

## 2025-07-01 Hamlet Net - QRP

### Announcements:

- Test Session Info
  - We had a very successful test session on Field Day. There were about 7 candidates, and they all passed what they came for. I don't recall the license level counts, but I know there were at least two new Technicians, and one upgrade from Tech to General in the group. We pushed Field Day to them, but not sure if any made it over there (will have to check the sign in sheets).
  - Next VE session is Saturday, July 26th in the Clover Building at the Boulder County Fairgrounds, and starts at 9 am. It is a PVET session, so there is no fee to test. For more info, and to pre-register, see the Licensing/Testing page on the club web site, <https://w0eno.org/>, under the Education menu.
- We are looking for presenters or presentations for November. We'd love to have club members present something they're interested in or working on, and there's plenty of time to get your presentation ready!

We're also interested in hearing any ideas for presentations that we could find someone to do.

- This month's topic is 3D Printing. The next is Fred (AF4BY) putting on a BBQ and putting together the club's SpiderBeam antenna. In Sept, may have Edge of Space Sciences coming out.
- Chuck said he's probably going to plan another outdoor meeting for August - the "Movie in the Park" event last year was great - even though we got a bit of rain. The plan is to provide food as well, so be on the lookout for more info!
- If you are interested in find out more about the Amateur Radio Emergency Services (or ARES) in the local area, check out the Boulder County ARES web site at <https://bouldercountyares.org/>

They have a VHF net on Monday nights at 8:00pm, as well as a DMR net on the 2nd, 3rd, and 4th Mondays at 8:30pm.

- Had about 40 people show up for Field Day. Article in Times Call.
- 13 Colonies started today.
- Upcoming Club Volunteer Opportunities:

- HAMCON Colorado 2025 for Rocky Mountain Division is October 23-26, 2025 in Grand Junction. For more information and to register, see their web site at: [hamconcolorado.com](http://hamconcolorado.com) They are also looking for presenters.
- Breakfast Saturday at 7:30 - 8:00 am at the Hidden Cafe.
- Mark - RMHAM is taking over the summer swapfest this year from the Denver Radio Club, Sunday August 24th at the Adams County Fairgrounds from 9am to 1pm. Admission is just \$6, so plan on dropping by! Tables are also available for \$13 in advance, and \$20 at the door.
- If you are an ARRL member, remember that you have digital access to four magazines - QST, On the Air, QEX, and National Contest Journal.
- We have a new net on the LARC repeaters. It's run by Timothy Moss, KFØLAR, on the 22nd of every month at 6pm. The 22nd was chosen to highlight the average of 22 vets who commit suicide each day. While the purpose of the net is to connect veterans, non-vets are welcome to participate as most all of us have friends or family who are or have served.
- The ARRL Colorado Section Net occurs on the second Monday of the month from 7 to 8pm. The net is run by Amanda Alden, K1DDN, our Colorado ARRL section manager, and is open to hams and non-hams alike. This net is a place where Colorado hams can ask questions of ARRL leadership and request help, guidance, club support, and technical support. This net meets on the second Monday of each month at 7:00 pm Mountain time. The net is on the Colorado Connection, Rocky Mountain Ham Radio DMR Talk Group 700, The Fun Machine, WE0FUN, and the NCARC Buckhorn Repeater 447.700 – with 100 Hz tone.
- We have some volunteer opportunities available where you can help out LARC:
  - Photographer / videographer - record team activities and upload to web site / YouTube
  - Newsletter Editor - put together the monthly Splatter newsletter
  - Event Coordinator
- Time's up for this year, but you can earn your 2026 membership or future renewal by acting as NCS for at least 5 nets next 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!

- 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 2025. If you have any ideas, or better yet, would like to present, please let Chuck know and we'll get you on the schedule! We would like to get some presentations from club members on stuff they've been doing, projects they're working on, or just things that interest them.
- 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](mailto:elmer@w0eno.org)**

**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 the Winter Field Day event. They have a multiplier based on the 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
  - c. I took a look at the Ham Radio Contest Calendar weekly view (<https://www.contestcalendar.com/weeklycont.php>), and all the contests that mentioned a QRP class used 5 watts as the max power allowed for that class.
- 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 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. It 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" - QRP 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 knob 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 as 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 all 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 \$1500.
  - Yaesu used to have a very popular QRP 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).

I've constructed a very low power QRP radio called the Pixie. It's a fairly-simple kit that you solder yourself and supports CW reception and transmission at just 1.2 watts. It doesn't even have a VFO - just a single crystal for one frequency (I think mine is in the 40m band). Other than testing it out with a nearby radio, I've not used it "for real."

### More Info:

- <http://www.arrl.org/grp-more-than-a-state-of-mind>
- QRP Labs: <https://grp-labs.com/>

- <https://qrper.com/>

**Email to [elmer@w0eno.org](mailto:elmer@w0eno.org)**

- 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](mailto:k0itp@w0eno.org)

**Email to [elmer@w0eno.org](mailto:elmer@w0eno.org)**

1. KØITP - Chuck - Firestone
2. AFØXS - John - Thornton
3. WAØJJC - Bob - Boulder
4. WØAKI - Aki - Longmont
5. AFØW - Bryan - Longmont-

**Field Day**

AFØW - Things to do different for Field Day:

If doing a different educational activity, start putting it together a week or two earlier. As it was, there was too much worked crammed into too little time.

I finally got on 40 meters in the evening, but while I could barely make out some stations no one seemed to hear me (either when replying to other stations, or when calling CQ). There were about 10 contacts logged for that station earlier in the day, so it probably wasn't a radio or antenna issue - maybe just sub-par band conditions.

Do some research beforehand into band conditions at different times of the day. When I was unable to make any QSOs on 40m, I checked out the DX Heat web site ([dxheat.com](http://dxheat.com)) and the North America-to-North America 40 meter table cell was red, so someone was making contacts.

I tried out a donated radio, a Kenwood TS-590. I was not familiar with all the controls, so it took a bit of time to figure out where everything was. This was made difficult by the low light at the time, and the bulb for the radio's meter being out. In hindsight, I should have gotten familiar with the radio during the daylight hours instead of socializing.

The new generator was great! I did not even realize it was running! The noise level was a huge difference between it and the one we used a few years ago.

I have planned of taking some time to complete the tasks for a few of the bonus points,

KØITP - Had to miss a lot of Saturday due to a prior commitment. Made a few contacts both Saturday night and Sunday morning.

WA0JJC - Was having issues with ICOM. Has it at home right now, but hasn't started working on it yet. Chuck did a great job organizing stuff, especially the incident management plan. Had a good time, and think everyone there did too.

AF0XS - Had a great time. Thanks for all the work making it a success.

**End:** 7:50pm