing else came down, and it did not affect the repeater or the antenna at Ray's house. That was a blessing. Mother Nature always has to have her say!

Overall it was a fun day. Most of us were placed near the water and/or medical stations. The people manning these stations do things to help encourage and energize the runners and they can get quite loud sometimes with music, cow bells, and shout outs all designed to motivate the runners. My crew at water station 4 was an exceptionally lively bunch and they kept me entertained too. They had a generator. A sound system complete with a microphone, three inflatable lawn ornaments (a turkey, the Ohio State Buckeye mascot, and a football helmet), and lots of music (Ohio State marching band CD, party music, Halloween music, rap, hip hop, and oldies). They line danced to Thriller and even did the chicken dance. I was not bored at my post at all, and the runners got a kick out of them too. It was a good event to end our Public Service season. Looking forward to next year!

73 Maureen, KD8NXXS



MAYBE THIS IS YOU?

Could YOU be the one I'm looking for? This is the editor of YOUR Newsletter. We have plenty of room for YOUR article(s)! If something is of interest to you, odds are that we all will enjoy your thoughts and activities! Have a favorite radio? Have some reminiscing to do? Maybe you have a question for one of our Elmers. OR, a Tip or Trick you learned that would help one of YOUR WRARC friends. You are warmly invited to contribute! Don't worry about writing or formality - we can help you with that. Your article could go in this spot, or one bigger, next month!!



THANK YOU FROM OUR SM



Hey Gang... What a week this has been! Monday night, 11/17, I was formally presented with the Joe Knight –Distinguished Service Award by the Great Lakes Director Dale Williams, WA8EFK and Tom Delaney, W8WTD Great Lakes Vice Director at the monthly PCARS meeting in Kent. Wow, what an honor it is to be nominated by you



folks for this very prestigious award.

Very few Section Managers in the country have had this award bestowed up them since it is not given out all that often. So, that makes it even that more special. I want to thank all of you for your continued support and willingness to make the Ohio Section the BEST in the country!! now have the plaque hanging proudly in the shack for everyone to see.

PostScript - November 18th Edition



1969 ARRL Film Promotes Amateur Radio:
(from Greg, WD9FTZ)

What is old is new again, have you heard that phrase before? Well, I will say that it comes true more times that you'll want to believe! I hear from many clubs around asking if there's any new video's out to show at their club meetings. Greg, WD9FTZ found this great older video and it does the job you've been asking for!!

The link below is to a 1969 video about Amateur Radio. Yes, it's a little dated, but the main message of this video still hits home to best describe what Amateur Radio is all about. The video is about 28minutes long, but it's well worth the time to view it, even if you've seen it back then!!!

https://www.youtube.com/watch?time_continue=33&v=0bJPY96NaSs&feature=emb_logo

PostScript - November 18th Edition



- Janet Egan
- Jim Jickess, KB8QDZ
- Stan Adamski, KB3WPD
- Matt Campbell, W8MIN



Amateur Radio Operator "Amateur means we're simply professional volunteers" ARRL reflector

FAMILY REUNIFICATION - A NEW FRONTIER

One of the clear messages from the 2013 Boston Marathon Bombing After Action Report is the importance of family reunification. There were many worried families missing loved ones in the bombing's aftermath, and anxiety continued for several days. The Red Cross provided their web site "Safe and Well," but the report noted that you had to register online to use it -- runners often did not have mobile data equipment with them to use the service.

At our marathon, the Medtronic Twin Cities Marathon, we have an excellent bond with our Medical Team. We serve right alongside them at every station. We register in the Medical Volunteer System and use the medical software. To paraphrase the old advertising slogan "They don't leave home without us." I explain, mostly seriously, we are the Medical Director's "Private Army." Our focus is health and safety and related duties as assigned.

The most attention I see from leadership on race day is with missing persons. If a runner is reported overdue, a huge pressure from family is placed on top officials who appear in our Medical Operations Center. We have approaching 80 hams reporting in from the course and we are entering the runner location data in our home-made Linux database. We are asking our on-course operators to also record queries from family about runners - (11:47 AM "please call your wife on this #" etc.)

Family reunification cannot be accomplished only by technology. Tracking runner RFID chips is part of the answer, but can't help missing or injured family members or spectators. This latter function requires the human element -- in our case, hams in yellow shirts. We also integrated non-ham volunteers in our mesh data network and Family Reunification Center. A few of the public officials I briefed were impressed that we had a wide area six megabit mesh network and microwave data backup network with 40 radio repeaters online. We are adding new repeater/mesh sites every year.

Perhaps the ultimate measure of trust was in evidence at some recent events where ham volunteers were tasked by top Fire and EMS leaders to coordinate and host non-911 rig dispatching and hospital capacity tracking, under the careful supervision of their professionals elbow to elbow.

Advice on Working Runner Events, from Lessons Learned

Build on the relationships you have. Do your best--be humble and reliable. Listen for new opportunities to serve. Take feedback seriously. Disown those who insist on stirring the political pot. If there is a toxic relationship evolving, back away quickly and quietly as things can change; bridge burning is never good.

-- Erik Westgard, NY9D, Medical Communications Coordinator, Medtronic Twin Cities Marathon, Red White and Boom TC Half Marathon

At the November meeting Wes, W8IZC, offered an opportunity for anyone to serve the community or gain extra volunteer hours through the local Red Cross. Representing Mahoning and Trumbull counties, he is actively seeking volunteers to participate in any of several activities such as Disaster Services, Emergency Services, or other teams, many of which include free instruction to volunteers in essential courses like CPR training. Additional alternative opportunities are available as Donor Ambassador of Blood Drives which provides good training for Volunteer Resource Operations or operations in disasters. Contact Wes "Wes Boyd W8IZC" <W8IZC@arrl.net> to get involved or to get additional detailed information.



Boyd, Homer (Wes)

Status: General Volunteer

Position: N.O. Biomedical Services:
Donor Ambassador - Mahoning
County, NO Biomedical Services:
Blood Services Volunteer Trainer,
Volunteer Services Recruitment
Team Member

Operating Unit: Northeast Ohio
Region

Chapter: American Red Cross of
Lake to River

A HAM'S CHRISTMAS POEM

T'was the Night before Christmas when all through the Shack,
Not a meter was moving, not a thing in the rack.

The Mike Cords were hung by the Yaesu with care,
with hopes that a call from the net would be there.

The Children were nestled all snug in their beds,
With earbuds from iPods that hung from their heads.

With Momma in her kerchief and I in my phones,
Had just settled down to decipher the tones.

When out on the lawn there arose such a clatter,
I sprang from my LazyBoy to see what was the matter.

Away to the window I flew like a flash,
as the di-pole from above fell with a crash.

The moon on the breast of the new fallen snow,
Gave lustre to the shine on the antenna below.

When, what to my wondering eyes should appear,
But a miniature sleigh and eight tiny Rein-deer.

With a little old driver, so lively and quick,
he ran dragging coax and some of my bricks.

When I looked up this poem, to see how much more,
I laughed and I chuckled and then I just swore.

So I'll finish this now with a rhyme or a joke,
then walk to the kitchen for a rum and a coke.

So after the drink and inspecting my grammar,
that's the best that you get, from the guy called **The Ham-mer..**



Happy 45th Birthday, AMSAT-OSCAR 7! The world's longest-lived satellite, AO-7, turned 45 years old this month. It was launched on November 15, 1974, from Vandenberg Air Force Base in California. After nearly 7 years of service, AO-7 was thought to have reached the end of its life in June 1981 due to battery failure, and a premature obituary appeared in the AMSAT Satellite Report. In an interesting footnote, although AO-7 was thought to be nonfunctional after 1981, it's been reported that the Polish Solidarity movement used AO-7 to pass messages in 1982, while Poland was under martial law. Twenty years later, on June 21, 2002, G3IOR reported hearing "an old-style CW beacon" from an unknown OSCAR near 145.970 MHz. It didn't take long to identify the satellite as AO-7, which remains operational and well-used while it's in sunlight. To celebrate AO-7's 45th birthday, AMSAT plans to auction a set of gold-plated AO-7 cufflinks and a 50th Anniversary AMSAT lab coat (size 42R). The auctions are now live on eBay and will conclude shortly after 0200 UTC on November 26, 2019. AMSAT reports that 100% of the proceeds will go toward Keeping Amateur Radio in Space. --



Thanks to AMSAT News Service

TRIBUTE TO A CENTURY OF BROADCASTING

Radio Amateur's "Tribute to a Century of Broadcasting" Video Debuts on YouTube

Art Donahue, W1AWX, of Franklin, Massachusetts, has posted his "Tribute to a Century of Broadcasting" video in recognition of the centennial of formal radio broadcasts. The video features a complete scan of the AM broadcast band (530 - 1700 kHz), with station IDs for all 118 AM radio channels.

Donahue told ARRL he recorded these off the air using two long-wire antennas in the trees. Each slide highlights one station on each frequency with call sign, location, power, day/night/gray-line reception, distance, and year of first broadcast, accompanied by audio of an actual station identification.



"If you ever spent evenings when you were a kid trying to hear long-distance radio stations on your AM radio, this video has what they all sound like today," Donahue said. "I wanted to do something in honor of the KDKA broadcasting centennial next year and thought I'd try to get every single channel recorded. It took a lot of time, patience, and good luck. You'll hear a lot of surprises on the video."

Donahue added, "It was a fun project to work on."

The ARRL Letter November 21, 2019

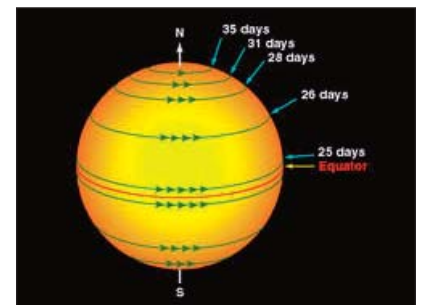


**Merry Christmas and Happy New Year from
the Avnets in the Show me state
to all our WRARC friends,
those we know and those we haven't met.
We hope you all have a great and active new
year with all the fun things you will be doing.
73 Al & Jane**

WHY PROPAGATION REPEATS ABOUT EVERY 27 DAYS

The sun rotates in about 27 days, but different solar latitudes rotate with different periods. This is why propagation repeats roughly every 27 days, as NASA explains.

The sun's rotation was first detected by observing the motion of sunspots. The sun's rotation axis is tilted by about 7.25° from the axis of Earth's orbit, so we see more of the sun's north pole in September and more of its south pole in March. Because the sun is a ball of gas/plasma, it does not have to rotate rigidly, as solid planets and moons do. In fact, the sun's equatorial regions rotate faster -- taking only about 24 days -- than the polar regions, which rotate once every 30+ days.



The source of this "differential rotation" is an area of current research in solar astronomy. -- Thanks to The ARRL Contest Update and NASA

The ARRL Letter November 21, 2019



December 2019



PREPAREDNESS LEADS TO READINESS - MATT W8DEC

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	7 Pearl Harbor Day
8	9 ARES Net 8:30 PM 146.745 PL 110.9	10 Ham Breakfast Eat'n Park Austintown 8:30 A.M. Board Meeting Eat'n Park Austintown 7:00 P.M.	11	12	13 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	14
15 Bill of Rights Day	16 ARES Net 8:30 PM 146.745 PL 110.9	17 WRARC Meeting 7:00 P.M	18	19  WaveBender Input Due	20 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	21 Winter begins 
22	23	24 Eat'n Park Austintown 8:30 A.M. Ham Community Breakfast	25	26	27 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	28
29	30	31 Make Up Your Mind Day New Year's Eve	2020 		WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	