Great Dayton Flood of 1913. Large amounts of precipitation over already frozen ground and ice damming along the rivers caused extensive flooding across the Dayton region leading to the establishment of the Miami Conservancy District and the system of dams and levies you see today. Although it may be difficult to see, the Arcade is slightly to the right of center.

Wavelengths

Apr 2018

Xenia Weather Amateur Radio Net
XWARN (W8XRN)

147.1650+ (123.0) (Analog Only)
443.1000+ (123.0) (Analog + System Fusion)

Meetings: 2nd Monday, 7:30PM, Greene Memorial Hospital (1141 N Monroe Dr, Xenia, OH) Herman Menapace Auditorium

President's Message

Spring is now officially here and with it, a number of public service events that we support using ham radio. Check the schedule printed elsewhere in this newsletter and see which ones you can help with.

46 days from now (as I write this), Hamvention 2018 kicks off. We are in the process of completing the graphic design for this year's t-shirts. Shirt sales are the major source of funds that support the mission of XWARN. Please come out and help with this important activity. More details will be available at the next meeting. I hope to see everyone there!

73 de N8ADO

ARRL EC-001 Mentors Needed

If you've taken EC-001, hold at least a General class license, have taken the standard FEMA courses, have some experience with emergency communications, and have a desire to help train future generations, then ARRL is looking (http://bit.ly/2Gpo9hv) for help filling mentoring slots for the entry level emergency communications course. For more information on applying to be a mentor, contact ARRL Emergency Preparedness Assistant Ken Bailey, K1FUG, tel (860) 594-0227.

Club Contacts

- President, Bob Baker , N8ADO President@xwarn.net
- Vice President, Brett Boggs, NV8I Vicepresident@xwarn.net
- Secretary, Jason Bowman secretary@xwarn.net
- Treasurer, Steve Mackey, N8ILR Treasurer@xwarn.net
- Repeater Guru, Jim Simpson, WB8QZZ Technical@xwarn.net
- Web Master John Seitz, N8ACU webpresence@xwarn.net
- Membership, Phil Verret, KA8ZKR membership@xwarn.net
- XWARN Trailer / Public Service, Mike Crawford, KC8GLE trailer@xwarn.net or publicservice@xwarn.net
- Newsletter, Jason Bowman, WG8B newsletter@xwarn.net

Calendar of Events

- Sunday, April 8. 8:00 AM until 3:00 PM (or part of the day). Ohio River Road Runners Club Full and Half Marathons Xenia YMCA (Need lots of help). Contact Mike Crawford KC8GLE@earthlink.net
- Saturday, April 14. 8:00 AM until 11:00 AM. "Spring Has Sprung" 5k Xenia YMCA. Contact Mike Crawford KC8GLE@earthlink.net
- Saturday, May 13. 8:00 AM until 11:00 AM . "Founders' Run" 5k and 10k. Trebein Elementary on Dayton-Xenia Rd East of Beavercreek near Ankeny Rd. Contact Bob Baker n8ado@arrl.net
- May 18-20. Hamvention

Other Events Needing Help

If you can help with the following events, please contact Robert Flory at ka5ruc@mocoares.org or 937.238.0436.

Bike for Tikes. Approximately 150 Bowling Green State University students bicycling from Cincinnati to Bowling Green for their annual fund raising event.
When: Friday April 6, 2018
Where: Great Miami River Trail w/stops at Carillon Park, Triangle Park, Taylorsville Metro Park (lunch)
Time: Enter Montgomery County around 7am, lunch around 1pm.
Frequency:* 146.640 (-) pl 123.0 K8MCA repeater
Need approximately *5* more ham volunteers to cover the route throughout the day.

20th Annual "Make A Difference...Safe A Life" 5k Walk/Run to benefit Suicide Prevention Center
When: Saturday April 7, 2018
Where: Dayton VA Medical Center
Time: 1000 - 1200. Be on site at 0845 for assignment.
Frequency: 444.250 (+) pl 123.0 K8MCA Repeater
Need approximately 7 more ham volunteers to cover the course.

Autism Society of Dayton 5k Walk/Run for Autism Awareness
When: Saturday April 28, 2018
Where: Payne Recreation Center, Moraine Ohio
Time: 0900 - 1200. Meet at Family Market, 3351 Main Street at 0800 for assignment.
Frequency: 444.250 (+) pl 123.0 K8MCA Repeater
Need approximately 6 more ham volunteers to cover the course. Please provide T-Shirt size. T-shirt deadline is April 1st.

One Year Free Membership for New Hams

XWARN would like to offer a free membership for new hams. At the March 2017 meeting, those present were generally in favor of it. However, the Code of Regulations specifies that only paid memberships have voting privileges. XWARN can simply “pay” for those memberships, but we’d only be paying ourselves ,and doing so probably goes against the intent of XWARN current governing documents. To remedy the legal problem and achieve the desired outcome requires a fix to the Code of Regulations.

Here is what we would like to propose:

1. In the Code of Regulations, change Section II.3(c) from "Membership is established when the Member has paid dues" to "Except as provided for below, Membership is established when the prospective member has paid dues".
2. Add a new paragraph Section II.3(c)(5) to read as follows: "In furtherance of the Purposes outlined in the Articles, the Executive Council may establish membership policies that do meet the criteria of this section for membership. These policies shall not create a membership class of an enduring nature unless the Regulations be amended."
3. In the Operations Manual, add a paragraph Section II.1(a)(4): "Newly licensed (within the past year) amateur radio operators can become Members without paying dues until the end of the next Annual Meeting or, if the Annual Meeting is within three (3) months at the point membership is established, the following Annual Meeting."

What this proposal would do is allow the Executive Council to quickly establish new types of memberships of a temporary nature without having to amend the governing documents every time. While we do not envision other types of temporary memberships, this language gives us the future flexibility to do so without having written votes. Why not simply make a “free first year” membership a permanent membership class? We could, but it does take flexibility away. For example, if we decide that it’s a bad idea after a certain period of time, then we would have to have another written vote with a commensurate 30-60 day delay. With the current proposal, we can add or remove temporary membership policies within a given meeting.

By the way, we are already within the 10-day window required for written vote notices. I simply could not work on the newsletter while I was on vacation. So technically we can’t hold a vote at the April meeting. We have to wait until May. The 10-day notice window and the requirement for written notification is probably something we should discuss at the April meeting. The last time I checked most people have access to email, and we could have had this proposed and voted on over email 2 days after the March meeting.

XWARN Mission

The mission of the Xenia Weather Amateur Radio Net (XWARN) amateur radio club is to conduct weather spotting nets during severe weather and other communication services for the City Of Xenia and all other Greene County communities.

In this capacity, we are set up to provide communication services as required to the Greene County Ohio Public Service Agencies and other local government entities. The communications services provided to the supported agencies may be for emergency purposes or to simply enhance their communications abilities. On an as needed basis XWARN provides similar services to various government entities of our surrounding counties.

Additionally, XWARN provides communications support to various community organizations in support of marathons, 5K runs, 10K runs, bicycle events, etc. to provide health and safety assistance to the participants and sponsors of said events.

In support of these goals, XWARN operates and maintains amateur radio repeaters and other equipment in Greene County.

Minutes: March 12, 2018

Bob opened the meeting at 1930 with the Pledge of Allegiance.

During greetings, we welcomed a new ham, Corinna Brown (KE8HUE), to the club and the world of amateur radio.

Cracker Barrel

Safety vests. New vests will be similar to old vests. New vests in time for Hamvention. $30 for nonmembers, $25 for members.

Hamvention 2017, limited number t-shirts, sweatshirts, and hoodies

More batteries available at good price. See Bob N8ADO.

Statewide tornado drill. March 21 @ 0950.

Motion to accept minutes from March 2018. Dick and Richard motioned. Approved.

Treasurer's Report. Dick and Richard motioned. Approved.

Public Service Events

Sunday April 8. ORRRC Xenia YMCA Full and Half Marathon

Spring Has Sprung. Following Saturday.

Founder's Run. Saturday May 12th

Trailer. Sitting in its nest. Cleanup day tentatively May 12.

Repeater. Not present

Website. Not present. Weather Net script on website

Membership. Not present. 2 new members.

Newsletter. Looking for ideas as usual. One member approached editor before meeting with idea.

We have volunteers to admin Facebook page. Liz and Richard.

Old Business

Need new MVMA node on Jim Simpson's tower. Have extra node that was supposed to go on Xenia jail. New name "W8XRN Xenia North" or "W8XRN Xenia Omni". Bob N8ADO proposes to allocate $250 to buy backbone connection equipment for the new node. Richard motions. Jim Beller seconds. Motion passed.

We have the asset transfer agreement to transfer assets between the association and the new non-profit corporation. Just need the tax info for the IRS application.

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New Business

Field Day. Bob is seeking coordinators. Jim Beller will coordinate with Fire Department. Need to make sure XWARN trailer gets out there (Rick Brooks). Bob will bring DARA truck. DARA is going to team with XWARN again. Need someone to deal with "other" equipment. Bob will help with logging. Mike Crawford will chair the food committee.

Any new ham gets a free membership until it's time to renew. Need to update the Code of Regulations.

Program

Jason show video of the Vault 6936 robotics team (Beavercreek) at the Nutter Center Competition. XWARN donated $250 to the local robotics club.

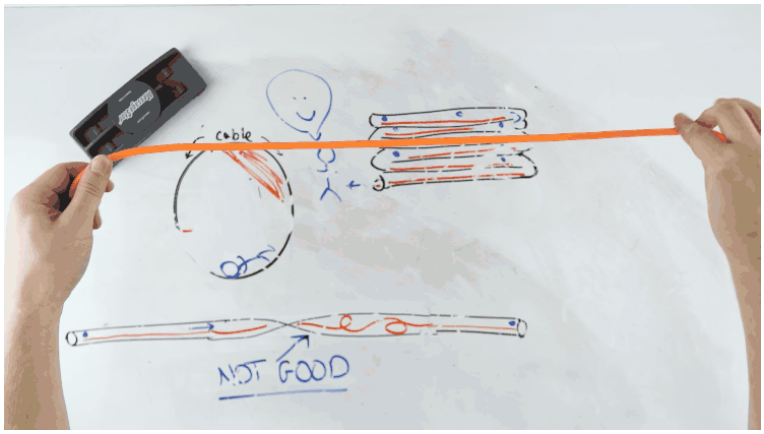
Closing

The next meeting is April 9. Jim Beller motioned to adjourn. Motion approved.

Jason Bowman

Secretary

Winding Up Your Cables



There was an interesting article (http://bit.ly/2JdoAZU) on DIYPhotography.net on how to wind up cables to keep them tangle- and damage-free. If you don't wind up your cables correctly, they can kink and tangle when unwinding, and more importantly the act of winding up your cables incorrectly can slowly damage the cables as the insides are twisted.

The basic technique involves holding the cable in both hands, imparting a slight twist with one hand, then bring your hands together. The slight twist will cause the cable to naturally loop without a damaging twist. The more advanced technique involves reversing the loop every other loop. This keeps the cable from falling into itself during storage and becoming tangled when deploying. But a mere picture can't do it justice. You have to watch the video (https://youtu.be/z_z1j4PJmtY).

A New Battery Manufacturer in Town

If you're like me, you may have been seeing adds for Dakota Batteries (http://bit.ly/2GpyRjZ) the last several months on Facebook. They have two batteries, one a 7Ah and the other a 10Ah using lithium iron phosphate a.k.a. LiFePO4 or "LiFe" chemistry. Dakota Life batteries are 20%-30% cheaper than similar batteries from Bioenno Power (http://bit.ly/2J8lmae). There are also other important differences between Dakota and Bioenno batteries. But first some basics.

LiFe batteries are a much safer lithium chemistry than lithium ion or lithium polymer. You can pretty much abuse them in a variety of ways without worrying about the battery having a "thermal event". Life batteries are also the lithium chemistry closest to lead acid in terms of voltage. So they are very compatible in a variety of applications, so much so that they are often used as drop-in replacements for lead acid batteries assuming the manufacture has designed the Protection Circuit Module (PCM) for that application. While more expensive than SLA batteries, Life batteries typically achieve over 2000 cycles compared to SLA's 400 cycles, and Life batteries can be deeply discharged making Life batteries cheaper over the long run.

What does a PCM do? PCMs prevent overcharging and sometimes overheating, prevent overdischarging, limit current, and provide bulk and balanced charging (Lithium batteries are charged in bulk first. Then individual cells are trickle charged to ensure each cell is brought to the same voltage. Unbalanced cells in a lithium pack can produce a "thermal event"). And here's the big difference between Dakota and Bioenno batteries. Dakota batteries are essentially drop-in replacements for sealed lead acid batteries. While Bioenna batteries can be used in place of SLA batteries when connected directly to a load, only the Dakota batteries can be charged like a lead acid and put in series and parallel like a lead acid. This means that the Dakota batteries can be connected directly to your vehicle's electrical system. Bioenno stresses, if you need more voltage or a higher amp-hour rating, to simply buy a single battery from them with the specifications that you need. Bioenna also stresses that you need to use a dedicated Life charger.

A Tennergy Life Battery and dedicated Life charger. The PCM inside the battery case provides bulk and balanced charging.

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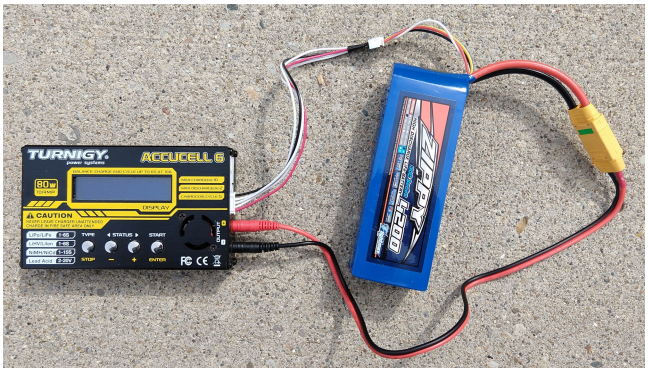

For hobby batteries, there are dedicated bulk (larger black and red wires) and balanced (smaller red, white, and black wires) leads. The load often supplies the current and voltage protections that a PCM would normally provide.

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At the other end of the spectrum are hobby batteries used for remote control applications. These kinds of batteries typically do not have a PCM rather relying on other components such as electronic speed controllers (ESCs) and specialized charge controllers to provide those protections and capabilities.

OH8STN has provided a brief review (http://bit.ly/2uzww4s) of the Dakota batteries, and his YouTube channel (http://bit.ly/2GpNA2x) looks like it has some interesting battery and solar projects to learn from.

No VHF SWR Meter? No Problem

From KB6NU.com (http://bit.ly/2Ecp133)

Will a CB SWR meter work on a 2 meter ham radio?

Yes and no. I use a CB SWR meter to check 2M antennas all the time. There is a trick to it however. If all you want to is check SWR on your 2M antenna, you don't necessarily have to buy a dedicated VHF/UHF SWR meter. What I keep in my toolbag for that is a cheapie $5 hamfest special CB SWR meter. They really don't work well on 2M but there's a trick you can do that will net a reasonably accurate SWR reading on 2M with one of these meters. What you do is connect up the meter as usual, key the rig with the switch in the forward power position, set the adjustment for full scale. Now, without touching anything, swap the coax connections so that the rig is connected to the "ANT" side of the meter, and the antenna is connected to the "XCVR" side. The reading you see on the meter will be very close to your real SWR. The closer to 1:1 your SWR is, the more accurate it will be. It would be more convenient to have a real SWR meter or antenna analyzer if you do a lot of testing, but for a quick antenna check after a mobile install or whatever, the $5 CB meters work OK.

The theory is relatively simple.

A basic SWR bridge is comprised of two couplers, each of which consist of a stripline or a pickup loop, and a detector diode. One coupler is used to detect forward power, the other reflected.

At 27 MHz, the precision of the components required isn't too stringent. Just about any diode will work, and minor imperfections in the stripline or pickup coils won't impact the accuracy that much.

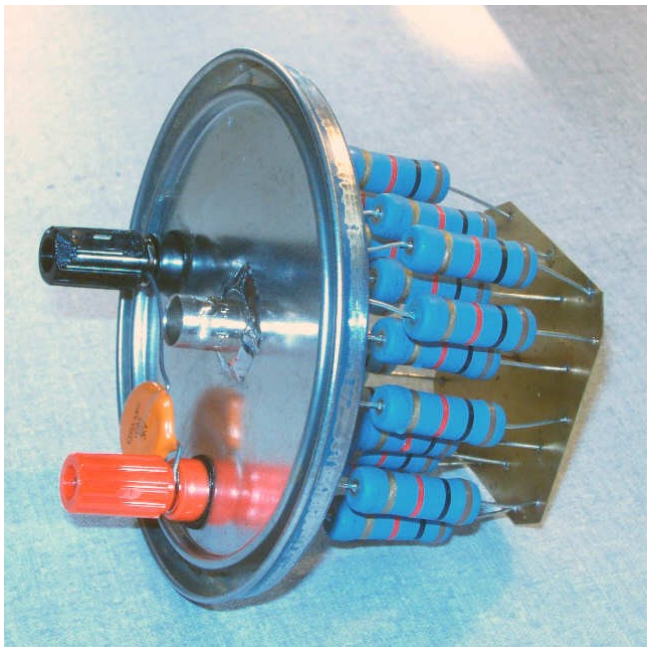
But at 2M suddenly minor differences between the striplines, stray capacitance, and type of diode starts to matter. By using just one of the couplers for both the forward and reverse readings any error that exists in that coupler is the same for both readings and thus cancels out. It's unlikely it'll work at 440 however, it's just too much to ask to expect a true 50 ohm network and zero bias or hot carrier diode in a cheap CB meter.

The absolute reading on 2M may still be somewhat inaccurate, especially at high SWR but odds are you don't care about that. All you're interested in is 1:1 or as close to it as you can get, and for that the $5 meters will be good enough.

Building Your Own Dummy Load

From K4EAA.com (http://bit.ly/2GKHuJr)

Editor's Note: According to a recent post (http://bit.ly/2GLrUNC) on Facebook, this is an old ARRL design. It uses 20 x 1KOhm resistors in parallel, which is the equivalent of 1 x 50 Ohm resistor. Each resistor is capable of handling 3W for a total of 60W dry. With mineral oil, load capacity doubles to 120W or more.



This is a take-off on a Dummy load that I've built in many different forms over the years. It uses a number of non-inductive resistors in parallel to achieve 50 Ohms over a wide frequency range. It is submerged in oil to allow somewhat extended operation during tuning or repair procedures. The advantages are: (1) It's cheap, (2) It provides a very pure 50 Ohm resistive load through 30MHz and beyond, (3) You can easily add power measurement and rig testing capability.

This one is conservatively designed for rigs that have power output levels up to 130W, such as the Kenwood hybrid lineup. I built it into a one-quart paint can, readily available at Ace Hardware for about 89 cents. I've used it for about a year now. A few hundred of your service rigs that you have sent to me have been loaded up into this dummy, and it is still like the day it was built. I know, because I had to take it apart to take these photos! It still measures 49.9 Ohms, even after all those rigs, all that power!

Note: The normal failure mode for resistors is to go UP in resistance value. If you think you have "fried your dummy," check it's resistance value - If it is much higher than 50 ohms, you have successfully cooked it. This dummy load will be very hard to destroy.

The parts required to build it are the Ace Hardware one-quart paint can or similar, twenty 1K 3W metal film or metal oxide resistors, a small brass sheet, also available at Ace, and an SO-239 connector, preferably single hole mount. Mine was built with a BNC connector, because all my home-brew rigs use BNC, but you'd probably find it more convenient using the SO-239, for your PL-259 plugs.

To add the optional power measurement capability, you'll also need a pair of red and black banana jacks or binding posts, and a BAV21 signal diode or similar, 7 cents quantity one at Mouser.

For those of you that wish to add power monitoring capabilities, you have to add two binding posts by drilling two additional holes, and mounting the posts. The following picture shows two 1N4148 signal diodes wired in series from the center conductor to the red binding post. I recommend the BAV21 250V signal diode. I used the two 1N4148's after checking their reverse breakdown, because I had lots of them. The "goop" around the base of the binding posts is some silicone bathroom caulk added

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to keep the oil from weeping through the mounts. The black binding post simply attaches to ground.

Next, we fill the quart paint can with mineral oil, which is a safe (You can actually drink it! - No PCB's for our dummy!), inexpensive, and readily availa-

ble. The mineral oil works very well for conducting heat away from our resistors - It enables us to use 60W worth of resistors safely with a 130W rig.

Now we'll find out how to use the optional diodes and binding posts that we've included in the dummy load..

The signal from your transmitter or transceiver is an almost perfect sine wave. We know this because the harmonics are at least 40 dB down from the carrier. When we measure the peak voltage from the detector (the BAV21), we are measuring within one percent of the true peak value of our carrier, not including the diode drop; we will add that back in later.

For power measurements, I recommend that a 0.01uf disk ceramic of at least 250V rating be connected between the binding posts. This will charge to the peak voltage applied to the 50-Ohm load, less the diode drop. You can then measure this voltage with your DVM.

Let's assume you measure 99.6V with your DVM. Add 0.4V for the forward drop across the BAV21 for a total peak voltage reading of 100V. The diode drop is a constant, always add 0.4V to your reading! (This assumes you are using a DVM or scope with an input impedance of 10 Megohms. For 100V DC, the forward current will be 10ua, for a forward drop of 0.4V)

Since this is a peak voltage, we need to divide by the square root of two to get RMS voltage. Take your calculator and divide by 1.414.

100 divided by 1.414 equals 70.72 Vrms.

To calculate power, we take the RMS voltage, square it, and divide by the load impedance, which in our case is ALWAYS 50 Ohms!

(70.72)^2 / 50 = 100W

So the output power, dependant on the accuracy of your DVM, is nearly 100W. If your DVM is accurate, say within 1% on DC voltage measurements, you have nailed your rig's output power within 2%, or 2W!

That's good. Consider a Bird Wattmeter. Their specified accuracy, when new & calibrated, is 5.0% of -scale when the measurement is at 1/2 scale. So, for example, a 200W element used to measure the 100W output of your rig can fall within 10W, so your 100W rig might measure 90w to 110W and still be within the calibrated accuracy specification. That's 20W of ambiguity. On the other hand, when power is measured by looking at the peak voltage, accuracy is a function of your DVM accuracy, plus the distortion in your output signal, the total of which may be on the order of 2% - - That's a 98W to 102W measurement, substantially more accurate!

Club Call: W8XRN

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«FNAME» «LNAME» - «CALL»
«ADDRESS»
«CITY», «STATE» «ZIP»

Wavelengths

Wavelengths is published monthly by the Xenia Weather Amateur Radio Net. Our meetings are currently held on the 2nd Monday of each month at **7:30 pm** at the Greene Memorial Hospital Auditorium. You can find additional information about our organization at www.xwarn.net . We welcome new and experienced Amateur operators and those interest in becoming an Amateur operator to attend our meetings.