May 2023

2023 Edition 5

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

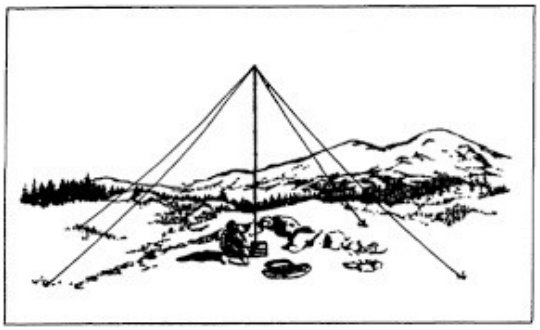
K8EEN UHF Repeater
444.600 MHz
+5 MHz / PL = 71.9 Hz

President's View

Frank Counts
KC8EVS

It's May, April went fast. All is well here in southern Knox County. Preparing to vote next week, hope all of you are. My antenna is still up and that is good. I made a few adjustments, and I am happy with the results. NVIS last weekend went well, weather was decent, and we made about 12 contacts at Thayer Ridge, 8 of which were other NVIS stations in Ohio.

I did not hear many NVIS stations. I don't think the band conditions were in our favor. Don and his group probably did much better, I haven't asked. My group did more talking than radio operating. In the afternoon I started hearing POTA stations on the air, all out of state. I got great signal reports from all, so maybe my antenna is operating a little long.



Saturday I spent all morning at the entrance to the Mohican Wilderness Campground testing to make sure everything was in working order for the upcoming Black Fork Gravel Grinder. Everything seems to be in good shape. We have learned how to operate this event over the last couple of years. I spent most of my time afterwards standing at the entrance of the campground talking with Terry, KI8N it was close to 1pm before we left. It took us that long to discuss all the problems in the world today. We did not solve anything, but we now have answers if anyone of importance asks.

Monday the 8th is our next meeting hope to see everyone there. By then the Gravel Grinder will be in the books and our next group event will be Field Day in June so if at all possible, come join us at Apple Valley.

73

Meeting Minutes

Scott Yonally
W8SY

The meeting was called to order at 7:00 pm by Frank, KC8EVS and he asked if there were any additions or corrections to the March Meeting Minutes as published in the newsletter. Hearing none, the meeting minutes were approved as published.

Treasurers Report

Terry, KI8N gave the Treasurers report. There were no corrections or changes and will stand as read.

Committee Reports

ARES

Terry, KI8N gave a short overview of what Knox County ARES is up to. Some discussion followed about NVIS Day and a few other upcoming events as to who will be operating and where the operations will be. Also discussed was Knox County EMA will be holding an IC-191 EOC class next week.

ARRL

Scott, N8SY stated there was nothing new to report.

Repeaters

Steve, N8RLW reported on the repeaters and their condition. There are no real problems, but he and Roger will soon be installing the new Yaesu repeater in place of the Maggiore Repeater. He stated he will be starting a new net on the 440 machine to give it a regular workout. This new net will start next month. The new power supply that was ordered is in and he will be going down to R&L Electronics on Saturday to pick it up. Some discussion followed about some donated cabinets and equipment.

MESH / EchoLink

Don, W8PEN gave a short overview of the MESH and EchoLink systems. He stated everything is working. Some discussion followed on where some of the MESH units are located and the possibility of improving the system by adding some new units and where they might be located.

Club Station Lease

Frank reported there has been no new news to report.

Tech Class / V.E. Testing

Michael, KE8HGE reported there are a few folks that would like to take the classes but are having some issues with their schedules. Some discussion followed on possible dates for classes. May 5th will be the next VE Testing session.

Events

- NVIS Day is locked in with people and locations to operate from. This will also be added to the Parks Department Calendar as well. Discussion followed as to who and where operations would be happening.
- Gravel Grinder is also coming up on May 6th. Discussion followed.
- Field Day and State Parks on the Air are also coming up as additional events.

"The good news is that we may start using the mesh network as a valuable service rather than just something to play with." Don, W8PEN

Old Business

* It was reported the Whitakers went shopping and now need some help assembling and getting their new station up and on the air. Some discussion followed with several people volunteering to help get them get their new station on the air.

New Business

* Barry, N8PPF donated the antenna he had written about in this last issue of the newsletter. He stated he really wanted it to go to a new Technician Class operator that would install and use it.
* Steve, N8RLW asked the members if it would be alright for him to register with Kroger's for the club to receive free monies from their Kroger's Plus Program. He then described how the program works and what is involved. No one objected. Steve will go ahead with this project.
* Frank, KC8EVS proposed that the club create a new position within the club. This new position would be Public Information Officer (PIO). He then went on with a short explanation as to the need for this new position and how it would benefit the club. Michael, KE8HGE suggested the Directors get together immediately after the meeting to discuss this. The club's Constitution and By-Laws will have to be modified to add this new position.
* Steve, N8RLW proposed to the club that they purchase an amplifier for the 146.79 repeater. He described many reasons for why this is needed and how it would benefit the operation of the repeater. He stated he would be donating $500 toward the $1,000 cost of the amplifier. Larry, AC8YE stated he would donate $100 toward the purchase as well. Some discussion followed. A motion was made by Roger, KE8ICI and seconded by Larry, AC8YE to go forward in this project and seek out additional donations. The motion was carried unanimously.

The raffle was held for a 50/50 drawing and Wayne, WB8WB won.

A motion to adjourn the meeting was made at 7:56 pm EDT with no dissenting votes cast.

Members Present	
Frank Counts, KC8EVS	Jim Bostic, KD8IZT
Ralph Bower, KC8REB	Wayne Bower, WB8WB
Emery Bennet, W8TW	Barry Butz, N8PPF
Tom Evans, KD8HSA	Roger Gorrell, KE8ICI
Don Russell, W8PEN	Larry Howell, AC8YE
Michael Jacobs, KE8HGE	Scott Yonally, N8SY
Shawn Bleiler, KD0DMJ	Marc Whitaker, KE8WMB
Steve Harvey, N8RLW	Bill Stroud, KD8WHQ
Terry Windsor, KI8N	Jocelin Whitaker, KE8WMC

NOTICES

2023 Upcoming Events

The following are 2023 club participation events.

- Black Fork Gravel Grinder 2023 - May 6th
- Mohican Trail 100 race at Mohican State Park—June 3
- Field Day, June 24 and 25 at Apple Valley
- Ohio State Parks On The Air—September 9 at Mohican State Park
- ARES Readiness repeater check for Red Cross shelter locations.
- ARES tabletop disaster simulation
- FLDIGI exercises and message sending
- Annual ARES SET
- Various ham radio contests from club station.
- Christmas Party 2023

MVARC has a new a new mailing address

Mount Vernon Amateur Radio Club
812 Coshocton Avenue
PMB #145
Mount Vernon, OH 43050

NOTE: When sending mail to this address the PMB and # must be used.

The new 2023 – 2027 question pool is effective July 1, 2023 – June 30, 2027, and *must* be used for General-class license exams administered on or after July 1, 2023.

MVARC now has an active Facebook presence

https://www.facebook.com/mvarc

Watch for announcements and reminders of upcoming events.

Do you have any events/activities YOUR club should participate in?

Let's Be 440.600 Radioactive

Steven Harvey
N8RLW

Republishing this article since the Net starts this month.

Are you aware the MVARC has a 440MHz repeater? Did you know it can do Wires-X, C4FM and Analog? If you answered no to any of these questions or you're wondering what tech jargon did he just say. Then you need to join us starting in the month of May 2023 for the 440 FM and Digital Tech Net on the MVARC 444.600 machine.

This new net will be held monthly on the 3rd Saturday of the month starting at **10:00 AM to 11:00 AM** on the 444.600 pl 71.9. The FM and Digital Tech will be hosting various topics of digital nature such as, what is C4FM, why is it different from DMR. What is the difference between a Talk Group and a Room. Many other topics in the digital ham radio world will be explored and this will also give our lonely 444.600 machine some exercise besides Terry, KI8N and Steven, N8RLW using it to listen to Wire-X groups all over the world.

We'll all check in and have discussion on the topic and see where it goes from there. My hope over time is to get enough local people with C4FM radio's so I can open this net up to others who can check into the net via our Wires-X room on the repeater. In the meantime, dig out your dusty 440 rig or dual band handheld and set it up for an outside antenna and program it to 444.600 pl 71.9. Give it a try before the net starts that way if you have any questions let me know. Let's become 444.600 Radioactive.

73

Steven Harvey; N8RLW Net Control for the 440Mhz and Digital Tech Net

Schedule and Topics

May 20th, 2023 - What did you see at Dayton that was digital?

June 17th, 2023 – What is C4FM and Wires-X and how can I use it?

July 15th, 2023 – What is DMR and how is it different from C4FM?

August – TBA

September – TBA

440.600 MHz
PL 71.9

FM and Digital Tech Net

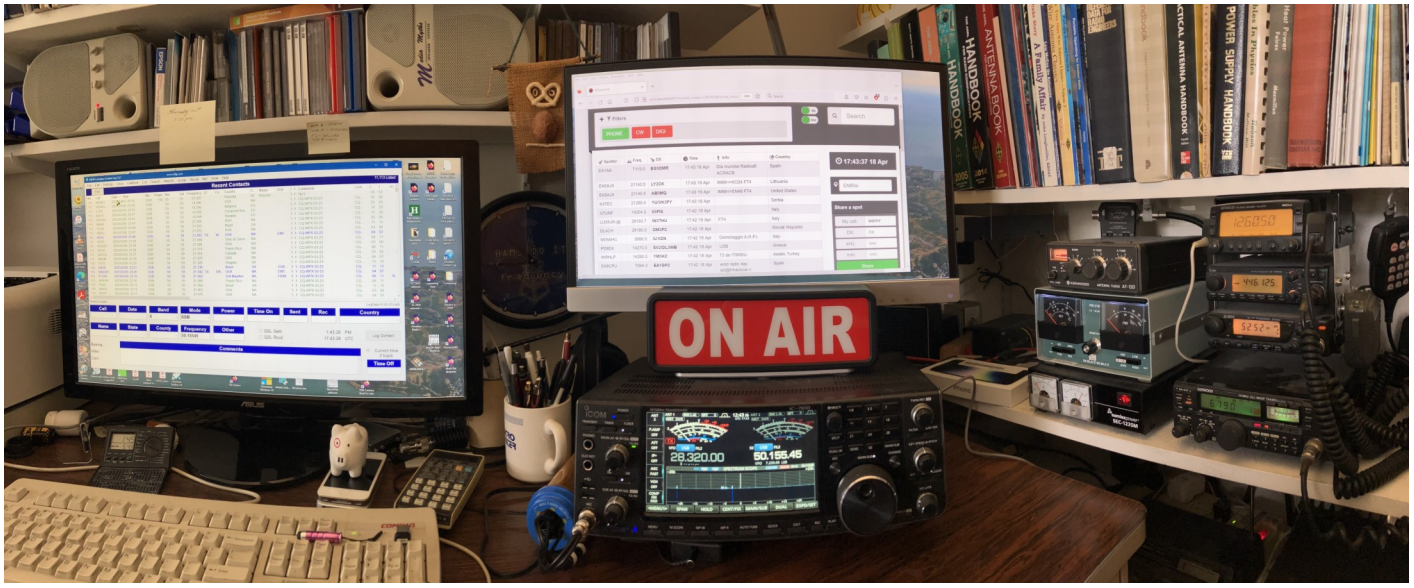
Member Ham Shack

Barry Butz

N8PPF

I have found two monitors to be very helpful. In this view N3FJP logging software and DX spotting are shown.

HF radio is in the middle. On the right is the VHF and UHF equipment.



"We did not solve anything, but we now have answers if anyone of importance asks." Frank, KC8EVS

ARES

Terry Windsor

KI8N

On March 18th I attended a G191 EOC/ ICS Interface course at Knox County EMA office. There were 14 people from various first respondergroups, Ohio and local EMA personnel, and a couple of people that do disaster consulting. The instructor was experienced in disaster situations and had worked in several EMA offices, Ohio and western states, and field locations. His personal stories and experience brought a lot of credibility to the training class.

At the May meeting I plan to tell what I took away from the class that will benefit MVARC if we are ever called to support a local communications emergency.

Some of the points will be:

- Reporting and responding as requested to assigned locations
- Professional attitudes/appearance
- Having operational equipment
- Knowing the forms/methods being used to send/communicate information
- We are a volunteer group
- The local PIO is the only person that should be giving information to the media or bystanders

The upcoming Black Fork Gravel Grinder is a great way to work on your emergency point-to-point communications skills, get your equipment prepared, react to real-time situations, and interface with the public.

Another upcoming event is the Mohican Trail 26, 50, and 100 which also is a great way to practice and prepare and react to an unexpected emergency.

Everyone should stay familiar with your radios and work on your communication capabilities.

Thanks everyone and stay safe and be prepared!

CONTINUING:

This is a great time for all club members interested in ARES to review the Ohio Section ARES web pages and complete or update any NIMS ICS training courses.

MVARC MAY MEETING

Please join us for our Monthly Meeting! We will be discussing a variety of topics and providing updates.
50/50 Raffle

Monday, 8 May 2023

7:00 PM

Academy Building
790 Fairgrounds Rd.

https://MVARC.net

Mount Vernon Amateur Radio Club
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Radio Activity

Don Russell
W8PEN

Local Mesh Network

Lots of stuff happening with the 2 meter repeater. However, I am sure Steven, N8RLW, will have a report for members elsewhere in this newsletter.

After many years of flawless mesh network operation, we are having some issues. Not anything that can't be fixed.

At the water tower, it appears that our nano switch has malfunctioned causing the three mesh nodes we have in place to not talk to each other. As time and weather permits, Matt (KC8UVN) will make a climb to the top and replace the switch.

The 5G node at KCH has apparently stopped transmitting. It receives okay but doesn't really do much. Plans are to replace the faulty node and perhaps add a 5G link as a backup to the main link to Johnstown, which is on the water tower. Again, as time and weather permits.

Then there are still the Centerburg and Fredericktown mesh projects that need to be completed.

Lots of work that can hopefully be completed by the end of summer.

The good news is that we may start using the mesh network as a valuable service rather than just something to play with. Matt has plans (with the club's consent) to install some packet equipment at the water tower. He will be using the spare antenna we have installed as a backup to the repeater antenna. No use letting it just sit there!

Matt would like to create a mesh link going back to Johnstown that will enable local Winlink access. Plus, I would like to set up the Echolink at the water tower instead of running it from home. This would require internet access, which can be supplied by the mesh network if it is used strictly for Echolink and not for web browsing.

These two items will make all the work on the mesh network start to pay off.

History of the Mt. Vernon ARC 2 Meter Repeater—PART II

I was wrong. I thought there were three parts to the repeater history. I found Part IV, so let's continue for a few months.

Note that Woody, W8PEN, was my mentor in ham radio. I took his call a few years after he had passed away and realized none of his family members (hams) were interested in taking his call.

So, here is the MVARC Repeater History, Part II, originally published in the May 2006 newsletter:

Repeater number two was just to move our first repeater out to what was then the Mt. Vernon Amateur Radio Club's headquarters. This was East of Mt. Vernon, off Route 36 on Vincent Road. Carl Barcus owned the place and although he was a CB'er, he wanted awfully badly to be a ham. He was handicapped, being blind, but was always there at the meetings and really enjoyed Chuck and I bringing the repeater out there and the constant visits we had to make to keep it going.

We added a 150 watt amplifier and 450 MHz control. We also added two sections of tower so the receive antenna was at 60 feet. We used two antennas on that tower separated by about 20 feet. If I remember right, the receive antenna at the top of the tower was a Ringo Ranger. The transmit antenna was a home brew four bay dipole array.

Antenna separation was not ideal, but coverage was much improved. We had some problems to the South, but North was good. Chuck could start hitting the repeater just South of Mansfield.

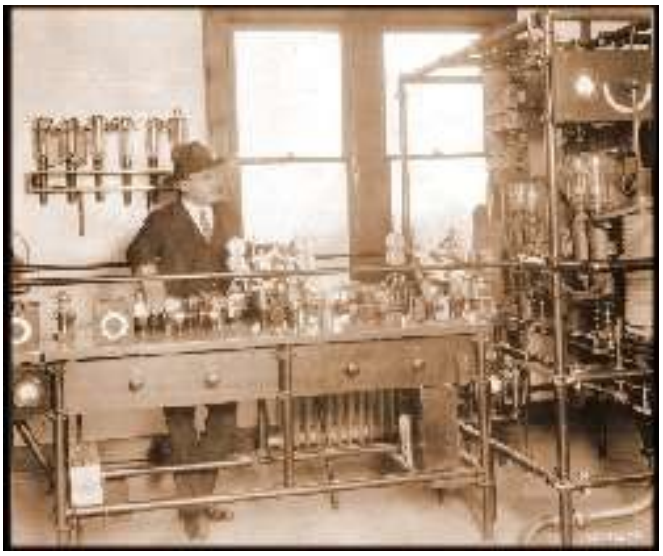
The main issue with this site was Mt. Vernon handhelds had trouble getting into it. After all, it was about five miles outside of Mt. Vernon; and not exactly line of site. You could do it, but you had to pick your spots.

I am not sure of the time frame, but I think this repeater was operational for six months to a year. This is about the time that the Club had enough members on 2 meters to warrant having the Club take some responsibility for the repeater. The club started paying the electric bill for it, although the treasury was not strong at the time, so I helped a little with my own money. Being single and living at home had its advantages.

We had a group of six to ten members that were using the repeater regularly. I can remember one old timer saying that 2 meters was worthless: "You can't even get down the block on 2 meters!" he claimed. So, I whipped out my little handheld (okay, big handheld by today's standards) and talked to another ham in Columbus who was also on a handheld. The next meeting, the old timer had his own handheld clipped to his belt!

On to Repeater number three. Now that the club was involved, everyone wanted even better coverage than the one we had at the Club site. Like I said, coverage to the South was not very good. Royce "Woody" Woodward (W8PEN, SK), offered to let us set up the repeater at his home.

He had a frequency measurement lab and a Broadcast Consulting business out on New Delaware Road. The elevation out there was 1350 feet above sea level! Sounded like a good deal.



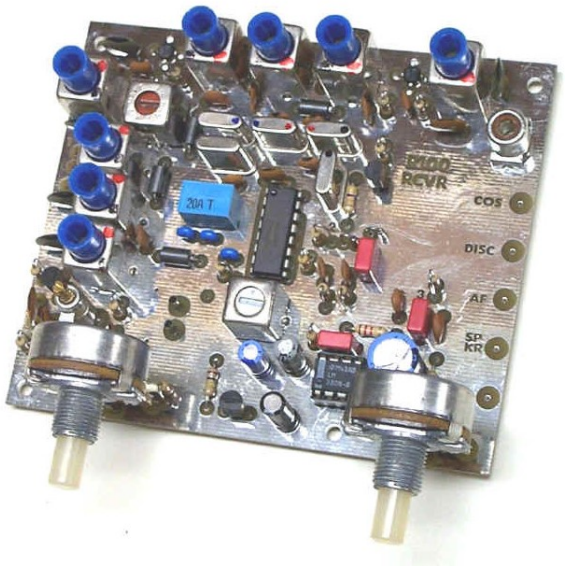
Since Woody only had a 50 foot telephone pole to hang antennas on, it was decided that a single sight operation was not going to be feasible. Duplexers were too expensive for us and not readily available. After knocking around the idea of a split site, with the receiver at Woody's and the Transmitter maybe staying at the club site, Woody came up with the idea of a split site on his property. He had plenty of land, so horizontal separation was not a problem.

Off to a ham fest we went again, this time with a little more cash in hand from other members. We were able to locate about 10,000 feet of insulated wire for a good price.

I say good price because I can't remember what we paid. While it was not in the plans, it immediately became apparent that we could run wires between the two sites instead of using uhf. We figured we could run five wires. two for audio and three for power and the COR line.

The next problem was the tower. We were able to find six good sections of used tower. Brushed down and painted, they looked pretty good. We bought three sections of tower for the base. Shovel dug a 6 X 6 X 6 foot hole. Then we mixed our own cement and poured the base. The tower was 90 feet high, with three sets of guys.

The receiver at the base of the tower was a solid state HAMTRONICS (then called VHF Engineering) RF-144 receiver. It came in kit form, and I was the official kit builder. Buried about 3 inches underground were our 5 wires running back to the Lab where the transmitter was. The transmitter was also solid state and from HAMTRONICS. The power out was 25 watts. I built that one too. Chuck designed and built a totally new controller. This was a fun project and brought a lot of club members together.



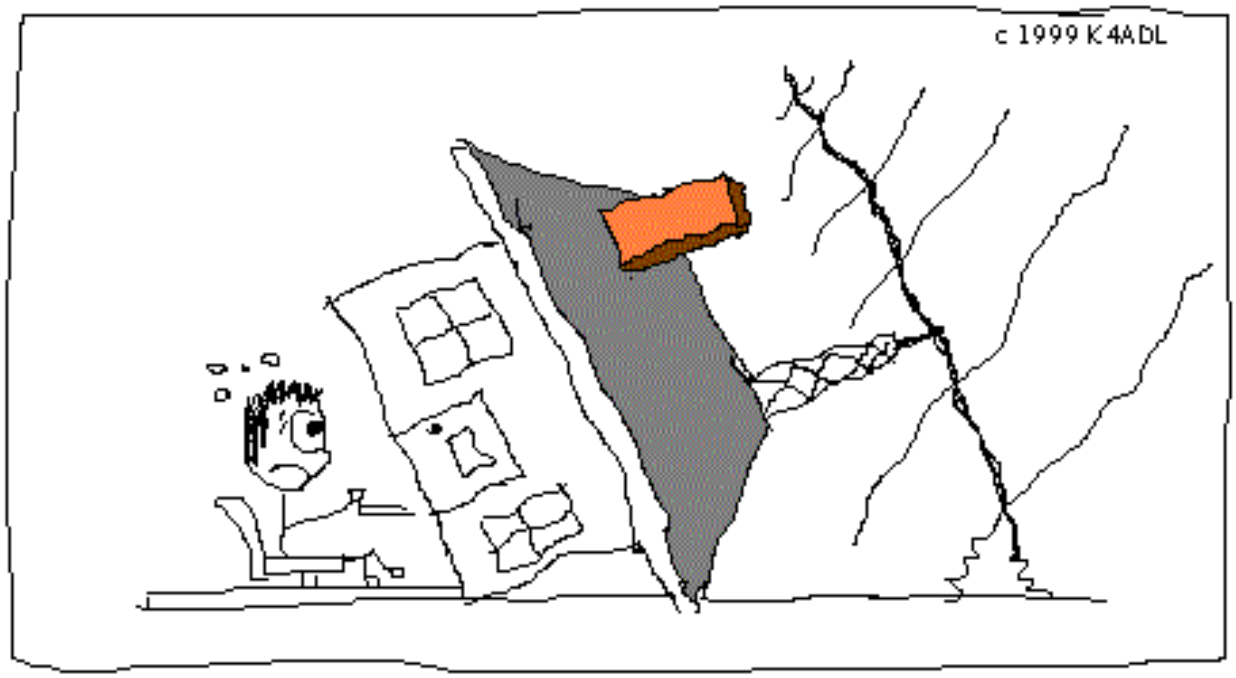
RF 144 Receiver

This repeater was a vast improvement over the previous two. I had no problems working into the repeater from Columbus, Mansfield, Wooster, etc. The one continuing drawback was the handheld coverage in Mt. Vernon. While better than the Club site repeater, it was far from perfect. We were four miles to the West instead of five miles to the East! I could easily work into the repeater from Morse Road and Cleveland Avenue with about 30 watts, but still had problems hitting the repeater with a handheld and a rubber duckie from most parts of Mt. Vernon. The crew was thinking about putting a remote receiver site somewhere in Mt. Vernon to fix this, but that was never done. I think we were all starting to get burned out on the repeater stuff. We had a repeater with fantastic coverage in most aspects and were happy with that.

This repeater was online for many years. Not sure how many, but I would say at least into the early 1980's. Like I said, the time frame on all of this is a little foggy. Too bad I didn't save all the paperwork and stuff we had. Chuck had married and moved to Columbus. I was still living in Mt. Vernon, married to Darlene, and not active on ham radio at the time. As I drifted away from repeater maintenance, Jim Woodland (WB8AYM, SK) kept trust of the repeater. While Jim could not do anything technical on it, he was a good keeper. He kept in touch with me, and I would bail him out when things started to go bad. The repeater required very little maintenance time.

Someone else took over as repeater tech somewhere along this time frame. Before it moved out of Woody's measurement lab. Then Woody (W8PEN) passed away and the repeater had to be moved. I was not a part of this, but from what I hear, taking down the 90 foot tower was a challenge! They used a pipe cutter to cut one leg at the bottom. Then let loose a couple of the guy wires. The theory was for it to come crashing down in the correct direction. Wrong! Apparently, the tower stopped falling at about a 45 degree angle. Someone had to walk up the tower and ride it down, along with a little pulling of the guy wires. WOW!

I think a repeater was installed at the Cable Company tower or WMVO radio tower. Seems like there was a ham who was WMVO's engineer for a while. From what I understand, this repeater was decent, but had some intermode problems being so close to WMVO's transmitter antenna. Bob Bruff (N8PCE) could probably fill us in here. Let's call this repeater number 4. Next month we will check out Repeater number 5 and beyond.



DONALD HAD BEEN WARNED TO CENTER THE 40 METER BEAM ON HIS ROOF.

Hope to see you all at the April meeting.

May 2023

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 OHDEN Net 7:45 pm	3	4 7 PM Roundtable Discussion on 146.79	5 9:00 am— Breakfast	6 **Black Fork Gravel Grinder**
7 9:00 pm ARES Sunday Night Net—Don (W8PEN)	8 **7 pm MVARC Meeting**	9 OHDEN Net 7:45 pm	10 4:45 pm Dinner - Southside Diner	11 7 PM Roundtable Discussion on 146.79 Repeater	12 9:00 am— Breakfast	13
14 **Mother's Day** 9:00 pm ARES Sunday Night Net— Roger (KE8ICI)	15	16 OHDEN Net 7:45 pm	17 4:45 pm Dinner - Southside Diner	18 7 PM Roundtable Discussion on 146.79 Repeater	19 9:00 am— Breakfast **Hamvention**	20
21 **Hamvention** 9:00 pm ARES Sunday Night Net— Michael (KE8HGE)	22	23 OHDEN Net 7:45 pm	24 4:45 pm Dinner - Southside Diner	25 7 PM Roundtable Discussion on 146.79 Repeater	26 9:00 am— Breakfast	27
28 9:00 pm ARES Sunday Night Net—Terry (KI8N)	29 **Memorial Day**	30 OHDEN Net 7:45 pm	31 4:45 pm Dinner - Southside Diner			

Ham Radio Contest Calendar

NVIS Day

These pictures are from Wolf Run Regional Park

Photos:
Don, W8PEN and Steven, N8RLW

K8EEN Repeater—146.790, PL 71.9

Steven Harvey

N8RLW

Hopefully everyone has realized by now the new repeater and controller are installed on 146.790. If you listen to the 146.790 machine and you're not hearing it, you will need to turn off your CTCSS or also known as tone squelch off on your radio. Currently the repeater is in open access mode, which means it does not require the tone of 71.9Hz to access the machine. It also does not output the tone of 71.9Hz back to your radio to open up the squelch so you can hear the repeater when it's on the air or when it ID's on the hour for the time during the week. You'll need to find your owner's manual for your radio or use software that came with your radio to reprogram it to use no PL tone of 71.9Hz for the time being.

This is only a temporary solution as we had to acquire tone boards from an outside vendor. As of writing this for the newsletter the boards have been ordered and have arrived. Now it's doing the wiring and hopefully with my schedule it will be done by the end of May and the system will be back to normal for receiving and transmitting a PL of 71.9Hz. I have taken a picture of the upgrades we have completed so far and it coming along very well.

Right now, there is new Astron RM-60 power supply, Yaesu DR-1X repeater, Arcom RC-210 repeater controller and a Cyberpower PDU (Power Distribution Unit) that helps keep the AC power all smoothed out from any spikes and shows the current draw when idle and in use. The Magorie and the CAT controller are at Roger's, KE8ICI work bench getting items tuned up and a new power amplifier installed back into the Magorie repeater to where it was purchased. When this work is completed, it will become our spare repeater just in case of any failure.

Speaking of amplifiers, I would like to say thank you to everyone who donated to the new amplifier fund as of May newsletter we have collected the $1000.00 needed to order the new amplifier for the repeater. After many good years of service, the Mirage mobile amplifier will be retired and sent to backup status.

The new Henry Amplifier is a continuous 100% duty cycle commercial grade amplifier. Why the expense on the commercial amplifier? During the rag chew/QSO net it become very apparent the Mirage Mobile amplifier with its age and only being a 50% duty cycle amp was showing it would turn off due to overheating and the power would drop to just the exciter power out of 3 watts. The repeater coverage would suffer because of it. We experienced this more than once during the QSO/NET and during the outages of low power Scott N8SY could not hear the machine anymore. Thanks to the donors who came forward I will have Terry by the middle of May order the new amplifier and once it arrives, we will be we'll be back up to normal output level or 100 watts.

Finally, you might be asking what can I do with this new Arcom controller? Are there any features I can use with this controller. The answer is yes, there are couple of features setup that you can send DTMF tones to the repeater and it will speak back to you.

The first one is called the echo test. Here is how you access it.

1. Say your "callsign", accessing the echo test and then on your keypad **tone 50** and unkey.
2. Repeater will say Echo Start Ready.
3. Immediately key down and say your call sign and unkey. The repeater will repeat back what it heard.

Second one is having the repeater tell you the time and date.

1. Say your "callsign" accessing the time and date.
2. Then on your keypad **tone 51** and unkey.
3. The repeater will then tell you the current time and date in non-24-hour format.

That is all I have programmed so far for you as the user. As time goes on, we'll be looking into other items for you to get from the repeater and the controller. There might be a good possibility of NOAA weather, maybe weather station data such as windspeed and temperature at the site. This controller has so many functions, it just takes time and learning how to enable the features to make it come to life.

73

Steven N8RLW and Roger KE8ICI

MVARC Repeater Technicians

Miscellaneous Rambling

Terry Windsor
KI8N

April went by too fast. I had plans to get out and play portable radio via POTA several times. However, I was only active at 4 parks. Three were new to me and two were in Memphis, TN. In Memphis I met Carlos, KB4CO as I was finishing an activation at K-6263 and he was coming in to do his activation. We talked for quite awhile about POTA and our activations.

Most of my POTA activity was using the Elecraft KX3. Never thought I would like working low power but turns out if is fun and has a challenging aspect. Seems to make West Coast and especially Europe contacts fun.

Since I sold my C2500HD truck I have had to come up with new ways to deploy my Hustler Resonators. With the truck I had them mounted on a magnetic base with a MO-3 mast and a VP-1 adapter to hold three resonators at a time. Then I placed the base on top of the fifth wheel hitch and used the truck as my ground plane. Everything was mounted with quick disconnects making set-up and tear down quick and easy.

With the new Wrangler there is no place to put a magnetic base so I use a tripod with a CB mirror mount to attach the resonators. The MFJ 1918EX Antenna Stand is 9.5' and with the 54" mast it gets the resonators fairly high. I also added four elevated radials that are held up with plastic fence posts. The radials are cut for specific bands to assist with RF efficiency and lower SWR. The four radials are actually long wires with crimp quick disconnects at specified lengths that set the needed length at a quarter wave radial.

This new setup is working really well and contacts from a park to Europe on 17, 15, 12, and 10 meters is fairly common now. The only downside to this configuration is the amount of stuff I now have to carry and the time it takes to set up. With the truck and magnetic base it took about 5 minutes to get on the air. Now it takes about 15 minutes to set up and start an activation. I was happier with less to configure and faster times but the range I get now is much better even working 10 watts.

I find it amazing how much work Steven, N8RLW and Roger, KE8ICI have put into updating the 146.790 repeater. Looking forward to the new amplifier and new capabilities of the ARCOM controller.

Everyone in the club should be proud of how members have supported new projects the last couple of years with new equipment; repeater antenna, Icom 7300 and the repeater amplifier and also work done on the Academy Building radio room. Thanks all!

Until next month "Ham it UP!

"Suppose you and a friend want to monitor a frequency but ont hear other conversations. Or you might be at a hamfest and want to keep in touch with your pal when he gets lost." Barry, N8PPF

Using Tones On Your Handheld Radio

Barry Butz

N8PPF

Lately I've heard conversations about using the squelch tones. This reminds me of an article I wrote for the club newsletter in March 1995. It still seems timely today so here it is.

CTCSS—What can it do for you?

No, it isn't a new insecticide. It is Continuous Tone Controlled Squelch System. Some of the other names used for the same system are "Private Line" (or PL, by Motorola), "Channel Guard" (by GE), "Quiet Channel" (by RCA), and "Tone Squelch". It is a method used by FM VHF/UHF transceivers for increasing the usefulness of the limited number of frequencies available.

Most transceivers have CTCSS encode ability built –in. Many also have CTCSS decode built-in or offered as an option. When a transmission is encoded, it carries a sub-audible tone along with its normal audio information. There are tones available from 67.0 to 254.1 Hz. Although the tone is not heard, a receiver with decode ability can detect its presence. The receiver will ignore any signal that does not carry the appropriate tone. When the tone is detected, however, it will open the squelch and let the audio be heard, thus the term "tone squelch". Th normal squelch control does not function when CTCSS decode is being used.

How can this be useful to you? Here are some examples.

The Mount Vernon repeater shares the 146.79 MHz frequency with several other repeaters within 200 miles. At times, you may hear one of the other repeaters when you really just want to monitor our local traffic. What to do? Out repeater is encoded with a CTCSS tone of 71.9 Hz. If you set your transceiver to decode 71.9 Hz, you will hear our signal and the others will be ignored.

Another situation arises when conditions allow a distant mobile station to reach our local repeater. His traffic is carried on our repeater, even though he didn't' intend that. Quite often his signal is very weak and keeps kerchuncking the repeater, to the annoyance of everyone. When this happens, out repeater can be put into CTCSS mode, which means that its receiver is set to decode 71.9 Hz. Signals not carrying that tone will be ignored. In order to make the repeater respond, you should det your radio to encode 71.9 Hz. If you have a memory dedicated to the repeater, you can set it to encode 71.9 Hz at all times.

If the repeater isn't in CTCSS mode, it doesn't matter if your signal is encoded or not. While in CTCSS mode, the repeater announces that it is "in PL at 71.9".

How about simplex operation? Suppose you and a friend want to monitor a frequency but ont hear other conversations. Or you might be at a hamfest and want to keep in touch with your pal when he gets lost. There are just a couple dozen simplex frequencies and about 10^{12} hams using them.

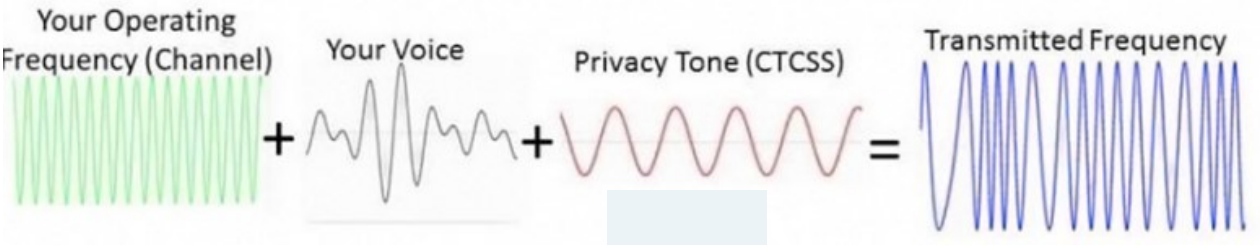
You and your friend can choose a frequency and CTCSS tone and set your radio to encode/ decode. For example, you might want to use 146.58 MHz with a tone of 100 Hz. Chances are you can find a combination that isn't being used. You should still check the frequency before transmitting. Since your receiver will only respond when it detects a 100 Hz tone, the 146.58 frequency might be in use by someone using no tone, or a different tone.

Here are the theory of operation definitions of CTCSS encode and decode.

Radio transmitters using CTCSS always transmit their own tone code whenever the transmit button is pressed. The tone is transmitted at a low level simultaneously with the voice. This is called CTCSS *encoding*.

The ability of a receiver to mute the audio until it detects a carrier with the correct CTCSS tone is called *decoding*.

Simplex



CTCSS Encoding

Final Takeaway

I have a few links that might be useful for setting up your radio to optimize and get the best audio quality you can or finding the right interface equipment for your shack.

First is optimizing your DSP settings. This is a link to Heil Ham Radio:

https://heilhamradio.com/dsp-settings/

"ADJUSTING YOUR RIG'S DSP SETTINGS

Modern Amateur Radio transceivers offer a wide variety of features that may include DSP-based adjustments for your SSB audio. Follow this guide for simple instructions on how to get your rig set up so that you sound great on the air.

Second is another Heil link I use for selecting the correct adapter cable and headset and/or microphone.

https://heilhamradio.com/compatibility/

The **third** link I find useful is determining which Tigertronics SignaLink USB Product is correct for your radio (if you do not have a built-in sound card).

http://tigertronics.com/files/SignaLink%20USB%20Product%20Guide.pdf

This link takes you to a pdf document that lists transceivers by manufacturer, model and correct SignaLink USB, radio cable, and jumper module.

The **fourth** link I find helpful, especially with all the articles about PL tones, repeater encoding/decoding is the Knowledge Base from RT Systems.

https://rtsystems.freshdesk.com/support/solutions

This knowledge database covers issues with programming most handhelds, mobile radios, and base stations. There is a FAQ that covers the types of Tones in general. What is the difference in Tone, TSQL, DCS and others? This is all described in the Tone Modes / Tone and Tone Squelch FAQ.

The last and **fifth** link is the Quick Radio Index on Universal Radio's web page.

https://www.universal-radio.com/catalog/QRI.html

This is probably the most comprehensive listing of Alinco, Icom, J.R.C., Kenwood, and Yaesu radios. The list is broken up by HT, Mobile, Base, and Receiver. Clicking on any of the models takes you to a short description and a list of accessories that were available when that radio was in production.

I hope you find these links useful with helping you either set up your radio(s) or assist you in product selection.

General Exam Sample Test Questions:

G6B12 Which of these connector types is commonly used for audio signals in Amateur Radio stations?

A. BNC
B. Type N
C. PL-259
D. RCA Phono

G7B02 Which of these classes of amplifiers has the highest efficiency?

A. Class AB
B. Class C
C. Class B
D. Class A

Extra Class Exam Sample Test Questions:

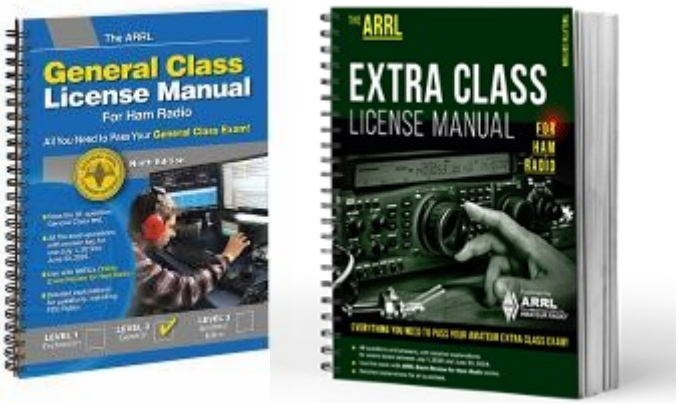
E8A09 How many different input levels can be encoded by an analog-to-digital converter with 8-bit resolution?

A. 256 divided by the gain of the input amplifier
B. 256
C. 8
D. 8 multiplied by the gain of the amplifier

E5B10 What is the relationship between the AC current through an inductor and the voltage across an inductor?

A. Voltage leads current by 90 degrees
B. Current leads voltage by 90 degrees
C. Voltage and current are 180 degrees out of phase
D. Voltage and current are in phase

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, retailers, or Amazon.



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? 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.

The Ohio ARES HF Digital Net—OHDEN

Tuesday at 7:45 pm 1804.5 MHZ, USB, Olivia 8-500 with water-fall frequency 1500.

Sunday at 4:00 pm 3584.5 MHz, USB, Olivia 8-500 with water-fall frequency 1500.

"Speaking of amplifiers, I would like to say thank you to everyone who donated to the new amplifier fund as of May newsletter we have collected the $1000.00 needed to order the new amplifier for the repeater." Steven N8RLW

FM Repeater Nets In And Around Knox County

County	Net	Frequency	Day and Time
Ashland	No net as of 03.30.2023		
Coshocton	CCRA	147.045 PL 71.9	Every Sunday 9:00 PM
	ARES	147.045 PL 71.9	Every Monday 8:00 PM
Delaware	Monday Night Net	145.170 PL 74.4	Every Monday 8:00 PM
Holmes	No net as of 03.30.2023		
Knox	**MVARC Roundtable**	**146.790 PL 71.9**	**Every Thursday 7:00 PM**
	ARES Sunday Night Net	**146.790 PL 71.9**	**Every Sunday 9:00 PM**
	440 FM and Digital Tech Net	**444.600 PL 71.9**	**3rd Saturday of the month starting May 2023 at 10:00 AM**
Licking	N8RA Tuesday Night Net	146.880 PL 141.3 444.500 PL 141.3	Every Tuesday 9:00 PM on the 146.880 except for the last Tuesday of the month they check in on the 444.500 repeater.
Morrow	Morrow County Net	146.775 PL 107.2	Every Sunday 9:00 PM
Richland	IRAC Net - Mansfield	146.940 PL 71.9	Every Wednesday 8:00 PM

Has anyone tried contacting any of the other nets? We have several operators from Licking County joining our Sunday Night Net and it would be great if we could reciprocate and join their net!

FCC and License Updates

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

All amateur examination applicants are required to provide an FCC Registration Number (FRN) to the Volunteer Examiners (VEs) BEFORE taking an amateur exam**Social security numbers are no longer accepted at exam sessions.**

Amateur candidates who already have an FCC license, whether for amateur radio 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

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 Aplications

EXAMINEES 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**.

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

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 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 more.

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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Contact Us

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PMB #145
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43050

Email

admin@mvarc.net

Answers to sample test questions on page 20.

G6B12: D – RCA Phono
G7B02: B – Class C
E8A09: B – 256
E5B10: A – Voltage leads current by 90 degrees

Editors Notes

The MVARC Newsletter is delivered to club members via email containing a link to the MVARC webpage, Newsletters heading.

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.

Web Page

MVARC.net

Facebook Page

https://www.facebook.com/mvarc