

# CQ CHATTER

OCTOBER 2022

VOLUME B22 • ISSUE 8

## WOOD COUNTY AMATEUR RADIO CLUB

<b>President</b>	<b>KG8FH/W8PSK</b>	<b>Jeff Halsey/Loren Phillips</b>
<b>Vice President</b>	<b>WE8TOM</b>	<b>Tom Leingang</b>
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<b>Treasurer</b>	<b>KD8NJW</b>	<b>Jim Barnhouse</b>
<b>Board Member</b>	<b>WB8NQW</b>	<b>Bob Willman</b>

### AREDN Group Performs Propagation Test

On Friday, September 16th, several members of the Wood County ARDEN (Amateur Radio Emergency Data Network) group got together to check out the propagation for the microwave equipment that is used to set up the mesh network.

Participants with go-boxes and fixed stations were W8PSK-Phil, KG8FH-Jeff, WB8NQW-Bob, and N1RB-Bob. Also helping out were KE8QGV-Roger and KE8NEC-Matt.

The goal of the exercise was to see if the 2.5 GHz signals being used were able to successfully propagate over distances that would be appropriate for setting up a

mesh network around Bowling Green. Two members of the group (W8PSK and WB8NQW) had set up microwave transceiver/antenna rigs at their home QTHs, both located at about 60 feet high. The two others (KG8FH and N1RB) took their go-boxes up to the roof of Offenhauer West dormitory on the BGSU campus and set up for relay. KG8FH was assisted by KE8NEC, and N1RB by KE8QGV.

Success was achieved with chat messages relayed between WB8NQW and both KG8FH and N1RB, a distance of about 2.5 miles. KG8FH also had his live video camera in action, and the video was copied in good shape by NQW. Relay to near the center of town at W8PSK's location (about a mile away) was not

*continued on p. 6*

## Net Check Ins-I

**Aug 30**

**Traffic: 0**  
**(NCS)**

**N1RB**  
**KE8CVA**  
**KG8FH**  
**WD8LEI**  
**KE8PJM**  
**WB8NQW**  
**W8PSK**  
**KD8RNO**  
**KE8CUZ**  
**KA8VNG**  
**WE8TOM**

**(11)**

**Sep 6**

**Traffic: 0**  
**(NCS)**

**KG8FH**  
**KE8CUZ**  
**KD8NJW**  
**KE8CVA**  
**WD8ICP**  
**W8PSK**  
**WB8NQW**  
**KA8VNG**  
**KD8RNO**  
**WE8TOM**  
**N1RB**  
**KE8PJM**  
**WD8PIC**  
**WD8LEI**

**(14)**

**Sep 13**

**Traffic: 0**  
**(NCS)**

**KD8NJW**  
**KG8FH**  
**KE8PJM**  
**WB8NQW**  
**W8PSK**  
**KE8NEC**  
**KA8VNG**  
**KD8RNO**

## Brain Teasers

1. Which amateur stations are eligible for space operation?
  - a.) any except those of Technician licensees
  - b.) only those of General, Advanced or Extra class licensees
  - c.) only those of Extra class licensees
  - d.) any amateur station
2. What type of semiconductor material contains more free electrons than pure germanium or silicon crystals ?
  - a.) n-type
  - b.) p-type
  - c.) bipolar
  - d.) insulated gate
3. What type of wave is made up of a sine wave of fundamental frequency and all its odd harmonics?
  - a.) a sine wave
  - b.) a cosine wave
  - c.) a square wave
  - d.) a tangent wave

# October Contests

The contest lineup for the month of October is given below. Please note that the WARC bands (60, 30, 17 and 12 m) are never open to contesting.

<b>Oct 1-2</b>	<i>0600 to 0559 Z</i>	80 m to 10 m
<b>Worked All Provinces (China) 'test</b>		<b>CW</b>
<b>Oct 1-2</b>	<i>0600 to 0600Z</i>	160 m to 10 m
<b>Oceania DX 'test-SSB</b>		<b>SSB</b>
<b>Oct 1-2</b>	<i>1600 to 2200 Z</i>	160 m to 10 m
<b>California QSO Party</b>		<b>all modes</b>
<b>Oct 2</b>	<i>0600 to 1800 Z</i>	80 m to 10 m
<b>RSGB (Great Britain) DX 'test</b>		<b>CW/SSB</b>
<b>Oct 8-9</b>	<i>0300 to 2100 Z</i>	160 m to 10 m
<b>Nevada QSO Party</b>		<b>all modes</b>
<b>Oct 8-9</b>	<i>0600 to 0600 Z</i>	160 m to 10 m
<b>Oceania DX 'test-CW</b>		<b>CW</b>
<b>Oct 8-9</b>	<i>1500 to 0500 Z</i>	160 m to 10 m
<b>Arizona QSO Party</b>		<b>all modes</b>
<b>Oct 8-9</b>	<i>1600 to 2200 Z</i>	160 m to 10 m
<b>Pennsylvania QSO Party</b>		<b>all modes</b>
<b>Oct 8-9</b>	<i>1800 to 1800 Z</i>	160 m to 10 m
<b>South Dakota QSO Party</b>		<b>all modes</b>
<b>Oct 15-16</b>	<i>1400 to 0200 Z</i>	160 m to 10 m
<b>New York QSO Party</b>		<b>all modes</b>

## Net Check Ins-II

Sep 13 **CONT**

WE8TOM  
N1RB  
KE8CVA  
KE8CUZ  
WD8LIC  
WD8LEI (14)

Sep 20 **Traffic: 0**

WB8NQW (NCS)  
KE8CVA  
KC8EKT  
KG8FH  
KD8RNO  
W8PSK  
N1RB  
KE8PJM  
KA8VNG  
N8VNT  
WE8TOM  
KE8UJA  
KE8QGV (13)

Sep 27 **Traffic: 0**

KG8FH (NCS)  
KD8RNO  
KE8CVA  
KC8EKT  
WD8LEI  
KE8PJM  
W8PSK  
KD8NJW  
WB8NQW  
KA8VNG  
N1RB  
N8VNT  
WD8ICP  
WE8TOM  
KC8NKC (15)

Brain Teaser answers: (E) 1-d, 2-a, 3-c

## Foxhunt Held after September Breakfast

The Breakfast Meeting on September 3 at Frisch's Big Boy was followed by a VHF foxhunt on 2 meter simplex. Fox, or hidden transmitter hunting is a valuable skill for hams to acquire. It can come in handy for locating sources of noise or of deliberate interference.

For this foxhunt, the fox was Phil-W8PSK and the weather was perfect for hunting. There was a total of six participants grouped in three teams, WB8NQW=KE8QGV, KE8CVA=KD8RNO and N1RB=N1LB.



WB8NQW demonstrating his fox hunting antenna

The fox located himself at the Portage Holiness Camp



From L to R: WB8NQW-Bob, N1LB-Linda, N1RB-Bob, W8PSK-Phil, KE8QGV-Roger, KE8CVA-Terry

photo by KD8RNO-Lynn

on Portage Road, about a mile south of Route 6. The WB8NQW team won the gold medal by employing Bob's storied manually-rotatable side-window dipole. A good time was had by all, but it would be nice if a few more participants turned

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## **WCARC Weekly Net**

Tuesdays at 2100 all year

147.18 MHz 67 Hz PL

### **Net Control Roster**

<b>Oct</b>	<b>4</b>	<b>N1RB</b>
<b>Oct</b>	<b>11</b>	<b>KD8NJW</b>
<b>Oct</b>	<b>18</b>	<b>WB8NQW</b>
<b>Oct</b>	<b>25</b>	<b>N1RB</b>
<b>Nov</b>	<b>1</b>	<b>KG8FH</b>
<b>Nov</b>	<b>8</b>	<b>KD8NJW</b>

## **NEXT MEETING**

### ***Business Meeting***

**Monday**

**October 10**

**TIME: 7:30 PM/7:00 EB**

**PLACE:**

**Sheriff's Training Room**

**S. Dunbridge Rd. &**

**E. Gypsy Lane Rd.**

**Bowling Green, OH**

## ***10 meter Nets***

***Informal SSB group meets***

***Sunday @ 20:30 local on***

***28.335 MHz***

***Informal CW group meets***

***Tuesday @ 20:00 local on***

***28.050 MHz***

## ***Fusion Net***

***Thursday***

***@ 19:30 local***

***on 442.125 MHz***

***Wires-X Operators***

***welcome***

***Informal net***



**AREDN from p. 1**

successful, presumably because of a low power condition in Phil's set up. This will definitely be corrected when the next test rolls around.

The group was encouraged by this demonstration that reliable signal relays can be performed at distances that would be typical between node points located around Bowling Green. Clearly, altitude helps, as well as minimization of the amount of foliage along the path. As is always the case, the AREDN group is working hard to overcome the challenges it faces. ■

**foxhunt from p. 4**

out. If you are not an experienced hunter, make arrangements to ride along with one for a time or two. That way, you will be able to learn the techniques that all fox hunters use, and get some advice on which equipment to use as well. ■

## **Beginner's Guide To Lithium Rechargeable Batteries**

by Lewin Day, [Hackaday](#)

Batteries were once heavy, awkward things, delivering only a limp amount of current for their size and weight. Thankfully, over time, technology has improved, and in 2020, we're blessed with capable, high-power lithium polymer batteries that can provide all the power

your mobile project could possibly need. There are some considerations one must make in their use however, so read on for a primer on how to properly use LiPos in your project!

### **So Many Types!**

With the first commercial lithium-ion battery entering the market in 1991, the (nearly) 30 years since have seen rapid development. This has led to a proliferation of different technologies and types of battery, depending on construction and materials used. In order to treat your batteries properly, it's important to know what you've got, so paying attention to this is critical.

**Lithium-ion, or Li-ion** typically refers to the overarching technology of rechargeable lithium batteries, but also specifically refers to the traditional cells built in cylindrical metal bodies. The venerable 18650 is one such cell, but a large variety of sizes and types exist. Their stout casings make these cells popular for rough-and-tumble vehicle use. **Lithium-Polymer, or Li-Po** refers to a lithium-ion battery that uses a polymer electrolyte instead of a liquid electrolyte. This enables the construction of pouch cells with different geometries. This flexibility of design makes lithium-polymer batteries useful in applications like smartphones and tablets, where a high-capacity battery is needed and a flat form factor is desirable. They're also commonly used in radio-control models,

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# October Contests

## continued

Oct 15-16	1500 to 1459 Z	80 m to 10 m
Worked All Germany 'test		<b>CW/SSB</b>
Oct 16-17	1700 to 0100 Z	160 m to 10 m
Illinois QSO Party		<b>all modes</b>
Oct 17-21	1300 to 2359 Z	160 m to 10 m
ARRL School Club Roundup		<b>all modes</b>
Oct 22-23	1200 to 1200 Z	80 m to 10 m
UK/EI DX 'test-SSB		<b>SSB</b>
Oct 29-30	0000 to 2359 Z	160 m to 10 m
CQ WW DX 'test-SSB		<b>SSB</b>

### *lithium from p. 6*

where their lightweight construction is a huge benefit for flying vehicles.

**Lithium-HV, or High Voltage Lithium** are lithium polymer batteries that use a special silicon-graphene additive on the positive terminal, which resists damage at higher voltages. When charged above 4.2V, most lithium batteries exhibit significant capacity loss and reduced lifespan. However, by using this additive, cells can be charged to 4.35V without exhibiting these negative effects. This extra voltage provides up to

a 10% gain in energy density over conventional lithium polymer batteries.

**Lithium-Iron-Phosphate, or LiFePO<sub>4</sub>** batteries are an altered lithium-ion chemistry, which offers the benefits of withstanding more charge/discharge cycles, while losing some energy density in the tradeoff. They operate ideally between 3.0V-3.65V, instead of the more typical 3.0-4.2V range of a standard lithium-ion chemistry. This, combined with a very flat discharge voltage curve, makes them ideal replacements for 12V lead-acid

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***lithium from p. 7***

batteries in many applications, where four cells substitute for the original six. They're generally more stable, with lower rates of self-discharge and capacity loss over time.

***Respect The Limits***

More so than most battery types, lithium cells are not tolerant of mistreatment. Discharging cells below their low voltage limit leads to the formation of copper dendrites, which can reduce cell capacity or short circuit them entirely. Overcharging cells causes damage to the anode by lithium plating out of solution, creating lithium dendrites, often leading to a short circuit or full thermal runaway of the battery, leading to a release of smoke and flames. Each cell in a pack must also be kept at the same voltage as its neighbors, to avoid cells getting damaged prematurely.

It's important not to charge lithium cells too quickly. Ambient temperature also plays a big role in battery performance. Lithium batteries don't appreciate being taken down below freezing, particularly when they're already fully charged. Below 0°C, charging is impractical, as metallic lithium can electroplate at the negative electrode, causing major damage or even short circuiting the cell. Between 0-5°C, charging is possible, but must be done slowly. Damage will tend to occur when batteries are charged at temperatures above 45°C, too.

Working outside these parameters will quickly lead to a dead battery at best, or a fire and explosion at worst. They also tend to swell up, outgas, and just generally become unseemly to deal with. On the surface this can seem like a lot to deal with. Thankfully the battery-electronics complex has worked hard to solve these issues. With the proper hardware and precautions, it's possible to use lithium batteries safely and effectively. But anyone working with these chemistries should familiarize themselves with the hazards.

***Battery Tending***

For applications working with bare cells or packs, such as when using LiPo batteries in RC models, simply using a lithium-ready charger is enough. The balance leads should be hooked up during charging, particularly when the battery has been taken to a fully-discharged state in use. Ensuring that a smart charger is used with the correct voltage limits (particularly when using LiFePO<sub>4</sub> and HV packs) will make sure you get the most out of your batteries. Make sure you've got some method to stop discharging the batteries when voltage gets low, whether by a warning light, buzzer, or automatic shutdown.

If you're producing a device that needs a permanently integrated battery, protection and charging circuits are just the ticket. Off-the-shelf modules and ICs exist to take the hassle out of managing a

***continued on p. 9***



***lithium from p. 8***

lithium-ion battery. A wide variety are available, from those that act as a simple low-voltage cutoff to complete charging and protection solutions. Companies like Adafruit sell [modules](#) that are a great starting point for those eager to integrate a neat charge and battery solution without having to spin up PCBs themselves. However, since these designs are open source it will be easy to integrate the circuit design into your own PCB in the future.

For larger applications featuring custom-built battery packs, a battery management system is a good choice. Basically, a BMS is not much different from a battery protection IC or similar, simply being designed for larger applications. A BMS is typically used on packs of 10 cells and up, used in transport applications like electric bikes and other rideables. The BMS is soldered directly to the battery pack, including a connection to each individual cell. Its purpose is keeping the cells balanced, limiting the maximum discharge current for safety reasons, and of course controlling the recharging process. Experienced pack builders will often integrate a BMS inside the battery's housing or covering, leaving simply a discharge port and a charge port accessible. This allows the end user to easily drop a battery into a project vehicle without having to worry about handling protection themselves.

If your application is particularly critical and needs to withstand environmental extremes, you'll want to monitor battery temperature. Keeping an eye on cell temps, particularly during the charge process, is a great way to protect your battery against damage. High-feature protection chips and battery management systems have provisions to monitor pack temperatures in order to achieve this. At this level, you'll likely be building custom packs, thus allowing you to install thermocouples at precise locations during the build. For high-power installations, temperature management is mandatory, with virtually all e-bikes and electric cars containing hardware to monitor battery temperatures and control systems accordingly.

***In Summary***

Lithium-ion batteries can bite, but used properly, they offer great performance and are more than safe enough for most applications. The key is to use the correct hardware, and to make sure you're avoiding crossing voltage and temperature limits that can lead to disaster. Hopefully, this guide will serve you well as you seek to integrate lithium power into your own projects. ■

**For sale: Xiegu G90 HF Radio.** Includes the cooling fan-stand. 20 watts. Great for portable operation. \$300 for club members. Will be listing publicly at a higher price soon. Contact [WE8TOM@we8tom.com](mailto:WE8TOM@we8tom.com)



**2022 SKYWARN**  
**Severe Weather Spotter Training**

The Erie County Emergency Management Agency, Cedar Point and the Erie County Amateur Radio Emergency Service (ARES) will be hosting a SKYWARN Severe Weather Spotter Training class on

**Thursday, October 13, 2022**  
**Doors Open at 5:30 P.M.**  
**Training starts at 6:00 P.M.**  
**Sawmill Creek Resorts**  
**400 Sawmill Creek Drive**  
**Huron, OH 44839**

The class will last around 2 hours and includes a multimedia presentation. It is open to all citizens interested in severe weather recognition, reporting, safety and teaches:

- \* Basics of thunderstorm development
- \* Fundamentals of storm structure
- \* Identifying potential severe weather features
- \* How to report information
- \* Basic severe weather safety

**SKYWARN Storm Spotters form the first line of defense against severe weather.**  
**It's more than just a weather class.**  
**It is information that could save many lives by advance warning!**

All interested individuals are encouraged to attend this **free training** for all ages and it is not necessary to pre-register. Thank you for your support.



# Skywarn® Spotter Training



## Fall Registration Now Open

### What To Expect

- Virtual Sessions – Online for convenience
- Interactive Questions and Answers
- What, When and How to report
- Late Season Severe and Winter Weather
- Approximately 2 hours long

Scan Me



Date

Tuesday October 11, 2022 (Evening Session)

6:00 PM EDT / 5:00 PM CDT

Thursday, October 13, 2022 (Early Afternoon Session)

1:00 PM EDT / 12:00 PM CDT

Saturday, October 15, 2022 (Morning Session)

11:00 AM EDT / 10:00 AM CDT

Tuesday, October 18, 2022 (Evening Session)

6:00 PM EDT / 5:00 PM CDT

[https://www.weather.gov/iwx/Spotter\\_Event\\_List](https://www.weather.gov/iwx/Spotter_Event_List)



NWS Northern Indiana



[www.weather.gov](http://www.weather.gov)



[/NWSNorthernIndiana](https://www.facebook.com/NWSNorthernIndiana)



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# Current WCARC Roster

#	NAME	CALL	CLA	STREET	CITY	ST	ZIP	E-MAIL
1	Jim Bamhouse	KD8NJW	G	1919 Hamilton Dr.	Perrysburg	OH	43551	barnhouse@buckeye-express.com
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3	Linda Boughton	N1LB	E	930 Champagne Ave.	Bowling Green	OH	43402	boughton@dacor.net
4	Brooke Bowerman	KE8EBN	G	816 Abington	Bowling Green	OH	43402	
5	Robert Daney	WD8LIC	E	30406 Cedar Valley	Northwood	OH	43619	
6	Jim Davis	K8JU	E	10990 Newton Rd.	Bowling Green	OH	43402	jdavis@amplex.net
7	Danny Dickey	KN4LEH	T	753 W. Main St. #250	Haines City	FL	33844	c_my_ta2s@yahoo.com
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10	John S. Gruber	N8MSU	E	920 Melrose	Bowling Green	OH	43402	jgruber@wcnet.org
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13	Larry Hasselman	N8VNT	T	8656 Kramer Rd.	Bowling Green	OH	43402	
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18	Jeff Kline	KG8QP	A	630 Rutledge Ct.	Perrysburg	OH	43551	
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24	Tom Leingang	WE8TOM	E	PO Box 252	Cygnat	OH	43413	WE8TOM@nielmot.com
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29	Paul Preston	KJ4UL	A	PO Box 184	Jerry City	OH	43437	
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40	Eric Willman	WD8LEI	T	545 W. Poe Rd.	Bowling Green	OH	43402	eric@willmantech.com
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