# 2022-12-13 Hamlet Net

**Announcements:**

- Test Session Info
    - The December 10 sessions was very successful
    - There were 9 candidates and 4 new Technician, 3 new General, and 2 new Extra Class licenses were earned!
    - One was David Toback, KF0CFD - congratulations!
- Bob, N0ZFV, is helping Dick out with special events. They are planning to put together a LARC Winter Field Day site at noon, Sat Jan. 28th in the Clover Building. Come join the fun, and if you haven't made an HF contact yet, this would be a perfect opportunity, as there will be a lot of activity on the bands, as well as experienced hams to help you out. You don't even have to be licensed (or be a General or Extra Class licensee) to use the radio - we will have plenty of licensed control operators on site.
- Club dues are going up by $5 per year starting January 1st. If you renew before then, you can pay the current price of $20.
- 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**
- 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: Weather Information**

- With the approaching temperature drops, I thought weather information would make a good topic for this week's net
- This can range from a simple conversation starter in a QSO up to vital information in the case of operations during adverse weather events like hurricanes or tornadoes
- There are many ways to gather (and provide) weather information via radio, ranging from simple to complex

**Voice**

- The simplest, most straightforward method is to simply use voice

- There are a set of seven "Voice of NOAA's National Weather Service" frequencies that include more than 1000 FM transmitters and which covers all 50 states
    a. The frequencies are in the VHF public service band and range from 162.400 to 162.550 MHz
    b. Many amateur radios come with these frequencies pre-programmed
    c. Many radios (amateur and consumer weather radios) have the ability to receive weather alerts for their local area using SAME, or Specific Area Message Encoding
    d. If you want to practice your foxhunting skills, and have a radio capable of receiving these transmissions, there are transmitters located near Longmont, Fort Collins, Greely and Fort Morgan
        - The Mead/Longmont transmitter is on 162.475 MHz
- You can also use voice on simplex or repeater communications - even those via satellite!
- During hurricane season, the Hurricane Watch Net activates for major storms that are approaching populated land masses
    a. It's purpose is to provide information to island communities in the Caribbean, Central America, and the US Atlantic seaboard
    b. This net is on HF on 40 and 20 meters
- There may also be local repeater-based SKYWARN nets
    a. The purpose of SKYWARN is to provide critical weather observations to the National Weather Service or NWS
    b. SKYWARN spotters are trained to accurately identify and describe severe local storms
    c. This information is used along with weather predictions and Doppler weather radar to help the NWS issue timely and accurate warnings for tornadoes, severe thunderstorms, and flash floods
    d. Radio nets in our area are run by Colorado ARES groups
- While not voice mode, you can also query other hams for weather information using a "keyboard-to-keyboard" digital mode such as RTTY, PSK31, or JS8Call
- If you really want to go old-school, of course there's always CW!

**APRS**

- Another way to view accurate local weather information is via APRS
- Most of this information is provided by weather stations owned and operated by radio amateurs
- This information is transmitted via RF in APRS packets or via the Internet, and eventually finds its way to the APRS-IS servers
- The information can be viewed on the aprs.fi web site (that's alpha-papa-romeo-sierra-dot-foxtrot-india)
    a. Weather stations are indicated by blue circles with the letters Whiskey Xray inside.
    b. Click on one to bring up current weather details, and click on the "show weather charts" link for more detailed and historical information.
- There is also a NWS organization called the Citizen Weather Observer Program, or CWOP, which allows members to share information from their personal weather stations with the world
    a. In addition to simply sharing weather information, the site also maintains a set of quality checks that members can use to check and improve their weather stations
    b. More information can be found on their web site at wxqa.com - that's whiskey-xray-quebec-alpha-dot-com
- If you have an APRS-capable radio, you can use it to directly receive local APRS transmissions
- You can also use a non-APRS radio with a soundcard interface to decode APRS packets on a computer
- There is also a bot that will reply to APRS messages with weather information called WxBot
    a. It can respond with weather forecasts or with the latest CWOP information
    b. Locations can be specified by your APRS position, city names, zip codes, call signs, grid squares, latitude/longitude, and airport designators (such as "DEN" for Denver International)
    c. You can specify a "when," such as "tonight," "tomorrow night," or "Saturday night"

    d. You can also request brief or full information - full information will be split into multiple APRS messages

    e. Any active weather hazards, such as winter weather warnings, will be included in the reports

**Winlink**

- APRS is not the only digital mode where you can request automated weather reports
- In Winlink Express, there are two entries under the Settings menu where you can request weather information

    a. Winlink Catalog Requests includes requests for METAR airport weather, satellite imaging, propagation and solar forecasts and numerous sets of weather locations in the categories starting with "WX_" (whiskey-xray-underscore)

    b. Note that you will need to initiate at least two sessions to retrieve the information - the first to send the request, and then at least one more to receive the results

    c. I tried a query for Colorado weather, and it took two minutes for a reply to appear in my inbox

- One thing to keep in mind if you are using RF to make your connections to Winlink is that it can take a lot of time to send large files (such as weather maps)

    a. The Colorado weather query resulted in a text reply of 1300 bytes, while the GRIB weather map request returned an 8300 byte message - over 8 times the size

    b. Also, don't do as I did the first time I saw this functionality and request a whole bunch of stuff, or you will tie up the RF channel and prevent others from using it

    c. Remember that you can use the telnet Internet connection mode to check out all the Winlink functionality without clogging up the airwaves

**Weather Satellites**

- Yet another way to receive current weather information is directly from weather satellites
- These satellites generally fall into two categories based on their orbits
- The first is geostationary - these satellites orbit above the equator and move at the same speed as the rotation of the Earth, so they appear to be suspended over the same location at all times

    a. This allows them to monitor weather in a given area over time

- The second category is low Earth orbit or LEO - these satellites behave similar to the amateur radio satellites in that they orbit around the Earth, so they cannot monitor a specific area continuously
    a. They orbit closer to the Earth's surface, so they can obtain sharper images than the geostationary satellites
- The NOAA polar satellites pass within view of all areas of the Earth at least twice a day
    a. Their cameras repeatedly scan side-to-side, essentially generating a uninterrupted picture as the satellite orbits
    b. This image is not stored on the satellite but is transmitted to the ground immediately using both an analog format called "APT or Automatic Picture Transmission," and a digital format called "HRPT or High-Resolution Picture Transmission"
    c. The APT FM transmissions occur on frequencies just above 137 MHz in the VHF air band, while the HRPT transmissions are in the L Band around 1.7 GHz using phase-shift keying
- Many users use software-defined radios that connect via USB
- Receiving the weather satellite transmissions is only part of the puzzle - to see the maps, you will have to use a computer program
- I'm including links to a web pages that described a DIY satellite ground station for receiving weather, one on using an RTL-SDR to receive satellite images (it may be a bit out of date), and the NOAA's web page on their currently-operating satellites
- I believe Chuck has some experience with weather satellites, so hopefully he can provide current info and answer any questions that you have

**Summary**

- Weather conditions can be much more than just a conversation filler - they can potentially become a matter of life or death to those involved in severe weather events
- Radio provides a number of methods for monitoring current weather conditions and hazards, but as with many things, there are different levels of equipment and procedures needed, depending on what methods you use
- Much like LARC's weekly radio nets provide you with an opportunity to test and use your radio equipment, you should be sure to explore the various methods of retrieving weather information and test them out before you need them in a crisis

**Questions:**

- **The question for the week is:** Where do you get your weather information, and have you ever used amateur radio for weather-related activities?
- **In my case,** I get most of my weather info from my wife, who uses her cell phone to access weather sites.

  I've used the APRS WxBot and Winlink services as well as NOAA weather radio. One thing I noticed when using weather radio alert monitoring on my ham radios is that there is sometimes a short "glitch" as the radio quickly switches to the NOAA weather frequency to check for alerts. Depending on the radio, it may or may not be noticeable, but is something you should be aware of.

**More Info:**

- National Weather Service NOAA Radio: https://www.weather.gov/nwr/
- National Weather Radio receivers: https://www.weather.gov/nwr/nwr_receivers
- Colorado NWR Transmitters: https://www.weather.gov/nwr/states_dyn?state=CO (click on pin to see frequency)
- Hurricane Watch Net: https://www.hwn.org/
- SKYWARN Colorado: https://www.weather.gov/skywarn/co-skywarn
- SKYWARN Boulder County: https://www.weather.gov/bou/Spotternews
- Citizen Weather Observer Program (CWOP): http://wxqa.com/index.html
- WxBot: https://sites.google.com/site/ki6wjp/wxbot?pli=1
- APT - Automatic Picture Transmission: https://en.wikipedia.org/wiki/Automatic_picture_transmission
- HRPT - High Resolution Picture Transmission: https://en.wikipedia.org/wiki/High-resolution_picture_transmission
- DIY Satellite Ground Station: https://publiclab.org/notes/sashae/06-26-2020/diy-satellite-ground-station
- Group for Earth Observation: Griddownpowerup.com
- NOAA Currently-Flying Satellites: https://www.nesdis.noaa.gov/current-satellite-missions/currently-flying
- RTL-SDR Tutorial: Receiving NOAA Weather Satellite Images: https://www.rtl-sdr.com/rtl-sdr-tutorial-receiving-noaa-weather-satellite-images/

- NOAA Satellite Imagery: https://www.nhc.noaa.gov/satellite.php

**Backup Questions:**

1. What hobbies do you have other than ham radio? Do you (or could you) use ham radio in those hobbies?
2. Share an "a-ha" moment you had with amateur radio.
3. **Another recent contest was the North American QSO Party - CW**
    a. **Can Technicians participate? Yes on 80, 40, 15, and 10 meters**

**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**

1. K0ITP - Chuck - Firestone - Have used HT. Looks outside to see weather. Have Raspberry Pi that decodes APT and METEOR and puts them on web site. ARES do exercises where they report weather via messages.
2. AF0W - Bryan - Longmont -
3. WA7EM - Ed - Erie - Speaking on new IC-706 from KE0SI. Have not used it, but appreciate we're not in a place that experiences a lot of weather.
4. KK2R - Andy - Longmont - While on sailboat, everything was HF. Used weather fax as a means of getting marine weather. Nowadays, looks at Apple watch.
5. KF0CFD - David - Longmont -
6. N0FTI - Steve - Longmont - Uses NWS web site (www.weather.gov). Also works as a contractor at NOAA - NWS is a division of NOAA. In Boulder, have a lot of weather scientists. Gets included in weather briefings 1-2 times a week, which gives local forecasts and any weather of interest in the US and around the world. Have several senior meteorologists in the meeting, so can get very interesting. Knows how to get to NOAA weather channels on HT and mobile radios.
7. K0DBL (formerly WB4FAS)- Don - Mead - Haven't had any weather-related activities on amateur radio. Has weather stations programmed in. Typically get weather info from local TV stations web sites and weather.com.
8. K0IPH - Al - Loveland - Weather info comes from various cell phone apps and local news broadcasts. Has NOAA frequencies set on HTs.
9. KF0KFJ - Laura - Loveland - Use app on cell phone (is never right!), also different weather stations on radio

**Announcements**

- Chuck - Thank those who participated in Christmas party. January 21st is the NCARC hamfest in Loveland. LARC has purchased 4 tables. Chuck is looking for help staffing

them, especially as he is having back surgery.  Club will be going to hybrid in-person/Zoom meetings in January.

Chuck - AnyTone878 mobile - they released a wireless BT mic (BT-101).  Seems to work pretty well.

Ed - Last week's presentation was about special events.  Have noticed that there's a 12 days of xmas on HF.  12 stations scattered around, sometimes SSB, sometimes CW.  Not on all the time.  Each have 1x1 call signs for different days.

Don - Usually does net control, but missed last week.