2025-08-05 Hamlet Net - JS8Call

Announcements:

- Test Session Info

    - Next VE session is Saturday, August 23rd 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.

- Radio News

    - I received a message that Nextlight will be performing maintenance on their system from 10pm tonight until 6am Wednesday. The LARC repeaters get their Internet access for Echolink through Nextlight, so Echolink may be unavailable during this time.

    - There's a new resource from ARRL documenting the history of ham radio called Radio Alpha, or the ARRL Museum and Research Library. It is available for viewing at https://arrl.org/museum. Radio Alpha is envisioned as a Wikipedia-like project, administered by a trusted group of volunteers.

      It aims to serve as a definitive repository of information, offering detailed descriptions and contextual data on pivotal figures, influential organizations, pioneering companies, transformative inventions, and iconic equipment that have shaped the amateur radio landscape. Radio Alpha addresses the critical need for a centralized, reliable, and easily navigable archive of amateur radio's past.

      For more details, see:
      https://www.arrl.org/news/introducing-radio-alpha-the-arrl-museum-and-research-library

- Club Activities

    - The August LARC Event will be a POTA activation on August 23 after the test session. If you can participate, get in touch with Chuck to discuss and help plan the location.

    - Breakfast Saturday at 7:30 - 8:00 am at the Hidden Cafe.

    - LARC Members can now check out Club equipment via the Club web page at: https://w0eno.org/ - click on the 'LARC Equipment Check Out Form" link on the "LARC Equipment" menu item at the top of the web page once you log in.

- Upcoming General Meeting Topics

  - August 20th - Violetta Latham (KN2P) - ARRL Section Youth Coordinator for Colorado will talk about an upcoming DXpedition to the Manihiki Atoll in the North Cook Islands

  - Sept 17th - Fred Nichols (AF4BY) - Demonstrating setup of the club's Spiderweb Antenna. The meeting will include an outdoor picnic with food provided.

- 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 They are also looking for presenters.

  - August 16th - Longmont Try-a-Tri Triathlon (https://longmontcolorado.gov/recreation-services/community-events/triathlon-weekend/). This is a super sprint distance triathlon. These are the distances: 200 yard swim, 5 mile bike ride, 1.2 mile run. HTs should be fine. Contact Steve Robbiano if you can help out.

- RMHAM is running the summer swapfest at the Adams County Fairgrounds on Sunday August 24th 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. For more info see: https://www.rmham.org/the-swapfest/

- 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.

- 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**

Presenter: Bryan, AF0W

Topic: JS8Call
- Last net, Bob (WAØJJC) mentioned that he tried out JS8Call and was not impressed with the speed. I did some research and found out some info about that application.

- To quote from the JS8Call website: "The idea with JS8Call is to take the robustness of FT8 mode and layer on a messaging and network protocol for weak signal communication on HF with a keyboard-to-keyboard interface."

- If you have not used FT8, it is a digital communication protocol to efficiently exchange standard messages containing information such as call sign, grid square, and signal strength
  - Exchange is highly regimented - (CQ, signal report, 73) - no opportunity for rag chewing!
  - Designed for multi-hop sporadic E propagation where signals may be weak and fading, and openings may be short
  - Its goal is to provide fast completion of reliable, confirmable QSOs under these conditions.
  - Each transmit / receive sequence is 15 seconds long
  - Six such sequences are needed to complete a QSO (approximately a minute and a half)
  - Modulation is 8 FSK (8 tones, frequency-shift keying) occupying 50 Hz bandwidth
- JS8Call was developed by Jordan Sherer (KN4CRD) and released as free open-source software on April 1, 2019
  - JS8Call is heavily inspired by WSJT-X, Fldigi, and FSQCall
  - It is completely free and open-source software
  - JS8Call is compatible with most modern operating systems: Windows, MacOS, Linux – desktop and Raspberry Pi versions are available. The windows version has been tested on windows versions 7 to 10, some users have even got it running on Windows XP. It looks like it runs on Windows 11 as well.
  - Was originally called FT8Call, but Joe Taylor objected that this might confuse users and make them think it was one of his products
  - It also used to use the exact same modulation as FT8 - this was changed to prevent conflicts between the two
- One of the main features of JS8Call is the ability to send free-form messages
  - These messages are broken up and encoded into sequences similar to FT8
  - All printable uppercase ASCII characters can be sent
  - Variable length encoding using 3 to 19 bits per character

- ○ JS8 does include different speeds (Slow, Normal, Fast, Turbo) that can be used in varying conditions

    - ■ Higher speeds require greater bandwidth, and have lower sensitivity

- ○ Average speeds range from 8 to 40 WPM

- ○ The default configuration of JS8Call is to decode all speeds, and send at Normal speed (approx. 16 WPM)

- ○ Different speeds have different bandwidth requirements:

Mode /Speed	Frame Time	Bandwidth	Approx. WPM	Approx. SNR Limit
Slow	30 sec	25 Hz	8	-28 dB
Normal	15 sec	50 Hz	16	-24 dB
Fast	10 sec	80 Hz	24	-20 dB
Turbo	6 sec	160 Hz	40	-18 dB

- ○ For comparison, you need about at least a -5 dB SNR for decent CW performance, and +6 dB for SSB voice - as with protocols such as FT8, you can likely decode signals that you cannot even hear!

- ○ The idea is that you would start a QSO at Normal speed, and then "upgrade" to faster speeds if conditions support it. JS8Call gives you a signal level for incoming remote stations and can receive reports of your station's signal level as received by remote stations, allowing you to make informed speed choices.

- ○ JS8Call supports more character choices than FT8.

    - ■ The extended character set includes all printable uppercase ASCII (A-Z 0-9 Space ./?+-`~!@#$%^&*()_=[]\{}|;':",<>) and Latin 1 (¡¿ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖØÙÚÛÜÝÞ).

    - ■ The message structure is variable encoded, so the most common characters take the least amount of space, and special characters take longer to send.

    - ■ JS8Call will indicate how long it will take to send your message as you type it in

- ● Includes many other new features:

- offers real-time keyboard-to-keyboard messaging, stored (inbox) messaging, message relay, and automatic station announcements.

- Automatic heartbeat transmissions let you know who you can hear and who can hear you (as well as the signal levels at reception)

    - This functionality has been changed from heartbeat to beacon

- Auto mode allows remote stations to relay messages

    - If I can hear Chuck, but he can't hear me, yet heartbeats indicate we can both communicate with a third station, then I can relay a message to Chuck through the third station

    - Relaying messages does slow down overall communication

    - Does not have to be used in both directions - if I can hear Chuck directly, but he can't hear me, he could transmit to me directly, and just I would have to use relay to reach him

- Features to aid in syncing computer clock to transmissions for proper decoding (can use GPS on PC or cell phone as well) - must be within 2 seconds of transmitter to decode

    - Note that this is 2 seconds relative to when the transmitter or receiver starts, the actual time does not matter

    - To successfully use higher JS8Call speeds, you need to have your time as accurate as possible

- Station can operate in automatic mode, but this may violate FCC rules if unattended (can only automatically respond to messages from stations under local or remote control)

- Provides group features to restrict heartbeat and message transmissions to members of that group

    - Not a security feature - you "join" a group by adding it to your JS8Call settings

    - For example, if a group of members created a LARC group, then they could exchange group messages among themselves using the group name without having to worry about individual callsigns

    - Groups can be used for things like nets, and ARES activities

- Messages to your station are saved and can be reviewed and responded to later

- - Includes groups to spot your location via APRS-IS (APRS Internet Services) at a specific grid square location, or submit a raw APRS packet to allow APRS messages to be sent, which can then utilize services such as the APRS-to-SMS gateway to send messages to cell phones, POTA and SOTA spots

  - Directed commands which will be automatically responded to by stations with AUTO enabled:

    - Query SNR (signal report), grid square, info and status messages, list of stations heard

    - Relay message - Relay messages can include multiple stations (i.e. relay message via AF0W then K0ITP)

    - Store message in inbox

    - Store message for another call sign

    - Have station check to see if it can communicate with another station directly

    - Have station automatically retransmit its last message

- There is an award for the first team of operators to successfully relay a message from one continent across three other continents and relay an ACK back to the originating station using JS8Call

  - This still shows up on their web page and there is no indication that it's been "won" yet

- JS8Call requires a dedicated application - it is not supported by WSJT-X or Joe Taylor

- Need an audio interface on your radio to connect to your computer

  - I have not come across anyone trying to use JS8Call by using their computer's speaker and microphone to interact with their radios speaker and microphone (such as you can do with SSTV)

- Don't believe CAT control is required

  - There are sets of built-in frequencies that can be chosen if you do have rig control

  - JS8Call can be used anywhere data emissions are permitted

- JS8Call does not require any form of Internet access (although you will have to sync your device's clock somehow)

- It is designed to run on SSB, so will work on 2m and 70cm with an all-mode radio

  - It may work on 2m/70cm FM, but there will be no one else listening, and also, you will not be able to decode multiple simultaneous signals like you can on SSB

  - Jason, KM4ACK, has a YouTube video where he runs JS8Call over FM with a Baofeng ("JS8Call with a Baofeng")

- JS8Call's modulation has a duty cycle in the range of 84% duty on a 15-second window for normal and slow, 79% for fast, and 65% for turbo.

  - If you plan to make heavy use of JS8Call, check your radio's manual for any power restrictions that it recommends for full-duty digital transmissions. When in doubt, use only a maximum of 50% of your rig's power output to ensure there are no issues

- As with many other digital modes, your audio input and output levels control how well you transmit and receive. Too high and the audio becomes distorted. Too low and you have no modulation / demodulation. Calibration is an important step to getting started.

  - A rule of thumb is to set your output audio just high enough to drive your transmitter while not engaging your ALC. If you drive your audio too high, your ALC will distort the tones and many stations will not be able to decode your transmissions.

- One thing to keep in mind is that this entire mode was developed by amateurs - no FCC or ARRL approval was necessary. This is one of the huge privileges we are allowed by the FCC compared to other radio services.

- Looks like the latest version is 2.2.0 which was released back in June of 2020.

- I have seen some complaints from users who have tried to use JS8Call, and while they are able to utilize the "automatic" message features, they complain that they have a hard time getting anyone to respond to their CQs

  - This may be due to many people leaving their station in AUTO mode when they are not physically at the station

Questions:
- **The question for the week is:** Have you used JS8Call, and if so, what features have you tried?

- **In my case,** I installed the software a few years ago, but have never used it to make a QSO.

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:
- JS8Call web site: http://js8call.com/

- The Tech Prepper: Getting Started with JS8Call: https://youtu.be/PV-BNN3adxU?si=bhgRvnegMeXde_td

- JS8Call from A to Z: https://youtu.be/FiCkfvcnuOo?si=tmP7v85A29WQiRZt

- JS8Call proposed net check in process: https://qsl.net/nf4rc/2021/ProposedNetCheckInProtocolV100.pdf

- JS8Call Time Sync Exercise: https://amrron.com/2022/02/22/js8call-time-sync-exercise-and-resources/

Email to 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

Email to elmer@w0eno.org

1. KØITP - Chuck - Firestone
2. WAØJJC - Bob - Boulder
3. AEØDO - John - N of Longmont
4. AFØW - Bryan - Longmont
5. WØAKI - Aki - Longmont
6. KEØEE - Don - N Longmont
7. WG5X - Chuck - Frederick

End: 8:00pm

WG5X - Several got together and 7