October 2022
2022 Edition 10

Mount Vernon Amateur Radio Club

Inside this issue

MVARC Repeaters

K8EEN VHF Repeater
146.790 MHz
- 600KHz / PL = 71.9 Hz

K8EEN-R Echolink Node: 809800

K8EEN UHF Repeater
444.600 MHz
+5 MHz / PL = 71.9 Hz

Club Meeting

The regular MVARC meeting is the 2nd Monday of each month at 7:00 pm.

The next club meeting is October 10, 2022.

Meeting Location:

Academy Building

790 Fairgrounds Road

Visit us on Facebook:

Mount Vernon Amateur Radio Club

Visit our Webpage:

https://MVARC.net

President's View

Frank Counts
KC8EVS

Frank has been busy in Florida welcoming another grandchild into his family. He is recovering and has been to a couple of Friday morning get-togethers.

He hopes to see everyone soon, in person. Hopefully he will be able to drive and navigate stairs soon. We also wish him success with his dandelion observations!!

Meeting Minutes

Bill Stroud
KD8WHQ

The August 2022 meeting of the Mt. Vernon ARC was called to order at 7:00 pm by Vice President Barry Butz, N8PPF. There were 10 members and 2 guests in attendance. President Frank Counts is still recuperating from surgery.

Roger Gorrell KE8ICI
Michael Jacobs KC8HGE
Emery Bennett W8TW
Bill Stroud KD8WHQ
Steven Harvey N8RLW
Terry Windsor KI8N
Barry Butz N8PPF
Don Russell W8PEN
Ralph Huffman W8LFR
Darlene Pudlinski KE8TJN
Kandee Popham Guest
Mark Dubler Guest

The minutes for the August Meeting were presented with no changes or objections.

The Treasurer's report was presented with no objections or changes.

ARES
An exercise is scheduled to go into the field at fire stations and Red Cross Shelters to verify if we can communicate with them from each location. We will also use 149.79 MHz simplex from each location. The exercise is scheduled for Sept. 24 at 9am.

The SET is scheduled for Oct. 1 and 2. Terry is reviewing all the documentation to set up an exercise.

Repeater
The 146.79 repeater was replaced with the old repeater assembly. Steve, N8RLW is currently working on and testing the new repeater/ controller.

The 440 repeater Wires X feature was down for a period this month as the computer somehow was turned off. Steve restarted the computer, and the repeater is running fine.

Mesh network and Echolink are both operational.

Old Business
Banners – Roger Gorrell ordered the new banners and they are in. The cost is $50 each.

There was a discussion about the testing for the hospital employees. Michael Jacobs will be setting up another testing date.

OSPOTA – 6 members attended POTA and there were 36 state parks contacted and a total of 69 contacts made.

New Business
A work party day to fix up the Radio Room will be scheduled this week.

The Fan Dipole antenna at the EOC needs put back up, one end is down.

There was a discussion on what to do with the Beofang radios. Keep them for club use or raffle them at the next 2 meetings. Nothing was decided.

OLD ways won't open **NEW** doors.

Steve Harvey presented a lease agreement for the owner of the building. They would not charge us rent but would like us to sign the lease. There was a concern about the section of locking the door. Steve will investigate that.

A committee needs to be formed next month for filling Officers and Director positions for 2023.

There is a need to access the 444.600 MHZ repeater if Michael Jacobs is not available. Michael will investigate this.

The meeting was adjourned at 8 pm.

ARES

Terry Windsor
KI8N

We finally were able to test our communications ability from the Academy Building club room to various locations throughout Knox County. Seven of us met Saturday 9/24 to perform this test. I want to thank Tom, KD8HSA, Steve, N8RLW, Michael, KE8HGE, Roger, KE8ICI, Don, W8PEN and Emery, W8TW for giving up their Saturday morning to test our ARES capability. For the most part we were successful operating all locations using the 2 meter repeater. We had good success on the 440 repeater and about the same with 146.79 MHz simplex. The results of the testing are shown on the next page. Some of the operators used both mobile mounted radios and handhelds in this exercise.

A couple of takeaways: we all need to know how to program our radios when in the field as there is no way to guess what frequency may be used. There are locations in Howard and Danville where there is no or limited VHF and no UHF capability due to terrain.

In all it was a great test with fantastic operators who were willing to use their time to ensure MVARC can communicate mobile and from the Academy Building with an attic antenna to support Knox County in an emergency.

I am going to contact the EMA office to schedule work on the fan dipole that is down. I had held off since the EMA office was involved in a multi-agency exercise and did not want to interfere in their operation.

As to working the Ohio SET event this year I decided not to schedule another event a week after our communications exercise. We will have more exercises/table top discussions in upcoming months when the club radio room is completed and equipment is installed and operational. I did not want to wear out the dedicated team that has been to the couple of ARES events so we will definitely plan for and work next year's SET.

Results of the communications exercise:

Assignment	Name and Address	146.790 Repeater Check	444.600 Repeater Check	146.790 Simplex Check
1	Danville Primary School - 205 Rambo St Danville, OH 43014			
1	Floralwood Apple Valley Community Center - 850 Crestrose Dr, Howard, OH 43028			
1	East Knox Fire Department – 23059 Coshocton Rd, Howard, OH			
1	Gambier Fire Department – 102 E. Brooklyn St, Gambier, OH			
1	Danville Fire Department – 7 West Walnut St, Danville, OH			
2	Centerburg Church of Christ - 3830 Columbus Rd, Centerburg, OH 43011			
2	Centerburg Elementary - 207 S Preston St, Centerburg, OH 43011			
2	Centerburg – Central Ohio Joint Fire Department – 5138 Columbus Rd, Centerburg, OH			
2	Homer Fire Department – 405 South St, Homer, OH			
3	First Presbyterian Church - 17 S Main St, Fredericktown, OH 43019			
3	New Life Church - 9955 Mt Gilead Rd, Fredericktown, OH 43019			
3	Fredericktown Fire Department – 139 Columbus Rd, Fredericktown, OH			
4	Faith Baptist Church - 8764 Martinsburg Rd, Mt Vernon, OH 43050			
4	Martinsburg Activity Center - 122 W Liberty St, Martinsburg, OH			
4	Utica Fire Department – 22 Spring St, Utica, OH			
4	Bladensburg Fire Department – 3790 Market St, Bladensburg, OH			
5	First Church of God - 10 Pine St, Mt Vernon, OH 43050			
5	New Life Church - 665 Harcourt Rd, Mt Vernon, OH 43050			
5	Mount Vernon High School - 300 Yellow Jacket Dr, Mt Vernon, OH 43050			
5	Apostolic Christian Church - 1635 Old Delaware Rd, Mt Vernon, OH 43050			
5	Mount Vernon Fire Department - 200 West Gambier St, Mt Vernon, OH			
6	Gay Street Methodist - 18 N Gay St, Mt Vernon, OH 43050			
6	Pleasant Street School - 305 E Pleasant St, Mt Vernon, OH 43050			
6	Trinity Assembly of God Church - 1051 Beech St, Mt Vernon, OH 43050			
6	College Township Fire Department – 13980 Wooster Rd, Mount Vernon, OH			
6	Knox Community Hospital			

Net control located in MVARC radio room at Academy Building - FTM-100DR with dual band antenna in attic

	Successful test with good copy both directions
	No contact - **unsuccessful**
	This location was close to the Centerburg Elementary School - **not checked**
	Equipment issues - **Not tested**

"...we all need to know how to program our radios when in the field…" Terry (KI8N)

Radio Active

Don Russell
W8PEN

September 2022 was a busy month for the club. Lots going on with the Ohio Parks on the Air, work on the new repeater and controller, painting the club room, and ARES activities.

Let's start with something a bit more interesting for you home brew antenna guys.

Air Core Balun

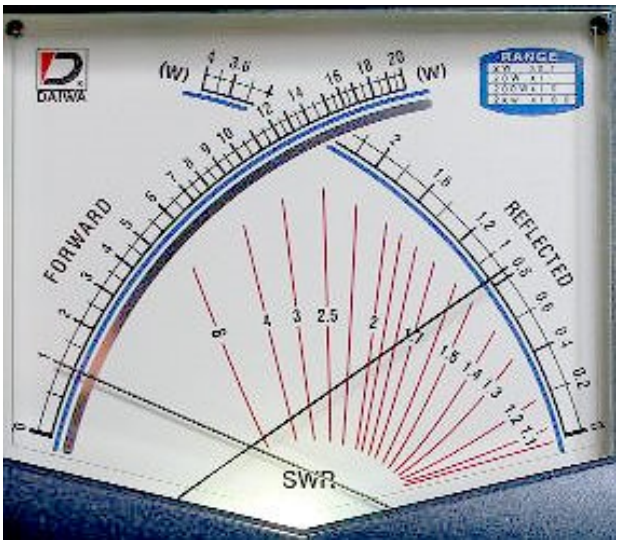
I have been a bit disappointed in the 4:1 torrid baluns that I have been trying to make. The ones I have made work, but the SWR seems to be a bit higher with my home brew ones compared to the commercially made ones when used on an Off Center Fed antenna.

Initially I had bought a T-200A torrid balun kit. This kit consisted of the T-200A torrid and some #14 enamel wire to wind either a 1:1 balun or a 4:1 balun. Bought a box to house the assembly in, plus eye hooks and a PL-259 chassis connector. Total cost was about $25. This was great seeing how a commercial balun sells for $79 or more.

After adding the wire to make the OCF antenna, I found the SWR to be over 4:1 on most bands. I think the only reasonable bands were 40 and 20 meters. I thought this was okay. My Kenwood TS-590S happily tuned this antenna with its internal antenna tuner. Nice. Made many contacts with it. My two external antenna tuners tuned this antenna as well. I was happy.

Then Field Day 2022 came around and we strung up this antenna for the 20 meter station. Turns out, Barry's (N8PPf) Icom IC-7300 would not tune this antenna. Bummer. A little bit of checking finds that the IC-7300 will only tune antennas with SWR of 3:1 or lower. Seems kind of strange since both Kenwood and Yaesu radios that I tested the antenna on tuned it just fine.

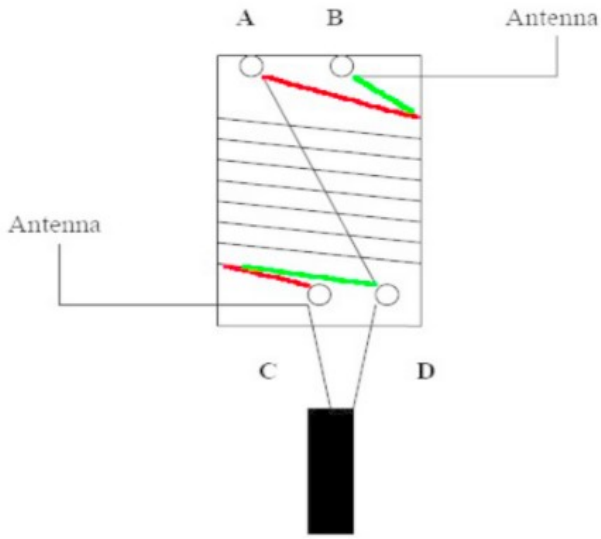
None the less, since the club bought an Icom IC-7300, I had to figure a way to get the SWR under 3:1. I thought that by rewinding the torrid with more or less turns of the wire would be sufficient to change the SWR. But it did not. Neither did changing the lengths of wire on the OCF antenna. Everything I did seemed to make the SWR worse.



Back to the internet to do some research. This led me to a page which described a 4:1 Air Core Balun. I was skeptical. Air Core Baluns were supposedly larger than torrid baluns. However, I was willing to give it a try.

Ends up, the 4:1 Air Core Balun was a bit larger than the torrid, but still fit in the box I had bought for the Torrid Balun.

After switching out the Torrid Balun in favor of the Air Core Balun, I found the SWR on the OCF antenna was much lower. Below 3:1 on most bands. The only problem was on 80 meters. SWR was okay on the low end of 80 meters, but a little too high on the high end of 80 meters for the IC-7300 to tune. When I tried to compensate for this by shortening the antenna wire length, SWR went too high on the other bands. I decided to live with the high SWR on 80 meters and if needed, use an external antenna tuner.



So, we tried this OCF antenna during the Ohio Parks on the Air event. The antenna performed well. I did bring my LDG external auto tuner so we could work 80 meter SSB. But the antenna performed very nicely on all bands. In fact, unknowingly, we worked the contest for a couple of hours using only 20 watts and received very good signal reports. I had turned the power down at home while testing the antenna so that if I had high SWR, I would not hurt the radio. I had forgotten to turn the power back up.

I am convinced that the Air Core Balun is a good alternative to the torrid balun. The advantage is that you can run high power without fear of burning the balun up, which is a possibility with a torrid balun. Another advantage is that the Air Core Balun is much cheaper. A 1-1/2 X 5 inch PCV pipe and some wire and you are set to go. Disadvantage seems to be limited to the size, which was not a problem in my case.

Advantages of the Torrid Balun would be the size. Especially if you build one for QRP operating. Disadvantage would be power handling capabilities under relatively high SWR.

I am not an expert on baluns. I am sure there are other pros and cons. But the Air Core Balun worked perfectly for me. Here is a link to building the Air Core Balun:

https://tailwindvt.com/baluns.php

Ohio Parks on the Air

The Mt. Vernon ARC set up for the Ohio State Parks on the Air event at the North Shelter of Mohican State Park.

Members arrived around 9:00 AM to set up the antenna and equipment. This went well. However, aiming the fishing pole to the proper tree limb proved more difficult this year than in the past. This was kind of funny since W8PEN spends a lot of time fishing in the trees at Alum Creek anyway. It took many tries to get the antenna up where we wanted it. We were able to get the antenna up a good 30 feet. Antenna by the way was a home brew Off Center Fed using the air wound 4:1 Balun mentioned previously. The antenna was 110 feet on one end and 25 feet on the other end and provided good SWR on all bands.

The equipment consisted of an Icom IC-7300 transceiver, an external LDG antenna tuner, a deep cycle battery with an MFJ battery voltage booster. The group did paper logging. However, next year we will use the N3FJP hack. Did not learn of this until after the event. Entering contacts after the fact was no fun.

The small group consisting of Michael Jacobs (KE8HGE), Terry Windsor (KI8N), Barry Butz

(N8PPF), Roger Gorrell (KE8ICI), Darlene Pudlinski (KE8TJN), and Don Russell (W8PEN) started operations about fifteen minutes late but had immediate success. The home brew OCF was working well. Curiously, the first few hours of operations were at 20 watts. The power had been lowered to check SWR and was never reset to 100 watts. No matter. Signal reports varied from 57 to 59 plus.

This was a fun event. There seemed to be more stations on this year than normal. The club always look forward to this event though. This year's event was a moderate improvement for us over past years.

Club Room Renovation

A group of us have been getting our club room at the Academy Building ready for occupation. The group has consisted of Roger (KC8ICI), Terry (KI8N), Ralph (KC8REB), Barry (N8PPF), and Don (W8PEN).

The walls have been primed and painted. The ceiling has been primed and painted except for an area because we ran out of paint.

Last step will be to finish the ceiling and paint the floor. Then we can clean up the mess and set up a couple of stations. Hopefully all of this will be completed before the October meeting.

Roger (KC8ICI) found the entrance to the attic. We have since installed a Diamond dual band antenna donated by Steve (N8RLW). Plans are for the antenna we used at Ohio Parks on the Air to be installed in the attic as well.

With a bit of luck, this will also be done before meeting night.

Repeaters

Roger and Steve are still working pairing the new controller with the Yaesu repeater. I would think this will be done by the November meeting.

The 70 cm repeater is working well. Wires-X has proved to be popular with the local group.

Mesh Network is also working well, although I need to do some work on it. Fall and Winter will free up a lot of time for me and I can work on it.

That is a wrap. Hope to see everyone at the October meeting.

Ohio State Parks On The Air (OSPOTA)

Left to right: Roger (KE8ICI), Don (W8PEN), Barry (N8PPF), and Darlene (KE8TJN)

Left to right: Terry (KI8N), Michael (KE8HGE), and Darlene (KE8TJN)

Portage County Amateur Radio Service, Inc. - PCARS

Ohio State Parks On The Air

2022 CONTEST SUMMARY SHEET

→ *Must* be submitted with each entry ←

Call Sign Used: K8EEN ← *This call sign will be printed on certificates*

Entry Category Select ONLY ONE:

[ ] MML - Multi-Op/Multi-Transmitter Low Power operating from one Ohio State Park	[ ] MMH - Multi-Op/Multi-Transmitter High Power operating from one Ohio State Park
[X] MSL - Multi-Op/Single-Transmitter Low Power operating from one Ohio State Park	[ ] MSH - Multi-Op/Single-Transmitter High Power operating from one Ohio State Park
[ ] SL - Single Operator Low Power operating from one Ohio State Park	[ ] SH - Single Operator High Power operating from one Ohio State Park
[ ] R - Rover - **One Summary Sheet Per Park** - Low Power - Park for this Summary Sheet =	
[ ] INOH - Operator inside Ohio **not** at an Ohio State Park	[ ] OUT - Operator operating from outside Ohio **From Where?**

Enter your State Park Name or 3-letter Designator: MOH

What were your maximum watts used?: 100

Club Name (even if your club is not the participant - will not affect your score**):** MT. VERNON AMATEUR RADIO CLUB (OHIO)

If Multi-op, list calls of all operators and loggers (all your team members): KE8HGE, KI8N, KE8ICZ, W8PEN, KE8TJN, N8PPF

Ohio State Park ID Check List

☐ ADA	☒ CAE	☐ FOR	☒ IDM	☒ LHO	☐ MHD	☒ OPT	☐ SFK	☐ WBR
☒ ALU	☐ CAT	☐ GEN	☐ ILK	☐ LMI	☒ MJT	☐ PLK	☐ SHA	☒ WLK
☐ AWM	☒ COW	☒ GLK	☐ JAC	☐ LML	☒ MLK	☐ POR	☒ SRN	☐ WRN
☐ BAR	☒ DEE	☐ GLM	☒ JEF	☒ LOG	☒ MOH	☒ PTC	☒ STO	
☐ BCK	☒ DEL	☐ GSL	☐ JEO	☐ LOR	☒ MST	☒ PUN	☐ STR	
☒ BEA	☒ DIL	☒ HEA	☒ JOB	☐ LWT	☒ MTG	☒ PYM	☐ SYC	
☐ BKL	☐ EFK	☒ HLK	☐ KEL	☒ MAL	☒ MUS	☒ QHL	☐ TAR	
☐ BLU	☒ EHB	☐ HOC	☐ KLK	☐ MBI	☐ NBI	☒ RFK	☐ TCK	
☒ BUR	☒ FIN	☒ HUE	☐ LAL	☐ MBY	☐ NKL	☒ SBI	☐ VAN	

Total OSPOTA Contest QSOs = 67

Number of Ohio State Parks Contacted (75 Max) 36

Total Submitted Score (QSOs x Ohio State Parks) 2412

NOTE: New Rule as of 2020 - Add YOUR state park in the list above to count as a multiplier !!

"By submitting this Summary Sheet I'm confirming that I have observed all competition rules. My report is correct and true to the best of my knowledge and I agree to be bound by the decisions of the Ohio State Parks On The Air Awards Committee."

Send Cabrillo log with this Summary Sheet, photos, comments, ideas, etc. within **14 days** after the contest to:

Ohio State Parks On The Air

LOGS@OSPOTA.org

Entries **with Summary Sheet** may be e-mailed to: LOGS@OSPOTA.org

Name Donald J Russell Call W8PEN **Call Sign Listed at Top of Page will be used for certificate**

Address 815 Brookwood Rd

City MT. Vernon State OH Zip 43050

E-Mail Address W8PEN@YAHOO.COM

Miscellaneous Rambling

Terry Windsor
KI8N

Don talked about making an OCF dipole for use at the club station and I have been working on a similar antenna for my home station. I had a 160 meter OCF dipole across the backyard but the storm last June knocked over one the trees holding an end up and the antenna has been down since then. In late August I strung the down end in a low tree with one end of the antenna only about 20 feet off the ground It has been working good on both 160 and 80 meters but with less distance than before. Think NVIS!

This month I am planning to shoot a line over a taller tree and get it back up around 50 feet. The logical question is why did I wait so long? The answer is the woods around a branch of the Kokosing River that flows at the back border of our yard is a tick infested haven. I hate getting ticks on me and every time I have ventured into those woods in warm weather I get 3 or 4.

Now that the weather has cooled and the weeds are starting to die it shouldn't be so disgusting to get back there. Me and the tennis ball cannon should have good luck fixing the antenna real soon!

I have never been an operator that thought QRP would be any fun. Seems like a lot of work to make contacts. However, this month I took the KX3 with me to activate Kokosing Wildlife Area (K-9472). Using 10 watts with a 20 meter Hustler resonator mobile HF antenna on a magnetic mount sitting on the fifth wheel hitch I made SSB contacts with both Spain and Italy. Signals were reported as 53 both ways. I was amazed at how well everything worked and now am planning more low power activations with this combination.

Just a side note to let you know that Icom has suspended production of the IC-7100 HF/VHF/UHF radio. They have been unable to get parts to meet manufacturing demands. Will it return to retailers any time soon? My guess would be no and another multiband radio is gone. If this prediction holds up then expect used prices to climb much like the FT-857D.

Until next month, "Ham It Up!"

"September 2022 was a busy month for the club. Lots going on with the Ohio Parks on the Air, work on the new repeater and controller, painting the club room, and ARES activities." Don (W8PEN)

October 2022

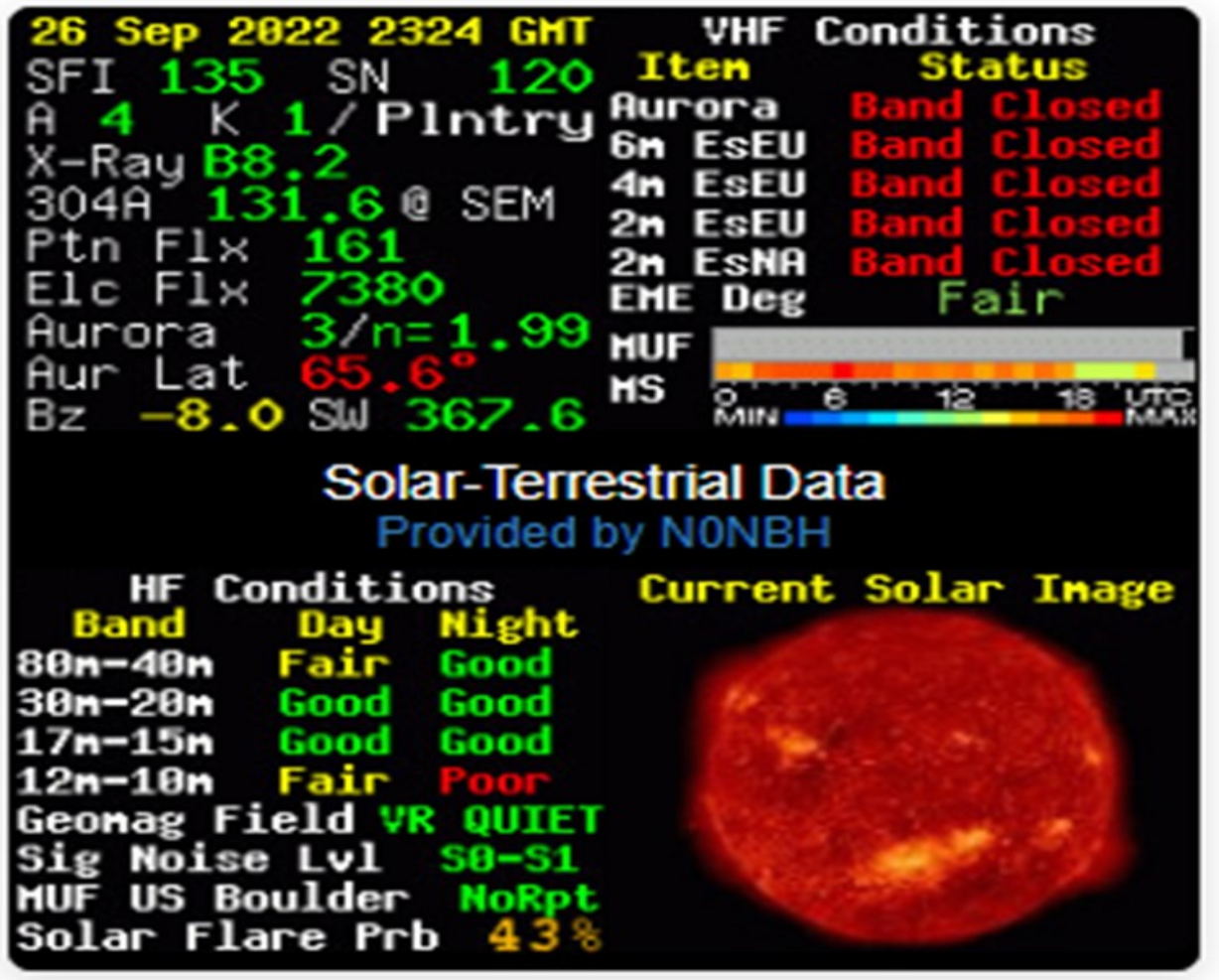
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2 9:00 pm ARES Sunday Night Net —Don Russell (W8PEN	3	4 OHDEN Net 7:45 pm	5 4:45 pm Dinner - Southside Diner	6	7 10:00 am Breakfast - Foundation Park, Park National Shelter	8
9 9:00 pm ARES Sunday Night Net—G. M. Jacobs (KE8HGE)	10 **Columbus Day** **7 pm** **Monthly Meeting**	11 OHDEN Net 7:45 pm	12 4:45 pm Dinner - Southside Diner	13	14 10:00 am Breakfast - Foundation Park, Park National Shelter	15
16 9:00 pm ARES Sunday Night Net— Roger Gorrell (KE8ICI)	17	18 OHDEN Net 7:45 pm	19 4:45 pm Dinner - Southside Diner	20	21 10:00 am Breakfast - Foundation Park, Park National Shelter	22
23 / 30 9:00 pm ARES Sunday Night Net—Terry Windsor (KI8N) ?	24 / 31 **Halloween (31st)** 	25 OHDEN Net 7:45 pm	26 4:45 pm Dinner - Southside Diner	27	28 10:00 am Breakfast - Foundation Park, Park National Shelter	**29**

Ham Radio Contest Calendar

Final Takeaway

Solar-Terrestrial Data

I have been looking at the solar-terrestrial data chart on QRZ.com to determine how well my HF signal is getting out especially for DX contacts. We have all been told that solar cycle 25 will be good for propagation. How do you know? I am going to describe what the fields indicate about HF and VHF signals. I am going to break this into two parts discussing the top left half of the chart this month and the right side and bottom next month.



Starting at the top of the example the prediction's date and time are shown in yellow; this example is from 26 September 2022 at 2324 GMT (or 7:24 pm EST).

Each of the fields in our example is described on the following web page with printable references; HF Propagation Tools and Solar Data. The data on this web page was gathered and presented by Paul Herrman, N0NBH. Also note the data within the fields is updated as regularly as every 15 minutes.

The first field on the left is labeled **SFI** with a value of 135. SFI = Solar Flux Index which is a value that ranges from 62.5 to 300. This represents the intensity of the solar radiation at 2800 MHz and is a good indication of the F Layer ionization which provides good DX on HF. The higher the number the greater the ionization and higher the usable HF frequency.

Next is **SN** or Sunspot Number with values between 0 to 250 and predicts band openings. This example shows an SN of 120. SN loosely correlates with SFI. A value of 120 states excellent conditions for all bands through 10 meters with 6 meter openings.

The **A** number or Planetary A Index provides a daily average level for geomagnetic activity and indicates instability in the Earth's geomagnetic field. Values range from 0 to 400 and this example shows an A value of 4. Used with the K index to determine HF conditions.

The **K** field represents the Planetary K Index and values range between 0 to 9. This value indicates disturbances in the horizontal component of Earth's magnetic field and is used to predict geomagnetic storms. The value in the example is 1 indicating quiet and inactive with no impacts on HF signals. The A and K values when used together indicate how volatile the Earth's magnetic field is on HF signals. When both are high the geomagnetic field is unstable and HF signals are prone to fading, paths closing, or other paths opening abruptly. A high K and low A index indicates a sudden abrupt disturbance in the geomagnetic field which can cause an intense but typically brief disruption in HF propagation.

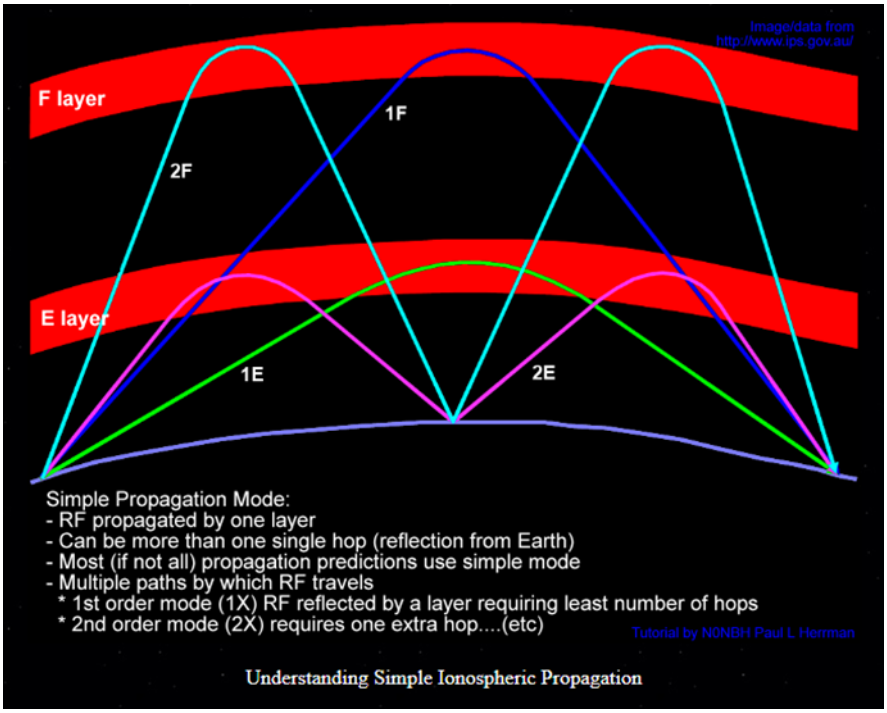
The **X-Ray** or Hard X-Rays field shows the intensity of hard x-rays hitting the Earth's ionosphere and is used to predict radio blackouts. Reported values range from A0.0 to X9.9 and the example is B8.2. This field indicates how the D-layer (HF absorption) is impacted. The letters are A, B, C, M and X where A is the lowest and the number defines the level of radiation. A value of B8.2 indicates no or small solar flares and very minor impact to HF signals.

Next is the **304A** or 304 Angstroms field. This is a NOAA reported field with values from 0 to unknown where our example indicates 131.6 @ SEM. This value represents the relative strength of total solar radiation at a wavelength of 304 angstroms (30.4 nm) emitted primarily by ionized helium in the sun's photosphere. SEM after the value states the measurement was taken be the SOHO satellite using its Scanning Electron Microscope (SEM) instrument. The 304A is responsible for about half of all ionization of the F layer in the ionosphere. This field closely correlates to SFI.

Ptn Flx = Proton Flux which is the density of charged protons in the solar wind also used to indicate solar radiation storms and affects the ionosphere E-layer. Values range from 0 to unknown with the example showing 161 which indicates minor impacts on HF in polar regions. The larger this number the more impact to the ionosphere.

The Electron Flux or **Elc Flx** represents the density of charged electrons in the solar wind. This value ranges from 0 to unknown with numbers >1000 impact the ionosphere E-layer. The value in the example is 7380 which is an alert of partial to complete HF blackout in polar regions.

The next field is **Aurora** with a shown value of 3. The range of values is 0 to 10++. Aurora indicates how strong the F-layer ionization is in the polar regions. Higher values cause auroral events (norther/southern lights) to move to lower latitude.



The **n** value following Aurora is normalization which ranges from 0 to 5 and indicates the confidence in the Aurora measurement. A value of <2.0 indicates high confidence and a value >2.0 is low confidence. The example is 1.99 which is still considered a high confidence value.

AUR Lat is the latitude of the Auroral event or northern/southern lights. The values range from 67.5 to <45 degrees. The example shows a latitude of 65.6 degrees. This latitude is above Fairbanks, Alaska to the north and Anvers, Antarctica to the south. For reference Mount Vernon, OH is at 40 degrees latitude. This number is also color coded for low activity, hi-latitude, and mid-latitude. A value >60 degrees north = hi-latitude auroral events and mid-latitude is 60 degrees to 30 degrees north.

The **BZ** field or Bz Component shows the strength and direction of the interplanetary magnetic field as impacted by solar activity. Values range from +50 to -50 with the example showing a value of -8.0. A positive value is the same direction as the Earth's magnetic field. A negative number is the opposite magnetic polarity which cancels out Earth's magnetic field and increases the impact of solar particles in the ionosphere.

The final field on the left top side of the example is the **SW** or Solar Wind reported value. This is the speed of the charger particles as they pass Earth. These values range from 0 to 1000 kilometers per second and our example shows a value of 367.6 km/s. The higher the speed, the greater pressure is exerted on the ionosphere. Values greater than 500 km/s have an impact on HF communications.

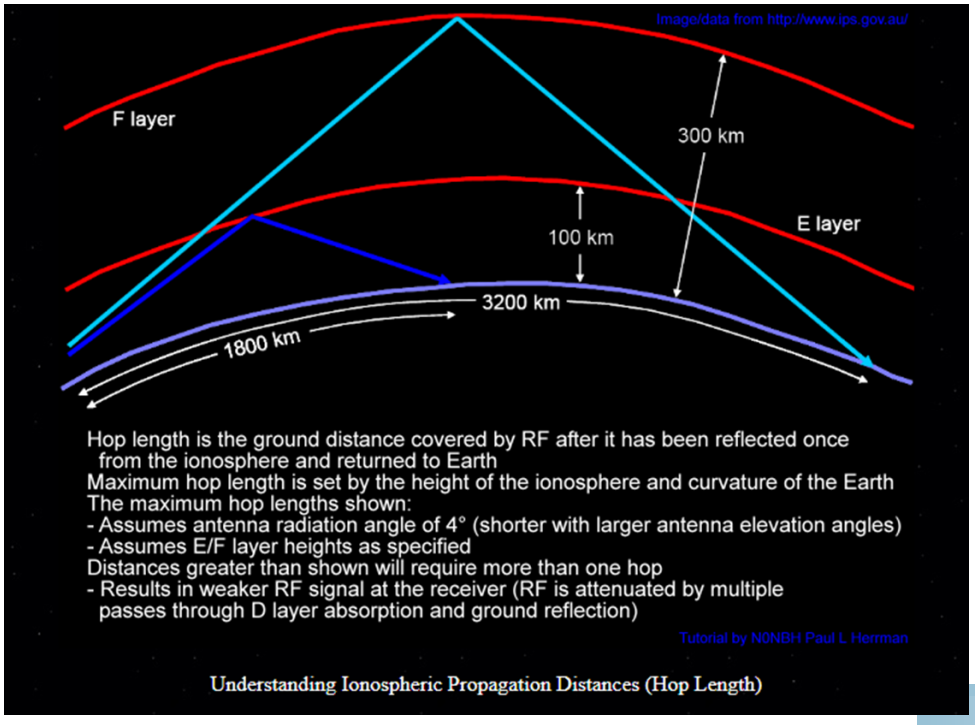
I hope this explanation of the solar-terrestrial data gives you a better understanding of how HF signals are affected by solar winds and radiation interacting with Earth's ionosphere and magnetic field. Now when looking at these numbers you can determine if it is worth chasing DX signals or just being happy with North America contacts.

These explanations should also assist with deciphering the ARRL's weekly email Propagation Forecast Bulletin with its predictions for upcoming days that week. (ARRL Propagation Bulletin 38 ARLP038 September 23, 2022.)

"Geomagnetic disturbances were down this week, but so were sunspot numbers and solar flux. Average daily sunspot numbers declined from 92.7 to 68, and average daily solar flux from 141.3 to 134.3. On September 22 the sunspot number was 99, well above (by 31 points) the average for the previous seven days, a promising indication. We hope it may signal a trend.

But Solar Cycle 25 progresses, a bit better than expected. A year ago, average daily sunspot numbers were about ten points lower, at 58.3, while average solar flux was 87.4, about 47 points lower. Two years ago, there were no sunspots! We still expect an uptrend lasting until Summer 2025."

Next month we will continue the discussion of the remaining solar-terrestrial data fields.



General Exam Sample Test Questions:

G9B10 What is the approximate length for a 1/2 wave dipole cut for 14.250 MHz?

A. 33 feet
B. 24 feet
C. 16 feet
D. 8 feet

G4E03 Which of the following direct, fused power connections would be the best for a 100 watt HF mobile installation?

A. To the battery using resistor wire
B. To the alternator or generator using heavy-gauge wire
C. To the alternator or generator using resistor wire
D. To the battery using heavy-gauge wire

Extra Class Exam Sample Test Questions:

E9E02 What is the name of an antenna matching system that matches an unbalanced feed line to an antenna by feeding the driven element both at the enter of the element and a fraction of a wavelength to one side of center?

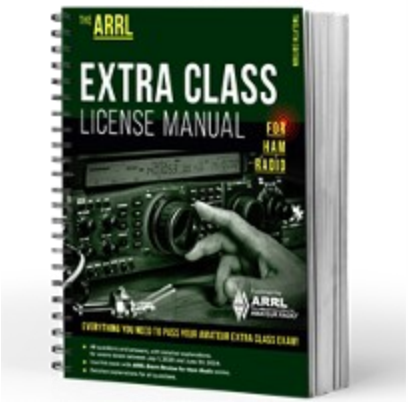
A. The delta match
B. The gamma match
C. The stub match
D. The epsilon match

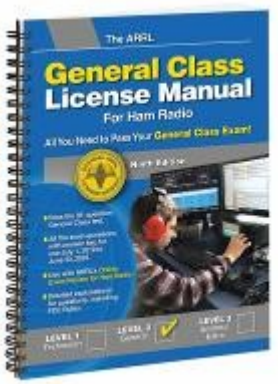
E9E07 What parameter describes the interactions at the load end of a mismatched transmission line?

A. Velocity factor
B. Dielectric constant
C. Characteristic impedance
D. Reflection coefficient

These test questions are from the current test pools for their respective license classes. How did you do? The answers are on the last page. Practice tests for all license classes can be found here: https://www.qrz.com/hamtest/

The ARRL license manuals shown are available from the ARRL or Amazon for license studying.





Miscellaneous Amateur Radio Information

Join us every Sunday night on the Mt. Vernon 146.79 repeater for our weekly MVARC ARES Sunday Night Net. Check-in starts at 9 pm.

Unable to access the repeater from where you are located? We are on IRLP (EchoLink) - Just look us up.
K8EEN-R Node 809800.

Ohio Traffic Nets

The Ohio Single Side-Band Net (OSSBN)
Ohio Single Side-Band Net; Ohio connection for what is going on in the Ohio Traffic System. The Net meets on 3.972.5 MHz at 10:30 am, 4:15 pm, and 6:45 pm daily.
Alternate Frequency for all sessions is 3.968 MHz.

Central Ohio Traffic Net
The Central Ohio Traffic Net is a part of the Ohio Section of the National Traffic System. They meet daily to handle traffic; all licensed amateur radio operators are welcome to check in and to learn to handle traffic. COTN meets daily at 7:15 pm on 146.970, -.600 MHz, PL 123.0. Signal Operating Instructions and frequencies given here: https://www.cotn.us/sop

Area Radio Clubs

Delaware Amateur Radio Association: http://k8es.org/

Newark Amateur Radio Assoc: https://www.n8ara.org/

(Mansfield) InterCity Amateur Radio Club: https://iarc.club/

Marion Amateur Radio Club: http://www.marionhamradio.com/home.html

The ARRL Ohio Section Newsletter: https://arrl-ohio.org/news/index.html

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"We have all been told that solar cycle 25 will be good for propagation. How do you know?" Terry (KI8N)

ARRL — the national association for Amateur Radio™

RADIOGRAM

NUMBER	PRECEDENCE	HX	STATION OF ORIGIN	CHECK	PLACE OF ORIGIN	TIME FILED	DATE

TO

PHONE NUMBER

E-MAIL

THIS RADIO MESSAGE WAS RECEIVED AT

AMATEUR STATION _____ PHONE _____

NAME _____ E-MAIL _____

STREET _____

CITY, STATE, ZIP _____

FROM DATE TIME

REC'D

TO DATE TIME

SENT

This message was handled at no charge by a licensed Amateur Radio operator, whose address is shown in the box at right above. No compensation can be accepted by a "ham" operator. A return message may be filed with the "ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225 Main Street, Newington, CT 06111 or **www.arrl.org**.

The ARRL is the national association for Amateur Radio and the publisher of *QST* magazine. One of its functions is promotion of public service communication among Amateur Radio operators. To that end, the ARRL has organized the National Traffic System for daily nationwide message handling.

1320 2/11

ARRL — the national association for Amateur Radio™

RADIOGRAM

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FCC and License Updates

First-Time Exam Applicants Must Obtain an FCC Registration Number before Taking an Exam

Effective Thursday **May 20, 2021**, all amateur examination applicants will be required to provide an FCC Registration Number (FRN) to the Volunteer Examiners (VEs) BEFORE taking an amateur exam. This is necessary due to changes the FCC has made to its licensing system.

Social security numbers are no longer accepted at exam sessions.

Amateur candidates who already have an FCC license, whether for amateur radio or in another service, already have an FRN and can use the same number. All prospective new FCC licensees, however, will be required to obtain an FRN *before* the examination and provide that number to the volunteer examiners on the Form 605 license application. An FCC instructional video provides step-by-step instructions on how to obtain an FRN through the FCC's COmmission REgistration System (CORES).

The FRN is required for all new applicants to take an amateur exam and is used afterward by the applicant to download the license document from the FCC Universal Licensing System (ULS), upgrade the license, apply for a vanity call sign, and to submit administrative updates (such as address and email changes) and renewal applications.

All applications will be required to contain an email address for FCC correspondence. Applicants will receive an email direct from the FCC with a link to the official electronic copy of their license whenever a license is issued or changed.

FCC APPLICATION FEE AND VEC FILED APPLICATIONS

1 - MAKE SURE EXAMINEES UNDERSTAND THEY MUST PAY WITHIN 10 DAYS.

Examinees do **NOT** have to wait for the email from the FCC to pay the fee. As soon as an the application file number is issued by the FCC, they can pay by logging into the CORES **Payer FRN System** or the CORES FRN Registration system (CORES - Login).

Application File Number search using an FRN: FCC Application File Number Search

CORES payment system background information and instructions: Information.

CORES step-by-step payment instructions: FCC Application Fee Instructions

2 - The FCC help center stated there is a known issue with individuals paying the $35 application fee via a smartphone or tablet. This is not a new issue, and they haven't been able to help troubleshoot the issue at the support center. **Encourage candidates to login and pay the FCC application fee from a computer**.

3 – Examinees should not amend any applications that a VEC submits on their behalf, especially **NEW** license applications. Amending VEC filed applications will cause the application to be **dismissed without action** in the FCC system and potentially require the applicant to pay another $35 fee. If there is a minor mistake on the application, either call us and we can correct and resubmit the application, or the individual can pay the fee, be issued the call sign, and then log back in and make corrections.

4 - Individuals should review their application **BEFORE** paying the fee. If there is a major error on the application, such as the licensee's name or license class earned is incorrect, or the answer to the felony question is wrong, **DO NOT PAY** the fee. Call the VEC immediately.

5 - When in doubt, **call the VEC!** Even if you think you shouldn't bother us with your question, call us anyway.

6 - FCC application fee webpage for information and instructions.

FCC Legacy CORES System—Retired

The Federal Communications Commission (FCC) retired the Legacy version of its COmmission REgistration System (CORES) on July 15, 2022. CORES is the FCC's public-facing database that enables and tracks certain types of FCC and FCC applicant actions, including amateur radio applications and licenses. Its implementation has enabled routine amateur applications and licenses to be issued overnight instead of over weeks, as was the case with earlier methods. ARRL The National Association for Amateur Radio® advises the amateur radio community to transition to the updated version of CORES as soon as possible.

In essence, CORES is designed to identify those who hold certain types of FCC licenses and FCC authorizations, including amateur licenses, and organize them in an easily accessible manner under a common FCC Registration Number (FRN) regardless of whether one holds a single such authority or thousands. The new CORES, in addition to assigning individual FRNs, allows holders of multiple FRNs to aggregate them under a single account where the licenses and authorization, fees and payments, and related actions can be administered from within the same account.

In effect, new CORES can be conceptualized as an electronic interactive file folder. The updated version of CORES has been available since 2016, and now its use will be mandatory for all amateur licensees when submitting amateur-related applications.

Starting on July 15, 2022, the Legacy CORES website will re-direct users to the Commission's updated CORES site. Although some functionalities in the old system will continue to work for a short time, the FCC has urged all users to transition to the updated CORES system to take advantage of its enhanced security and functionality.

MVARC

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Frank Counts, KC8EVS

Vice President
Barry Butz, N8PPF

Secretary
Bill Stroud, KD8WHQ

Treasurer
Terry Windsor, KI8N

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Note

The Friday morning breakfast is meeting at Ariel-Foundation Park in the Park National Bank large shelter. This is to accommodate parking since the Academy Building visitor parking is not closely available during weekday work times the group has temporarily decided to relocate to a meeting location that is easier for club members, guests, and visitors to access.

If you have any questions or comments please express them at the club meeting October 10.

Club Officer Elections

Do you have a desire to be more active in club activities? Have new or different events or ideas?

It is that time of year to see who is interested in holding an office within MVARC.

The following are available in the next officer elections;

President
Vice President
Secretary
Treasurer
Directors

Either speak up at the October meeting or send an email to admin@mvarc.net if you are interested in becoming more involved.

New Technician Class (Element 2) Question Pool took effect July 1, 2022.
Answers to sample test questions on page 11.

G9B10: A – 33 feet
G4E03: D – To the battery using heavy-gauge wire
E9E02: B – The gamma match
E9E07: D – Reflection coefficient

Editors Notes

The MVARC Newsletter is delivered to club members only by email link to the MVARC webpage.

Thanks to all for your assistance with the MVARC Newsletter; in 2022 we were selected as the second best newsletter in the Ohio Section.

Please note the contact email for the MVARC newsletter is: **admin@mvarc.net**.

The **MVARC CQ** is the official newsletter of the Mount Vernon Amateur Radio Club.

Mount Vernon Amateur Radio Club
Serving Greater Knox County, Ohio

Swap and Shop

Jessica Myser is selling her dad's (Tony Spiegel, KC8UR) equipment. Below is a list of some of the items she has. If you are interested in seeing/purchasing any of these items or want to ask if she has any other equipment, please contact Jessica; - jessicamyser@gmail.com

MFJ-939 Autotuner

LDG Z-817H Autotuner

MFJ-939 Autotuner

RM Italy KL 203-P

Kenwood TR-751A 2 meter multimode transceiver

Yaesu VX-170 2 meter HT

Icom IC-229H 2 meter mobile radio

Stryker SR-94HPC 10 Meter Radio

Daiwa SWR Meter CN-101L

Autek QF-1A

Mirage BD-35 Amplifier VHF 40 watt Amplifier

Mirage B-310-G VHF/UHF 100 watt Amplifier

Icom SM-30 Microphone

Hustler Magnetic Mounts

MFJ-383 Amplified Speaker

Radioshack Frequency Counter