

From the NCARC President

Joe Hawley KDØTYU
president@ncarc.net

June has been an exciting month for the Northern Colorado Amateur Radio Club. We started the month with our Rosin Corps event, with a full house on both shifts. Everybody got to build a 20-40-meter dipole antenna, and after some work, we got them all working. I want to thank everyone who showed up and patiently waited while we tuned the antennas (until the lightning came!). Then we had our HF in the park, which, as usual, rained. Fortunately, it cleared up by the time we started the event. It was slightly colder than expected, but we had a great turnout. I feel it was a success, so I think we will continue to offer this. On June 17th we will have our club meeting at the Golden Corral as usual, and Darren will be giving a presentation on the NCARC website. I've had a few people ask me about specific areas on the website that not everyone may be aware of. Then we finish the month with the ARRL field day, which will be June 24th and June 25th. We'll take July off due to the holidays and other summer activities, but we'll return in August with other exciting presentations. So stay tuned, and thanks for supporting NCARC.

Public Affairs Office

Dave Winnett WØDDZ
pao@ncarc.net

Numbers as of June 13, 2023

YouTube

Views (last 28 days): 3,850
Watch time (hours, last 28 days): 578.9
Subscribers: 2,613
New Subscribers (last 28 days): 41

Facebook

Members: 553
New Members: 7

From the camera at Rattlesnake



Club Meeting

Saturday, June 17, 2023

Note new time! Starting 30 minutes earlier.

8:00 am Golden Corral opens- breakfast and socialize, **9:00 am** club meeting

LIVE and IN PERSON at
The Golden Corral
1360 Sculptor Dr, Loveland CO 80537

PLUS

Zoom streaming - All members will receive a link to the online broadcast
If you don't receive a link by Friday before the meeting, please email treasurer@ncarc.net
You choose what you feel comfortable doing: attend in person or online.

Topic:

**Everything You Ever Wanted to Know about the
NCARC Website**

Darren Kalmbach KCØZIE

Next meeting:

July 22, 2023

Tech Report

James Cizek, KIØKN

techchair@ncarc.net

June 2023

Horsetooth

The Winlink node at Horsetooth has been repaired and is back online. I've received reports that the APRS iGate is not hearing very well, it's online and working so I will take measurements on my next trip up. A huge thanks to one of our members, NORTB, for donating an additional set of batteries for the Horsetooth site. They are compatible with the batteries that are there now and will measurably extend our runtime in the event of power failure. Other than the APRS sensitivity reports, everything is working nominally at Horsetooth again. The PC was replaced there as well, so we are in good shape. The 220 MHz repeater that we'll be putting up at Horsetooth in collaboration with the Colorado Repeater Association is being tested now and should be ready to deploy fairly soon!

Buckhorn

The power supply, backup battery and 2 fuse holders that failed have all been replaced at this site. The GPS and GPS antenna have also been replaced. The site is in much better shape now, but the 447.700 power amplifier is not. It's got a problem whereas it reduces power rather quickly as it's keyed up (likely heat related). Also, after many, many months of no issues on the 447.700 the intermod/digital signal problems are back in force. Thanks to another generous member, KEOSOR, we've been given a donation that will allow us to replace the Buckhorn repeaters with a new set of Motorola repeaters (that will match the Horsetooth machines). This will give us a couple of advantages: the new repeaters will natively produce 100 watts so we will not need an outboard power amplifier anymore, and they will have receive pre-selectors on them. The new repeaters *may* help the intermod/digital problem as well. Repeater are hard to find right now, but as soon as we find some for these replacements, Buckhorn will be upgraded.

CSU-VARA

The VARA FM node we placed there has gone down. Due to a circumstance with the Windows version running there, I cannot remotely troubleshoot it. We expected to replace the PC from the onset, and I have it configured and ready to go. I will replace the PC ASAP (Buckhorn repairs first as they are needed for Skywarn, then this station). Once the new PC is deployed, that node will operate both VARA FM and stand AX.25 packet Winlink on the same frequency. I expect to have this working this coming week!

Greeley

I've fixed some networking issues that were preventing linking to/from the Greeley 146.850 repeater. We will be linking that repeater to the 447.275 Horsetooth, at least for nets, for right now, to allow some of our members in the Greeley area easier access to our resources.

CSU

I had mentioned an upcoming replacement of the PC at CSU that would allow the Winlink node to serve both VARA FM and traditional AX.25 1200 baud Packet Winlink on the same machine. This has been done and is in place now. The callsign is W0QEY-10 and it's available in the drop down in RMS Express.

Interference

We have been having some deliberate interference again lately, mostly keying down over people talking. We've made marked improvement in our DF'ing capabilities and it's fairly easy to target people doing bad things pretty quickly and with much greater accuracy than before. If this continues, we'll be turning over the info to the FCC (which has been enforcing amateur infractions lately! Go check out the "NAL" page at the FCC for details).

Treasurer's Report

Darren Kalmbach KCØZIE

treasurer@ncarc.net

May 2023

| Account | Checking | Raffle | Savings | PayPal | Total |
|-------------------|----------|---------|---------|---------|----------|
| Beginning Balance | \$5,812 | \$2,783 | \$1,110 | \$7,411 | \$17,115 |
| Deposits | \$5,263 | \$0 | \$0 | \$209 | \$5,472 |
| Transfers | \$0 | \$0 | \$0 | \$0 | \$0 |
| Withdrawals | \$2,643 | \$0 | \$0 | \$543 | \$3,186 |
| Ending Balance | \$8,432 | \$2,783 | \$1,110 | \$7,077 | \$19,401 |
| Outstanding Items | \$0 | \$0 | \$0 | \$0 | \$0 |
| Net Balance | \$8,432 | \$2,783 | \$1,110 | \$7,077 | \$19,401 |
| Net Change | \$2,620 | \$0 | \$0 | (\$334) | \$2,286 |

| Project | This Month | Previous | Total | Budget |
|---------|------------|----------|------------|------------|
| QRV4 | \$1,143.62 | \$ - | \$1,143.62 | \$1,200.00 |

Expenses: Storage, Rosin Corps, PC, QRV4, GPS, Batteries

Revenue: Memberships, Rosin Corps, Donations

Membership Activity:

April 2023: 224 (8 new)

April 2022: 215

Did You Know?

A new, regular contribution from Bob Schmid WA9FBO

I is for Current

We use the symbol “I” for current, such as when writing Ohm’s Law ($I = E/R$) or referring to “IR drop” or “I²R loss”. There’s no “i” in “current”, so where did that symbol come from?

French physicist André-Marie Ampère, after whom the unit of electrical current is named, developed Ampere’s Law in 1820. It mathematically described the magnetic force between two electrical currents and created the new science of electrodynamics.

Ampère needed an instrument to measure electricity for his experiments, so he used an instrument that contained a compass. It became the forerunner of the galvanometer, which in turn became the forerunner of the ammeter. These instruments measure charge flow, which Ampère called “*intensité de courant*” (current intensity). He gave it the symbol “I”, which still remains with us.

CW WPM

Since Morse characters vary so much in length, how do we determine the speed of CW in words per minute, such as 5, 13, or 20 WPM? What’s a “word”? If we program a microprocessor to send CW, how many milliseconds in duration is each dit, dah, the intra-character space between them, the inter-character space between characters, and the inter-word space?

We break the characters into “elements”. A dit is one element and a dah is three elements. An intra-character space is one element and an inter-character space is three elements. An inter-word space is seven elements.

By international agreement, Morse code speed is defined by the word “PARIS”. The calculation works this way:

| | | |
|------------------------|-------------------|---------------|
| P = di_dah_dah_dit____ | = 1+1+3+1+3+1+1+3 | = 14 elements |
| A = di_dah_____ | = 1+1+3+3 | = 8 elements |
| R = di_dah_dit____ | = 1+1+3+1+1+3 | = 10 elements |
| I = di_dit_____ | = 1+1+1+3 | = 6 elements |
| S = di_dit_dit_____ | = 1+1+1+1+1+7 | = 12 elements |

The word PARIS has exactly 50 elements.

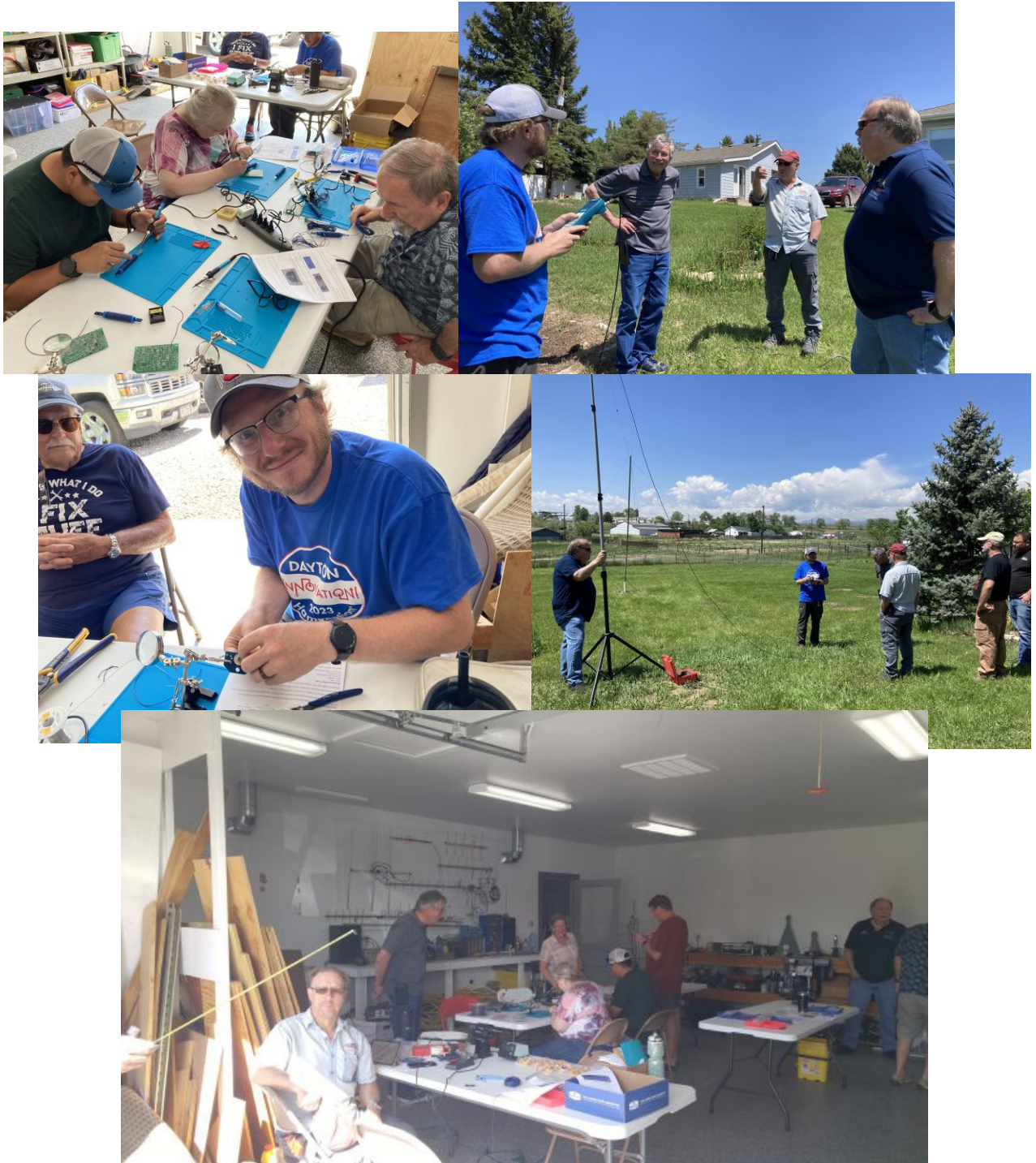
Sending PARIS 5 times in one minute (5 WPM) means sending 250 elements per minute. The duration of each element is:

$$(60 \text{ sec/min}) / (250 \text{ elements/min}) = 240 \text{ ms/element}$$

Sending PARIS 13 times in one minute (13 WPM) means sending 650 elements/minute, or an element time of 92.3 ms. At 20 WPM, the element time is 60 ms.

Rosin Corps: May 27, Build an Antennae

A few pictures from building the recent dual band 20/40 m dipole HF antenna from Pacific Antennas – great fun to make, and a little tricky to tune!



Get the Goods!

The [NCARC Store](#) is open for business! We have stickers, t-shirts, patches, water bottles and keychains. We still have monogrammed clothing too.

<http://www.ncarc.net/?q=node/424>

It's Never Too Late to Renew!

Renew your NCARC membership.

It's quick and easy.

[Click here!](#)

It's never too late to start planning for Christmas: Santa on the Air

The Longmont Amateur Radio Club and the Northern Colorado Amateur Radio Club will again participate in the Santa On The Air program, and we need your help. We're looking for individuals who want to play Santa and his Elves.

The Longmont Amateur Radio Club has done the event for many years and can supply any training you would need to perform these duties. This is an excellent opportunity for the two clubs to work together to bring holiday joy to everyone. If you are interested in helping us out, please send Joe Hawley an email: president@ncarc.net.

Radio Communications at the Boston Marathon

By Jeremy Turner, NØAW

I was privileged to be a radio communications volunteer at the 127th Boston Marathon in April 2023. It had been many years since my last public service event, and I wasn't sure quite what to expect, especially since it was the 10th anniversary of the bombing. A good friend and former co-worker Jim (KB1ZJO) had been asking for years to get me to join, and I decided 2023 was the year. It couldn't have been a cooler experience.

How does one even get to volunteer for the Boston Marathon? The Boston Athletic Association (BAA) is the governing body for the marathon, including participants and volunteers. If it's your first time volunteering, applications are due in late January due to a background check. There's no cost or fee to volunteer, and volunteers are given (and must wear) the approved jacket to identify them as volunteers.

There are approximately 275 volunteer radio amateurs at the Boston Marathon, organized into four teams: (1) the start line, (2) the course, (3) transportation, and (4) the finish line. The start group is the smallest of the four with about 40 volunteers, and is responsible for communications around the start area in Hopkinton. The course group is the largest as hams are spread out along each of the 26.1 miles of the road course. Transportation is the group responsible for making sure athletes get from Boston to the start area, and then making sure they get back into Boston safely. The finish line, much like start, is responsible for communications at the various finish line locations.

There was an all-day seminar for volunteers and a separate talk for hams. The start group held our own Zoom meetings weekly for the 2-3 weeks leading up to the Marathon primarily to answer questions. There is a collection of documents including the operating procedure, list of repeaters (ICS-205), and a forum where some of the volunteers answer question about public service gear.

The morning of the Marathon, we arrived at a nearby business parking lot at 5am. We checked in and received our badge, laminated instructions, map, and the volunteer jacket. After the security checkpoint and a short bus ride, we arrived at Hopkinton Middle School, which was home base for the start group. We munched on bagels and muffins while going through our last minute briefing at 6am. At the conclusion, we got in our assigned positions to await the incoming athletes from Boston. Some volunteers remained at the middle school, as the vast majority of the 35,000 athletes would be held there until it was time for their wave to start. For me, this meant about a mile walk down toward the Hopkinton town common where all the tents were setup. Tents included the professionals, wheelchairs, and assisted/para-athletes, which was mine, right behind the media staging area. I might just be in a few morning live shots!

Generally speaking, we were to do the following: (1) report any emergencies, medical or otherwise, (2) report back when certain events occurred (eg when the group of athletes arrived, left to stage at the start line), and (3) request things, such as my tent was missing trash cans and yoga mats for athletes to stretch. Our net control would help connect us with the right person so that we got what we needed.

Radio Communications at the Boston Marathon (continued)

The start is a carefully orchestrated event. The first athletes leave around 8:30am, other athletes closer to 9am, and the masses go in waves between roughly 10-11am. After the athletes in my assigned tent went to the start line, I walked to my second position between the staging area and the start line. I was another set of eyes and ears for the 35,000 athletes making their way to the start line in their waves and groups. I was glad that my volunteer jacket kept the drizzle and brief shower off me!

We reported back one issue. There was the largest group of porta-potties I have ever seen, but no way for athletes to get off the course and to them, and get back on. So they hopped the fence, and then hopped back. That was feedback for the BAA to consider for next year's marathon.

When the last runner had cleared the start line, other BAA volunteers finished cleaning up, and we were able to leave our positions for the mile walk back to the bus drop off. However, we were not released to get on the bus until the last runner had cleared a certain position on the course, in the extremely unlikely event that runners would need to come back to Hopkinton. Somewhere around 12:15pm or so, we got the call that we were free to go! A short bus ride back to the parking lot to our cars, and find some lunch.

What a cool experience!



Me at the beginning of the 1 mile walk from Hopkinton Middle School to the town common, which is the starting line.

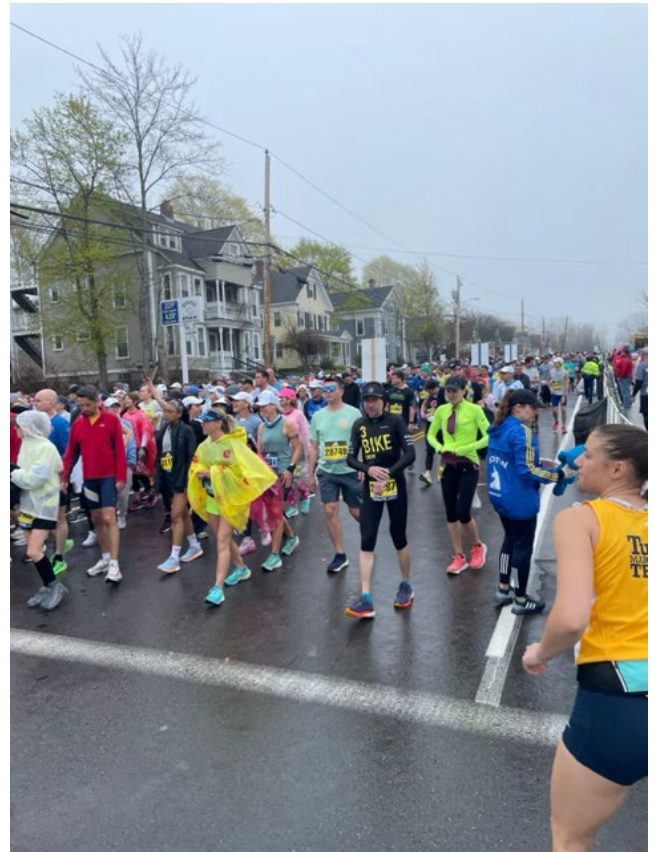


An assisted runner and guide being interviewed by the local media.

Radio Communications at the Boston Marathon (continued)



The short trek up the hill to the starting line at Hopkinton



A wave of runners released to get into their 8 groups.



The 1 mile walk back from Hopkinton town common to the middle school.



Several radio volunteers just waiting for the all-clear.

Peak-to-Peak Highway Special Event

On September 30th, the Northern Colorado Amateur Radio Club and five other radio clubs will host a special event for the 105th anniversary of the Peak-to-Peak Highway. The Peak-to-Peak Highway begins as state highway 7 in Estes Park, brings you past the tiny town of Allens Park on state highway 72, then heads to Nederland. From there, it goes south onto state highway 119 through Blackhawk, into Clear Creek Canyon and ends at Interstate 70.

There will be 5 or more clubs participating, and each club will have two or three predetermined sites along the trail. The event will last eight hours, with operators working two-hour shifts. This special event will encompass HF on three modes: SSB, CW, and FT8, and various frequencies. Special event QSL cards will be sent to each contact.

If you are interested in participating, [click here](#) to sign up. Or email Joe Hawley at president@ncarc.net for more information!

RF Exposure Evaluations

The FCC's updated rules on RF exposure evaluations have now taken effect. The ARRL provides a variety of resources, including an RF exposure calculator, to help amateurs with compliance.

<http://www.arrl.org/rf-exposure>

Need a vacuum tube?

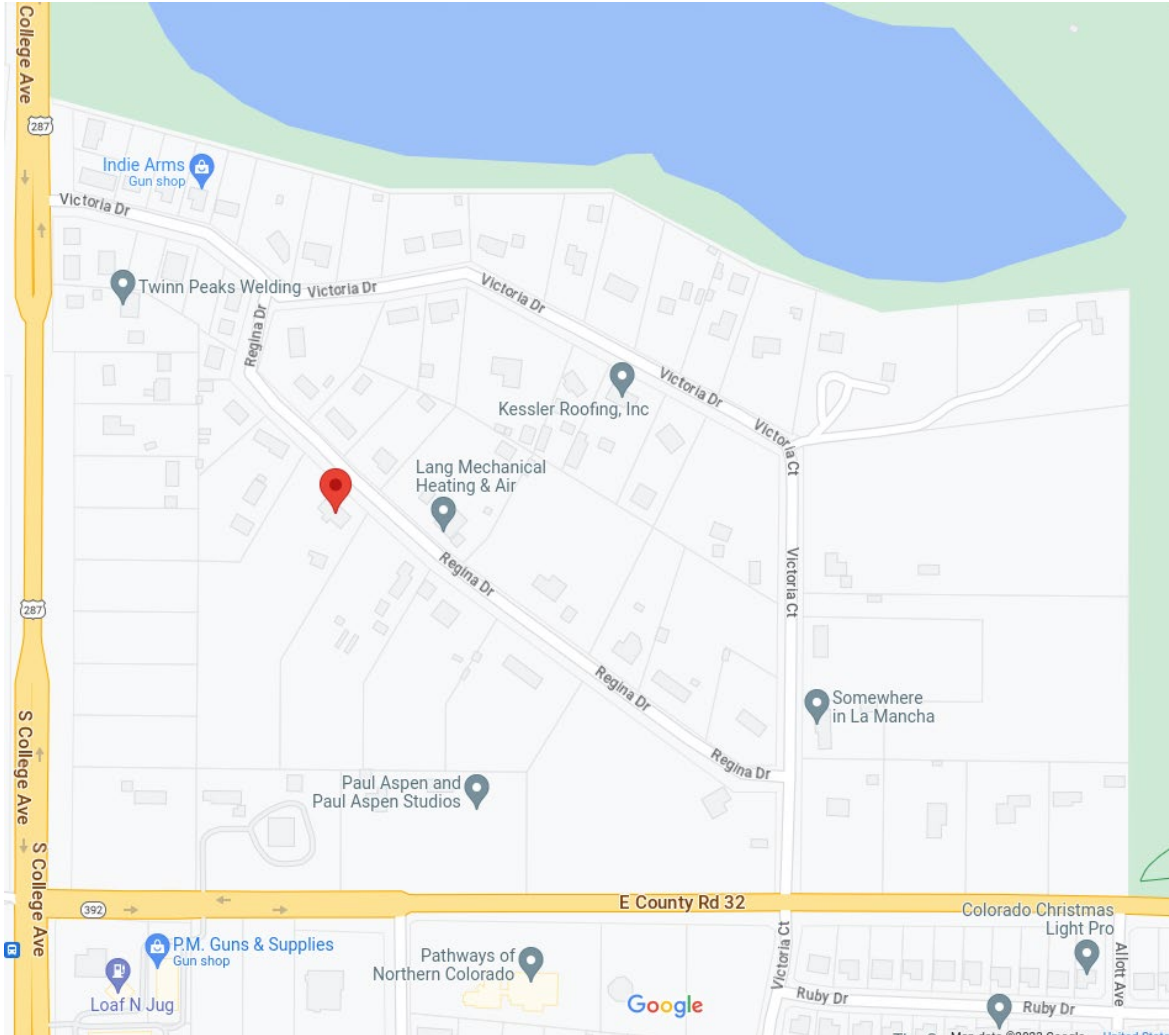
Amateur Radio Newsline reports that vacuum tube manufacturing will happen once again in the United States. Manufacturing rights were purchased from AT&T many years ago, and manufacturing is now ramping up in Rossville, Georgia. According to Wired magazine, "if all goes to plan, the U.S. could once again dominate vacuum tube manufacturing." (Currently, most vacuum tubes are manufactured in Russia and China.)

FCC is Enforcing the Rules!

Licensee Hit with \$24,000 Fine for Jamming Net, Failure to ID

<https://www.radioworld.com/news-and-business/business-and-law/ham-operator-faces-fine-for-disruptions-to-warfa-net>

Field Day Map and Directions



E County Rd 32, running east/west at the bottom of the map, is Carpenter Road.

There are two ways in and out of this neighborhood. Traffic on Carpenter Road can enter from either direction at Victoria Court at the bottom right of the map, and can exit there to either direction. Traffic on College Avenue (Highway 287) can only enter at Victoria Drive from northbound College Ave, and traffic exiting there can only go northbound.

Within the neighborhood, at both ends of Regina Drive, there is a 3 way intersection. There are no stop or yield signs at these intersections, Watch for cross traffic.

Upcoming Ham Radio Events

Courage Classic Bicycle Tour: Jul 14, 15, 16, Copper Mountain, CO. [More info here.](#)
Contact Christian WØCDN w0cdn@comcast.net

Never Summer Race Event: Jul 28-30, 2023, Gould, CO. [More info here.](#) Contact
Wayne ADØKE

Equinox Marathon, ½ Marathon, 5 Mile: Sep 17, Poudre Canyon, Fort Collins, CO.
[More info here.](#) Contact Marty KØMLG

Red Feather Jamboree: Sep 22-24, 2023. Red Feather, CO. [More info here.](#) Contact
Brian NØBCB

Blue Sky Marathon: Oct 21, 2023, Fort Collins, CO. [More info here.](#) Contact Darren
KCØZIE

Rocky Mountain Division Convention: Aug 12-13, 2023, Albuquerque, NM. [More info here.](#)

From the Editor

Ann Donoghue KØARD

newsletter@ncarc.net

Summer is off to a great start, and I have a “new” antenna to set up. I really enjoyed the Rosin Corps class and greatly appreciate the opportunity to learn. The instructors are the best!

Please send your articles, ideas for articles and announcements for inclusion in the newsletter.