2023-09-26 Hamlet Net - Radio Features (ARS, Batt Save, BCL, VOX, Dual Watch)

Announcements:
- Test Session Info
  - Next VE session is Saturday, October 29th in the Clover Building at the Boulder County Fairgrounds, and starts at 10 am. It is an ARRL vEC session, so there is a $15 test fee. For more info, and to pre-register, see the Licensing/Testing page on the club web site, https://w0eno.org/, under the Education menu.

- LARC will be conducting its annual meeting on October 18th. Elections for the Board of Directors will be held that night, so all LARC members please plan to attend (at least for the voting at the beginning of the meeting, as we have to get a quorum of members present to conduct the elections). If you are unable to attend in person or via Zoom, please submit a proxy to help us meet the quorum requirements.

- Chuck is putting together a special event to celebrate the 105th anniversary of the Peak-to-Peak highway involving multiple area radio clubs this Saturday, September 30th. They're currently looking for volunteers to work this special event. They will be operating HF SSB voice, CW, and FT8 stations from 8am to 4pm with three operators at each station. There is a signup link on the club web page at https://w0eno.org/, or contact him for more information!

- We have some volunteer opportunities available where you can help out LARC:

  - Photographer / videographer - record team activities and upload to web site / YouTube

  - LARC Fest Coordinator -

  - Newsletter Editor - put together the monthly Splatter newsletter

  - Activities Chairperson - member of the Board of Directors

- Our sister club up in Nederland is looking for some help with events they are running. They have a weekly Monday night net with no predetermined agenda, so you can lead it however you want. They are also planning a Field Day site at Golden Gate State Park and are welcoming anyone who wants to participate. Finally, they are looking for operators for the Ned Gravel run on July 8th. They have signup links for all these events, so head over to their web site https://w0ned.org/ for more information!

- 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!

- 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. If you have questions, ask them on a net or **send email to elmer@w0eno.org**

Presenter: Bryan, AF0W

Topic: Radio Features

- One thing that can be overwhelming to new hams is when they sit down to configure their first radio

- Most radios have a number of features - the usefulness of which will depend on your particular operating requirements

- Frequently, the radio's manual will have a section detailing the basic operations of the radio, such as selecting a frequency, transmitting and receiving, and storing information in the radio's memories

- There will be a bunch of other pages covering the many options and features of the radio, many of which may not make sense to a new user

- In this presentation ,I'm going to cover a few of them that are present on many handheld radios

Automatic Repeater Shift (ARS)

- Most HT owners want to use them to communicate via repeaters

- Remember that standard repeaters receive incoming transmissions on one frequency, and simultaneously transmit on a different frequency

  - Your radio must know which frequencies to use

- If you subtract the repeater's transmit frequency from its receive frequency, you will get the offset

- The offset can be positive (i.e. repeater's receive frequency is higher than its transmit frequency) or negative (i.e. repeater's receive frequency is lower than its transmit frequency)

- These offsets have standard magnitudes for each band: 2m +/- 600 kHz, 70cm +/- 5.0 MHz, 10m - 100 kHz

- There are also standard offset directions (plus or minus) for different frequency ranges within each band

- Many radios have a feature where they will automatically set up the standard offset and direction based on the frequency you enter

- This feature is typically called something like Automatic Repeater Shift or ARS

- Some repeaters may have non-standard offsets, in which case you may need to disable this automatic feature to access them from VFO mode

- I've been bitten by this before. When attempting to test out a handheld radio, I entered a "random" frequency in the 2m band on two radios, then attempted transmitting. Everything was fine when I used one radio - the other one could hear it, but in the other direction, I got nothing. I eventually noticed that when I pressed the PTT on the second radio, the frequency displayed on the radio would change. Once I saw this happening, I was able to disable the automatic repeater shift feature on that radio, and then everything worked fine.
    - If I had happened to select a frequency in the simplex portion of the band, I would not have run into this issue, as the radio in question would not have set an offset for that range of frequencies

Battery Saver

- Many radios have a feature called Battery Saver or Receive Battery Saver that can be used to lengthen operating time when running from batteries

- What it does is to "put the radio to sleep" for a period of time, and then periodically "wake up" to check if a signal is being received
    - If a signal is received, the radio will stay active, but will again enter sleep mode once activity stops

- Many radios allow you to control the length of time between these checks - the longer the time, the lower the battery usage rate

- While useful for voice work, if you are trying to do packet work such as APRS, the radio may miss out on the start of a transmission if this coincides with a "sleep cycle," so you should disable this feature when using data modes

- This feature is also why it is good to wait a second or two after pushing your PTT before you start speaking.

- The Yaesu FT-60 also has a "transmit battery saver" - what it does is to lower the output power if the last signal received was very strong. When used, it can significantly conserve battery power

- The FT-60 also has the ability to disable the transmit / receive LED to further conserve battery power

Busy Channel Lockout (or BC L)

- One thing you always want to avoid is interfering with a transmission by transmitting from your radio on the same as someone else's transmission

- Typically, this is done by listening to the frequency to make sure it's not being used

    - If you are on HF, it's customary to then transmit asking "Is this frequency in use?" and then pausing to make sure no one replies before beginning your actual transmission

- Some radios have a feature named something like "Busy Channel Lockout"

    - This feature prevents your radio from transmitting when there is a signal strong enough to break squelch present on the frequency

- This situation can occur when there are two repeaters sharing a frequency, but using different CTCSS tones.

    - If you are within the listening range of both repeaters and are listening to one of them with the tone squelch set, you will not hear the other repeater's transmissions on the same frequency, because it is using a different tone.

    - If you were to transmit, you would potentially interfere with the traffic on the other repeater.

    - You can manually check for this condition by using your radio's MONITOR button - when this button is pressed, all squelch is disabled until it is released, which would allow you to hear the other transmission.

- ○ This can be a local issue here. Our 448.800 repeater shares the frequency with one located in Colorado Springs. We use an 88.5 Hz CTCSS tone, while they use 100 Hz.

VOX

- ● VOX stands for voice operated transmit and allows you to operate your radio completely hands-free (especially if you have a headset)

- ● This can be a problem, however, if you are operating in an environment with a lot of noise

- ● Usually, the VOX feature will have a sensitivity setting that can be used to set the level at which the transmit triggers

  - ○ Make sure your radio is not transmitting when you don't want it to - some things that can trigger VOX unintentionally include:

    - ■ Background noises in the shack, such as equipment fans, music, other radios

    - ■ Noises from breathing, coughing, and sneezing

    - ■ Loud nearby conversations, such as when at a parade or other outdoor event

- ● If you are sending data over your radio using VOX, you may find that the delay when the VOX system starts transmitting is enough to corrupt the signal you are sending out

  - ○ Sometimes, the audio application will have the ability to output a signal prior to sending the data to work around this

  - ○ If not, you may either have to manually activate the transmitter using the PTT button, or get an interface that will activate the PTT for you based on a control signal sent from the software

- ● One other caveat with using VOX is you need to remember to turn it off when you are finished operating. I ran into this during a class demo on SSTV. I had enabled VOX for the SSTV demo, but did not turn it off afterwards. Later on, I was using the radio to demo something, and noticed that it kept switching to transmit mode as I was talking (not part of the demo!) I saw the "VOX" indicator on the screen and was able to disable it, but you wouldn't want your mobile radio to transmit when you're having an argument with your spouse in the car or something!

Dual Watch

- It is sometimes helpful to monitor more than one frequency at a time

    - Perhaps you are at an event which has a net on a repeater, but you also want to monitor a simplex frequency for any local transmissions

- There is a feature present in radios such as the Baofeng UV-5R and allows you to monitor two frequencies somewhat simultaneously

    - It does this by quickly switching the radio's single receiver back and forth between the two VFOs

- This means that you cannot actually listen to two frequencies at the same time

    - In the above example, if someone was transmitting on the simplex frequency, you would be unable to hear and transmissions on the net frequency until they stopped their transmission and your radio goes back to check the other frequency

- There are a few handhelds like the Kenwood TH-D72 that actually contain two receivers and on which you can simultaneously hear two transmissions (and also listen to one frequency while transmitting on another).

    - This functionality is desirable for satellite work so you can immediately hear if you are getting into the satellite's repeater or not.

- This feature can cause some confusion

    - Depending on the radio's configuration, when you press the PTT button, you may transmit on the last frequency that received a signal, or it may be "locked" to either always use the A VFO or the B VFO.

    - If you are talking to someone on the A VFO, and when you release the PTT for them to talk, and someone is already transmitting on the B VFO, the radio will switch to the B VFO, and you will not hear your QSO partner's reply.

    - For these reasons, we disable the dual watch functionality when programming the radios for new hams

    - If you are operating in a scenario where you need to monitor two (or more) frequencies, it might be better to get a true dual-receive radio, or use multiple radios - especially if there is likely to be a lot of traffic on each.

Summary

- These are just a few of the many features available on modern radios

- Note that different radios have different sets of features, so if there are some that are important to you, make sure you verify that they are present on a radio before you purchase it!

Questions:

1. **The question for the week is:** Have you run into any issues using features on your radios, or is there some feature which you don't fully understand?

2. **In my case,** I've acquired quite a number of HTs. For better or for worse, they're all different models. While I initially thought this was a good idea so I could get experience on different devices, it makes it difficult to use them past basic communications since all the features, programming, and configuration are different (as well as the accessories, batteries, and chargers).

   Because of this, I'm sort of a bad example - for instance, I don't know off the top of my head how to program a repeater into the memory of any of my radios manually. I have a couple where I could probably figure it out via trial and error, but I've not really delved into all the features on them.

Backup Questions:

1. What hobbies do you have other than ham radio? Do you (or could you) use ham radio in these hobbies?

2. Share an "a-ha" moment you had with amateur radio?

More Info:

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- 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

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