

# Wavelengths

May 2017

## 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

Online Newsletter: <https://sway.com/SIDcSRzUiyoEbA7t>

## President's Message

At the last meeting, we had a discussion concerning the possibility of incorporating the club. An advantage is that this would significantly reduce members' exposure for responsibility related to liabilities of the club. It would also allow us to file for recognition as a 501(c)(3) organization, i.e. "non-profit", with the IRS. The disadvantages are that we would need to file Articles of Incorporation with the State of Ohio and pay a fee (\$99). Every five (5) years, we would need to renew and pay a small fee (\$25). Note that we already carry insurance and pay taxes like a "real" corporation, so being a corporation would not change the way we do things. We would still be bound by our Bylaws.

If we choose to apply for 501(c)(3), there would be more paperwork, another significant fee (~\$800), and we would need to file an annual "postcard" tax statement. However, the State allows charitable corporations to annually have up to six days of fundraising sales for which no sales tax is required to be paid. The amount of sales tax that we pay to cover t-shirt sales is greater than the filing fees, so we would come out ahead the first year and way ahead after that.

Elsewhere in this newsletter, Jason has provided a proposed set of "Articles of Incorporation". These have been reviewed by an attorney and the principles stated come from the club Bylaws.

The Bylaws do not address incorporation, but they do require that matters of a substantial nature be voted upon by the membership using a written ballot. At the last meeting, we set aside a motion to

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## Emcomm Driving More Hams

Govtech.com had an interesting [article](https://goo.gl/904u4G) (<https://goo.gl/904u4G>) on amateur radio recently. The title of the article says it all: "Emergency Communications Driving Increase in Amateur Radio Operators".

"There has been a tremendous amount of interest in emergency preparedness since 9/11 and Katrina, and this is true for the amateur radio community as well," said Mike Corey, the emergency preparedness manager for the American Radio Relay League (ARRL). "Emergency communications is a gateway into amateur radio, and many join our ranks through an interest in being better prepared themselves and as a way to serve their community."

## Club Contacts

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

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incorporate so that we could spread the word that this is under consideration. Please try to attend the May meeting as this matter will likely be voted upon.

2017 Hamvention t-shirts, sweatshirts, and hoodies will be available for purchase at the May meeting. Steve Mackey is coordinating the shirt sale, this year, and I expect that he will start signing folks up for time slots to man the sale during Hamvention.

Many of the club's members have volunteered with the Hamvention Communications Committee. Mike Crawford plans to have the volunteer credentials at the meeting. This might be a convenient time to pick them up.

On Saturday, May 13, I am coordinating the ham radio volunteers for the Founder's Run 5k and 10k runs. It takes place at Trebein/Cox Schools near Trebein and Dayton-Xenia. I need quite a few additional volunteers for this.

I received a nice thank you note from Belinda Poe and Courtney Bain, the organizers of the No Buts About It 5k that we supported in March. They have asked that we return next year and advise that the event may move to UD.

## Calendar of Events

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- May 8, Monday, 7:30 PM, XWARN Monthly Meeting, [Greene Memorial Hospital Auditorium](#) (<https://goo.gl/maps/bE2zCag4Krz>)
- May 13. Founder's Run 5k/10k
- May 19-21. Hamvention
- 6/4/2017 Sun 9–3. Little Miami Triathlon Ft Ancient St Park area. 18 mile bike course. Needs lots of help. [N8ADO]
- 6/24,25/2017 0900 Sat—1600 Sun. ARRL Field Day Beaver Creek Fire Station 61 (D-X rd & Orchard Ln) Set-up—operate radios—tear down—potluck picnic Sat PM ALL Invited [N8ADO]
- 7/15,16/2017 Sat Sun All day. Young's Dairy Charity Bike Ride From Young's (Yellow Springs) to Ohio Northern University, Ada & back. Big bike event, lots of territory, overnite is fun [KC8GLE]
- 7/27–30/2017 ThFrSaSu. Pan Ohio Hope Ride. Big bike event Cinci to Cleveland. They mostly provide the SAGs and spotters, we provide DARA Truck and support [N8ADO]

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## Calendar of Events

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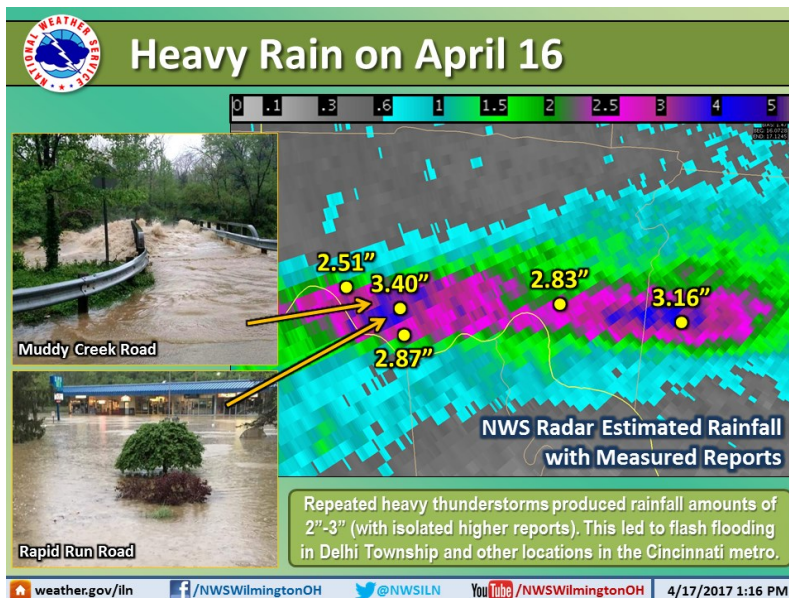
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- 8/5,6/2017 Sat,Sun Maker Faire Carillon Park Display DARA Truck, demos
- 8/13/2017 Sun 11–3. DARA Picnic. Thomas Cloud Park Huber Heights
- 8/26,27/2017 Sat 7--7, Sun 7–N. Abi Khan Horse Challenge Caesar Creek Lake area. Keep log of horses on course, exercise in comms across uneven terrain [N8ADO]

*Editor's Note: I was provided with a long list of events in the Miami Valley area. In the interest of space, I've removed events starting in September or later. As time passes and past events get deleted, I will add the future events back.*

## Rain in Cincinnati April 16th

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On the evening of April 16, a [storm](https://goo.gl/h0u0IH) passed through the northern Cincinnati area dumping [large amounts of rain](https://goo.gl/556ZaX) in a short period of time. Remember that it doesn't take much water to sweep you off your feet or float a vehicle. Also, when a road is covered with water, it is impossible to tell the structural condition of the road underneath. Don't go through!

Jason WG8B

### 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 from April 10, 2017**

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President Bob Baker, N8ADO, opened the meeting at 7:32 pm by asking the membership to stand and recite the Pledge of Allegiance. Self introductions were completed with 19 members present.

### **Cracker Barrel**

Bob, N8ADO, reported that Hamvention Talk-in needed volunteers especially Friday and Saturday mornings. Jim Simpson, WB8QZZ, showed the members present the Hamvention t-shirt for 2017.

### **Secretary's Report – (Janese Brooks, KD8DGB, substitute secretary)**

Dick Bray W8IHQ, motioned to approve the minutes of the March 2017 meeting. Motion seconded by Phyllis Haller, KC8QCK. Motion passed by unanimous voice vote.

### **Treasurer's Report – Steve Mackey, N8ILR**

Steve reported the account balance. Rick Brooks, KD8DGA, motioned to accept the report. Phyllis, KC8QCK, seconded the motion. Motion passed by unanimous voice vote.

### **Public Service – Bob Baker, N8ADO and Michael Crawford, KC8GLE**

At the "No Buts" 5K it was discovered simplex did not work well for this race. The race organizers provided a water stop but forgot cups. The amateur radio operators covering the race provided cups. The Spring Has Sprung 5K went well. The Xenia Marathon and half-marathon had 17 Hams covering this day long event. Could have used a couple more operators but things went well and the only injury reported that required medical attention was a broken leg. Jason Bowman, WG8B, stated it would be helpful to have more mobile bike operators on the bike path and fewer operators at the intersections and use a vehicle to patrol the two road loops. This would allow the bikes to remain on the bike path.

**Upcoming events:** Saturday, May 13 is the Founder's Run (5k and 10k). The start will be at Trebein Elementary School on Dayton-Xenia Road.

### **Communication Trailer – Michael Crawford, KC8GLE - absent**

Bob, N8ADO, reported the trailer mast will be used for Hamvention Talk-in. There is still some work to be done to make that possible.

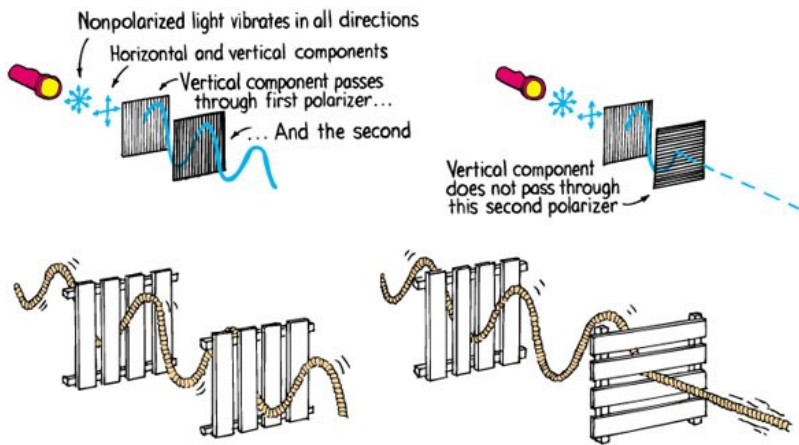
### **Technical and Repeater Committee – Jim Simpson, WB8QZZ, Brett Boggs, NV8I - absent**

Jim, WB8QZZ, reported Bret Boggs, NV8I, found the needed connector and is trying to get the repeater up and running by Hamvention.

### **Website – John Seitz, N8ACU - absent**

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## Back to Basics — Antenna Orientation



In electromagnetics, there is a concept known as polarization. Polarization by definition is the direction that the electric (not magnetic) wave is “waving”. There are three kinds of polarization—vertical, horizontal, and elliptical with circular being a special case of elliptical. Vertical polarization is when the electric wave is waving up and down. Circular polarization is when the electric field is twisting at a constant rate—sometimes vertical, sometimes horizontal, some-

times in between. Polarization is not measured in an absolute sense. Polarization is always measured relative to another antenna. But for many terrestrial applications, vertical truly means “up”.

So why does polarization matter? Theoretically, if the transmitting and receiving antennas are 90 degrees to each other, there is infinite loss. This is why you can’t read the LCD displays at gas pumps with your polarizing sun glasses on! However, practically no wave is exactly vertical or horizontal. So with enough power or being close enough, transmissions will get through. Another interesting case is when antennas are cross polarized 60 degrees to each other — there is a 6dB signal loss, which translates into a 50% reduction in radio range. Another interesting case is when one side is using a linear (vertical or horizontal) polarized antenna and the other end is using a circularly polarized antenna — there is a 3dB loss, which translates into a 30% loss of range. Since satellites spin and create circularly or elliptically polarized waves, they use circularly polarized antennas. And cross polarization losses are why you should also be using a circularly polarized antenna when communicating with or through a satellite.

Finally, cross polarization losses are why new amateur radio operators need to pay attention to how they are holding their HT. Holding your radio flat or tilted is fine when everyone is working in close proximity. However, when trying to hit a far-away repeater, it is very important to hold the radio so that the antenna is vertical to reduce the amount of cross polarization losses with the repeater antenna.

Fun Fact: Aviation voice communications are vertically polarized while terrestrial navigation signals, e.g. VHF Omnidirectional Range or VOR navigation aids, are horizontally polarized.

Jason WG8B

*(Continued from page 4)*

John would like to have someone take over as webmaster for the XWARN website. Josh Long, W8KDL, volunteered to be the new webmaster. There was discussion about placing the XWARN By-Laws on the website. The By-Laws can now be place on the website in a secure manner.

#### **Membership – Phil Verret, KA8ZKR**

Phil stated membership numbers had not changed. He has 4 life members that were on the list he was given. Phil requested an e-mail listing all charter members of XWARN as they are all life members.

#### **Newsletter – Jason Bowman, WG8B**

Jason is looking for articles for the newsletter. He will ensure the articles have been edited for spelling and punctuation prior to publication in the newsletter.

#### **Old Business:**

Bob, N8ADO, began a discussion of the possibility of registering as a 501(c)3. To be registered as not-for-profit organization you must be incorporated.

Jason, WG8B, gave a presentation on incorporating and provided an “Articles of Incorporation” that would be required to accomplish both incorporation and registering as a 501(c)3. Jason presented a few of the reasons for incorporating. The main reason would be to reduce or negate any individual liability for each club member. Once incorporated XWARN could then file for 501(c)3 status. As a 501 (c)3 XWARN would be exempt from payment of sales taxes on the t-shirt sales, a savings of \$800-\$1,200. Additionally, any donations made to the club would be tax deductible for the donor.

There is a small cost to both. The initial cost to incorporate would be approximately \$99.00. There is a fee to register as a 501(c)3 that is based on gross profits and then requires an additional \$25.00 fee every few years. Additionally, XWARN would have to file taxes with the State of Ohio each year. This is done using a post card each year.

Additional discussion ensued regarding pros and cons of incorporating. Jason made sure that everyone understood Incorporation is for legal purposes. Incorporation can be done without applying for 501(c)3 status, however, 501(c)3 status cannot be obtained without incorporating.

Dick, W8IHG, motioned to have Jason proceed with incorporation. There was some discussion that the Articles of Incorporation should be reviewed by an attorney. Jim Beller, KC8OKU, will check into the possibility of having them reviewed. After the discussion Dick, W8IHG withdrew his motion. Bob, N8ADO, requested Jason place the Articles of Incorporation in the May newsletter after they have been reviewed by an attorney. This will allow for all club members to review and it will be voted on at the May meeting. No decision was made regarding XWARN registering as a 501(c)3.

#### **New Business:**

*(Continued on page 7)*

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Steve, N8ILR, reminded everyone he needs volunteers to sell t-shirts at Hamvention. Additionally, any club member may sell equipment at the t-shirt booth. Any equipment that does not sell must be picked-up on Sunday prior to the end of Hamvention or it will be thrown away.

### **Field Day:**

Jim, KC8OKU, agreed to coordinate with the Beavercreek Township Fire Department. Jim, WB8QZZ, will be coordinating with DARA.

### **Radios for New Hams:**

Josh, W8KDL, stated he obtained the call sign of his father, Kenneth Long, sk. Ken had several hand held radios and a couple mobile radios in excellent condition and some are new radios. Ken requested these radios be given to newly licensed Amateur Radio Operators 18 years of age or younger.

### **Adjournment**

Bob, N8ADO, adjourned the meeting at 8:35 pm.

Respectfully Submitted,

Janese Brooks KD8DGB (Substitute Secretary)

## **Validation of Club Documents**

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In my research for the Articles of Incorporation, I asked the club for a copy of the Bylaws since they were not on the website. I asked why they weren't, and one of the answers was that there was a concern over the Bylaws being manipulated somehow.

If that is still a concern, we can use a cryptographic hash to guarantee the validity of any copy of the Bylaws. The creator of the file runs the file through a one-way hash function, which outputs a unique code in theory. I say in theory because it has now been shown how to maliciously generate "collisions" with some of the older, weaker hash functions such as MD5 and now SHA-1. A "collision" is where two different files produce the same hash, which is not good if you're trying to validate a file. So now the recommendation is to use SHA-512.

The process works like this. The officer responsible for maintaining the Bylaws would upload the file to any number of websites that can generate the hash. Then they would provide the Bylaws, hash, and hash function used to whomever asked. Then the receiver would upload the file to a website that has the stated hash function and compare the resulting hash with the hash provided. If they match, then you know the file hasn't been manipulated.

Jason WG8B



## Malicious Interference

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Amateur radio operators usually see malicious interference in the form of being deliberately stepped on with noise or maybe some obnoxious sound being transmitted in between other transmission. However, on the evening of April 7, someone in the Dallas, TX, metro area took malicious interference to the [next level](https://goo.gl/PhKXkP) (https://goo.gl/PhKXkP). They managed to activate the emergency sirens in the Dallas metro area for an extended period of time. The only way that the sirens could be silenced was by turning the entire system off.

Officials initially reported a hack implying that someone had broken into a computer system to achieve this effect. But it was later clarified that the emergency sirens were activated by radio. The article linked to above suggests the “hack” was someone simply monitoring the monthly tests on the Dallas emergency siren frequency in the 700MHz band and learning the DTMF codes. If you read the comments in detail, another possibility was discussed. Some systems also use AFSK to signal the sirens, and all someone had to do was record the transmission during a monthly test and then replay it. Finally, a more detailed [analysis](https://goo.gl/FCloEn) (https://goo.gl/FCloEn) suggested that it did start with a computer infiltration.

Dallas officials said that they fixed the problem and do not want to discuss specifics lest someone else try the same thing. A commenter pointed out this means they simply altered the activation code or split the code into “test” and “actual emergency” codes, which is a temporary and still insecure method of securing the system. Other [news sources](https://goo.gl/d2GD6M) (https://goo.gl/d2GD6M), however, reported that officials added “some encryption” as part of the fix. That obviously begs the question, why weren’t they using an encrypted radio link to begin with?

Finally, another commenter pointed out that all it takes to find the frequency that your local government is using to activate sirens is a cheap SDR dongle (\$15 on Amazon) and any number of free scanner programs. Our regional systems can’t be that vulnerable, can they?

Jason WG8B

## XWARN Non-Profit Status

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I have agreed to begin shepherding XWARN through the process of achieving non-profit status with the IRS. The first step of the process is to incorporate, and to incorporate the club needs Articles of Incorporation. At the end of this newsletter is a draft of the Articles of Incorporation for XWARN that we will vote on at the May meeting.

Most of the content and language comes from an IRS [template](https://goo.gl/loKifD) (https://goo.gl/loKifD). However, there are two paragraphs taken verbatim from the Bylaws describing the purposes of XWARN in Article Third. Furthermore, a paragraph about the non-pecuniary requirements of operating on

*(Continued on page 9)*



## **Random Emcomm Stuff**

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FLDigi is now at major version 4.0. However, I am not certain what is significantly different, if anything, in the new major version.

It is possible to make [Flmsg forms](https://goo.gl/ZnCNyk) look like web pages. The receiver has to have the option checked to open the received form in their default web browser. HTML, CSS, and Javascript can all be included. Before attempting this, really think if it adds value to what is being sent. Adding web elements can make the message size many times larger than just the plain text of the message. This isn't an issue over high bandwidth links but may not be appropriate or necessary over disadvantaged links such as what amateur radio typically uses.

It was recently [announced](https://goo.gl/IfHzPC) that AT&T will build out the FirstNet network. FirstNet provides 20MHz of bandwidth to first responders and is basically a parallel cellular service. FirstNet was first envisioned at the attacks on 9-11-2001 when communications were problematic in New York City and so was interoperability.

Jason WG8B

## **XWARN Non-Profit Status**

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the amateur radio bands was added in Article Fifth. This was specifically added to provide further evidence to the IRS our of non-profit nature, should we choose to seek non-profit status after incorporating. The clearer it is in the application that our purpose is oriented towards non-profit activities, the sooner the IRS will give the club non-profit status.

We will actually take two (2) votes at the May meeting.

The first vote will be whether or not to submit the application to the State of Ohio for incorporation. The application has a fee of \$99. Note that the State of Ohio uses an online form for applications, so the Articles may not be submitted in exactly the format found at the end of the newsletter. After submission, the club can expect a certificate from the state within a week or two. Ohio's non-profit [guide](https://goo.gl/rmZghr) suggests that some applications are approved automatically.

The second vote will be to appoint me, or another member as put forward by the club, to act as the initial Statutory Agent. The Statutory Agent is the person who is empowered to file the Articles and speak on behalf of the club with the State of Ohio. I have offered to be the initial Statutory Agent while the club is incorporating and seeking non-profit status.

It was decided at the April meeting that we should not vote for incorporation and non-profit status at the same time. So any voting at the May meeting will only be for incorporating. If we vote for incorporation, once we are incorporated we will hold another vote to decide whether to apply for non-profit status.

Jason WG8B

**Articles of Incorporation  
of  
Xenia Weather Amateur Radio Net**

The undersigned, a majority of whom are citizens of the United States, desiring to form a Non-Profit Corporation under the Non-Profit Corporation Law of the State of Ohio, do hereby certify:

**FIRST**

The name of the Corporation shall be Xenia Weather Amateur Radio Net, hereinafter referred to as XWARN.

**SECOND**

The place in this state where the principal office of the Corporation is to be located is the City of Xenia, Greene County, Ohio.

**THIRD**

Said corporation is organized exclusively for charitable, educational, and scientific purposes, including, for such purposes, the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code. Specifically, the purpose of XWARN is to

1. Primary. Provide to the City of Xenia and Greene County, Ohio, a network of trained amateur radio operators to assist in emergency communications.
2. Secondary. Further the exchange of amateur radio information and cooperation between members, to promote increased technical knowledge, good operating practices, fraternalism among members and other area amateur radio operators and organizations, to encourage participation in community service activities prompted by this and other area amateur radio organizations, and to so conduct organization programs and activities to advance the general interest and welfare of amateur radio in the community.

**FOURTH**

The names and addresses of the persons who are the initial trustees of the corporation are as follows:

Robert Baker, President 3852 Rosecliff Drive Beavercreek, OH, 45440	Bret Boggs, Vice President 3935 Apache Trl Jamestown, OH, 45335	Steve Mackey, Treasurer 2579 Wyoming Dr. Xenia, OH, 45385
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**FIFTH**

No part of the net earnings of the corporation shall inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Third hereof.

In accordance with 47 CFR 97.113(a)(3), the corporation and its members, trustees, and officers shall not be compensated for utilizing radio frequency spectrum allocated to the amateur radio service for the purposes described in Article Third hereof.

No substantial part of the activities of the corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the corporation shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office.

Notwithstanding any other provision of these articles, the corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code, or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, or the corresponding section of any future federal tax code.

## **SIXTH**

Upon the dissolution of the corporation, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code, or shall be distributed to the federal government, or to a state or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by a Court of Competent Jurisdiction of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

In witness whereof, we have hereunto subscribed our names this day of April 10, 2017.

Club Call: W8XRN

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XWARN  
P.O. Box 562  
Xenia, Ohio 45385

Email: [info@xwarn.net](mailto:info@xwarn.net)  
Website: XWARN.NET

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

## **Wavelengths**

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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](http://www.xwarn.net). We welcome new and experienced Amateur operators and those interest in becoming an Amateur operator to attend our meetings.