2024-02-13 Hamlet Net - Morse Code

Announcements:

- Test Session Info
    - Next VE session is Saturday, February 24th in the Clover Building at the Boulder County Fairgrounds, and starts at 10 am. It is an ARRL session, so there is a $15 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.

- RMHAM is putting on their Swapfest on February 18th from 9am Ito 1pm at the Adams County Fairgrounds. Admission is $6. Bring your HT - there will be a foxhunt set up in the adjacent Adams County Regional Park. For more information, see their web site at: https://www.rmham.org/the-swapfest-2024/

- I covered Powerpole connectors last week, and came across an interesting post on Reddit by a gentleman trying to bring in some extra income while his wife is recovering from surgery and unable to work.

  His product has a pair of Powerpole connectors on one side (red and black) connected to a pair of Wago connectors. The entire assembly is wrapped in heat shrink.

  The idea is that with one of these devices, you'll be able to easily connect any pair of wires to Powerpole connectors. You just strip the ends, slide them into the Wago connector and close the lever on the connector, which clamps down on the wire to keep it connected.

  While perhaps not a good connection for something permanent, having one of these could help out in an emergency if all your equipment uses Powerpoles, and you need to use something that does not have them.

  I'm including a link to the Reddit post and the ham's ad in the notes for tonight's presentation. His listed price is $12 for one device, or $20 for two plus $2 shipping.

  Reddit post:
  https://www.reddit.com/r/HamRadio/comments/1anpv1y/need_help_wife_is_having_surgery/

  Device:
  https://www.reddit.com/media?url=https%3A%2F%2Fpreview.redd.it%2F214koxmkjthc1.jpg%3Fwidth%3D1275%26format%3Dpjpg%26auto%3Dwebp%26s%3D6009230695d79442af95cc9ef5bb6b648403bb78

- 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

- There are several Board positions that will be available in October. Currently, the President, Treasurer and Secretary are planning to make this their last year of service. If you are interested in serving on the board of a 501(c)3 non-profit, please consider running for one of these positions. The current members would be more than happy to "show you the ropes" during the year, so you wouldn't start with zero experience.

- If you are an ARRL member, remember that unless you are paying extra for the printed magazine, you will not receive any issues after January. The February QST is available on the ARRL web site.

- Also looking for volunteers to help with LARCFest on April 6. If interested, please check out web site and contact Bob Smith (N0OM) for more information. Tables are also being sold if you have stuff to get rid of.

- 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 2024 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 2024. 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: Morse Code

- The original mode of communication used for amateur radio was continuous wave or CW.
- Traditionally, a straight key, which is really a momentary switch, is used to manually modulate a continuous carrier signal onto the air
- When the key is pressed, the signal is transmitted. When the key is released, the transmission stops.
- By pressing and releasing the key in a pattern, information can be communicated between stations.
- The pattern used for amateur radio is called International Morse code and consists of short-duration signals called dits, and longer-duration signals called dahs.
- In written form, dits are represented by dots and dahs by dashes.
- Letters, numbers, and punctuation form the symbols of Morse code, and are represented by combinations of 1 or more dits and dahs.
- Most people are familiar with two Morse letters - S and O as part of the "SOS" signal, which consists of three dits (an "S"), followed by three dahs (an "O"), followed by another three dits (another "S").
- While most people think or Morse code as consisting entirely of dits and dahs, there is actually another very important characteristic - and that is the space between each dit and dah
- There are different lengths of spaces between individual characters in a word, and between words themselves - this is so the listener can determine where new characters or words start
- Using the length of a dit as a unit of measure:
    a. A dah is equivalent in duration to three dits
    b. The space between dits and dahs in a character is the length of 1 dit
    c. The space between characters is 3 dits
    d. The space between words is equivalent to 7 dits

Sending

- Morse code can be generated by many means - there are a few varieties of manual keys as well as automated means of sending Morse code
- The straight key was already mentioned - this is a momentary switch, and the sender is responsible for all aspects of timing while sending the characters
- Repeatedly pressing down on a straight key can be fatiguing, so a variation, sometimes called the cootie or sideswipe key, has the user press the key horizontally instead of vertically
    a. Typically, the key can be pressed in either direction to generate a signal, allowing the operator to alternate back and forth to improve speed
- Another enhancement, called the bug or semi-automatic key, has a mechanical apparatus in the key that generates a series of dits when pressed in one direction, and a continuous tone when pressed in the other
    a. This allows the operator to send precisely-timed dits, but still requires them to handle timing for their pauses and dahs.
- A further refinement is called the dual paddle, squeeze paddle, or iambic paddle. This device features two vertical keys mounted in parallel close to each other. When pressed inward, each key closes a different circuit. When connected to a device called a keyer, pressing one key generates a timed series of dits, and the other a timed series of dahs. If both paddles are squeezed together it can generate a repeating alternating sequence of dits and dahs, starting with whichever paddle made contact first. This behavior can theoretically be used to increase sending speed.
- Depending on the type of key you are using, a device called a keyer can be used. This takes input signals from one or two paddles or switches, and generates precisely timed contact closures that can be sent to a traditional radio that expects a simple on/off key. It allows for things like the iambic functionality mentioned above.
- Most keyers will have some sort of speed control to vary the timing of the generated signals.
- Newer radios, like the ICOM IC-7300 in the club's GoBox have built in electronic keyers, and menu options to set the type of key you have connected.
- While researching this presentation, I came across a chart that showed the number of keystrokes needed to send the entire alphabet and numbers 0 through 9 using different devices.
    a. The straight key required 132 keystrokes, the semi-automatic bug required 87, a non-iambic keyer required 73, and an iambic keyer 65.

    b. This shows that there is a huge jump from going from a straight key to a bug, and a respectable improvement going to a non-iambic keyer, but not much additional benefit going to an iambic keyer. Remember, when using an iambic keyer, you can squeeze both handles together to generate an alternating string of dits and dahs.

- When learning Morse code, there are two different schools of thought. One is to use a straight key so you learn how to manually send "properly formatted" code, and the other is to start with a dual-paddle key coupled with an iambic (or non-iambic) keyer, since it will result in better performance

- Another method is using a computer or other automated device to generate the contact closures needed to send Morse code. For example, the fldigi program I mentioned a few nets back can do this - you simply type your message into the program, and it will generate contact closures which when connected to a radio will transmit the appropriate Morse code characters.

    a. Of course, this method of sending will result in relatively perfect timings for symbols and pause lengths, making it very easy for computer systems (and humans) to decode.

Receiving

- When receiving Morse code, the decoding is typically performed in your head. This requires more learning, as you must interpret audio signals as opposed to making muscle movements to send them.

- One thing that is strongly discouraged is relying on any sort of visual aid, such as charts showing the Morse representations of letters.

- The issue is that this gets more areas of your brain involved in the decoding process - now you have to hear a signal and visually scan for it. While this appears to work great at first, your speed will likely plateau very quickly, perhaps around approximately 5 words per minute. Your brain just can't keep up!

- What you should do is focus on recognizing what the various characters (and later words) sound like.

- For example, when I say the word "dog" you are not hearing the individual letters (D-O-G), but rather recognize what the word sounds like and know what it means.

- You may already recognize SOS (dit-dit-dit-dah-dah-dah-dit-dit-dit), and if you've listened to amateur radio Morse code, you may recognize something else - dah-di-dah-dit dah-dah-dit-dah) is CQ.

Speed

- A common question is what speed should I try to learn at?
- There are a few different systems related to timing.
- One system meant to make recognizing sound patterns easier is called "Farnsworth" timing
- In this system, instead of slowing down the entire Morse communication, the lengths of the dits and dahs are shortened (so you get used to hearing a faster speed signal), but the spacings between the characters and words are lengthened, resulting in a slower overall communication, but giving you more recognition time.
- There is also the Koch method, which once again tries to facilitate recognizing characters as a single sound entity.
- For this to occur, the letters cannot be sent super slowly
- The Koch method introduces new letters with sound patterns that are distinctly and obviously different, again to help the student differentiate the different characters easily
- The student is exposed to new letters when they reach about 90% accuracy on current letters, and then new letters are mixed in with the old letters while they progress
- You can try out the Koch method on the Learn CW Online web site at https://lcwo.net/ (lima - charlie - whiskey - oscar)

How to Learn

- Unfortunately there is no "trick" or "shortcut" to learning Morse code - you just have to put in the time.
- Daily practice is the best way to continually improve without losing previously-learned material
- You should attempt to learn to copy at a character speed of at least 20 words per minute - if you still find you are trying to count dits and dahs, increase the speed to 25 or 30 WPM
- Use Farnsworth timing if you are unable to copy at this speed
- Start listening to on the air QSOs and the ARRL code practice bulletins - you will quickly find that real code does not sound like that generated by practice programs, and includes things like differences between operator sending styles, atmospheric interference, adjacent signals and more.

- Try to decode "in your head" without writing down letters or words. Again, writing will only slow you down - you don't have to write down everything I'm saying now to follow the net!

- There are also groups that help operators learn Morse code - one is the CW Academy. They run an 8 week long session three times a year for beginners through advanced operators. They also have resources for students available on their web site at https://cwops.org/ (charlie-whiskey-oscar-papa-sierra)

- Another is the Long Island CW Club. You can check out their web site at: https://longislandcwclub.org/ and also include a bunch of resources.

- CW is still very much a used mode in amateur radio. It can work great for things like SOTA and POTA, where weak CW signals can get through where a single-sideband signal would not.

Questions:

- **The question for the week is:** Do you already know Morse code, or are you interested in learning? Would you be interested if LARC put together a group to practice CW together (not a class per-se - just a group of people trying to learn together, and wanting others to practice with)?

- **In my case,** I recognize SOS and CQ. My wife Kat briefly drilled me on my call sign during a trip, but I've forgotten it. I've used fldigi and other programs to send and receive Morse, but have never had a Morse QSO. I would like to learn CW eventually, but have not put the time into it yet.

  Tried using fldigi and CW Skimmer - I was not able to get very good results out of them (for example, someone sending their call sign multiple times would get decoded differently each time).

  I think it would be neat to learn CW, but just haven't put the time into it. Mainly to be able to use QRP radios for stuff like POTA.

More Info:

- fldigi: http://www.w1hkj.com/

- CW Skimmer: https://www.dxatlas.com/CwSkimmer/

- Farnsworth Timing: http://www.justlearnmorsecode.com/farnsworth.html
  http://www.arrl.org/files/file/Technology/x9004008.pdf

- Koch Method: https://www.qsl.net/n1irz/finley.morse.html

- Learn CW Online: https://lcwo.net/
- Long Island CW Club: https://longislandcwclub.org/
- CW Academy: https://cwops.org/
- Begali Morse Key web site (fancy / $$$ keys): https://www.i2rtf.com/keys---paddles.html
- Vibroplex Keys: https://www.vibroplex.com/contents/en-us/d1.html

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?

- 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. K0DBL - Don - Mead, CO
2. AE0DO - John - Longmont
3. WA0JJC - Bob - Boulder
4. KC0CT - Joe - Broomfield
5. W0PPC - Steve - Lyons
6. W7PGF - Phillip - Frederick
7. KF0MXH - Art - Longmont
8. AF0W - Bryan - Houston
9. W0UM - Kat - Longmont

End: 8:00pm