



REPEATER RAG

Vol. 49, Number 3
July, 2023

Denver Radio League's
Quarterly Newsletter

From The Editor

Once again, Field Day was a fun-filled event. Wish you were there.

Five of us gathered on the lawn of Bemis Public Library. It was a beautiful day. We passed the time making lots of radio contacts and showing visitors what ham radio can do.

One visitor stopped by to share a dire experience that changed her life. Read more about that on Pg. 6. (See Pg. 9 also.)

One lesson learned is that the more you practice setting up a station outdoors, the easier it becomes. You know what to bring and how it should all go together. More hands make for faster and easier work.

The second lesson: It's easy to overload receivers with nearby transmitter signals even when they're many bands away. Antenna orientation helps but it's not enough.

Jim KEØNRE
Editor

To submit an article for publication, email it to the Editor: KEØNRE@ARRL.NET

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Visit our website for up-to-date information

<http://denverradioleague.org>

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Meeting & Membership Information

FCC News

A California man faces a \$24,000 fine for playing recordings during an amateur radio net and not providing his call sign.

The FCC received numerous complaints about Philip Beudet N6PJB . It issued a notice of apparent liability for “willfully and repeatedly interfering with the radio communications of the Western Amateur Radio Friendship Association while it was attempting to hold a regularly scheduled net and for failing to provide station identification on amateur radio frequencies.”

In other actions, 16 landowners were issued FCC warnings for allowing illegal broadcasting from their properties.

“[O]wners can no longer turn a blind eye to pirate radio operations on their property,” Chief of the FCC Enforcement Bureau Loyaan Egal said in a statement. “Such activities can interfere with licensed broadcast signals and do not meet the emergency alerting responsibilities of lawful radio stations.”

The FCC may issue a fine exceeding \$2 million if it determines that the landowners continued to allow any individual or entity to engage in pirate radio broadcasting.

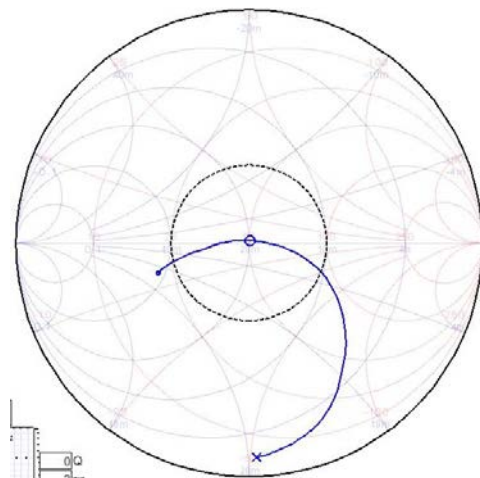
Some of the pirate radio broadcasts issued warnings were located in the Bronx and Brooklyn in New York, and Newark, Irvington and Paterson in New Jersey.



April Meeting Summary

Dave KC7MP has wanted to work the 160 meter band since he first got his ticket. His rigs are capable but limitations on antenn space and height prevented him from doing more than dreaming. Now Dave has found a way to get 200 feet of wire in air and work the band of his dreams.

We also began planning for Summer Field Day on June 24-25, 2023i.



Preview of July's Meeting

John KIØH will discuss his experience with common mode current on feedlines and cables in his shack. He'll talk about the problems caused and how he solves them.

Jim KEØNRE will share recent experiences with an old (PSK-31) and a new (FT8CALL/ JS8CALL) digital mode and compare them to some more familiar ham radio modes.

Morse Code Class

DRL's Morse code class took a hiatus since the Winter holidays. Code classes will resume soon. They're held at 8:00 pm immediately following the Thursday DRL Fun Net. Contact Dave KC7MP for more information. His contact information is available for lookup through QRZ.com.

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| B -●●● | K -●- | T - |
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| D -●● | M -- | V ●●●- |
| E ● | N -● | W ●-- |
| F ●●-● | O --- | X -●●- |
| G --● | P ●-●● | Y -●-● |
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Repeater Update

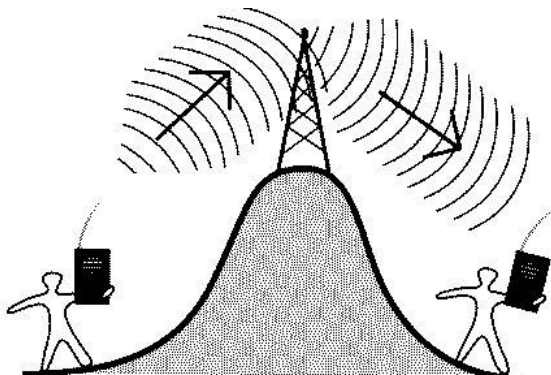


Maintenance and Repairs

The 146.880 repeater system at the Warren Peak site is plagued by interference. The issue appeared to arise from its controller. Replacement of two suspect CMOS chips was undertaken. That failed to cure the problem so an identical backup controller was installed in its place. That also failed to resolve the issue.

The repeater, controller and control receiver are very old and has been taken out of service. DRL is in the process of selecting new equipment to replace the existing controller and radios at the site.

Until then, we will gather for Thursday evening nets on Zoom. The DRL will send email invitations to those Zoom sessions to members.



DRL FUN NET

The DRL Fun Net convenes Thursdays at 7:30 PM on the 146.880 repeater. We discuss anything related to amateur radio. You don't need to be a DRL member to participate. All licensed hams are welcome to join in.

DRL REPEATERS

Since 1967, the Denver Radio League has operated repeaters for the benefit of the Denver amateur radio community. Today, we operate and maintain four repeaters covering most of the Denver metro area. Repeater use is restricted to properly licensed hams.

VHF

145.050 MHz, packet only

146.640 MHz, -600 kHz, 100 Hz CTCSS

146.880 MHz, -600 kHz, 100 Hz CTCSS

UHF

445.600, -5 MHz, System Fusion, Wires-X

For additional information concerning location and coverage maps for each repeater location, refer to the DRL website:

<http://denverradioleague.org/repeaters>

If you detect a problem with our repeaters, contact a Board member to report it.

SUMMER FIELD DAY 2023

Matt WØMKM, Tom KD4DT, Dave KC7MP, John KIØH and Jim KEØNRE set up portable stations on the lawn of Bemis Public Library on June 24th. They brought two pop-up canopies in case summer thunderstorms dogged them again. Instead, clear skies, comfortable temperatures, and gentle breezes greeted them. The trees and the canopies flying the DRL's Field Day banner shaded them the whole afternoon.

Next came erecting antennas. They strung between the trees wire dipoles tuned for 20-, 15-, 10-, 6-meters. John KIØH brought his sturdy portable tower topped with a 2-meter Yagi. They could simultaneously work each of five bands with limited interference between them.

The rigs on sight were a Yaesu 710, an ICOM 9700, two ICOM 7300s and an ICOM 730. All ran from external batteries. John KIØH kept one battery charged with the help of two solar panels. They worked very well thanks to the sunny afternoon weather. AC inverters let them use any 110 VAC accessories they may have brought.

Laptop computers connected to the 7300s enable them to work the digital modes. If laptop batteries sagged, they were connected to a battery to refill them.

Setup began at 9 am and completed by 11. At the nearby church, bells chimed precisely at noon, alerting it was the starting time for Field Day. DRL members operating under the club callsign of KEØNCQ sent out their first CQs by phone, CW and digital modes.

Although everyone was transmitting on a unique band using a tuned antenna, the close proximity of antennas meant, even at lower transmit power levels, receivers listening on the other bands heard



interference from adjacent transmitters. Hams do not live by radios alone. Jim KEØNRE brought a cooler filled with ice and drinks. Matt WØMKM brought some fixin's for lunch and grilled some brats.

Propagation was fair on all HF bands but waned through the afternoon. Many minutes passed between QSLs. They made more contacts in Colorado, California, Idaho, Oklahoma, Texas, and Washington. Ionospheric conditions permitting, contacts as far away as the Carolinas, Illinois, Rhode Island, Virginia, and Wisconsin happened.

As important as connecting with other Hams was, making face-to-face connections with families visiting Bemis Library was an important measure of Field Day success.

Adults and children stopped by to see what we were doing and hear about services Hams can provide to their community. They saw examples of how Hams talk with others. A dozen elementary school children chatted for several minutes. As they viewed the DRL Field Day banner, the kids were impressed to see how far our amateur radio signals travel.

A woman made a point of praising Hams for the deeds they do. She recounted how two decades ago an amateur radio operator helped her and her party raise help to evacuate them from the path of a powerful hurricane crossing Central America. The memory of that experience was still vivid for her.

Thankfully, life-threatening situations like that don't happen often. Discussing and demonstrating that capability with the public reminds everybody of the role amateur radio can play in an emergency. Hearing that story made the effort we Hams go to by publicly working outdoors feel so worthwhile.

Band conditions only got worse as the afternoon went on so operations ceased at 3 pm. An hour later, everything was packed up and on its way back home.



News From Space



Image courtesy of NASA

SOLAR TRENDS

Move Over, Carrington!

In September 1859, Colorado's Rocky Mountain News reported that campers in the local mountains awoke to a display of auroral light "so bright one could easily read common print." One camping party said that "some insisted it was daylight and began the preparation of breakfast."

Nine hundred miles west, crowds gathered in San Francisco's streets and looked up in awe. "The whole sky appeared to undulate something like a field of grain in a high wind; the waters of the Bay reflected the brilliant hues of the Aurora," wrote one journalist in the San Francisco Herald.

The two-day celestial event almost immediately silenced 100,000 miles of telegraph lines around the world. They fell "so completely under the influence of the Aurora Borealis that it was found utterly impossible to communicate between the telegraph stations."

This episode was called the Carrington event, named for the British astronomer Richard Christopher Carrington who connected the phenomenon with a huge solar flare days before.

When the peak of each solar cycle nears, amateur radio operators wonder if they'll experience another Carrington event. A more serious question is whether there will be even stronger events that impact the Earth? Of all things, the answer may lie in tree rings.



Research into tree rings has discovered the fingerprints of events far worse than Carrington's. They've been dubbed Miyake events. The evidence is sudden, single-year leaps in the concentration of radioactive carbon-14 (C-14).

Trees capture carbon dioxide from the air, convert it to sugar and store it in their growth rings. Radioactive C-14 is produced continually in the stratosphere by reaction of nitrogen with neutrons produced by cosmic rays. Concentrations of C-14 in air rise sharply when the Earth's atmosphere is bombarded by an intense burst of cosmic radiation.

In 2012, Fusa Miyake, a graduate student in Nagoya University, was studying the growth rings of a 1900-year-old Japanese cedar tree. She found a 12% jump in radioactive carbon (C-14) in rings grown between the years 774-775. That value indicated a cosmic event 20 times more intense than the Carrington event. Since

then, other researchers have confirmed Miyake's findings in European and North American trees.

Single-year leaps in the concentration of C-14 in trees, together with the concentrations the isotopes beryllium and chlorine created by a similar natural mechanism, have been confirmed to have occurred in 7,176 BCE; 5,410 BCE; 5,259 BCE and more recently in 993 CE.

There were no radios, satellites or electronic devices during previous Miyake events so no catastrophic disruptions happened. Massive solar events would have been harmless to mankind and would go unnoticed.

A Miyake event today would most certainly be noticed. We rely heavily on electricity and electronics to keep things running. Miyake events would be devastating to satellites, power transmission lines, ham radios and many more things we take for granted

A Ham Brain Teaser

You'll find me in all of your radios, both analog and digital.

I hang out in many other places, too.

I'm usually small but sometimes not.

My influence extends beyond me.

I love to interact with others like myself, sometimes to our mutual detriment.

I hate change.

I hate it so much, I can make sparks fly.

But I get over it quickly because I have a short memory.

Who Am I?

HINT: A picture of my cousin is on Pg. 3.



CURIOSITY CORNER



We're Amateurs So There's Always More To Learn

Many DRL members offer their time and equipment to provide communications services throughout the year in support of community activities like races, fairs and parades. Those same services become even more important in times of emergency.

Auxiliary Communications (AUXCOMM) is the term used to describe the many organizations that provide communications support to emergency management, public safety, and other government agencies.

The FCC regards providing communications services to the public during times of emergency as one of the basic purposes of the Amateur Radio Service.

Over the years, ham radio operators and their equipment have played an important role in emergencies here in Colorado.

Earthquakes, floods, wildland fires and other emergencies can interrupt or overwhelm ordinary means of communication. Losing communication limits the effectiveness of responses to these situations.

The Amateur Radio Emergency Service (ARES) is part of the ARRL. Through this program, the nation is divided into 71 administrative sections, one of which is the state of Colorado. Colorado's Section Manager, Amanda Alden K1DDN, appointed James Cizek KI0KN as the Section Emergency Coordinator (SEC). Cizek is responsible for leading Colorado ARES.

A list of ARES volunteers is available at <https://coloradoares.org/contacts/>.

Recently, Southwest Incident Management Team (SWIMT) members hosted a full-scale wildland fire exercise for the Hotchkiss Colorado Fire Protection District. SWIMT Incident Commander (IC) Douglas Fritz ensured AUXCOMM would be part of the exercise. Fritz enlisted SWIMT Communications Unit Leaders (COML) Steve Schroder, KIØKY, Colorado AUXCOMM manager, and Emit Hurdelbrink, WØUAW, Colorado AUXCOMM unit deputy coordinator, to assist in exercise.

Based on a hypothetical sudden, rapidly growing wildfire in the Hotchkiss Fire District, this realistic exercise brought together local, county, and state resources. The simulated wildfire exercise began on April 1.

Delta County Emergency Manager Kris Stewart formally requested support from the



Colorado AUXCOMM Unit using the Colorado Department of Public Safety's WebEOC system. In addition to personnel to staff the incident command post (ICP) and emergency operations center (EOC), Stewart requested Colorado AUXCOMM's portable HF radio station. Each Colorado AUXCOMM member received an order with instructions for mobilization and reporting.

Two AUXCOMM members were assigned to the staging area where fire engines and all resources checked in and received the incident action plan (IAP).

The Montrose Amateur Radio Club placed their communications trailer at the ICP to assist. Three AUXCOMM members staffed the trailer and established the incident communication center (ICC).

This arrangement allowed communications staff access to ICP personnel to maintain situational awareness with a quiet location to coordinate communications.

A portable HF/SHARES go-box and Chameleon antenna provided the team with HF Winlink capability, allowing them to communicate with the State of Colorado and the Delta County EOCs, where additional AUXCOMM partners worked to support the mission.

AUXCOMM/ARES members from Mesa County staffed the staging area and the ICC. They monitored traffic on the command channel and participated in using a medical incident report (MIR) in the Wildfire Medical Plan ICS Form 206 form to document simulated injuries during an incident.

Ferron was the AUXCOMM manager at the ICC. His team used the Colorado AUXCOMM portable HF radio station to send ICS email

messages to Colorado Section Emergency Coordinator James Cizek, KIØKN.

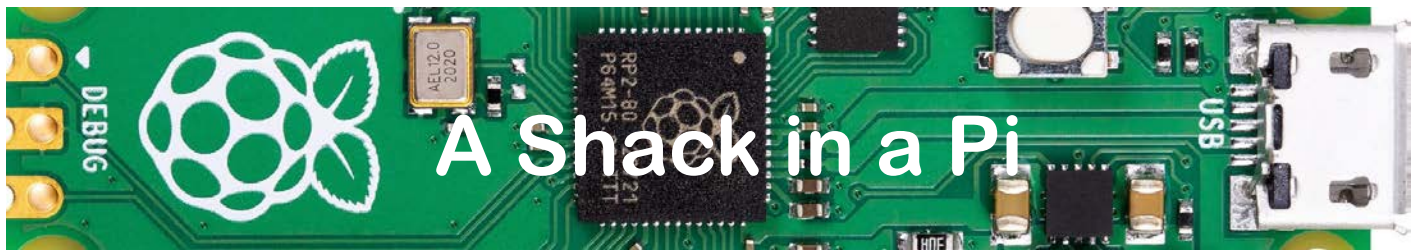
In turn, Cizek used his home station for the HF station at the Colorado State EOC near Denver, and the team used the local VHF digipeater to exchange ICS messages with Bill Bear, KCØQXX, Colorado Region Eight Emergency Coordinator, who served as the AUXCOMM manager.

AUXCOMM members traded positions and tasks so the whole team could get hands-on training in relaying message traffic through HF and VHF/UHF gear.

Exercises like this one provide AUXCOMM teams with valuable training to prepare to support Colorado's Division of Homeland Security and Emergency Management when an actual disaster occurs.

Salute these and all amateur radio operators around the state who devote so much time and effort to help our first responders who make Colorado a safer place to live.





Pandemic-induced supply chain interruptions made Raspberry Pi single board computers extremely scarce. Hobbyists spent more time at home and dreamed up clever uses for them. Orders for a Raspberry Pi (RPI) quickly drained warehouse supplies.

Soaring demand and scarce supply made prices skyrocket four-fold or more. Back orders stretch out to a year or longer. When you did find a second-hand RPI, it sold for an outrageous sum.

Supply problems have eased but the situation hasn't returned to pre-pandemic norms. Prices hover about twice what they were in 2020. Some versions are in stock and delivery times are stated in days instead of months.

In a previous Repeater Rag issue, we looked at HamPi. It's a collection of useful ham radio software that runs well on most Raspberry Pi versions. If your transceiver has a USB port, an internal sound card and has CAT control, HamPi quickly gets you "on the air" with a vast assortment of digital modes.

Inventors and hardware tinkerers will be more interested in RPI HATs. What's a HAT?

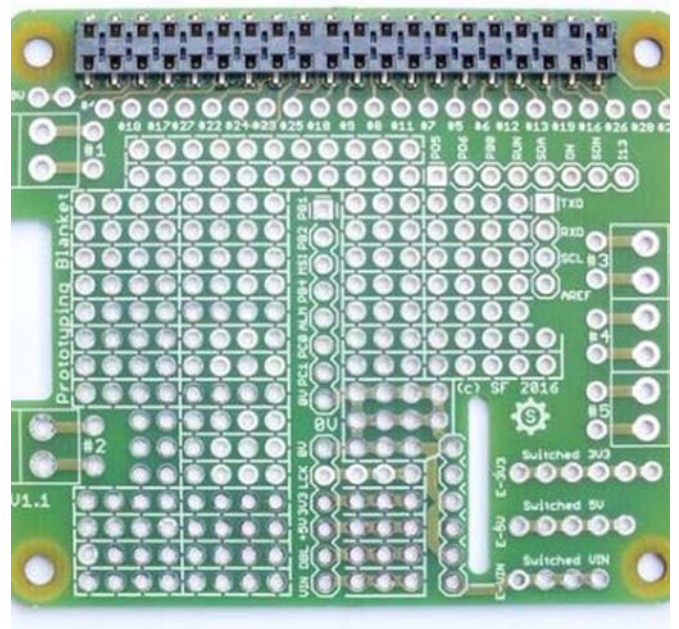
HAT stands for 'Hardware Attached on Top'. They are boards specifically designed to pair to and add functionality to an RPi.

A HAT mates with the 40-pin GPIO connector on RPi boards including Raspberry Pi 4 and Raspberry Pi Zero. Adding a ribbon cable lets you connect a HAT with other RPi versions as well.

Various retailers sell HATs (some call them "bonnets"). Most are built for one dedicated purpose: servo motor control, GPS reception, LoRa transceiver, display, sensing, relays, or even to act as UPS for the RPi itself.

This last purpose is particularly helpful. When any computer loses power unexpectedly, almost anything can happen and it's usually not good for whatever it was doing at that moment. Sudden power loss can also corrupt the SD card that stored the RPi's operating system.

A UPS gives an RPi extra time to recognize that power was lost and to gracefully terminate all running tasks. A 3,000 mAh UPS battery can power an RPi Zero for up to eight hours. At that point, it's almost a mini-laptop.



Meeting Location



Edwin A. Bemis Public Library

The Denver Radio League meets quarterly at the Edwin A. Bemis Public Library which is located at 6014 S Datura St, Littleton, CO 80120. We get together on the third Thursday of January, April, July and October in the meeting room on the lower level.

Our general meeting starts promptly at 6:30 PM and ends at 7:45 PM.

Members and guests are welcome to attend. Consult our website for last minute updates.

<https://denverradioleague.org>

DRL Board meetings commence at 6 PM, immediately prior to our general meeting.

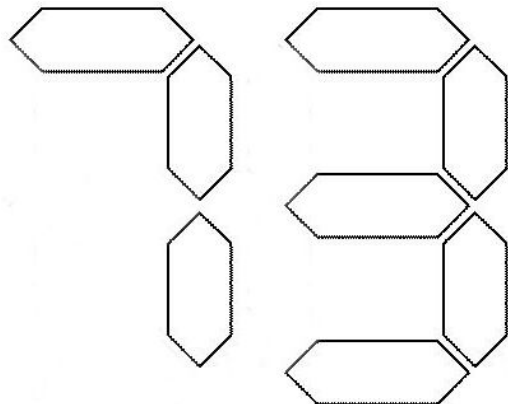
Between meetings, we gather Thursday evenings at 7:30 PM on our 146.880 repeater to discuss anything related to amateur radio. All licensed operators are welcome to join in.

Who We Are

Founded in 1969, the Denver Radio League has operated continuously ever since. We are dedicated to promoting the art and science of radio communication. DRL is a 501(c)(3) non-profit organization and is affiliated with the American Radio Relay League. We meet quarterly in person and weekly on the DRL Fun Net where we share knowledge and experiences and undertake a variety of radio related activities.

Join or Renew Now

Membership in the Denver Radio League is open to all licensed amateur radio operators. Use the application form on the last page of this newsletter.



DRL Membership Application Form

Name: _____ Call Sign: _____

License Class: _____ (Tech, General, etc.)

Street address (1): _____

Street address (2): _____

City: _____ State: _____ ZIP: _____

Primary Phone #: (_____) _____

Secondary Phone #: (_____) _____

Email address: _____

ARRL Member? Yes No

(ARRL membership helps the club maintain ARRL affiliation)

Denver Radio League dues: \$15.00 / year

Membership dues pay for 1 full year of membership

Please attach a check to this form (paying by check is strongly encouraged) made out to:
Denver Radio League (check number _____) and bring to a club meeting or mail to:

Thomas Dall
5630 S. Lowell Blvd.
Littleton, CO 80123
planeup@att.net