

# Q-FIVER

The Official Newsletter of the OH-KY-IN Amateur Radio Society



## The President's Corner

August is already upon us and there are all kinds of events going on, including Ohio State Parks on the Air (contact Michael KD8SOH for details), the CFF Bike Ride (Contact Ryan AC8UJ for details), the MS Bikeathon coming up this Sat/Sun (contact Mike KD8ZLB for details), and probably more things I am forgetting! Bottom line, these are great opportunities to get involved in some Public Service events to promote our hobby and show both our professionalism and our commitment to serving the community.

Don't forget about our Foxhunts! Foxhunts are in full swing as you probably know, but with a bit of a twist. The hunts are alternating between mobile and on-foot hunts, with opportunities available to experience both styles while having a lot of fun at the same time! And after our Foxhunts, check out the Brunch Bunch each month on the second Saturday – hey, what's not to like? Food, friends, and amateur radio talk! Contact Bruce (N8BV) or visit our website for details of the upcoming month's venue.

Also, coming up in September is the Mini-Maker Faire in which OHKYIN is going to participate. This year's festival is on Saturday and Sunday September 15th and 16th at the Hamilton County Fairgrounds - 7700 Vine Street, Cincinnati, Ohio 45216. The hours are 10:00 AM to 5:00 PM daily. Contact Cesi, KD8OOB, for more information.

Only about a month and a half until our Hamfest in September, the 22<sup>nd</sup>. This is a great event with lots more than just the hamfest part! There will be food, fellowship, and some great opportunities to meet with others hams, and of course some goodies that you just won't be able to live without! Mark it in your calendar!

Finally, our August meeting will feature a presentation on using Logbook of the World (LOTW) and other online logging programs. We will try to demystify some of the steps needed for signing up and using these programs, along with the benefits they represent.

See you all at the August meeting!

Cheers! Robert AK3Q

## 2018 Board of Directors

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### OH-KY-IN Repeaters

146.670 (-) Clifton

146.625 \*(-) Edgewood

146.925 \*(-) Delhi

443.7625 \*(+5) Clifton

*A CTCSS (PL) tone of 123.0 Hz is required for access to all OH-KY-IN repeaters. All repeaters also transmit a CTCSS (PL) tone of 123.0 Hz*

*\* Fusion Repeater*

### APRS on 144.390 mHz

K8SCH-10 Edgewood WIDEn

### Packet on 145.010 mHz

K8SCH-7 Digipeater

For membership information, please contact Nathan Ciufo KA3MTT, 6323 Cinnamon Ridge Dr, Burlington KY 41005, (859) 586-2435 or Email [membership@ohkyin.org](mailto:membership@ohkyin.org). Renewals of Club Memberships are due by the end of March. Permission is hereby granted to any amateur radio group to quote or reprint from this publication, if proper source credit is given, unless permission is otherwise reserved.

THE Q-FIVER is now mailed & e-mailed, it's hoped, a week before the club meeting.

Normally copy deadline is the weekend before that. Please send your submissions for THE Q-FIVER (including notice of upgrades & callsign changes) to Brian K4BRI

These may be: snail-mailed to or dropped off at 6901 Backus Drive, Alexandria KY 41001 or telephoned to (859) 635-3095 any time



### Oh-Ky-In Life Members

John Phelps N8JTP

Kenneth E Wolf N8WYC

John W Hughes AI4DA

Karl R Kaucher KK4KRK

Howard Hunt NG8P

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Roger Higley W8CRK

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Steve Weeks AA8SW

## 2018 Committee Chairs and Appointments

Newcomers/Elmers Net..... Robert Gulley AK3Q  
 Technical Operations Group ..... Eric Neiheisel, N8YC  
 ARPSC Representative.....Jerry Shipp W1SCR  
 Volunteer Examiners .....Brian DeYoung K4BRI  
 QCEN Representative ..... Pat Maley KD8PAT  
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 Librarian ..... Justin Moore KE8COY  
 Digital Group .....Jerry Shipp W1SCR

Q-Fiver Editor ..... Brian DeYoung, K4BRI  
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 Historian ..... Dale Vanselow KC8HQS  
 Special Publications ..... Jo Haltermon KD4PYS  
 Fox Hunters ..... Dick Arnett WB4SUV  
 Equipment Mgr .....Fred Schneider K9OHE  
 WebMaster ..... George Gardei N3VQW  
 Silent Key .....Bruce Vanselow N8BV  
 Tech Talk Net Mgr .....Bruce Vanselow N8BV  
 K8SCH QSL Mgr ..... Bob Frey WA6EZV  
 TV/RFI ..... Dick Arnett WB4SUV  
 HamFest ..... Gary Coffey KB8MYC

*The August Foxhunt will be a mobile foxhunt, starting from Mt Storm park in Clifton. Setup will begin about 9:30 with the hunt starting at 10 AM*

## August Calendar

Wed Aug 1	9:00 PM	Tech Talk, NCS Robert AK3Q
Sun Aug 5	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: <a href="#">AAA: Apps for Apple and Android</a>
Tue Aug 7	7:30 PM	Club Meeting in St Bernard—Topic: <a href="#">Logbook of the World—Robert, AK3Q</a>
Wed Aug 8	9:00 PM	Tech Talk, NCS Eric N8YC
Sat Aug 11	10:00 AM	Monthly Mobile Foxhunt, starting at Mt Storm Park in Clifton
	1:00 PM	Brunch Bunch at <b>Frischs Restaurant, 5202 Delhi Pike</b>
Sun Aug 12	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: <a href="#">Books that Belong in your Radio Library</a>
Tue Aug 14	7:00 PM	Board of Directors meeting at My Neighbor’s place –3150 Harrison Ave.
Wed Aug 15	9:00 PM	Tech Talk, NCS Dale, KC8HQS
Sun Aug 19	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: <a href="#">Understanding Resonance</a>
Wed Aug 22	9:00 PM	Tech Talk, NCS George N3VQW
Sun Aug 26	6:30 PM	Newcomers/Elmers Net, 146.67, Topic: <a href="#">Bad Habits, Good Habits On and Off the Air</a>
Wed Aug 29	9:00 PM	Tech Talk

# Minutes of July 2018 Member Meeting

The meeting was called to order at 7:31 PM by Robert AK3Q with the Pledge of Allegiance.

Guests: 1 – Todd KY4TS.

New Licenses or Upgrades: Tony upgraded to General, congratulations!

Self Introductions: 28

Health and Welfare:

- Ted NC8V has successful back surgery.
- Harry WA8LOJ fell about two weeks ago and is currently rehabbing at West Park.

Brag Sessions:

- Pat KD8PAT was interviewed by WCPO Channel 9 regarding her weaver guild and it will be broadcast on Cincy Lifestyle at 10:00 AM on Monday, July 9<sup>th</sup>.
- George N3VQW has two states from the 13 Colonies event.
- Robert AK3Q worked the Baker/Howland Islands DXpedition and worked the South Cook Islands.
- Cesi KD8OOB received seven SSTV images from the ISS.
- The 13 Colonies special event is going on until midnight Sunday, July 8<sup>th</sup>.
- The 155<sup>th</sup> Anniversary of the Battle of Gettysburg special event is going on until Tuesday, July 10<sup>th</sup>.
- Last Sunday, July 1<sup>st</sup> was Alexanderson Day when SAQ in Grimeton Sweden fired up their vintage Alexanderson Alternator and transmitted greetings at 17.2 kHz. You can view this and past years on YouTube.
- The Antarctica Midwinter Broadcast just occurred.

Prior Meeting Minutes: Pending due to corrections not being submitted to the Q Fiver in time for publication.

Membership: 132.

Treasurer:

- Brian K4BRI submitted it and it has been filed for audit.
- The club recently purchased a Henry Amp for the 625 repeater.

Silent Keys: None

Tech Operations:

- The 625 repeater is getting some upgrades with a new Henry Amp and a new Arcom Controller.

- The next meeting will be Thursday, July 19<sup>th</sup> at 7:00 PM at the 67 repeater site; all are welcome.

#### Fox Hunts and ARDF

- Brian K4BRI reported June's hunt was a mobile hunt with Phil KG8AP hiding out at the Cincinnati Observatory.
- July's hunt will be on-foot, ARDF-style on Saturday, July 14<sup>th</sup> at 10:00 AM at Harbin Park in Fairfield. There will be plenty of transmitters to find, some easy and some tough!

#### Nets

- Bruce N8BV reported that Robert AK3Q will be net control for Tech Talk on Wednesday and providing Amateur Radio Newline and Amateur News Weekly for this week, so bring some questions!
- Robert AK3Q reported the Newcomers and Elmers Net this Sunday will be about CubeSats.

Website: Nothing new.

#### Digital Group

- Jerry W1SCR reported another good turnout for the June meeting.
- The group meets on the 4<sup>th</sup> Tuesday of the month next door in St Bernard's Centennial Hall, 110 Washington Ave., St Bernard, OH 45217 at 7:00.

QCEN: Pat KD8PAT reported the July meeting is the annual club picnic on Saturday, July 21<sup>st</sup> at 12:00 PM at Sellman Park in Madeira. The Flying Pig volunteers are especially invited. Please bring a side dish.

ARES: The next meeting is Tuesday, July 17<sup>th</sup> at 8:00 at 250 William Howard Taft Road in the Hamilton County Health Department. Take the left ramp for parking.

#### Old Business

- Field Day was a great success with plenty of visitors with excellent food. Leroy KE8JTK was really appreciative of all he learned from everyone setting up. Todd KY4TS was lone operator at the Boone County Fire Training Center where he ran an antenna down the training tower and made 350 contacts with two visitors. QCEN was very busy with air conditioning, indoor plumbing, 24 hour operations and four overnight operators. Bob WA6EZV was a machine, making 170 QSOs in 60 minutes with Dick WB4SUV logging for him!
- Bruce N8BV reminded us that tomorrow, July 4<sup>th</sup>, is Red White and Blue Ash where he needs volunteers for the beer booth.
- Cesi KD8OOB is getting a group together to host a booth at this year's Cincinnati Mini Maker Faire on Saturday, September 15<sup>th</sup> and Sunday, September 16<sup>th</sup> at the Hamilton County Fair Grounds. Anyone interested in participating, please contact him at kd8oob@gmail.com.
- A Hamfest planning meeting will be held at Aiken High School on Thursday, July 26<sup>th</sup> at 7:00 PM. The Hamfest will be on Saturday, September 22<sup>nd</sup> at Aiken High School in College Hill. We will need people to help setup the night before. All ticket sales will be outside this year. We have sent invitations and a ticket to local area clubs.

- The Milford ARC Hamfest went well.
- Bob WA6EZV needs volunteers to host ARDF Fox Hunts in mid-October at the Scouting Jamboree for groups of 20-30 scouts.

#### New Business

- Leroy KE8JTK will be training people for CERT – Community Emergency Response Team. The training program is a 21 hour program spread over eight weeks starting Tuesday, July 17<sup>th</sup>. Each week will consist of a three hour session offered three times a week on either Tuesday, Wednesday or Saturday, your choice. Cincinnati no longer has a CERT team and this is vital to our community as it is a primary link to FEMA.
- Bruce N8BV informed us that the next Brunch Bunch will be at the Century Inn, 10675 Springfield Pike, Glendale on Saturday, July 14<sup>th</sup> at 1:00 PM.

The meeting was recessed at 8:09 PM and resumed at 8:20 PM

#### Program:

- George N3VQW presented on Packet Radio. Thanks!
- Next month's program will be Logbook of the World and logging software.

Split the Pot: The pot held \$120 with \$60 going to Brian K4BRI.

The meeting was adjourned at 9:11 PM.

Respectfully submitted, Cesi DiBenedetto KD8OOB, Secretary.

## Red White and Blue Ash 2018

It was a hot day standing on that blacktop. Really hot! But nobody complained. There was no time to. There was a job that had to be done and that is what we did. We sold a lot of beer and wine.

It was 96 degrees with a feels like temperature of 105 - 110 degrees on July 4th in Blue Ash and the OH-KY-IN beer booth kept busy all evening.

Red White and Blue Ash is always a fun event. This was our 11th year running a beer booth there. For our participation in the event this year the Oh-Ky-In treasury increased by just short of \$1500.

Our commission check arrived in the amount of \$991.51. Add to that our tips collected of \$490. That makes a total of \$1481.51 already given to the club treasurer.

A REALLY big THANK YOU goes to those that helped work the OH-KY-IN beer booth this year!!

Dennis KD8ILY   Lynn WD8JAW   Pat KD8PAT   Ed KE8JTQ  
 Laura (Eds wife)   Kelli   Matt   Bruce N8BV

73, Bruce N8BV

## The Music of Radio: Dark Matter

By Justin Patrick Moore, KE8COY

“Are you sitting comfortably?” These were the only words uttered by the legendary master of Industrial music before his one hour performance at the COSI Planetarium on May 26. As soon as the lights were turned out, the seats began to vibrate and shake from the intense rumble of sub-bass and low-end sound frequencies. Lift off had been achieved.

My grandson Lucas was sitting next to my wife Audrey. When he said “Grandma, I’m scared” I got scared. Was it really such a wise thing to have brought a seven year old to a concert by the pioneer of the Dark Ambient sub-genre? Lustmord’s live shows are known for being very loud. Granted, we all had ear plugs in, but Lucas’ ears hadn’t yet been exposed to all the damaging noise I had already subjected mine to. With Audrey’s hand around Lucas, he quickly settled down. He might have even fallen asleep during the show. The abstract video projected on the Planetarium ceiling certainly helped to induce a state of hypnosis in myself as I let Lustmord’s vast, sonorous, and pulsing undertones flood through my body.

Part of the reason I had wanted to see this show in particular was due to the work Brian Williams, the man behind Lustmord, had done on his most recent album, *Dark Matter*, released on the Touch label in 2016. The sounds on that record had all been derived from an audio library of cosmological activity that he had collected for ten years between 1993 and 2003. On the liner notes he wrote, “While space is a virtual vacuum, it does not mean there is no sound in space. It exists in space as naturally occurring electromagnetic vibrations, many well within the range of human hearing while others exist at different regions of the electromagnetic spectrum and these can be adjusted with software to bring them within our audio range. The recordings of these interactions in space come from several different environments including radio, ultra violet, microwave and X-ray data and within these spectra a wide range of sources including interstellar plasma and molecules, radio galaxies, pulsars, masers and quasars, charged particle interactions and emissions, radiation, exotic astrophysical objects, cosmic jets and flares from magnetars.” Brian had gathered this material from a variety of sources including NASA (Cape Canaveral, Ames, The Jet Propulsion Laboratory and Arecibo), The Very Large Array, The National Radio Astronomy Observatory alongside a number of educational institutions and private contributors throughout the USA.

To be able to hear recordings of these emissions was intriguing enough for me. To hear what an artist of Lustmord’s caliber did with them on his album was a revelation. Hearing versions of that material live in a planetarium with video projections of the cosmos was a great experience. It has often been said that the study of astronomy is a humbling experience. One of the things astronomy can teach is the smallness of man. The personal problems we so often obsess over, when seen under starlight, feel less pressing. Astronomy also builds character by showing us the transience of both our sorrows and joy in the dance of galaxies. As Lustmord puts it “Everything that has ever been observed by man, even with our most sophisticated instruments, amounts to less than five percent of the Universe.” Do what we will, our hasty minutes fly. When compared to the life of a star we our lives are just eye blinks. Meditating on the fragile mortality of the body and our place in the cosmos to me isn’t a cause of despair, but rather a tool for helping me to focus on what I do and say and think today. It is a reminder to not take for granted the limited amount of time I have been allotted for granted.



(Continued on page 8)

Lustmord further explains that, “approximately sixty-eight percent of the Universe is unseen dark energy and approximately twenty-seven percent is unseen dark matter. We have yet to discover what dark matter is, and only know the things it is not. Although it has not been directly observed, its existence and properties are inferred from its effects on visible matter, its influence on the Universe's large-scale structure, and its effects in the cosmic microwave background.”

The sound of the record was one of desolate rumbling. It had no high points, no low points, no climax or resolution. It is a music of celestial loneliness that gives a shape to what it might feel like to be on an interstellar voyage far away from home: there are other things out there in space, but they aren't nearby, and the very cosmological activity we find so beautiful in pictures and imagery, when seen up close is violent and deadly. While the album does start and stop, it could have been infinite. It could have gone on forever. Listening to this places you in the void between the stars. That's a great place to visit, but for all the wonder and majesty of the universe, I'm glad I'm not a cosmonaut. I'm thankful my place in the creation is this verdant earth.

At the concert Lustmord drew material from across the breadth of his forty year discography. I could hear elements from his various records recombined in new ways. Included in the mix were sounds and sequences I recognized from *Dark Matter*. Experiencing his music live was very different than when I play his albums on my home stereo. While I have good bass response in my speakers, the low-end at the show was something else altogether. One of the reasons I wanted to go was to get the full impression of his powerful subharmonics in the flesh.

Though overtones occur naturally with the physical production of music on instruments, undertones and subharmonics must be produced in unusual ways. Whereas the overtone series is based upon the multiplication of frequencies, the undertone series is based on their division. There are several different ways to create subharmonics and undertones. Composers Mari Kimura, George Crumb and Daniel James Wolf have written works for violin or string quartets that require the musicians to bow their instruments with enough pressure to create pitches below the lowest open string of the instrument. This intense pressured bowing causes the sound waves to modulate and demodulate from the resonating horn of the instrument with frequencies corresponding to subharmonics. At the Lustmord concert the subharmonics were produced by the amplification of his deep bass audio signals through the loudspeaker system.

At times during the show, it was as if I felt the shaking of the chairs and vibrations within my body to be more powerful than the tones that I heard with my ear. This had a kind of grounding effect on me. Even if some of the source material was derived from cosmic sources, and the video projections showed glittering gas nebulas and colorful fields of stars, the deepness and acute pressure of the sub-bass was a full body experience. As the music wound down to a close, the room felt stable again. We were no longer inside a super collider.

When the one hour show was over I asked Lucas how he liked it. He was nonchalant having survived the experience. “It was boring,” he said. “The guy didn't even sing.”

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**Announcement:** From August 18<sup>th</sup> until mid-December of 2018 I will be returning to my roots in community radio as I fill in for Ken Katkin as the host of WAIF's *Trash Flow Radio*. The show airs on 88.3 FM every Saturday from 3-5 pm. Please tune in for stuff you won't hear anywhere else on the local broadcast dial. Besides playing underground rock music, I'll also be promoting the clubs activities (classes & events) and ham radio in general. Expect to hear the kind of music I write about in this column as well as *Trash Flow*'s usual mix of: Avant-garde punk, pop avant-garde, sad songs with loud guitars, loud songs with sad guitars, anti-Beatle exuberance, psychedelia, bargain-bin outsider music, revisionist rock history, music made by teenagers with “sXe” tattoos, and timeless DIY. Absolutely no major label recording artists (except the Ramones). Music from the catholic school, not the parochial.



# The Exam Corner

## The Exam Corner Steve Weeks AA8SW

With the text of the General License question pool changing as of July 1, 2019, we have decided to accelerate the release of these study aids to ensure there is plenty of time to digest the material before the new material is reflected in the licensing exams.

Therefore, the website will be updated regularly with new sections. There are currently 8 sections placed in “The Exam Corner” section of the OH-KY-IN website (the link is available under the first drop-down menu at the top of the home page), with a 9<sup>th</sup> section released before this Q-Fiver issue goes to print.

Below is a brief synopsis of each section published since the last Q-Fiver, with links to the full article for each section on the Exam Corner page. – Steve

### Propagation 1 – Solar Activity

For #3, let’s begin a series of 3 lessons on propagation. The General Class license is so desirable because it gives us access to worldwide communications on HF bands, but over-the-horizon signals have to be reflected (technically refracted in most cases) back down to Earth by the atmosphere. The layer of the atmosphere most commonly involved is the ionosphere, which is “charged up” by the Sun, so solar activity has a major effect on long-distance radio communications.

### Propagation 2 – MUF and LUF

This is the second in the series of three lessons on propagation. The General Class license is so desirable because it gives us access to worldwide communications on HF bands, but over-the-horizon signals have to be “bounced” (technically refracted) back down to Earth one or more times by the atmosphere (most often, by the ionosphere).

This unit focuses on two simple concepts – the Lowest Usable Frequency (LUF) and Maximum Usable Frequency (MUF), which are just what they sound like – between the LUF and the MUF are the frequencies that are usable for communications between two given points at a given time. Note, this is not a 24-hour average, it is as of the specific time that the communication is desired to be made. Below the LUF, radio waves are absorbed by the ionosphere and not “bounced” back.

### Propagation 3 – Ionospheric Layers

This is the last in the series of three lessons on propagation. The General Class license is so desirable because it gives us access to worldwide communications on HF bands, but over-the-horizon signals have to be “bounced” (technically refracted) back down to Earth one or more times by the atmosphere (most often, by the ionosphere).

Remember from the last lesson that the layers of the ionosphere are in alphabetical order with D being closest to the Earth, then E, then F1 and F2. The higher you go, the farther radio waves can “bounce” in one hop. Recall also that propagation depends on solar intensity which of course is maximized when the Sun is directly overhead, which also heats the ionosphere and causes it to rise higher from the ground.

### Emissions 1 – Basic Types of Emissions

So far, we have covered electrical and RF safety, and propagation. The third major topic in this series is emissions. General Class amateurs may transmit many different kinds of signals – the FCC refers to these as “emissions”. It sounds complicated but at the General Class exam level, it isn’t.

The process of encoding a “plain” RF signal (known as a carrier) with audio or other information is called “modulation”. The basic types of modulation are:

☐ Amplitude modulation, which varies the amplitude (instantaneous power level) of the signal. This is the oldest type of audio modulation and is widely used in broadcasting (such as the 540 to 1600 kHz band, known as the AM Broadcast Band). It is a double-sideband format since both sidebands are modulated equally. The “modulation envelope” of an AM signal is the waveform created by connecting consecutive peak values of the modulated signal.

☐ Frequency modulation, which varies the instantaneous frequency of an RF wave. An example of this is the FM Broadcast Band from 88 to 108 MHz. FM is also used for typical 2-meter repeater operations. Frequency Shift Keying (FSK) is a form of FM for digital communications where the binary bits (each a zero or a one) are represented by two different frequencies and the oscillator is directly controlled by a computer or other digital source to generate the varying frequencies.

☒ Single sideband (SSB), which is the most common voice transmission mode used by radio amateurs on HF bands. In this mode, the carrier and one of the sidebands are suppressed, and all of the transmission power is concentrated into the remaining single sideband so it uses the transmitter power most effectively of the voice modes. It also produces the narrowest bandwidth of the voice modes, since the carrier and one sideband are suppressed.

☒ Phase modulation, which varies the phase angle of an RF wave. It is produced by a “reactance modulator”.

So let’s review – amplitude modulation varies the amplitude (power level); frequency modulation varies the frequency; phase modulation varies the phase; and single sideband uses one sideband. Don’t make it difficult, just go with the obvious answers. Remember a “modulation envelope” is a “waveform”, “reactance modulator” goes with “phase modulation”, and FSK uses digital control over the oscillator.

### **Emissions 2 – RF Back to Audio**

This is the second of three articles on the topic of emissions. In this section, the examiners are mostly focused on how a receiver converts RF emissions back into audio frequencies that we can hear.

The process of combining two RF signals having different frequencies is known as “mixing” or “heterodyning”. Mixing two RF signals results in two new RF signals, one at a frequency equal to the sum of the original two, and one equal to the difference. For example, mixing a 10 MHz signal and a 2 MHz signal results in 12 MHz (the sum) and 8 MHz (the difference). Conventional receivers typically generate a variable frequency oscillator (VFO) signal which is mixed with the incoming signal in order to produce a difference signal at a specific intermediate frequency (IF) that the receiver is designed to handle. This is called a “superheterodyne” receiver (the results that it achieved were considered super when it was invented 100 years ago). However, simple arithmetic dictates there is another incoming signal frequency which, when mixed with the same VFO signal, will also produce an (accidental) output at the same IF frequency – this is called an “image response”.

### **Emissions 3 – Evolving Digital Modes**

This is the last of three articles on the topic of emissions. This section deals with the rapidly-evolving subject of digital modes, and unfortunately that means that some of the questions (which were prepared in 2015) are a little outdated. In the 2019 revision, I’m sure that the examiners will update this material. In the meantime, we have to deal with the current question pool as we find it. The digital modes represent a merger of computer and radio functions. Accordingly, computer terms such as “bits” are involved. A bit is a single binary digit that can have the value of 0 or 1, and when transmitted by radio using Frequency Shift Keying, where one frequency represents a 0 and another frequency represents a 1, they are called “mark” and “space”.

## How to transfer files to and from a Raspberry Pi over your home network.

Brent Shields - KK4HMR

If you have set up a Raspberry Pi on your home network then at some point you will likely need to transfer files between your home computer and the Raspberry Pi. Perhaps you would like to automatically backup photos from a Raspberry Pi camera to your home computer. PuTTY and WinSCP are two applications that help with this.

Raspbian, the most common operating system for the Raspberry Pi, comes with many networking utilities already installed. Sftp, scp, ssh, wget, and getty are a few examples of command line utilities that are included with Raspbian Linux but are not included with Windows by default.

sftp – secure file transfers

scp – secure copy

ssh – secure shell connection

wget – download files from a web location.

getty – terminal emulator on Unix computers.

Telnet is a terminal emulator application that is not included with Windows by default but can be installed. It is still useful for things like testing open ports through firewalls but for our purposes a secure terminal is preferred.

Getty is a terminal emulator program on Unix or Linux systems. The name is a pun on the word 'get' and TTY. Getty is used for both virtual terminals on a Linux PC and for remote logins to Linux or Unix systems. 'getty' is the program that prompts for login and runs the shell environment the user sees after logging in.

The term TTY stands for teletypewriter. The first patent for a teletypewriter was issued in 1846 to an inventor named Royal Earl House. In those early days someone could type letters on a piano style keyboard and the remote device would print the letters. Mr. House called his invention the printing telegraph. Over the following 60 years there were continuous improvements and reworking from many inventors. Émile Baudot in France was one of those contributors. He devised a 5 bit digital code for a new version of the printing telegraph. This allowed multiplexing the signals so that multiple messages could be sent simultaneously over the same conductors. He still used the piano style keyboard. The term baud, the number of symbols sent per second, was named after him.

Around 1899, Donald Murray an electrical engineer originally from New Zealand moved to New York City with an idea for a practical teletypewriter. Telegraphs were still being sent manually since the existing Teletypewriters were not practical for mass production and were difficult to use and maintain. Murray worked at a newspaper in Australia and saw the need for sending text without needing operators trained in Morse code. Murray used a QWERTY keyboard with a modified Baudot code to create what became the Telegraphic Typewriter that was used around the world.

PuTTY is an open source application that was originally written for Windows to do terminal emulation like getty. The name "PuTTY" seems to be a pun on the name getty. An additional pun is that you need to put PuTTY on your Windows. PuTTY gives you the functionality of telnet, ssh and sftp on Windows. PuTTY comes bundled with additional command line utilities. 'pscp' is the PuTTY version of scp.

Before installing software on your Windows PC, SSH will need to be enabled on the Raspberry Pi. Raspbian, the OS on the Raspberry Pi, comes with SSH already installed but it needs to be enabled before we can use it to connect from the PC. SSH stands for Secure Shell. It lets us make a secure, encrypted connection to the Raspberry Pi.

To enable SSH on the Raspberry Pi using the GUI Desktop:

Choose Menu > Preferences > Raspberry Pi Configuration

Click the 'Interfaces' tab

For SSH choose 'Enabled'

Click OK and then let it reboot.

For a headless (no monitor connected) Raspberry Pi system you can enable SSH by putting an empty file named 'ssh' on the root directory of the sd card.

While you are still on the Raspberry Pi, find out what its ip address is. Launch a command prompt and type ifconfig to see the ip address. You might want to set up a static ip address in your home router for your Raspberry Pi's so after any power blips or reboots they will be at the same ip addresses. To do this you need to look in the router configuration to find the mac address for the Raspberry Pi in the connection listing. Assign that mac address a static ip address. There should be a page in the router configuration that let's you do that. This is optional.

Next, download and install PuTTY on your Windows PC. It can be downloaded from <https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>. Choose the latest msi file. After installation you will need to set up a connection to your Raspberry Pi. When you launch PuTTY for the first time the Configuration dialog will appear. For the Host Name put in the IP address for the Raspberry Pi. Leave the Port set to 22 and Conne-

tion type as SSH and click the Open button. A popup will ask if you trust this server and if you want to save the SSH key. Accept the key. A prompt will appear for you to enter the account name. The default account is 'pi'. Next you need to enter the password which is raspberry by default. You should now see the command prompt on the Raspberry Pi. You can use Linux commands such as 'ls' to list files and 'cd' to change directories. Or you can use Midnight Commander to browse the files.

## Install Midnight Commander on Raspberry Pi

This is optional and is just for convenience. I was a fan of Norton Commander in the 90's so I find Midnight Commander helpful for command line sessions. Midnight Commander is an open source rewrite of the now extinct Norton Commander. Norton Commander provided two frames that let you browse two different folders at the same time. You could copy and paste between the two folders, compare files, quickly view the contents and edit files. Midnight Commander lets you browse through folders quickly with a colorful interface that works over the PuTTY connection.

To install Midnight Commander type the following commands from the Raspberry Pi command prompt.

```
sudo apt-get update  
sudo apt-get install mc
```

Now you should be able to type 'mc' to launch Midnight Commander from the PuTTY command prompt and browse files and folders on the Pi. Once you have located files you wish to copy to or from your Windows PC you can use pscp on the Windows computer to copy them.

## Copy Files at the Windows command prompt from the Raspberry Pi

From the Windows command prompt verify the path environment variable is setup correctly by typing pscp. You should see a listing of the Usage details. Here is the command for copying a file: (put in the ip address for your Raspberry Pi)  
**pscp pi@192.168.1.49:/home/pi/filename.txt filename.txt**

You will be prompted for the password for the 'pi' account. If you would like to set up a batch file or a scheduled task to run the copy then use the -pw option to enter the password along with the other options.

```
pscp -pw raspberry pi@192.168.1.49:/home/pi/filename.txt filename.txt
```

## Copy Files from the Raspberry Pi using WinSCP

WinSCP is an Open Source GUI application for Windows that lets you copy files to and from the Raspberry Pi without needing to type commands. It can be downloaded from <https://winscp.net/>. Click the download link then find the link called 'Download WinSCP 5.13.3 (9.2 MB)'. (Ignore the large green buttons that say "START NOW".) During installation it will find any saved Connections that you set up with PuTTY. Setting up sessions is very similar to setting them up in PuTTY. Use the ip address for the Raspberry Pi as the hostname. The username and password are pi and raspberry as before.

The one slightly tricky point with WinSCP is that copy/paste in Windows won't work. Drag and drop between the two frames works. Or you can 'download' files from the Rpi to the PC and 'upload' files from the PC to the Rpi. If you right click on a file in the Rpi you will see the 'Download...' button appear in the Right Click menu.

## Next steps

I've been planning for a long time to set up some security cameras with Raspberry Pi Zeros along with some HAM related projects. These tools should be helpful for these projects. Instead of needing to connect a USB drive directly to each Raspberry Pi I will be able to transfer all files from a central location.

I would like to set up host names on my local network so I won't have to use the ip addresses. I just learned that PuTTY will search for the network name of the Raspberry Pi so that can be used in place of the IP address. I haven't tried that yet so I'm not sure if I'll use that or set it up in my router or if I'll set up a local Domain Name Server (DNS) on a raspberry Pi to handle that. When I do I'll write about it for the newsletter. Another idea for an article is how I set up two wireless routers on the same network. One for the house and one for the detached office and garage. They both have the same id and pass phrase so devices transfer seamlessly between them.

## Foxhunts and ARDF

From Matthew, AA9YH:

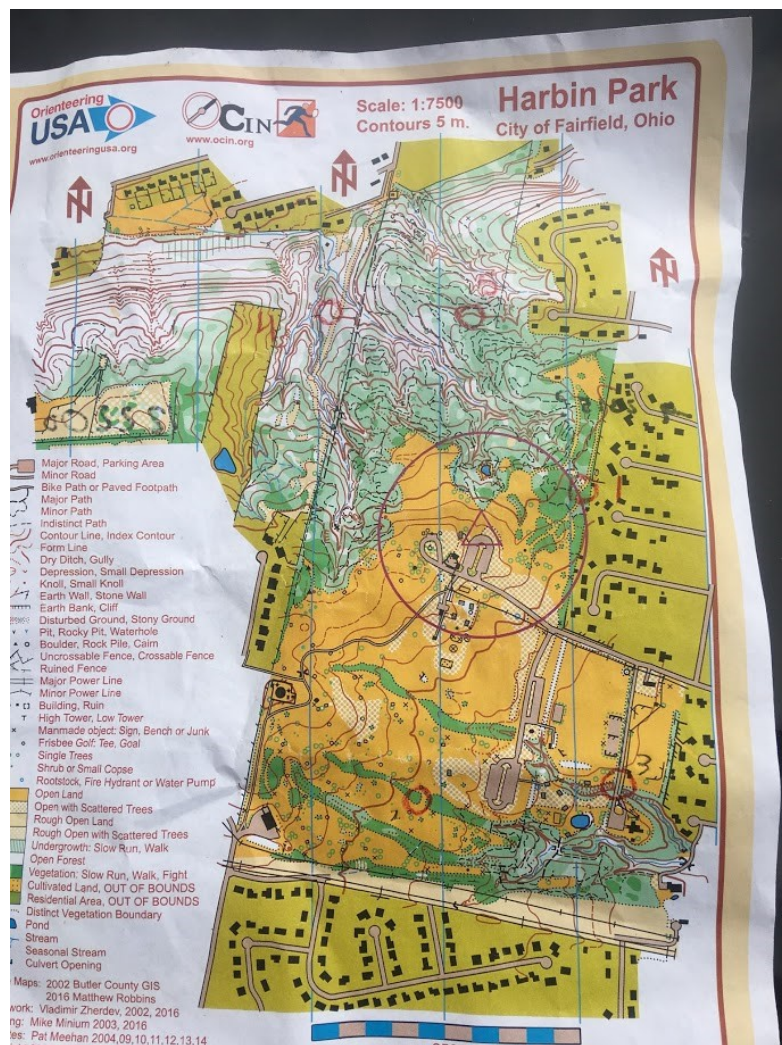
Results of July ARDF:

<u>Name</u>	<u>Time</u>	<u>Order</u>
Brian K4BRI	1:04:30	45132
Bob WA6EZV	1:16:00	45132
Dick WB4SUV	1:06:54	2315
Cesi KD8OOB	2:06:00	2315?
Marji KJ4ZKC	1:05:40	123
Brent KK4HMR	1:23:45	2

From Bob, WA6EZV:

First many thanks Matt for setting a good 2m course. Been way to long since I had a good workout. I think more 2m events are in order and less 80m.

Man am I rusty. To start I headed up the hill toward the tower where I had my first bearing to mos. What a reflection, took me a while to realize it was actually down by moi, (I think) so I shifted direction and headed north toward moh. way down in the valley I first stopped short than on the next cycle overran the transmitter before turning west across the ravine and up the hill past the clearing. I figure four to five cycles to finally find moh. Brian must have been in the vicinity though I never saw him until I was back down the hill on the trail.. Both of us took winding trails and a bit of cross country east in the direction of mo5. At one point we were both 20 to 30 meters apart and pointing north looking across a revive and trying to decide how to get to the other side. Taking slightly different routes Brian aced me out on mo5. At this point Dick also appeared, just leaving mo5 I think. Dick and I both took the winding trails east toward the top of the hill toward the open fields,. I was still looking for moe, made a wrong turn and backtracked leaving Dick and headed toward moe. Missed it on the first try and had to backtrack again! Another cycle lost. After moe, I finally got what I believed to be a true signal from mos and headed south along the far East side of the park. Found mos tucked in the far south east corner of the park. Turned west up the hill and make my way to moi and finally back to the finish. Watch said 3.1 miles and 1 hour 16 minutes.



## Brunch Bunch

**The next Brunch Bunch will be held Saturday, August 11th, at 1pm. The location for August is Frischs Restaurant located at 5202 Delhi Pike in Delhi Township, 45238. Frischs is located a very short distance from the intersection of Delhi Pike and Anderson Ferry Road.**

**Frischs takes the extra steps to make your meal fresh to order from ingredients that pass our strict standards for quality and taste. Its what makes any meal at Frischs Freshworthy.**

**Today, Frischs is a modern brand with food and decor that appeals to multiple generations. Its a special place that never ceases to delight new and returning customers many who have fond memories of Frischs through the years, and many others who are making fond memories today.**

**You can find a map as well as the menu at:**  
[www.frischs.com](http://www.frischs.com)

Remember that the Brunch Bunch always meets the second Saturday of every month at 1pm at a location to be announced each month. If you can't join us this month, maybe you'll be available to join us in the months ahead.

I'm always looking for suggestions on what restaurant you think might be a good place for the Brunch Bunch to visit soon.

73, .....Bruce, N8BV



# August 2018 DX Spots de KA3MTT

Sun	Mon	Tue	Wed	Thu	Fri	Sat
D44EK - Cape Verde Thru 8-7  	3B8 - Mauritius thru 8-4  		1	2	3	4
5 GU - Guernsey thru 8-11  Website: <a href="https://www.qrz.com/lookup/sp7vc">https://www.qrz.com/lookup/sp7vc</a>  	6 ZA - Albania thru 8-12  Website: <a href="https://www.qrz.com/lookup/sp7idx">https://www.qrz.com/lookup/sp7idx</a>  	7	8	9	10	11 GJ - Jersey through 8-14  Website: <a href="https://www.qrz.com/lookup/sp7vc">https://www.qrz.com/lookup/sp7vc</a>  
12 TX5T - Austral Is Thru 8-21  Website: <a href="http://kh8samoa2018.com/">http://kh8samoa2018.com/</a>  	13	14	15	16	17	18
19	20 Z6 - Kosovo thru 8-26  	21	22	23	24	25
26	27	28	29	30	31 A sloooow month for DX !!!!  73, Nathan KA3MTT	

OH-KY-IN Amateur Radio Society

Regular monthly meetings are held the first Tuesday of each month at 7:30PM local time at the St Bernard Recreation Hall, 120 Washington Avenue (corner Washington & Tower Aves) in St Bernard, just east of Vine St. Please come in the doors at street level, facing the high school. Visitors are ALWAYS welcome!

The next meeting of the Oh-Ky-In Amateur Radio Society will be Tuesday, August 7th at 7:30 PM

Program:

# Logbook of the World

(and other online logging programs)

By

Robert Gulley AK3Q

OH-KY-IN Amateur Radio Society

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PLEASE  
PLACE  
STAMP  
HERE

