2022-10-25 Hamlet Net

Announcements:

- Test Session Info
    - Next scheduled test session is Sunday, November 13th at 350 Terry Street
        - Patriot VE Team session, so no testing fee.
    - To test before this (or online), go to hamstudy.org -> Find a Session (make sure you search for online sessions!

- CQ Worldwide DX Contest for SSB this weekend on HF bands. For more info, see: https://www.cqww.com/

- The High-frequency Active Auroral Research Program (HAARP) will be conducting a research campaign from Oct. 19 to Oct. 28, with transmissions taking place between 1400-0600 UTC.

  They are soliciting reports from amateurs and shortwave listeners for their moonbounce and Ghosts in the Afterglow projects.

  For more information, see the post on the NCARC homepage at: https://www.ncarc.net/

- The ARRL is running an online auction to raise money for their education and technology fund. The auction runs through thursday, October 27th. For more information, go to: https://arrl.auctionanything.com/

- Ed - WA7EM - announced that he is going to run another activity involving studying, designing, and building low-level circuits such as those that make up a modern radio. The activity is probably going to start in November. Send him an email to join - his address is in QRZ.

- RMHAM has published details of their upcoming Tech Talks and 2022-2023 RMHAM University presentations. Topics include Using the Incident Command System for events, Chinese DMR programming, Ham Radio instrumentation and others. For more information, or to sign up for these free presentations, go to the RMHAM web site at rmham.org and click on the RMHAM UNIVERSITY menu item near the top of the page.

- The northern Colorado Amateur Radio CLUB, NCARC, is hosting a Rosin Corps event on Saturday, November 5th from 9-11 am in the CSU Chemistry lab. Each participant will build their own 2m Yagi antenna - perfect for working satellites or fox hunts! There is no cost for the class. For more information and to sign up, see their web site at: ncarc.net (november-charlie-alpha-romeo-charlie dot net)

- The Nashua Area Radio Society has opened registration for their FREE Fall 2022 Online Ham Bootcamp, which is being held Saturday, November 5th from 10am to 6pm Eastern via Zoom. The Bootcamp is a series of demonstrations and tutorials designed to help

newly-licensed hams to get on the air and use their licenses.

The morning session will focus on Technician level activities, while the afternoon session will focus on HF activities for General and above licenses.

For more info, see their web site at: n1fd.org (november-one-foxtrot-delta dot org) and select the "HAM BOOTCAMP" menu item under the "OUR ACTIVITIES" menu drop-down.

While there is no charge for the camp, you must pre-register.

Links:
Info & Schedule:
https://forums.qrz.com/index.php?threads/nashua-area-radio-society%E2%80%99s-fall-2022-ham-boot-camp-registration-is-open.833357/
Bootcamp info: https://www.n1fd.org/ham-bootcamp/
Registration: https://www.n1fd.org/register-ham-bootcamp/

- There is still plenty of time to earn a free year of LARC membership by acting as NCS for at least 5 nets this year. You can run either this Tuesday night net or the Thursday night net (or both). We have scripts available for both, so all you need is a good connection into the repeater, and somewhere to keep track of names and call signs as people check in. If you're going to be on the net anyway, why not save some dough at the same time!

- If there are any newly-licensed hams listening, QRZ and GigaParts have announced a New Ham Jumpstart program, which will provide new hams with a welcome package containing a dual-band HT and programming cable.

  If you obtained your first license within the last 30 days, then you are eligible! The program runs through October 31st. To sign up, go to www.qrz.com/jumpstart, that's www-dot-quebec-romeo-zulu-dot-com-slash-jumpstart

- The LARC Christmas Party will be held on December 14. We are planning to hold it at the Niwot Grange. If we can get at least 75 people to attend, we can get the cost per person down to $11. Members and spouses/family members are welcome! (Dick - KE0VT)

- All club activities are open to anyone - members and non-members. ~~If you have questions, ask them on a net or~~ **send email to elmer@w0eno.org**

- Club breakfast Saturday mornings at 8am at the Hidden Cafe in Longmont
    - Come meet other Club members and discuss amateur radio

Presenter: Bryan, AF0W

Topic: Top 10 Hardest Tech Exam Questions

- I came across a web site with an article titled "The 10 Hardest Questions on the FCC Ham Radio Technician Test," and thought it might be interesting to discuss them

10 Question

- The 10th hardest question was "Which of the following is an appropriate receive filter bandwidth for minimizing noise and interference for SSB reception?"
- The possible answers are: 500 Hz, 1000 Hz, 2400 Hz, and 5000 Hz
- Can anyone provide the right answer? (2400 Hz)
- The bandwidth, or range of frequencies occupied by a full AM signal is approximately 6000 Hz - a SSB signal is around half of that, making 2400 Hz the correct selection
- If you select too narrow of a filter - say, 500 Hz, part of the voice signal will be blocked by the filter, making it difficult or even impossible to understand the signal
- The 500 Hz selection is more appropriate for a CW signal, which occupies around 150 Hz of bandwidth
- In older radios, these filters are mechanical and are fixed in bandwidth. Newer radios implement this filtering using digital signal processing, allowing for greater control over the filter characteristics

9th Question

- The 9th most difficult question was "Which of the following is a common repeater frequency offset in the 2-meter band?"
- The frequency offset is the difference between the repeater's transmit and receive frequencies.
- The possible answers are: Plus or minus 5 MHz, +/- 600 kHz, +/- 500 kHz, +/- 1 MHz
- Anyone want to try to answer? (+/- 600 kHz)
- +/- 5 MHz is the standard offset for 70 cm repeaters, and +/- 500 kHz is the standard offset for 6m repeaters

8th Question

- The 8th hardest question is "What property of a radio wave is used to describe its polarization?"

- The possible answers are: The orientation of the electric field, the orientation of the magnetic field, the ratio of the energy in the magnetic field to the energy in the electric field, and the ratio of the velocity to the wavelength
- Anyone want to answer? (the orientation of the electric field)
- A radio frequency wave is an electromagnetic wave - it consists of a varying electric and magnetic wave that oscillate in a repeating fashion
- Antennas also have a polarization associated with them
- The greatest amount of signal reception will occur when the polarization of the antenna and radio wave match
- Since almost all repeater antennas are vertically-polarized, you will get the best performance using a handheld radio when you keep the antenna vertical

7th Question

- The 7th most difficult question is "What is the advantage of having multiple receive bandwidth choices on a multimode transceiver?"
- The possible answers are: Permits monitoring several modes at once, Permits noise or interference reduction by selecting a bandwidth matching the mode, Increases the number of frequencies that can be stored in memory, Increases the amount of offset between receive and transmit frequencies
- Anyone know the answer? (Permits noise or interference reduction by selecting a bandwidth matching the mode)
- Single-mode radios, such as those typically used for handheld and vehicle use on 2m and 70 cm FM can have fixed bandwidth filters since their signals will always be the same
- Multi-mode radios need to support CW, SSB, AM, and FM signals, which have signal bandwidths varying from 150 Hz for CW up to 10-15 kHz for FM signals

6th Question

- The 8th most difficult question is "What is another way to specify a radio signal frequency of 1,500,000 hertz?"
- The possible answers are: 1500 kHz, 1500 MHz, 15 GHz, or 150 kHz
- Anyone want to provide the answer? (1500 kHz)

- This is just a prefix-conversion problem, but can be difficult (unless you're a drug dealer or scientist, and are used to the metric system).
- The most difficult part of this is remembering the order of the prefixes (such as milli, micro, nano, pico) - the decimal place moves three spaces with each

5th Question

- The 5th most difficult question is "What is the approximate bandwidth of a single sideband (SSB) voice signal?"
- The possible answers are: 1 kHz, 3 kHz, 6 kHz, and 15 kHz
- Anyone want to answer this one? (3 kHz)
- They are trying to confuse you here with the 6 kHz AM and 15 kHz FM signal bandwidths.
- It also involves a prefix conversion - if SSB is approximately 2400 Hz, this converts to 2.4 kHz, so 3 kHz is the closest answer.

4th Question

- The 4th most difficult question is "What is the function of the SSB/CW-FM switch on a VHF power amplifier?"
- The possible answers are: Change the mode of the transmitted signal, Set the amplifier for proper operation in the selected mode, Change the frequency range of the amplifier to operate in the proper portion of the band, or Reduce the received signal noise
- Anyone want to answer it? (Set the amplifier for proper operation in the selected mode)
- This switch is needed because of the difference in modulation for the two classes of signals
- These amplifiers are typically linear amplifiers, which means they can handle both constant-amplitude modulation modes such as CW and FM as well as modes that vary the amplitude of the transmitted signal, such as AM and SSB
- I took a look at the manuals for a few of these amplifiers, and the stated purpose of this switch is to set the changeover time of the built-in transmit relay - raising it to 1 second for SSB and CW use
- Without this change, the relay would chatter back and forth switching the amplifier into and out of the signal path as it tries to keep up with Morse code or varying SSB signals

3rd Question

- The 3rd most difficult question is: "What is the approximate bandwidth of a VHF repeater FM phone signal?"
- The possible answers are: Less than 500 Hz, About 150 kHz, Between 10 and 15 kHz, Between 50 and 125 kHz
- The correct answer has already been mentioned once - anyone want to provide it? (Between 10 and 15 kHz)
- The reason it varies so much is that it depends on the signal being modulated as well as the deviation level on the radio.
- If you yell into the microphone, you will generate a wider signal than if you just hold down the PTT without saying anything

2nd Question

- The second most difficult question is: "What happens to current at the junction of two components in series?"
- The possible answers are: It divides equally between them, It is unchanged, It divides based on the on the value of the components, and The current in the second component is zero
- This one gets into some electronics, so Ed can't answer it - anyone else? (It is unchanged)
- The same current flows through all components in a series circuit.
- This is why if you have a set of Christmas lights that is wired in series, and one bulb burns out, they all go out - the flow of this single current is interrupted
- For bonus points, does anyone know what happens to current at the junction of two components in parallel? (it divides based on the value of the components) - if there are two identical resistors, it will divide equally.

Number one question

- The most difficult question was: "Which of the following is an example of remote control as defined in Part 97?"
- The possible answers are: Repeater operation, Operating the station over the internet, Controlling a model aircraft, boat, or car by amateur radio, or All of the above
- Anyone have the right answer? (operating a station over the internet)

- They have a really good wrong answer here - the one about controlling a model aircraft by amateur radio
- What type of control would this be? Local control, remote control, or automatic control?
- The type of control refers to the station control point, which is the location at which the control operator function is performed (you have to love government regulations)!
- The control operator is the licensed radio amateur who is responsible for the transmissions of a station
- Local control means direct manipulation of the transmitter by a control operator. So when you are sitting in front of your radio, you are using local control.
- A remotely controlled station is a station controlled indirectly through a control link. A control operator must still be present at the control point, but the radio can be on the other end of an internet link, or a radio link of some sort, like a microwave link.
- Finally, automatic control of a station means the use of devices and procedures for control so that the control operator does not have to be present at a control point.
- The control operator responsibilities of a station under automatic control differs from one under local control. Under automatic control the control operator is not required to be present at the control point, but is still responsible for the station's operation.
- Repeaters and satellites are a type of automatically-controlled stations.

Summary

- The ham radio exam system has some parallels with the drivers license written tests.
- You get tested on knowledge that you may or may not need when you actually get around to using your radio, and passing the test with a perfect score does not mean you won't be lost when you finally sit down in front of a radio to operate!
- It does make you aware of various issues that may arise (such as third-party traffic and band edges) - sort of like how I know there is an issue with parking close to a fire hydrant, but I'd have to look up the regulations to find the exact distance.

Questions:

- **The question for the week is: What was the most difficult test question, concept, or topic that you encountered when taking your amateur radio exams?**
- **In my case,** the metric prefixes probably gave me the most problems on the Technician exam, mainly because they were not something I'd used in my career or daily life.

- The biggest overall issue was just getting back into a mode of studying for taking a test. If I had done this back when I was in school, I think it would have been a lot easier to pick stuff up!

- Things like remembering and knowing how to use formulas like Ohm's Law and the length of a resonant dipole were easy, but remembering all the non-logical stuff like the portions of the bands that were available to different license classes, some of the FCC regulations, and the band edges was more difficult for me.

More Info:

- https://hamradioprep.com/hardest-questions-on-fcc-technician-license-test/

Backup Questions:

1. What hobbies do you have other than ham radio? Do you (or could you) use ham radio in those hobbies?
2. Share an "a-ha" moment you had with amateur radio.
3. **Another recent contest was the North American QSO Party - CW**
    a. **Can Technicians participate? Yes on 80, 40, 15, and 10 meters**

Notes:

- If you have ideas for net topics or general meeting topics / presenters, please let us know! Tell us on a net, or send email to k0itp@w0eno.org

Email to elmer@w0eno.org

1. K0ITP - Chuck - Firestone - Regulations & rules were not a big deal, electronics was more difficult.
2. AE0DO - John - N Longmont - Band edges, regulations, and different locating systems used by contests. Have been using electronics for years, so no problems there.
3. KM6SJA - Steve - Longmont - Long time ago. Trying to memorize stuff for larger retrieval. Getting used to doing multiple-choice test
4. N0ZFV - Bob - Broomfield/EL Android - Remembering frequencies each class could operate on for HF
5. AF0W - Bryan - Longmont -
6. W0PPC - Steve - Lyons - Don't remember - thought a lot were tough. Tech was tough, but only went through them a few times. Almost aced General. Regulations were main problems.
7. AF4BY - Fred - Mobile - (not there)
8. WT0RJ - Trevor - Boulder Mobile - Missed just about every electronics question

Thank you to John, Steve, Bob, and Trevor for helping out with answers.

Chuck Announcements

Board Meeting on first Wed of month - let him know if you would like meeting info

Keep an eye on Splatter and web site for stuff coming up in 2023

SotA (Santa on the Air) coming up - Nov 27th - Dec 4th - On repeaters (LARC and NCARC) and Echolink. Kids will get QSL card from Santa

elmer@w0eno.org - send any questions, and a team of experienced hams will help you out

Had great meet-and-greet at Oskar Blues - thanks to all who attended, including XYLs.

W0PPC - Mentioned that some new hams may be hesitant to get on the net, and to perhaps highlight the open forum/Q&A portion at the end of the net. Also, perhaps consider going around asking what questions people have, or what is holding them back from advancing with ham radio, and seeing what can be done to address.

Might also make sense to revisit the LARC elmer program to get one-on-one support for new hams who may be lost as to how their new radio works, or how to set up their station, etc.