The Mentor’s Notebook

A Guide for the New Ham

Rev. 0.92

Bellbrook Amateur Radio Club

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1 What Do I Do Now?

Congratulations on getting your license and welcome to ham radio! It is natural to have lots of questions and to wonder what you should do next or how to get on the air. This *Mentor's Notebook* is intended to help you get started and answer many of the questions that new hams have. But what is a *Mentor*? A *Mentor* is an experienced amateur radio operator who acts as a teacher and guide for a new ham. These people used to be called *Elmers* in the jargon of amateur radio.

This notebook is mainly a local guide for what you can do in the Miami Valley now that you are a licensed amateur radio operator. There are sections on purchasing a radio, how repeaters work and a list of local repeaters, and some tips on programming your new radio. The appendix contains several, useful guides you can print out and keep near your home station. Be sure to take advantage of the Mentors listed in this guide. They are always happy to answer all your questions. Hams are great people so don't be afraid to contact them!

The Bellbrook Amateur Radio Club (BARC) and the BARC Education Committee sponsor this notebook. Please consider attending a BARC Membership meeting on the third Thursday of every month and join the fun. For more information, visit the BARC website at *bellbrookarc.org*.

In addition to this *Notebook* as a guide for new hams, the Amateur Radio Relay League (ARRL), the National organization for amateur radio in the U.S., puts out a podcast for new hams titled "So Now What?" You can access that podcast at the ARRL website at *arrl.org/so-now-what.*

2 What Radio Should I Buy And Where?

One of the first items you will purchase (if you haven't already) is a radio. Radios run the gamut in price and features. This guide will focus on starter radios that are inexpensive or moderately priced. If you want something more feature-packed, ask a Mentor!

Generally, though, you would probably like a radio that is meant for the amateur bands, is dual-band, handheld, and battery operated with a rubber duck antenna (looks like a walkie-talkie). Dual band radios cover the VHF (2m) band from 144 to 148 MHz and the UHF (70cm) band from 420 to 450 MHz. Handheld radios are convenient for travel and battery operation means they will operate outside or during an emergency. These radios typically come with a programming cable, a desktop charger, and a *rubber duck* antenna. A rubber duck is just a short rubbery antenna. These are usually not the best antennas, and your first additional purchase should be a replacement antenna, such as the Nagoya 701 dual band whip antenna. A handheld speaker microphone is another nice addition as well as an extra battery.

2.1 Radios

A list of typical analog FM radio manufacturers includes Baofeng, Icom, Kenwood, and Yaesu. Be sure to ask a Mentor about *Digital Modes* if you are interested in getting a digital radio. Here are the websites along with some good starter radios if you would like to explore. When you are ready to purchase a radio, use the store links in the next section for the best prices.

Manufacturer	**Radios**	**Website**
Boafeng	UV-5R and UV-6R	*baofengradio.com*
Icom	ID-31A and ID-51A	*icomamerica.com/en/amateur*
Kenwood	TH-D72A and TH-D74A	*kenwood.com/usa/com/amateur*
Yaesu	FT-60R, FT-65R, and FT-70R	*yaesu.com*

Baofeng radios are extremely inexpensive and can be had on sale or at Hamvention for about $20-$25. Icom, Kenwood, and Yaesu radios are more expensive ($100-$500), but generally of higher quality.

2.2 Stores

Ohio is lucky to have two of the larger ham radio retail stores. The first is R&L Electronics in Hamilton, OH, and the second is DX Engineering near Cleveland, OH. They both have on-line stores and both usually have booths at Hamvention. Of course, Amazon also sells lots of ham radio gear and you can get used gear on eBay (or various Facebook Ham Radio pages). BARC will often list used equipment for sale by members and has an auction every year to sell equipment donated to the club.

A list of stores with locations and links to their on-line storefronts is provided below. A visit to R&L is always a good time, but bring your wallet! It is hard to leave without buying anything.

Store	Location	Website
R&L Electronics	1315 Maple Ave Hamilton, Ohio 45011	*randl.com*
DX Engineering	1200 Southeast Avenue Tallmadge, Ohio 44278	*dxengineering.com*
Universal Radio	651 Lakeview Plaza Blvd., Suite B, Worthington, OH 43085	*universal-radio.com*
GigaParts		*gigaparts.com*
Ham Radio Outlet	Various locations	*hamradio.com*
Amazon		*amazon.com*
eBay		*ebay.com*

2.3 Equipment Reviews

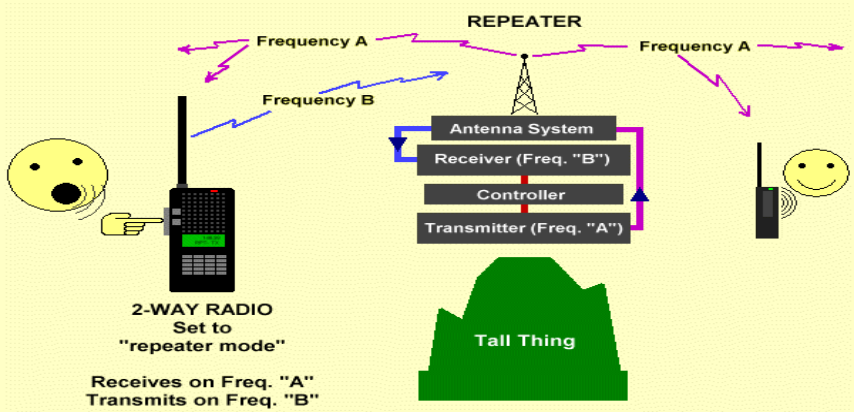
When looking for new or used equipment, one valuable reference for information and reviews is *eham.net*. The site includes ratings, cost information, and many detailed reviews of both new and used equipment you may be considering. Hit this site first before purchasing.

3 How Do I Program My Radio?

Before diving in, you should understand the information needed to program your radio, so let's review how repeaters operate.

3.1 How Do Repeaters Work?

The typical handheld transceiver (HT) radio outputs about 5 Watts. Although this is pretty good, the lack of a proper antenna and intervening terrain or buildings can make reaching distant points difficult. A repeater is generally placed high in the air and uses a much higher output power (about 50 Watts). As



long as your HT can reach the repeater, your signal will get a boost and be able to reach much further.

A repeater is defined by its *Transmit Frequency* (the frequency you listen on). The repeater *Receive Frequency* is offset from the *Transmit Frequency* so that the repeater can simultaneously receive and transmit signals. The repeater offsets are defined by convention as 0.6 MHz for VHF (2m repeaters) and 5 MHz for UHF (70cm repeaters). If the *Transmit Frequency* is below 147 MHz, the offset is negative; if the *Transmit Frequency* is 147 MHz or above, the offset is positive.

A repeater may require that you add a sub-audible tone to access the repeater when you are transmitting. Think of the tone as a password that allows you to select among several area repeaters that may be listening on the same or a nearby frequency.

A list of repeaters in the Dayton area is provided in the Appendix.

3.2 Operating On A Repeater

Here are a few tips for operating on a repeater.

3.2.1 What's That Beep?

Sometimes you will hear a beep when someone unkeys the repeater. That is a *Roger Beep* to let you know the repeater timer has reset and that you can go ahead and key up again.

3.2.2 Why Did I Time Out The Repeater?

Repeaters have a built-in timer that automatically cuts off a call after a certain amount of time (like three or four minutes). This is to ensure that if a station accidentally keys up the repeater, it does not hold the repeater open so nobody else can communicate. It is good practice on the air to keep your conversation short and announce that you will "*Break here*" every so often, so that the repeater timer can reset if you have several things to discuss, but more importantly, so that other stations can break in to the conversation to join your discussion or pass emergency traffic.

3.2.3 Repeater Etiquette

Here are a few tips for repeater etiquette.

1. *Listen first*! You do not want to key up on somebody else's conversation.
2. Do not call CQ on a repeater. When you want to announce yourself, say "*W8LRJ listening on the BARC repeater*" or just "*W8LRJ listening*". You don't have to announce your repeater, but it can be helpful to stations who are scanning a list of repeaters so they know which one you are on.
3. If you want to call a specific person (like a Mentor!), say something like "*KM8AM this is W8LRJ*" where KM8AM is the person you are calling and W8LRJ is your callsign.
4. Wait a couple of seconds between exchanges in your conversation to allow other stations to break in or pass emergency traffic.
5. In the same way, keep your conversation short. If you have several items to discuss, announce "*Break here*" every so often to allow others to join the conversation or to pass emergency traffic.
6. If you want to join another conversation in progress, wait for a break, and then just give your callsign. When one of the stations acknowledges you, then you can give your callsign again, name and location, and join the conversation.
7. Don't forget to ID every 10 minutes ("*This is W8LRJ"*) and when you are are finished ("*W8LRJ clear*").
8. If you can't get a better antenna for your HT or use a mobile/base station, try to move to an outdoor or higher location or increase your transmit power. Using a handheld radio with a rubber duck antenna from your basement is not going to reach the repeater very well and will make it difficult for others to hear and understand you.
9. If you do have a mobile/base station that can output 50-100 watts, try first with only 10 watts so as not to desensitize the repeater. Use only the power necessary to complete the contact.

3.3 How Do I Program My Radio Myself?

There are three main options for programming your radio yourself. ***Chirp*** is open source, free software that will allow you to program many different radios. It runs on Windows, Linux, and MacOS.

RT Systems is retail software and can also program many radios, but you must purchase a new version of the software for each different radio as well as a special programming cable. It only runs on Windows, but is full-featured and easy to use. Finally, many ***Manufacturers*** offer free programming software that can be downloaded from their website, so be sure to check those, too.

Chirp is available for free download at https://chirp.danplanet.com. *RT Systems* can be purchased through Amazon, just make sure you get the version for your specific radio model. One advantage of *Chirp* is that you can use the same software for all your radios and use any operating system you like. Most other radio programming software is Windows only.

The BARC website has a great tutorial on using *Chirp* to program a Baofeng UV-5R radio. You can use the tutorial to program any radio that *Chirp* supports.

3.4 Can Someone Do It For Me?

Sure! Just ask a Mentor or contact John Westerkamp, W8LRJ, and setup a meeting at the BARC clubhouse. You can reach John at 937-271-3119 or *w8lrj@arrl.net*. John also brings his laptop and programming software to most Membership meetings, so feel free to say hello and ask him to help you program your radio. Be sure to bring the following items with you:

1. Radio Model Number (let John know in advance so he can be sure it works with *Chirp*)
2. Programming cable for your radio (*must have!*)
3. Your radio ;-)

3.5 Should I Get A Better Antenna?

The answer is probably yes, but don't sweat it! Any antenna that gets you on the air is a good antenna! For your first HT radio, adding a *Nagoya 701 8-inch dual band whip antenna* will help you sound better on local nets and public service events. The *Nagoya 771 15-inch dual band whip antenna* will be even better for outdoor public service events. For your home base station, check eBay for the *Ed Fong Dual Band J-Pole antenna*. There is more information under *Programs* at the BARC website. It runs around $35 and will get you to more distant repeaters if installed up high. Then just run coax down to your HT or base station. Make sure the antenna connector matches your radio. If you still aren't sure what to buy, ask a Mentor!

If you are thinking about trying some HF, in addition to a radio for the HF bands, you might think you need a huge, expensive tower to get on the air. Not so! That tower antenna and high power station might get your farther, but you can make perfectly fine contacts with just a wire and matching network thrown up in your attic! If you do put up an outside antenna, be sure to read up on safety, grounding, and bonding. An excellent resource is *Grounding and Bonding for the Radio Amateur* by H. Ward Silver, N0AX. It is part of the ARRL Series of textbooks and is available for loan at the BARC library or for purchase on-line from ARRL. There is also a presentation on *Grounding and Bonding* by Ken Moak, KM8AM, on the BARC website under the *Programs* tab.

The details of antenna design are something to dive into later. Watch the BARC website for upcoming antenna classes or programs. If you would like to get started sooner, just ask a Mentor to help you out! Putting up antennas is a favorite sport among amateur radio operators.

4 Getting On The Air

Every ham has felt the anxiety of deciding to hit the Push-to-Talk (PTT) button that first time. Will I make a mistake? When should I ID? Will people get annoyed at my inexperience and make fun of me? Not to worry! Experienced hams are more than excited to welcome a new operator! Before long, you will be chatting with friends. Before discussing some easy ways to start out on the air, let's answer some of those questions.

Will I make a mistake? Probably, but even experienced hams do, so don't worry about it. Most likely, you will do fine. If somebody does correct you, take it as helpful feedback and not a personal attack.

When should I ID? Most new hams ID too often so don't be worried about giving your ID. You should ID when you make your initial call, every 10 minutes during the contact (that is a long time!), and when you sign-off. That's it!

Will people get annoyed at my inexperience and make fun of me? No! Hams are great and friendly people. Unless you are barging into the middle of a conversation without warning or doing something illegal (like playing music or using obscene language), nobody is going to make fun of you or embarrass you. Experienced hams will probably know you are new, but like we said before, they are more than excited to welcome a new operator!

Now, let's see how you can ease onto the air without having to make that first contact with a stranger.

4.1 Check-In To Local Nets

A net is a meeting on the air, typically on a given repeater, that affords a group of amateur radio operators an opportunity to test equipment, practice operating techniques, and have a good time. Nets are often run by local clubs and organizations. See later sections for more detailed information about these clubs and organizations.

Nets typically are directed by a *Net Control Operator* who controls the flow of information. Think of the Net Control Operator as the hub and the other hams as the spokes. All traffic goes through the Net Control Operator.

Since a net is often scripted, it is easy to test your radio and whether you know how to operate it by *checking-in* to the net. When the Net Control Operator calls for check-ins, go ahead and key-up! Listen carefully to the Net Control Operator for the information required during the check-in, but this is typically your callsign (both alphabetically and phonetically), your name, and your location (city or county). As an example, when the Net Control calls for check-ins, you can hit your PTT button and say:

Caller*: W8LRJ, Whiskey-8-Lima-Romeo-Juliet, John, in Beavercreek*

and then release the PTT. That's it! If the Net Control acknowledges your check-in, you know your radio is correctly programmed for that repeater and that you have correctly operated your radio. Some

nets follow-up after a round of check-ins and allow each operator to pass information to the net or just discuss how their day is going! A list of local nets is given below. Remember that the frequency shown is the frequency you listen on (the repeater transmit frequency). The + or – sign after the frequency indicates a positive or negative offset. The tone (if any) is given in the ( ).

Net Name	Repeater	Date/Time	Website
Bellbrook Amateur Radio Club (BARC) Net	W8DGN 147.045+ (no tone)	Sundays at 8:00 pm	bellbrookarc.org
Greene County Amateur Radio Emergency Service (GCARES) Net	W8GCA 146.910- (no tone)	Tuesdays at 9:00 pm	gcares.net/nets.htm
West Central Ohio Amateur Radio Emergency Service District 3 (D3 ARES) Weekly Net	WA8PLZ 146.820- (77.0 Hz tone) *	Wednesdays at 8:00 pm	ohd3ares.org/net-information/net-guidelines/current-net-guidelines/
Montgomery County Amateur Radio Emergency Service (MOCOARES) Net	K8MCA 146.640- (123.0 Hz tone)	Tuesdays at 8:00 pm	mocoares.org/Repeater%20and%20Net%20Information.htm

* Once the 145.11- (77.0 Hz tone) repeater is back on-line, the District 3 ARES net will return to its primary frequency. Be sure to check the D3 ARES website for the latest net repeater information.

4.2 Call A Mentor

It is hard to “cold call” strangers on the air, but that is what hams do all the time, and eventually, you will, too. In the mean time, why not call a Mentor? These are hams who are expecting new operators to call them and are often listening and waiting for your call. You may even hear one of the Mentors call on your repeater. If you do, call them back and start a conversation! That is what they are hoping you will do! If you see a Mentor at a club meeting, introduce yourself. At the BARC meetings, they will typically be wearing the blue BARC polo with their first name and callsign on the front. These Mentors are all available on the BARC Repeater at 147.045+ (no tone).

Name	Callsign	Email
Ken Moak	KM8AM	*km8am@ctcn.net*
Ken Gunton	W8ASA	*ken@ohiomicrowave.com*
John Westerkamp	W8LRJ	*w8lrj@arrl.net*

4.3 Contests

Contests, much like Nets, are structured events that offer another way to ease into getting on the air. Various contests run throughout the year (a full list can be found in the ARRL Magazine *QST* and at the ARRL website *arrl.org/contests*) and each contest has a required exchange, typically your callsign, a signal report, and your state. To work a contest, listen carefully to how the contest operator is calling and how those responding reply. A typical exchange might go like this:

Contest Caller: CQ Contest CQ Contest Kilo-Mike-8-Alpha-Mike QRZ? *(QRZ means who is calling?)*

Response: Whiskey-8-Lima-Romeo-Juliet *(Give your callsign phonetically and wait to be acknowledged.)*

Contest Caller: Whiskey-8-Lima-Romeo-Juliet, 5-9 Ohio *(Acknowledged with a signal report and state.)*

Response: QSL, 5-9 Ohio *(QSL indicates you received the caller's report; then you return a report to the caller)*

Contest Caller: QSL. CQ Contest CQ Contest Kilo-Mike-8-Alpha-Mike QRZ?

Many contests occur on the HF bands so these are a good way to practice your SSB phone, CW, or digital technique on the HF bands. *Technician Class operators do have HF band privileges* (and may soon have more), but if you work a contest from your local club, you can operate in the General and Extra Class bands since Extra Class operators are almost always around the clubhouse during contests. Below is a list of contests in which the Bellbrook Amateur Radio Club (BARC) usually participates:

Contest	Description	Date
Ohio QSO Party	Contact as many Ohio stations and counties as possible	August
North American QSO Party	Contact as many North American stations and states as possible	January
RTTY Roundup	Test your RTTY or FT-8 digital skills by contacting as many stations around the world as possible	January
Field Day	Contact as many USA stations and states and around the world as possible	June
ARRL Rookie Roundup, SSB	Great for new hams!	April
Phone Fray	30 minute SSB HF contest Tuesdays at 10:30 pm	

4.4 Field Day

Field Day is a great opportunity to get on the air in a relaxed and fun setting. Clubs and organizations around the country setup stations outdoors (at a local park or public location like a

shopping center or fire station) and operate continuously 24 hours a day over a weekend making as many HF contacts as possible with other Field Day stations. There is often food and fun activities and there are plenty of Mentors available to show you how to use the HF radios and get you on the air making contacts.

Field Day is always the fourth full weekend in June. The Bellbrook Amateur Radio Club (BARC) runs a Field Day every year that includes a large picnic style dinner. It is very well-attended and lots of fun. Check the BARC website for more information at *bellbrookarc.org*.

4.5 Public Service Events

There are a large number of Public Service Events around the Miami Valley that use amateur radio volunteers to provide communications for the event. The volunteers allow the event to keep track of logistics, health and welfare of the participants, and any emergencies that might come up. Public Service Events are run as a directed net just like a regular weekly net. *That is one reason to check-in to the weekly nets so you can get practice participating in a directed net.*

These events are usually advertised along with contact information for volunteers on the District 3 web site at *ohd3ares.org* or on the BARC website *bellbrookarc.org*. Additionally, upcoming Public Service Events are always listed during the District 3 ARES weekly net (see Section 4.1), so be sure to tune in and join the net. If you sign up for various amateur radio mailing lists, you will get the requests for volunteers before each event with contact information. Some of the more popular events are listed below.

Name of the Event	**Location**	**Date**	**Website**
ORRRC Marathon	Xenia	Early April	*orrc.org*
Founders Run	Trebein Elementary	Early May	
Little Miami Triathalon	Fort Ancient State Park	Early June	*morganscanoe.com*
Holiday at Home Parade	Kettering	Labor Day Weekend	*holidayathome.org*
Air Force Marathon	WPAFB	Mid September	*usairforcemarathon.com*
Resolution Run	Beavercreek HS	December 31	

4.6 Sounding Like a Ham

Hams use a lot of jargon on the air and new hams often worry they won't understand what is being said or don't want to sound like a newbie. Don't worry about it! If you ask, most hams will be happy to explain what they are saying. Many of these shortcuts came from the Morse code or CW world where brevity is important. On the air, it is best to speak in plain language, but you will still hear some jargon. Here are a few tips to get you started.

4.6.1 Is It 73 Or 73's?

The expression "73" is a ham's way of offering "Best Regards" when completing a contact. You should use 73 since 73s is like saying "Best Regardsssss". You will sometimes see (in writing like for digital modes or email) a ham sign-off with "73 de W8LRJ". The "de" is short for "this is", so you would read this as "Best Regards this is W8LRJ".

4.6.2 Phonetics

Phonetics are used because it is often easy to confuse letters that sound alike (especially in callsigns) and difficult to hear DX stations (long distance outside the USA) or even local FM stations when there is lots of QRN (static) or QSB (fading). Try to use the International Phonetics Standard since many stations won't recognize what "W8GSC – Wilberforce-8-Gold-Star-Chili" means. A table of International Phonetics is provided in the Appendix.

4.6.3 Q Signals

Q Signals are shortcuts that were developed in the CW world for brevity. They are often used during CW transmissions and some digital transmissions, but phone (voice) transmissions are best done in plain language. Some of these do pop-up quite often though, so it is good to know a few common ones or keep a list at your station. See the Appendix for a list of common Q Signals. Some you should know include QRZ (who is calling?), QSL (message acknowledged), QSY (changing frequency), QRN (static noise), QRM (interference), and QSB (fading).

4.6.4 Calling CQ

CQ is a signal that you are looking for contacts with any and all stations. When you call CQ, you should include your callsign, the frequency band you are calling on, and your location. This helps other stations point their antenna in your direction. Before calling, be sure to listen first and make sure the frequency is available. Then ask if the frequency is available. An example call is given below:

Caller: (*Listen for a minute or two to see if the frequency is available.*)

If nothing is heard, ask if the frequency is available.

Caller: *This is W8LRJ. Is this frequency available?*

Repeat the question a few more times to make sure the frequency is available, then go ahead with your call.

Caller: *CQ CQ CQ Calling CQ on 10 meters. This is W8LRJ Whiskey-8-Lima-Romeo-Juliet in Dayton, Ohio calling CQ on 10 meters. CQ CQ CQ W8LRJ calling CQ and standing by.*

After calling, wait for a few seconds to give other stations a chance to reply and then repeat your call. Don’t worry if it takes awhile. Other stations have to find you on the bands!

5 Should I Join A Club?

Yes, of course! Clubs meet regularly and sponsor lots of fun events. They are a great place to meet fellow hams and talk with a Mentor who will be happy to answer your questions and talk radio.

5.1 ARRL

The American Radio Relay League (ARRL) is the national association for amateur radio, connecting hams around the U.S. with news, information, and resources. The ARRL charges a yearly membership fee for which you get a copy of the monthly magazine *QST* which contains articles about ham radio, reviews of equipment, and designs for antennas and other amateur radio projects. The ARRL website has tons of information about the hobby as well as books for sale covering all aspects of amateur radio from license study guides, to antenna theory and design, and all kinds of operating techniques. You definitely want to visit and spend some time at *arrl.org* when you get a chance.

In addition to this *Notebook* as a guide for new hams, the Amateur Radio Relay League (ARRL), the National organization for amateur radio in the U.S., puts out a podcast for new hams titled “So Now What?” You can access that podcast at the ARRL website at *arrl.org/so-now-what.*

5.2 Local Clubs

Here is a list of local clubs with links to their websites. See the list of repeaters in the Appendix for each club’s repeater information.

Club Name	**Location**	**Website**
Bellbrook Amateur Radio Club (BARC)	Bellbrook	*bellbrookarc.org*
Dayton Amateur Radio Association (DARA)	Huber Heights	*w8bi.org*
Xenia Weather Amateur Radio Net (XWARN)	Xenia	*xwarn.net*

6 How Can I Help?

There are several organizations throughout the Miami Valley that are dedicated to providing emergency communication services in times of disaster. These organizations are not necessarily clubs, but look to volunteers to support their mission.

6.1 Greene County Amateur Radio Emergency Service (GCARES)

The Amateur Radio Emergency Service (ARES) is a nationwide field organization sponsored by ARRL and composed of licensed amateur radio operators who are willing to offer their time and equipment to provide communications support for local governments and other non-profit disaster relief organizations during disasters and emergencies. GCARES is the Greene County part of ARES Ohio District 3. GCARES is not a club and there are no dues. For more information about GCARES and ARES in general, and to sign-up, visit *gcares.net.*

6.2 XWARN

XWARN is the Xenia Weather Amateur Radio Net. They were formed to provide communications support in the time of disasters, especially before and during weather-related events. XWARN holds meetings on the second Monday of each month at the Greene Memorial Hospital, Herman Menapace Auditorium, 1141 N. Monroe Drive, Xenia, OH. When threatening weather approaches, be sure to monitor the XWARN repeater at 147.165+ (123.0 Hz tone) for information and to report dangerous weather (see Spotter section below). For more information or to join the club, visit *xwarn.net*.

6.3 *Dayton Skywarn And National Weather Service Spotter*

Dayton Skywarn is a non-profit, 501(c)(3), organization and not a member of RACES, ARES, or other clubs, groups, or organizations. The organization’s sole purpose is to provide trained, visual, severe weather reports to the National Weather Service (NWS) via amateur radio. Dayton Skywarn assists the National Weather Service in protecting 1.4 million people and over 6100 square miles of land in a 15 county area around Dayton, Ohio. Skywarn holds regular training classes taught by NWS meteorologists to maintain a large number of trained weather spotters. When threatening weather approaches, turn to the K8MCA Repeater at 146.640- (123.0 Hz tone) for further information and to report to the weather net. Net Control is always W8OK. For more information about Dayton Skywarn and NWS Spotter Training, visit *dayton-skywarn.org*.

7 The Bellbrook Amateur Radio Club

The Bellbrook Amateur Radio Club (BARC) began as a communications support group for the City of Bellbrook-Sugarcreek Township Disaster Plan following the 1974 Xenia tornado and was officially founded July 4, 1976, with 20 charter members.

BARC is a 501(c)(3) organization that has been continuously active over the past 45 years as a general purpose club with monthly meetings, education programs, emergency preparedness, public service, and currently has over 80 members from Bellbrook-Sugarcreek Township and the surrounding area. There is a yearly membership fee to join.

You can learn more about BARC by visiting the club's website at *bellbrookarc.org* or by *Liking* the club's *Facebook* page at *BARC Bellbrook Amateur Radio Club*.

7.1 BARC Clubhouse

The BARC Clubhouse is located at 51 South East Street, Bellbrook, OH 45305 at the former Sugarcreek Elementary School near downtown Bellbrook. Members have access to the clubhouse any time and are welcome to use the radio stations. The clubhouse also has WiFi. Please ask a club member for the door entry code and WiFi password.

7.2 Stations

There are four stations in the BARC clubhouse. Each station is equipped with an Icom IC-7300 transceiver that covers the HF bands from 1.8-54 MHz. The 7300 supports SSB, CW, RTTY, AM, FM, and most digital modes directly without an external sound card. The front panel includes a real-time spectrum scope so you can view most of the band you are currently working, allowing you to find where stations are transmitting quickly. Ken Gunton, W8ASA, has prepared a tutorial video on using the 7300 which can be found on the BARC website under the *Club House* tab. Still need help? Ask a Mentor to show you how to use the 7300 after a meeting or during a contest.

Other equipment common to all four stations includes Astron power supplies, rotor controllers to rotate the antennas, bandpass filters (except station #4), laptop computers, external displays, keyboards and mouse, two headsets, speaker microphone, and a headset splitter.

Each station also has its own set of dual band VHF/UHF (2m and 70 cm) mobile radios. This equipment is summarized below.

Station	Radio	Description
1	Yaesu FT-897	HF/VHF/UHF All Mode Portable Transceiver
	Yaesu FT-8800	144/430 MHz Dual Band FM Mobile Transceiver
	Icom IC-2100	144 MHz VHF FM Mobile Transceiver
2	Yaesu FT-7900	144/430 MHz Dual Band FM Mobile Transceiver

	Icom IC-2100	144 MHz VHF FM Mobile Transceiver
3	Icom IC-2820H	144/430 MHz Dual Band FM Mobile Transceiver
4	Yaesu FT-2500M	144 MHz VHF FM Mobile Transceiver

7.3 Antennas

The BARC clubhouse is equipped with several large antennas on the roof covering most bands of interest from 80 meters through 6 meters and the VHF (2m) and UHF (70cm) bands. There are several directional Yagi antennas that can be rotated and a multi-band inverted-V as well as several vertical antennas for HF, VHF, and UHF. Any of these antennas can be connected to any transceiver using the patch panel behind Station #4 (see below for more information).

7.4 How Do I Get On The Air At BARC?

The following is a *Quick Setup Guide* with a step-by-step procedure for preparing a station when you want to get on the air.

1. Decide on which band you want to operate and choose a station and transceiver. **You may only operate within the privileges of your license unless a higher authorized licensee is present.**
2. At the patch panel behind Station #4, use a patch cable to connect your station/transceiver to the desired antenna for your band.
3. If you are using a directional antenna on one of the two towers, connect a rotor patch cable from your station to the desired tower. The rotor patch panel is just to the left of the antenna patch panel behind Station #4.
4. At your station, find the power supply labeled for your transceiver and turn it on.
5. Turn on your transceiver and set it to the desired band and mode (use LSB for 40 meters and below and USB for 20 meters and above).
6. If you are using the bandpass filter, turn it on and select the desired band.
7. If you are using the rotor, please follow the instructions on the rotor control carefully so as not to harm the rotor motor.
8. Follow the procedures for calling CQ given earlier in this notebook.
9. When you are finished, turn off the transceiver first, and then turn off the power supply.
10. ***Be sure to remove all cables from the rotor and antenna patch panels to protect the equipment during a storm.***

7.5 Tips For Using The Clubhouse Stations

Please follow these guidelines when using the BARC Clubhouse stations.

1. Only BARC club members in good standing are permitted to use the equipment.
2. You may only operate within the privileges of your license unless a higher authorized licensee is present.
3. If you find any problems with the equipment, please let somebody know.
4. If you are not sure how to use the equipment safely and correctly, please ask a Mentor for help. They would love to help you get on the air!
5. Please do not rewire any of the station equipment.
6. Please do not delete any settings in the transceivers.
7. Please do not delete any files on the laptop computers.

7.6 Resources At The BARC Clubhouse

There are many other resources available to BARC members at the clubhouse. Here are just a few.

1. There is a **complete workbench** with power supplies, tools, and soldering equipment. Several meters including a Bird watt meter and plugs are available for making measurements of power output and SWR. There are also hook-ups to the antenna patch panel and a dummy load right at the workbench for your convenience. The workbench is a great tool for building or repairing amateur radios equipment.
2. The BARC clubhouse also has an extensive **library of reference books** available for you to check out on loan. These include several ARRL Manuals and classic reference texts. If you are looking to learn more about a particular subject in amateur radio, this is a great place to start!
3. Don’t forget the BARC website at *bellbrookarc.org*! There are links to several tutorial videos under the *Links* tab and monthly technical presentations under the *Programs* tab. Watch for the new *Education* tab for lots of great information, especially for new hams.

8 Appendix

8.1 List Of Dayton Area Repeaters

The following information is gathered from the *repeaterbook.com* website using a *Location* query around Dayton, Ohio (and edited for brevity).

Call	Freq	Tone	Location	ST/PR	County
2m					
K8FBN	145.41000-	118.8	Fairborn	OH	Greene
K8MCA	146.64000-	123	Dayton (MOCOARES and Skywarn)	OH	Montgomery
W8BI	146.94000-	123	Dayton (DARA)	OH	Montgomery
W8CYE	145.49000-	77	Springboro	OH	Warren
W8DGN	147.04500+	118.8	Bellbrook (BARC)	OH	Greene
W8DYY	147.19500+		Miamisburg	OH	Montgomery
W8GCA	146.91000-		Bellbrook (GCARES)	OH	Greene
W8XRN	147.16500+	123	Xenia (XWARN)	OH	Greene
WA8PLZ	146.82000-	77	Dayton (District 3 ARES)	OH	Montgomery
70cm					
K8FBN	442.37500+	118.8	Fairborn	OH	Greene
N8NQH	444.87500+	94.8	Bellbrook	OH	Greene
NO8I	442.95000+	118.8	Huber Heights	OH	Miami
W8AK	442.92500+	123	Huber Heights	OH	Montgomery
W8BI	442.10000+	123	Dayton (DARA)	OH	Montgomery
W8GCA	442.72500+		Bellbrook (GCARES)	OH	Greene
W8DGN	443.67500+		Bellbrook (BARC)	OH	Greene
W8DYY	443.00000+	88.5	Miamisburg	OH	Montgomery
W8GUC	444.66250+	123	Kettering	OH	Montgomery
W8XRN	443.10000+	123	Xenia (XWARN)	OH	Greene
WG8ARS	443.18750+	123	Germantown	OH	Montgomery

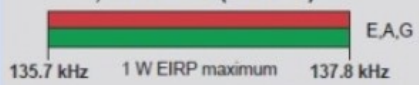
US Amateur Radio Bands

US AMATEUR POWER LIMITS — FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

ARRL The national association for AMATEUR RADIO®

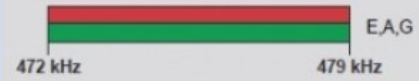
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at https://utc.org/plc-database-amateur-notification-process/. You need only register once for each band.

2,200 Meters (135 kHz)



630 Meters (472 kHz)

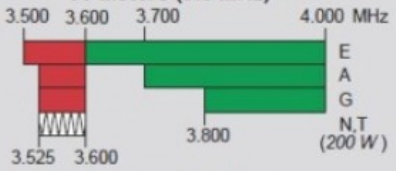
5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.



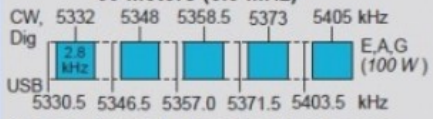
160 Meters (1.8 MHz)

Avoid interference to radiolocation operations from 1.900 to 2.000 MHz

80 Meters (3.5 MHz)

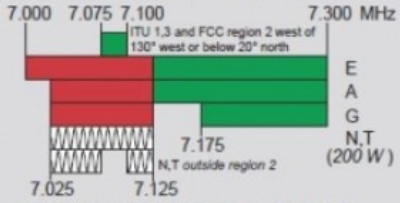


60 Meters (5.3 MHz)



General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

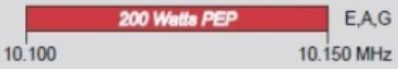
40 Meters (7 MHz)



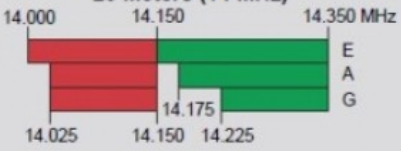
See Sections 97.305(c), 97.307(f)(11) and 97.301(e). These exemptions do not apply to stations in the continental US.

30 Meters (10.1 MHz)

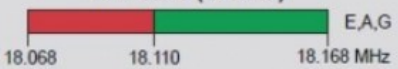
Avoid interference to fixed services outside the US.



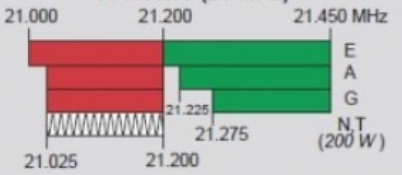
20 Meters (14 MHz)



17 Meters (18 MHz)

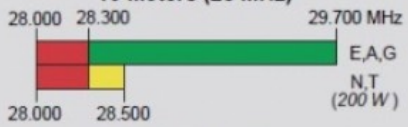


15 Meters (21 MHz)



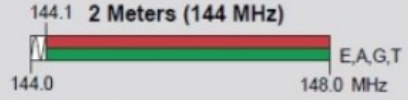
12 Meters (24 MHz)

10 Meters (28 MHz)

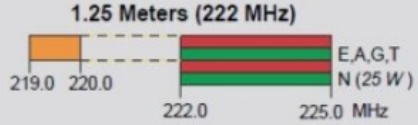


6 Meters (50 MHz)

2 Meters (144 MHz)

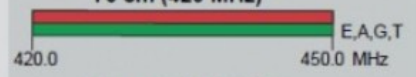


1.25 Meters (222 MHz)

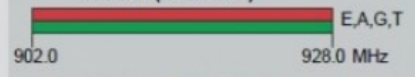


*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.

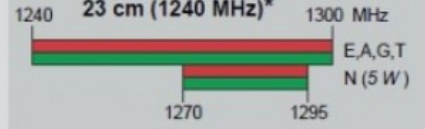
70 cm (420 MHz)*



33 cm (902 MHz)*



23 cm (1240 MHz)*



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz ‡	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

‡ No pulse emissions

KEY

Note:
CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- = RTTY and data
- = phone and image
- = CW *only*
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems *only*

E = Amateur Extra
A = Advanced
G = General
T = Technician
N = Novice

See *ARRLWeb* at *www.arrl.org* for detailed band plans.

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8.3 Q-Signals And Phonetic Alphabet

Communicating with Other Hams

Contact Basics: Good Amateur Practices

Q-Signals

Q-signals are a system of radio shorthand as old as wireless and developed from even older telegraphy codes. Q-signals are a set of abbreviations for common information that save time and allow communication between operators who don't speak a common language. Modern ham radio uses them extensively. The table below lists the most common Q-signals used by hams. While Q-signals were developed for use by Morse operators, their use is common on phone, as well. You will often hear, "QRZed?" as someone asks "Who is calling me?" or "I'm getting a little QRM" from an operator receiving some interference or "Let's QSY to 146.55" as two operators change from a repeater frequency to a nearby simplex communications frequency.

Q-Signals

Abbr.	Questions
QRG	Your exact frequency (or that of _____) is _____kHz. Will you tell me my exact frequency (or that of _____)?
QRL	I am busy (or I am busy with _____). Are you busy? Usually used to see if a frequency is busy.
QRM	Your transmission is being interfered with _____ (1. Nil; 2. Slightly; 3. Moderately; 4. Severely; 5. Extremely.) Is my transmission being interfered with?
QRN	I am troubled by static _____. (1 to 5 as under QRM.) Are you troubled by static?
QRO	Increase power. Shall I increase power?
QRP	Decrease power. Shall I decrease power?
QRQ	Send faster (_____wpm). Shall I send faster?
QRS	Send more slowly (_____wpm). Shall I send more slowly?
QRT	Stop sending. Shall I stop sending?
QRU	I have nothing for you. Have you anything for me?
QRV	I am ready. Are you ready?
QRX	I will call you again at _____hours (on _____kHz). When will you call me again? Minutes are usually implied rather than hours.
QRZ	You are being called by _____ (on _____kHz). Who is calling me?
QSB	Your signals are fading. Are my signals fading?
QSK	I can hear you between signals; break in on my transmission. Can you hear me between your signals and if so can I break in on your transmission?
QSL	I am acknowledging receipt. Can you acknowledge receipt (of a message or transmission)?
QSO	I can communicate with _____ direct (or relay through _____). Can you communicate with _____ direct or by relay?
QSP	I will relay to _____. Will you relay to _____?
QST	General call preceding a message addressed to all amateurs and ARRL members. This is in effect "CQ ARRL."
QSX	I am listening to _____ on _____kHz. Will you listen to _____on _____kHz?
QSY	Change to transmission on another frequency (or on _____kHz). Shall I change to transmission on another frequency (or on _____kHz)?
QTC	I have _____messages for you (or for _____). How many messages have you to send?
QTH	My location is _____. What is your location?
QTR	The time is _____. What is the correct time?

ITU Phonetic Alphabet

Letter	Word	Pronunciation
A	Alfa	**AL** FAH
B	Bravo	**BRAH** VOH
C	Charlie	**CHAR** LEE
D	Delta	**DELL** TAH
E	Echo	**ECK** OH
F	Foxtrot	**FOKS** TROT
G	Golf	GOLF
H	Hotel	HOH **TELL**
I	India	**IN** DEE AH
J	Juliet	**JEW** LEE ETT
K	Kilo	**KEY** LOH
L	Lima	**LEE** MAH
M	Mike	MIKE
N	November	NO **VEM** BER
O	Oscar	**OSS** CAH
P	Papa	PAH **PAH**
Q	Quebec	KEH **BECK**
R	Romeo	**ROW** ME OH
S	Sierra	SEE **AIR** RAH
T	Tango	TANG GO
U	Uniform	**YOU** NEE FORM
V	Victor	**VIK** TAH
W	Whiskey	**WISS** KEY
X	X-Ray	**ECKS** RAY
Y	Yankee	**YANG** KEY
Z	Zulu	**ZOO** LOO

Note: The **boldfaced** syllables are emphasized. The pronunciations shown in this table were designed for those who speak any of the international languages. The pronunciations given for "Oscar" and "Victor" may seem awkward to English-speaking people in the US.

A few additional Q-codes that are often used on CW (Morse code) nets (known as *QN Signals*) include:

QNI - net control is asking all stations to announce themselves

QNF - the net is now free (no longer *directed*)

QNX - a station is requesting to leave the net (net control will respond with QNX if ok to leave)

QRU - (as above) do you have anything for the net? or I have nothing for the net