2022-01-24 Hamlet Net - Winter Field Day and QRP

Announcements:

- Test Session Info
    - Next VE session is Saturday, February 25th. ARRL session, so $15 fee to take test

- LARC will be running a Winter Field Day station at 350 Terry Street. Setup will begin at 9am, with operations commencing at noon and running for 24 hours. Don't worry if you have a Technician license (or even no license) - we will have Extra-class control operators present so you can get on the radio and make some contacts!

  The club is supplying pizza or subs or something, so no potluck (but feel free to bring snacks!)

  Based on feedback from last year, have set up an area away from the radios for socializing to allow the operators and loggers to focus on their tasks.

- You can start earning your 2023 membership or future renewal 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! There are four free memberships available for 2023, so don't wait to get started!

- If you didn't find what you wanted at the NCARC hamfest this past weekend, the next hamfest in this area is the ARA Swapfest on February 19th at the Adams County Fairgrounds from 9am to 1pm. More info at: https://n0ara.org/the-swapfest-info-and-directions/

- Chuck has set a goal for the Club of running at least one activity a month. This can be a hands-on construction activity, an operating activity like Field Day a fox hunt, or a special event station. The goal is to get people together to have fun with amateur radio! We have multiple locations at our disposal, as well as lots of Club equipment, so if you have an idea for something you think others hams would like to do, please let us know, and if you're willing to run it, even better!

- The Club is also looking for presentation topics for 2023. If you have any ideas, or better yet, would like to present, please let Chuck know and we'll get you on the schedule!

- All club activities are open to anyone - members and non-members

- 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: QRP

- While the majority of HF radios output a signal with up to 100 watts of power, one of the benefits of operating amateur radio is that the FCC grants us the ability to transmit on most bands with power levels up to 1500 watts
    a. This is far greater than the 2 watts allowed on FRS radios and the 4 watts allowed on standard CB radios
- Many amateurs purchase bulky amplifiers to boost their signals to make it easier to contact faraway stations
    a. This is sometimes referred to as operating QRO - or operating at full power
- Some amateurs go in the opposite direction by intentionally operating at much lower power levels
- This is referred to as QRP operation - to remember it, think "Reduced Power"
    a. QRP is one of many Q-signals that are a system of radio shorthand developed from older telegraphy codes.
    b. Q-signals are abbreviations for common information that save time and allow communication between operators who don't speak a common language
    c. These signals can be used as statements or questions.
        - "QRP" means "Decrease power"
        - "QRP?" Means "Shall I decrease power?"
- There is no standard limit for the maximum amount of power to allow for QRP operation
    a. I've heard 5 watts used as the dividing line for QRP, but came across references to 10 watts or even anything under 100 watts being QRP, so it's a loosely-defined
    b. An example is this weekend's Winter Field Day event. They have a multiplier based on the final output power of your final amplifier.
        - QRP stations, as defined by transmitting less than 5 watts on CW or 10 watts on phone get a multiplier of 2
        - All other stations have a multiplier of 1

- Some users also further divide QRP by power levels:
    a. QRP uses 1 to 5 watts
    b. QRPp uses 100 milliwatts to one watt
    c. QRPpp uses less than 100 mW

Why QRP?

- If you've ever struggled to break into a pileup using a 100 watt radio, you may wonder why anyone would ever want to operate with even less power
- There are a few different reasons
- One is that some contests have special categories for starting operating at QRP power levels
    a. As most of the major contesting stations are operating at full power, that means there is less competition for the QRP category, so you could increase your potential standing in the contest results
- Some operators are participating in activities such as Parks on the Air and Summits on the Air where they might need to carry their station with them for quite a distance
    a. Operating QRP generally allows them to use a smaller radio than your typical 100 watt desktop set
    b. Since radios aren't magical devices, the higher the power level of the output signal, the more power they have to take in
        ■ This isn't an issue for a radio sitting in a shack or a vehicle, as you can easily supply power from a power supply or the vehicle's battery
        ■ You would not want to carry a typical automobile battery up to operate from one of the 14er summits, for example
        ■ Running at lower power allows you to reduce the size and weight of the battery you need to carry
- I heard another reason directly from a local ham from whom I purchased an antenna tuner. He said that he was bored with how easy it was to make full-power contacts, and was switching over to QRP
    a. While this would result in more challenges when operating, this is exactly what he wanted

- Another reason you might want to operate QRP is that there are a number of low-power radio kits you can construct yourself

    a. For example, a company called QRP Labs has a radio called the QCX+ that is a single-band 5 watt CW transceiver

    b. If features a rotary encoder synthesized tuning, VFO with A/B/Split operation, an Iambic keyer, and a CW decoder for $65

    c. They also have the QDP digital transceiver which features a five-band or 6-band 5W Digi-modes transceiver kit, including an embedded SDR, 24-bit 48k USB sound card, CAT control, synthesized VFO with temperature-controlled reference oscillator for $69

- Remember that the transmitter is only part of the puzzle - your antenna system can be the difference between whether you complete a contact or not

- QRP does not mean you just toss a random wire in a tree and operate - there is nothing that says you can't connect your QRP rig to a tower with a beam antenna on the top

- You can also compensate for the reduced signal levels when running QRP by using modes such as CW or data that can complete contacts where SSB transmissions would fail

- You may remember from studying for your license that Part 97 of the FCC regulations specifies that "An amateur station must use the minimum transmitter power necessary to carry out the desired communications" - QRO enthusiasts are certainly taking this requirement to heart!

Radios

- If you have an HF radio, you can most likely reduce its power output to QRP levels - you don't need to have a dedicated radio

- On the ICOM 7300 HF radio, you touch the meter display to show the power output meter, then press the multifunction button, touch the "RF Power" box, and use the multifunction box to set the output power level between 0 and 100% (corresponding to 0 to 100 watts)

- Note that if your radio is set to single-sideband mode, there will not be any output power indicated on the output power meter unless you're sending a signal, so you'll have to talk in to the microphone to make the meter move

    a. Constant carrier modes such FM or CW will show a steady output power level when transmitting

- While there are inexpensive QRP radios such as the kits mentioned previously, that doesn't mean that all QRP radios are cheap!
- Three examples of higher-end QRP radios are:
- The ICOM IC-705 All Mode Portable, which maxes out at 5 watts with the internal battery pack, or 10 watts on external power. It supports HF as well as the 6 meter, VHF and UHF amateur bands running D-STAR DV, SSB, CW, AM and FM modes. It does not have a built-in tuner, but an optional external tuner is available. The current cost is around $1350.
- Prior to the IC-705, there was the Elecraft KX2 and KX3. The KX3 covers al HF bands and all modes. It has options such as a panadapter, 100 watt amplifier, internal antenna tuner, and 2 meter transverter. It can be purchased as a kit or fully assembled, but the kit is very high-level - it's more assembling modules together rather than soldering components to circuit boards, and the kit version only saves you $30. List price for the assembled radio is $1400.
- Yaesu used to have a very popular QR radio - the FT-817, It went through a few iterations, and was followed by the FT-818, which was a compact HF plus VHF and UHF 6 watt radio. These radios were also popular with amateurs who were working satellites - the all-mode capability allowed them to work linear satellites as well as FM ones.

Challenges

- Of course, there are some potentially significant challenges associated with QRP operation
    a. Lower transmitter power equals lower signal level at the receiver, all other things being equal
        - This means that even if propagation conditions are such that your signal is making it to some DX location, it's possible that their noise floor is high enough to hide it
    b. Many situations where QRP makes sense, such as SOTA and POTA, also preclude the use of large, efficient antennas. Again, this results in further attenuation of your outgoing signal
- One way to work around these is to be sure to add "/QRP" to your callsign to indicate that you are running at an intentionally low power level
- You will also build experience to help you "stand out" in a pileup - for example, by timing your response to a calling station's CQ

- Many stations will respond to these calls first (whereas they might skip over a weak signal with a non-QRP modifier), and may be more inclined to invest a little more time in working you

Summary

- If you are bored with the ease of making high-powered voice or FT8 contacts, perhaps operating QRP is just the challenge you are looking for.
- Radios can be inexpensive, or you may already have everything you need to get started.
- Of course I've also heard the saying "life is too short for QRP!" so it's not necessarily for everyone

Questions:

- **The question for the week is:** Have you ever used QRP, and if so, what radio did you use and how was your experience?
- **In my case,** the only time I've tried QRP operation is during one of LARC's "radio in the park" activities to commemorate the Boulder County State Fair, where we tried SSB on an FT-817. We weren't able to make any contacts (and that's where I heard the "life is too short…" comment from another ham at the event).

More Info:

- http://www.arrl.org/qrp-more-than-a-state-of-mind
- QRP Labs: https://qrp-labs.com/
- https://qrper.com/

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