



# Jamboree on the Air 2017

## Radio Merit Badge

### Newport County Radio Club



#### Radio Merit Badge

In a short while you'll be camping at the Glen at the prettiest time of year. Here's a great chance to earn one of the most rare and prestigious Merit Badges—Radio! The Newport County Radio Club will make it possible for you to earn the Radio Merit Badge during the Jamboree On The Air weekend.

At the Glen you will find different radio transmitters set up for Requirement 9a. Under the Pavilion will be volunteers who will check off the other requirements as you complete them. The volunteers are there to help you earn your merit badge, but you must *Be Prepared*.

Following is a page called *Radio Merit Badge Cafeteria*. The Cafeteria page is a special version of the merit badge requirements that describes what the volunteers will expect you to do for each requirement. You will also see that there are specific instructions about how you can complete each requirement. Be sure to read over this page carefully!

#### How do I Prepare?

Here is one of the most complete on-line sources for Radio Merit Badge. Scroll down a short way on the page and click on Modules 1, 2, and 3.

Use the Cafeteria page to sort out the information that you need. For example, Components, Schematics, and How Radio Waves are Created in Module 2 are not required, but Q signals in Module 3 are. Be sure to study the Q signals QRM, QRN, QSB, QSL, and QTH because these are the ones that you will most likely use on the air.

[http://www.scouting.org/jota/radio\\_merit\\_badge.aspx](http://www.scouting.org/jota/radio_merit_badge.aspx)

The Ham Radio School on-line page is excellent and compact. Scroll down to nearly the bottom of the page and you'll find each requirement listed in order. Click the blue requirement number and an easy to understand explanation will open in a

separate window.

<http://www.hamradioschool.com/bsa-radio-merit-badge>

Finally, another good on-line source is found at QSL Net. The requirement training is on the left middle of the page, just click the blue wording.

<http://www.qsl.net/aa6j/radiomb>

#### Pre-JOTA Check List

Most of the requirements ask you to discuss or explain radio ideas. But five requirements ask you prepare drawings, charts, or descriptions. You can learn about the things that you will discuss or explain from the on-line resources and keep these in your head. But you will have to prepare these special five requirements beforehand and bring them with you to the Glen. Here are the things that you should have with you at the JOTA Weekend numbered as they appear on the Cafeteria page:

1. Learn how to spell your name phonetically, for example: "Hi, I'm Jim, Julliett-India-Mike."
- 2a. Prepare a diagram showing how radio waves travel locally and around the world.
3. Draw and label a chart of the electromagnetic spectrum covering 300 kilohertz (kHz) to 3000 megahertz (MHz).
5. Draw a block diagram for a radio station that includes a transceiver, amplifier, microphone, antenna, and feed line.
8. This requirement asks you to find out about three career opportunities in radio and then to find out more about one of these. It's probably a good idea to write up a brief description of this special one so that you won't have to remember all of the details.



# Radio Merit Badge Cafeteria



1) Introduce yourself by saying your name, then spelling it phonetically. Example: "Hi, I'm Jim, Julliett-India-Mike."

Explain what radio is. Then discuss the following:

(a) The differences between broadcast radio and hobby radio.

1(b) The differences between broadcasting and two-way communications.

1(c) Radio station call signs and how they are used in broadcast radio and amateur radio.

1(d) The phonetic alphabet and how it is used to communicate clearly.

2. Do the following: Make the sketch beforehand, but be prepared to answer questions about your sketch.

2(a) Sketch a diagram showing how radio waves travel locally and around the world.

2(b) Explain how the radio stations WWV and WWVH can be used to help determine what you can expect to hear when you listen to a shortwave radio.

(2c) Explain the difference between a distant (DX) and a local station.

2(d) Discuss what the Federal Communications Commission (FCC) does and how it is different from the International Telecommunication Union.

3. Do the following. Make and label your chart beforehand:

3(a) Draw a chart of the electromagnetic spectrum covering 300 kilohertz (kHz) to 3000 megahertz (MHz).

3(b) Label the MF, HF, VHF, UHF, and microwave portions of the spectrum on your diagram.

3(c) Locate on your chart at least eight radio services, such as AM and FM commercial broadcast, citizens band (CB), television, amateur radio (at least four amateur radio bands), and public service (police and fire).

4. Explain how radio waves carry information. Include in your explanation: transmitter, receiver, amplifier, and antenna.

6. Explain the safety precautions for working with radio gear, including the concept of grounding for direct current circuits, power outlets, and antenna systems.

7. After you have had your turn at the radio stations, return to the pavilion for this last requirement. Discuss what types of equipment you saw in use, how it was used, what types of licenses are required to operate and maintain the equipment, and the purpose of the station.

5. Do the following: Make your drawing beforehand.

5(a) Explain the differences between a block diagram and a schematic diagram.

5(b) Draw a block diagram for a radio station that includes a transceiver, amplifier, microphone, antenna, and feed line.

5(c) Discuss how information is sent when using amplitude modulation (AM), frequency modulation (FM), continuous wave (CW) Morse Code transmission, single sideband (SSB) transmission, and digital transmission.

5(d) Explain how NOAA Weather Radio (NWR) can alert you to danger.

5(e) Explain how cellular telephones work. Identify their benefits and limitations in an emergency.

8. You may write up your choice of career for the more detailed description beforehand, but be prepared to discuss that choice.

Find out about three career opportunities in radio. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

9(a) Amateur Radio. Do this requirement at the pavilion.

(1) Tell why the FCC has an amateur radio service. Describe activities that amateur radio operators can do on the air, once they have earned an amateur radio license.

(2) Explain differences between the Technician, General, and Extra Class license requirements and privileges. Explain who administers amateur radio exams.

(3) Explain at least five Q signals or amateur radio terms.

(4) Explain how you would make an emergency call on voice or Morse code.

(5) Explain the differences between handheld transceivers and home "base" transceivers. Explain the uses of mobile amateur radio transceivers and amateur radio repeaters.

9(b) Amateur Radio. Do this requirement at the stables.

(6) Using proper call signs, Q signals, and abbreviations, carry on a 10-minute real or simulated amateur radio contact using voice, Morse code, or digital mode. (Licensed amateur radio operators may substitute five QSL cards as evidence of contacts with five amateur radio operators. Properly log the real or simulated ham radio contact, and record the signal report.