



From the NCARC President

Joe Hawley KDØTYU
president@ncarc.net

It's that time of year when we meet with our friends and family for the holidays. I look forward to it every year. I hope you had the opportunity to get on the air with our Santa on the Air program. A big thanks to Bart, Ann and Chuck, who were Santa and his elves during the event. We had some technical issues as we went through the process, and thanks to James and Chuck, they fixed it quite quickly. I'm sorry for the inconvenience of moving the program to our Horsetooth repeaters; however, we've lost our GPS link, which means we couldn't link our repeaters to the Longmont group. Next year we plan to assist Chuck and the Longmont Amateur Radio Club more than we did this year.

I'm giving you some updates on things we planned for after the first of the year. January 21st, we will have our NCARC Winter Hamfest. We still have quite a few excellent tables left, but as I discovered in the past, they go pretty quickly as we get closer to Christmas. We're looking at doing another Hamlet Class in February or March for all our newly licensed folks.

We had a class or a seminar on programming radios a few years ago. I'm thinking about doing this again, where you will bring your radio in, and we will program it with the local frequencies and such, but we will show you how to do it individually. We will need you to sign up for that because there are quite a few radios out there, and the software is reasonably easy to acquire, but the cables may not be, so we'll need to have some heads-up on this.

We're finishing up our platform for the UNC microwave system. I'd like to give a big thanks to Greg, Jim, and James for putting this together. It was a great effort, and we have a solid platform to put up there. I think this one will never blow over. I will send a note asking for help assembling the platform and getting it on the air soon.

Finally, I wish everybody a happy holiday, and I hope you get everything you want.

Public Affairs Office

Dave Winnett WØDDZ
pao@ncarc.net

Numbers as of December 13, 2022

YouTube

Views (last 28 days): 1,098
Watch time (hours, last 28 days): 151.9
Subscribers: 2,374
New Subscribers (last 28 days): 19

Facebook

Members: 522
New Members: 5

Club Meeting

Saturday, December 17, 2022

9:00 am socialize, **9:30 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

Show and Tell

**Bring in your latest project, experiment,
or interesting bit of radio gear
and share with the group!**

Next meeting:

**January 21, 2023
Hamfest!**

Tech Report

James Cizek, KIØKN

techchair@ncarc.net

December 2022

Happy holidays everyone!

We have replaced the 5 GHz microwave links with the 60 GHz links purchased earlier this fall. Everything is working well.

Horsetooth

We have a problem somewhere in the RF chain of the WInlink node. Not sure if it's the radio or not. This station is duplexed onto a single antenna that is shared with the APRS iGate which is functioning well.

This leads me to believe it's a radio issue or something between the radio and duplexer (it's the time of year that rodents like to come inside to get warm and they love to eat cable insulation!!). Next trip up I will take spares and try to repair. I am aware of the small squelch-tail-like signal that you occasionally hear on the 447.275 at the end of someone else's transmission. I am investigating.

Buckhorn

Everything here is working well but we have a VERY bad intermod problem on the 447.700 repeater. I will bring a spectrum analyzer up there next visit and we will see if we can learn anything about what is causing that. This might take a few trips as these issues are never easy, but it's so often now, hopefully it will be something we can track down reasonably quickly.

All other sites are operating normally. We also have a new battery bank ready to deploy at Rattlesnake ranch and hope to do that before snow buries the site for winter.

I've been having some health issues lately that have slowed my progress in site visits, but I hope to have the above items done before our deep snow sets in!

Thanks for your help and support, I hope everyone has a warm and enjoyable holiday!

The Things You Learn at Tech Net

Marty Gerlach KCØQOK warned us about batteries going bad and provided some pictures of his “going bad”. Even a slight swelling indicates this is occurring. Remove your batteries and take them to a battery recycling center, asap. You really don’t want to risk an explosion. A few other “interesting” methods of disposal were discussed, but none of them was actually a good idea.



Treasurer's Report

Darren Kalmbach KCØZIE

treasurer@ncarc.net

November 2022

Account	Checking	Raffle	Savings	PayPal	Total
Beginning Balance	\$2,693	\$2,329	\$1,110	\$4,336	\$10,468
Deposits	\$0	\$0	\$0	\$312	\$312
Transfers	\$0	\$0	\$0	\$0	\$0
Withdrawals	\$1,247	\$1,568	\$0	\$12	\$2,827
Ending Balance	\$1,447	\$761	\$1,110	\$4,636	\$7,953
Outstanding Items	\$0	\$0	\$0		\$0
Net Balance	\$1,447	\$761	\$1,110	\$4,636	\$7,953
Net Change	(\$1,247)	(\$1,568)	\$0	\$300	(\$2,515)

Expenses: Storage, Hamfest prizes/tickets, Rosin Corps, cables

Revenue: Memberships, Hamfest tables

Membership Activity:

November 2022: 230 (2 new)

November 2021: 266

Get the Goods!

The [NCARC Store](http://www.ncarc.net) 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>

New to morse code?

**Check out your progress at the 2023 Straight Key Night
Sponsored by ARRL, held on New Year's Day (UTC).**

From the ARRL: Objective: This 24-hour event is not a contest; rather it is a day dedicated to celebrating our CW heritage. Participants are encouraged to get on the air and simply make enjoyable, conversational CW QSOs. The use of straight keys or bugs to send CW is preferred. There are no points scored and all who participate are winners.”

For more information: <http://www.arrl.org/straight-key-night>

Kids' Day

Another fun activity is Kids' Day, usually held the first Saturday in January and the third Saturday in June (1/7/2023 and 6/18/2023), all day UTC time. For more information: <https://www.arrl.org/Kids-Day>

Hamfest Speakers

If you have a topic you would like to hear about, or know of a great speaker, please contact Ann Donoghue at newsletter@ncarc.net. She is organizing the speaker sessions for Hamfest and is looking for help in identifying topics and speakers.

NVIS Antenna Testing

Bob Nauta WØBNC and Greg Ella NØEMP

NVIS stands for Near Vertical Incidence Skywave. This is an HF, ionospherically propagated communications technique for local and regional communications.

You know from studying for your General, and from hosting Field Day, that we can talk out to long distances on HF, using refraction off the ionosphere.

With low angle radiation (towards the horizon) such as from vertical antennas or horizontal dipoles or beams more than 1/2 wavelength above ground, we can work DX. The problem with this, for local and regional communication, is that we "skip over" closer in stations and have a dead zone.

By directing our RF generally straight up, our signal comes back down in a roughly circular area, covering a radius of a few hundred miles. At the same time, we are only hearing signals coming in from the same high angle, this reduces our receive noise level and interference from distant stations.

We get this high angle pattern by using wire antennas, dipoles, either end fed or full wave loop, that are horizontal to the ground and less than a quarter wavelength above ground. In practice, they can be much less than a quarter wave above ground, like 5 feet.

With low angle radiation, we can work up through 10 meters when the ionosphere is really cooking. The highest usable frequency at any particular angle is called the MUF, Maximum Usable Frequency. As we shoot up at higher and higher angles, the MUF decreases.

Shooting straight up, the MUF is rarely above 12 MHz, and typically not above 10 MHz. At the low end of the spectrum, D layer absorption builds up in the daytime to limit our lowest usable frequency.

Because of this, and considering our amateur frequency allocations, amateur radio NVIS is typically limited to 80, 60 and 40 meters.

Usually, 80 meters at night and 60 + 40 during the day. Ionosondes, like the one Terry W0ASP runs in Boulder, are valuable resources for planning NVIS communications. They also shoot straight up, and listen straight up, and display what the ionosphere is doing at that high angle, across the HF spectrum.

Because of the high angle pattern, NVIS is usable for emergency communications because:

1. We probably don't want to talk to Denmark when we need help.
2. We don't have the close-in dead or skip zone.
3. We can communicate into and out of canyons, and over mountains.

Lately, some of us, primarily me, Bob WØBNC and Bart NØNYY, have been going out into the Poudre and Big Thompson canyons and testing NVIS under real world "difficult" conditions. We have been talking back and forth to each other, and also using scheduled HF nets, such as the High Noon Net on 40 meters and the Colorado ARES Sunday Morning Net on 80 meters.

Lots of other club members have been either monitoring or talking with us from their homes.

Now that we know this works, and works well when properly employed, we are working on antenna systems that are transportable, easily set up in a limited space by one person, and can cover all 3 bands. Bob's set of pictures from Pawnee National Grasslands, and mine from Poudre Canyon, involve this phase of our testing.

Marty, KCØQOK, has been very interested in this work, because of the difficulties he has supporting events in the Poudre Canyon. This has prompted him to get his General license.

Here are a couple of good links about NVIS:

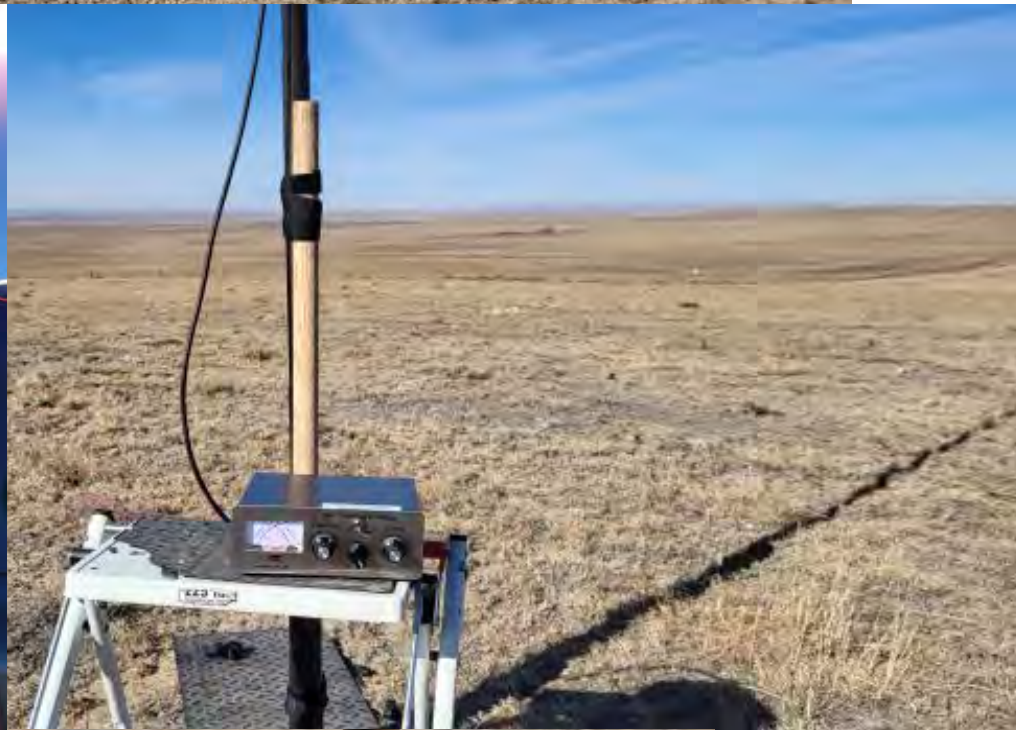
<https://kv5r.com/ham-radio/nvis-antennas/>

https://en.wikipedia.org/wiki/Near_vertical_incidence_skywave

Bob's Set Up on the Pawnee

AS-2259 military crossed dipole (AS-2259), Small Transmitting Loop (STL), 1/4 wavelength linked wire (.25WL)





Greg's Set Up in the Big Thompson Canyon

Icom AH-4 autotuner on a 9 foot hitch mounted mast, 41 foot horizontal wire to another 9 foot mast. Vehicle counterpoise.



Upcoming Ham Radio Events

NCARC HamFest: Jan 21, 2023. The Ranch, Loveland, CO

For Sale?

Have something to sell? Remember – you can post items for sale directly on the website. This new feature allows you to have control over your ad! Log into the NCARC.net website and go [here](#). On the right-hand side, you'll see an option to "Add For-Sale item".

How stupid can a person be...?

And, in the "how stupid can a person be" category, don't clone a radio to access the State of Colorado DTRS system. KOPWO in Centennial, Colorado illegally cloned a Motorola radio that was transmitting (pinging) on the State's digital trunked radio system. He got busted!

<https://docs.fcc.gov/public/attachments/DOC-389269A1.pdf>

From the Editor

Ann Donoghue KØARD
newsletter@ncarc.net

The Christmas Party at Bruce's Bar was a big hit, around 50 people attended. It was wonderful to see everyone! And Santa came with gifts for all.

Northern Colorado Amateur Radio Club (NCARC) Presents:

Larimer County Fairgrounds—Thomas McKee 4H Building

Saturday, January 21, 2023



Winter 2023 Hamfest



Open To Public 8:00 AM To 1:00 PM!

Admission \$7.00

www.ncarc.net

Radio Talk In:

448.025 (-) 100Hz tone

This Year Featuring:

- Fantastic prizes for drawings and door prizes
- Guided tours of the event for folks new to Hamfest
- Exhibits and Demonstrations
- New and used amateur radio, computer related equipment for sale

Colorado's First Hamfest of the Year
Bigger And Better Than Ever Before!

Great Door Prizes Given Out During the Event

This Year's Raffle Prizes Below

Raffle Lic # 2023-17943

Must Be Present To Win

GRAND PRIZE

YAESU FT-891



2ND PRIZE

YAESU FTM-300R



3RD PRIZE

YAESU FTM200R



4th PRIZE

YAESU FT70DR



5th PRIZE

YAESU FT65R



6th PRIZE



ARROW ANTENNA
146/437-WBP10

Raffle Tickets 1/\$1 6/\$5 14/\$10

Must be present to win

For Advance Table Reservations:

Visit: WWW.NCARC.NET

Or Contact Joe Hawley KDØTYU

970-689-0828 president@ncarc.net

Admission: \$7.00

8 Ft. Tables: Pre-Registration: \$13 to \$17

A special thanks to our sponsors



Amateur Related Presentations

Free License Exams - 9:30AM

Admission Fee not required

Please bring your FRN number to the session

Licensing Opportunity!

If Upgrading—Be Sure To Bring A Copy Of
Your Current License!

For our vendors

Visit Our Web Page—Just For You!

Online Pre-Registration For Your Tables!

View The Table Layouts—Pick Your Spots!

Signup Right On The Webpage!

Vendor Setup Begins at 7:00AM—Event Day

Two Large Overhead Doors For

Quick & Easy Setup!

5280 Arena Circle, Loveland, Colorado

Take Exit 259 off 1-25

East on Crossroads Blvd 0.35 Miles

North on Fairgrounds Ave. 0.25 Miles

To Main Entrance to The Ranch

GPS COORDINATES: 40.44286, -104.9863