NCARC Tri-Bander

Volume 7, Number 8 August 2026

From the NCARC President

Joe Hawley KDØTYU
president@ncarc.co
970-689-0828

Well, we're halfway through summer, and we've already had a lot of exciting things happening here at the Northern Colorado Amateur Radio Club!

Looking ahead, our annual picnic is coming up in September, and we are also planning a **General Class license course** toward the end of September. If you're interested in moving up to your General license, this is a great opportunity. The class will be **completely free**, including the test session, and will be held at the **Larimer County EOC**. For more information and to sign up, please visit our website at **ncarc.co**.

We're also looking at holding another **Rosin Corps** hands-on event, possibly in October, so keep an eye out for more information.

We are currently updating our website, so you may encounter a few glitches or have trouble accessing certain areas. If you run into any problems, please let me know, and I'll do my best to help you.

I hope to see many of you at our club meeting this weekend. Thank you so much for your continued support of the **Northern Colorado Amateur Radio Club**. It's your participation and enthusiasm that make this such a great club!



NCARC Club Meeting

August 15, 2026

8:30 am Golden Corral opens- breakfast and socialize, **9:00 am** club meeting

In Person and online

Join Zoom Meeting
https://us06web.zoom.us/j/88127185059?pwd=QYfk8vaWa08xqbNeLauKp6qb2qW1af.1

You choose what you feel comfortable doing: attend in person or online.

Topic:

Description and Observation of a Satellite Observing Station - Keeping Track of Amateur Satellites

Joseph DiVerdi KØNMR

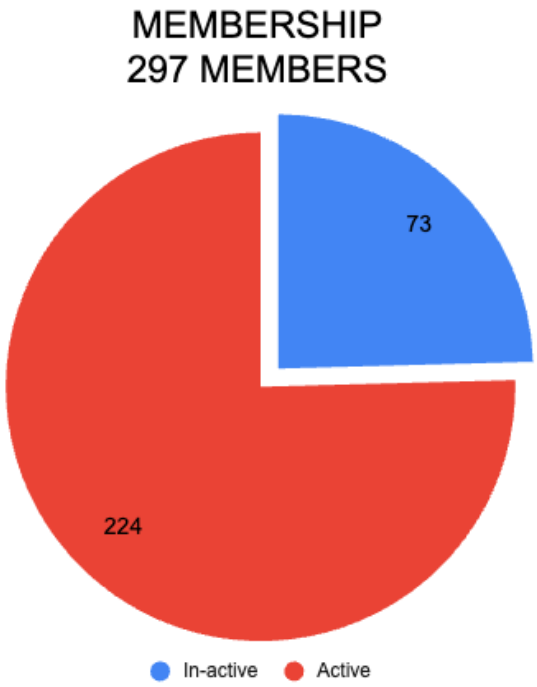
Location:
The Golden Corral
1360 Sculptor Dr, Loveland CO 80537

Treasurer's Report

Pete Robbins WØRCR
treasurer@ncarc.co

Here are some highlights for July:

- **New Members:** We are thrilled to welcome 1 new ham to the club.
- **Membership Term:** Club approved changes to Bylaws related to membership terms. We are updating the club website to support this change.



Finances

Opening Balance	$17,151.06
Incoming	$25.00
Outgoing	$62.29
Ending Balance	$17,113.77

Income:	**Expenses**
• Membership Dues	• Parts • Storage

Please welcome our newest club member:

NØYHO

Membership Renewal Update

Membership Renewal Update: The club recently approved changes to our Bylaws regarding membership terms, and we are currently updating the club website to support this new system.

Here is how your upcoming renewal date will work:

- Existing Members (Paid for 2026): If you paid your annual dues between September 1, 2025, and December 31, 2025, your next renewal date is January 1, 2027.

- Rolling Memberships (Paid in 2026): If you paid or joined on or after January 1, 2026, your membership will now renew exactly 365 days from the date you last paid.

Please Renew Your Membership!

It's quick and easy.

Click here!

Interested in helping with the ARRL Year of the Club events?
Please contact Joe Hawley and volunteer!

Club Picnic

September 19, 2026, 11:00 am

North Lake Park, 2750 N Taft Ave, Loveland

Bring a dish to pass, grilled items provided by the club.

(Cooks needed)

Update on Redfeather

By Joe Hawley KDØTYU

A few weeks ago, I sent out a note regarding the Red Feather project and its completion in late May. Unfortunately, it appears that not everyone received that message. Here is the information so everyone will have access to the frequencies and a summary of what has been completed.

If you have any questions, please feel free to contact me. Depending on your location, you may be able to access the system from different parts of North Fort Collins. For example, I am in the southwest corner of Loveland and am unable to access it from my location, but you may have better results elsewhere. Please give it a try and let me know how it works for you.

The site now hosts an analog FM repeater on 447.125 MHz with a 100 Hz tone and standard negative offset. Initial testing indicates the repeater is performing exceptionally well. Because it is a linked repeater, it can be connected to any of our other club repeaters, and we are currently connected to 447.275 MHz for evaluation and will be evaluated for a permanent link configuration that will best serve our members.

In addition, the site is home to the Northern Colorado Amateur Radio Club's first DMR repeater. The DMR machine operates on 145.385 MHz, uses Color Code 7, and is connected to the Rocky Mountain backbone network. Time Slot 1 is assigned to Rocky Mountain Wide, while Time Slot 2 is assigned to the North talk group. We greatly appreciate the cooperation and support we have received from the Rocky Mountain Ham Radio community over the past two years as this portion of the project came together.

NCARC Elmer Group: The Northern Colorado Amateur Radio Club is looking for volunteers to become part of our new **Elmer Group**. **By Joe Hawley, KDØTYU**

One of the greatest strengths of amateur radio is experienced operators helping others learn and grow. We are building a team of volunteers who are willing to share their knowledge and lend a hand to both new and returning hams.

As an Elmer, you might help members with:

- Choosing the right radio or antenna for their needs.
- Installing radios, antennas, and related equipment.
- Programming handhelds and mobile radios.
- Learning new operating modes such as DMR and other digital technologies.
- Answering general amateur radio questions and providing encouragement.

Whether you're helping someone get their first station on the air or assisting a longtime operator who wants to explore something new, your knowledge and experience can make a real difference.

If you're interested in volunteering, please let me know. You can send me an email, give me a phone call, or stop me before or after one of our meetings. I'd be happy to answer any questions..

HF in the Park Event Great Success!

By Joe Hawley KDØTYU

Last Saturday, August 8th, the Northern Colorado Amateur Radio Club held our annual **HF In the Park** at the Centennial Shelter on West 1st Street in Loveland, and I have to say, I think this was one of the best HF in the Park events we have ever had!

We had an outstanding turnout, with **35 and 45 people** joining us. There were seven or eight different demonstrations covering a wide variety of amateur radio activities, from **slow-scan television to several different types of homemade and experimental antennas**.

James Cizek did an excellent job, as usual, giving those who were brand new to HF a great overview of how to get on the air. He explained current operating procedures, what to listen for, how to make contacts, and what new operators should know when getting started on the HF bands. He then took everyone around and introduced the various demonstrations and operators who were there.

After the overview, everyone had an opportunity to break into smaller groups, where the individual demonstrations were explained in more detail. We had quite a few people get on the air and make their **first HF contacts**, which was especially exciting to see. There were also plenty of questions asked and answered throughout the afternoon.

Overall, I think this was one of our most successful HF in the Park events yet. It was great to see so many members—both new and experienced—come together, share their knowledge, and get people excited about HF.

A big thank-you to everyone who came out and participated, and especially to all of those who brought equipment, antennas, demonstrations, and their expertise. Your participation is what makes events like this such a success!

I hope everyone had as much fun as I did. I'm already looking forward to the next one!

From Randy Barnett, KFØRUW, NCARC Public Affairs

The **HF in the Park 2026 video** is posted on our NCARC YouTube channel! **Watch it here!**





Tech Report

James Cizek, KIØKN
techchair@ncarc.co

August 2026

Nothing out of the ordinary, just regular maintenance, software updates and reboots!

Upcoming General Class

By Joe Hawley, KDØTYU

NCARC is proud to announce our upcoming General class, and we'd love to have you join us!

Class Dates:

- Saturday, September 26th
- Saturday, October 3rd

Location: Larimer County EOC, 4872 Endeavor Dr, Johnstown, CO

Cost: Free (lunch provided both days)

We'll also be holding an afternoon test session in October if you'd like to take your exam. Testing is optional—but if you choose to test, we can help you finish up, get your license, and get you all squared away.

To register, go to **Exam Tools** and follow the prompts. This will sign you up for the class and the test session. The test session is optional, you are not obliged to test at that time.

If you run into any issues with registration, feel free to reach out to me at **president@ncarc.co**, and I'll walk you through the process.

Did You Know?

A regular contribution from Bob Schmid, WA9FBO

What Did Yagi Do?

The idea behind amateur radio's most familiar directional antenna

With its long boom and row of metal elements, the Yagi antenna is familiar to many hams. But the Yagi wasn't born as a ham antenna, and it wasn't created by accident. It came from a very specific question asked nearly a century ago: How do you push radio energy in one direction without complexity?

Two names, one idea

The antenna commonly called a "Yagi" is more accurately the **Yagi–Uda antenna**, named for Hidetsugu Yagi and Shintaro Uda, who developed it in the mid-1920s at Tohoku Imperial University in Japan.

Uda carried out much of the experimental work, carefully measuring how nearby metal elements affected radiation. Yagi, the senior researcher, published the results in English. That proved to be a crucial detail at the time. The design was quickly adopted in Europe and the United States, particularly for early radar systems, while Japan initially showed less interest.

The problem they were solving

Early radio systems faced two stubborn limitations: weak signals and antennas that radiated in every direction, whether that was useful or not. Directional antennas existed, but they were often large, complex, or impractical.

Yagi and Uda were looking for an antenna that could shape radiation without elaborate feed networks or massive structures. They suspected that nearby metal might be doing more work than anyone expected. Their elegant answer: **You don't need to feed every element.**

"Unconnected" metal

A Yagi antenna (Fig. 1) has only one driven element—the one connected to the feedline. The other elements aren't wired to anything at all. These are called **parasitic elements**, and they work by borrowing energy from the electromagnetic field around them.

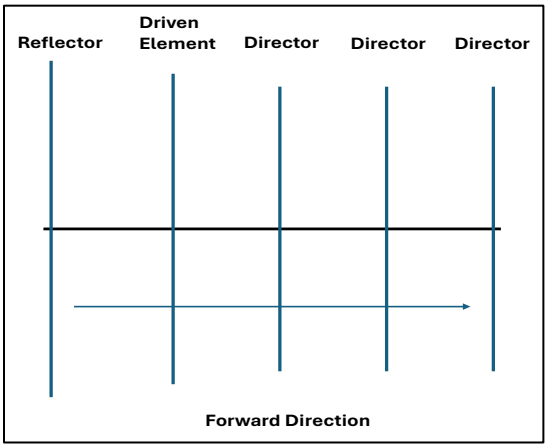


Figure 1 - The Yagi–Uda antenna uses one driven element and nearby parasitic elements. Small differences in length and spacing cause energy to add in one direction and cancel in others.

When RF flows in the driven element, it creates a changing electromagnetic field. Nearby conductors respond by developing currents of their own. Those currents don't just sit there—they re-radiate energy.

Here's the clever part: If a parasitic element is made slightly longer than the driven element, its re-radiated energy lags in phase. That element becomes a **reflector**, pushing energy away from itself. If an element is made slightly shorter, its radiation leads in phase, pulling energy forward. These are the **directors**.

Length, however, is only part of the story. Spacing between elements matters just as much. Spacing controls how strongly the elements couple to one another through the electromagnetic field. Place them too close together, and the antenna can become difficult to match and unpredictable. Spread them too far apart, and the parasitic elements stop doing much at all.

What did Yagi Do? (cont.)

This is why two Yagis with identical element lengths—but different spacing—can behave very differently, even when their SWR looks perfectly acceptable. The feedpoint may be happy while the radiation pattern suffers.

Nothing mystical is happening. No energy is created. The antenna is deliberately arranging interference so radiation adds in one direction and cancels in others. **The pattern depends on the interaction between elements,** not on any single element.

What "gain" really means

A Yagi does not amplify RF. It does not focus energy like a lens. What it does is waste less energy.

Energy that would have gone backward or sideways is redirected forward. The narrower the beam, the higher the apparent gain. The tradeoff is reduced coverage in other directions, and that tradeoff is exactly why it works so well.

Why hams embraced the Yagi

For hams, the Yagi checked all the right boxes:

- One feedpoint
- No phasing harness
- Predictable behavior
- Scales easily from HF to UHF
- Built from simple materials

Why SWR Can Look Fine Even When the Pattern Is Bad

One confusing aspect of directional antennas is that a Yagi can show an excellent SWR and still perform poorly. SWR only tells you how well power is transferred from the feedline into the driven element. It says nothing about *where* that power ultimately goes.

A Yagi depends on interaction between elements, so changes in spacing, nearby objects, or construction details can distort the radiation pattern without significantly affecting the feedpoint match. In other words, the antenna may be efficiently fed but inefficiently aimed.

That's why Yagi design is more about geometry and interaction than resonance.

Why Adding Directors Eventually Stops Helping

Does adding more directors always increase gain? In practice, the improvement quickly diminishes. Each additional director couples less energy than the one before it, and eventually the added complexity produces very little forward gain.

Beyond a certain point, extra elements mainly narrow the beam and increase sensitivity to construction errors. That's why many successful Yagi designs stop at a modest number of directors—they're balancing performance against predictability. More metal doesn't automatically mean more signal.

It also rewards understanding. Small changes in layout produce visible changes in performance. When you rotate a Yagi, you really do see the signals rise and fall.

A 100-year-old idea that still works

There are newer antennas and more complex designs, yet the Yagi remains everywhere—from contest stations to modest rooftops. That's not nostalgia. It's good engineering.

The Yagi–Uda antenna endures because it solved a hard problem by using physics instead of complexity.

Free Amateur Radio License Testing Available

The Northern Colorado Amateur Radio Club is committed to helping new and existing amateur radio operators earn or upgrade their licenses. That's why we offer free amateur radio testing sessions by appointment.

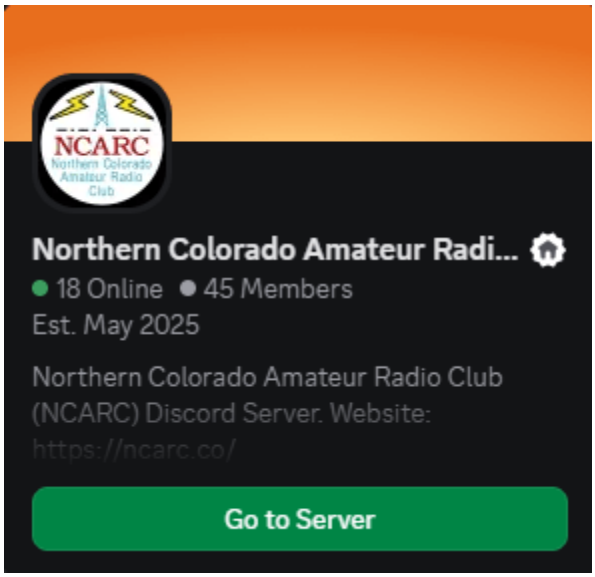
If you are ready to take your Technician, General or Amateur Extra exam, our Volunteer Examiners can often arrange a testing session at a time and location that works for you. We can meet at a local coffee shop, restaurant, community location, or other suitable venue. In some cases, we may even be able to come directly to your home.

We do ask for a few days' notice to coordinate our exam team, but in most cases, we can accommodate testing requests at almost any time.

Whether you're getting your first license or upgrading to the next level, we're here to help make the process as convenient as possible.

For more information or to schedule a test session, please get in touch with the club president Joe Hawley, KDØTYU, at president@ncar.co or 970-689-0828.

Join our NCARC Discord Server!



Upcoming Ham Radio Events

NCARC Summer Picnic! Sep 19, 2026, 11:00 am, North Lake Park, 2750 N Taft Ave, Loveland

Fall Equinox Marathon: Sep 20, 2026, Poudre Canyon, CO. More info here. Contact Marty KØMLG

Red Feather Trail Jamboree: Sep 25-27, 2026, Red Feather, CO. More info here. Contact Bryan NØBCB

Blue Sky Marathon: Oct 17, 2026, Fort Collins, CO. More info here. Contact Ron KØAZA

Weekly On Air Events

NCARC Tech Net, Mondays, 6:00 pm MT, 447.275 (100 Hz tone)
NCARC Club Net, Wednesdays, 6:30 pm MT, 447.275 (100 Hz tone)

Biweekly Get Together

Martinez-Clarke Luncheon: every other Wednesday, 11:30 am,
(next one Aug 19, 2026) Perkins Restaurant, 2222 W Eisenhower Blvd, Loveland, CO

From the Editor
Ann Donoghue KØARD

An excellent HF in the Park event and all kinds of good things happening with our repeaters - the fun never stops!

And the Club Picnic is only a month away!

Hope your summer is filled with those fun things!
Send me a story and photos!