THE ROUND TABLE
Monthly Newsletter Of The Denver Radio Club
Since 1917 April 2025

President's Message

By Gerry Villhauer, W0GV

Hello DRC Members,

April is here and I see flowers already blooming. It is always nice to see the warmer temperatures.

I would like to thank John Portune, W6NBC for his presentation at our March 2025 meeting. John always has interesting and well presented programs.

Our April program will be presented by Karin Thompson, KD4DXX. Karin is with RT Systems and as you may know, RT Systems develops programming software for just about any and all VHF/UHF type radios that are out there in radioland. Please join the Virtual DRC regular monthly meeting on April 16, 2025. See the DRC Website if you do not have the link for the meeting.

We have an opening for a DRC Board Member Apr 1, 2025. If you are a current DRC member and would consider filling this position, please let me know as soon as possible.

Thanks to all of our new members who have recently joined the DRC. Your support is very much appreciated. Please come to meetings and events and stay active. Your name and call will be posted in this edition of the Round Table.

73 for now,

Gerry, W0GV
President

Who's New In The DRC?

Provided by Kelly Sobanski, KB8OGP

The DRC is a very active club in the Denver metro area and we'd like to have all of our members listen for these new calls and welcome them to the club and repeaters. Welcome to our newest members:

James Matson - KF0RGX
George Vinson - WD0AOA
Gregory Winter - KE0GBS
James Carter - KF6HMR

We have a number of activities throughout the year and we'd like very much for you to participate in serving your community. If you have questions please feel free to ask on any of the repeaters or see the contact information on the last page of this publication.

Also, please join us once a month at the regular club meeting on the 3rd Wednesday at 7:00 p.m. For new hams we have the Elmer session which starts at 6:00 p.m. before the regular meeting.

Question of the Month

By Bill Rinker, W6OAV

"How Far Does My Ground Wave Go?"

The answer can be found on page 5 of the November 2007 issue of the Roundtable: https://w0tx.org/RoundtableArchive/2007-RoundTables/RT200711(NOV).pdf

---

Calling All QSL Cards

By Brennan Pate, AD0UZ

If you would like to have your QSL card featured in an upcoming edition of the Roundtable please send a copy of it (i.e. PDF or JPG) to roundtable@w0tx.org.

Alternatively, if you have received a unusual or exotic one in the past and would like to share it, then send it on over.

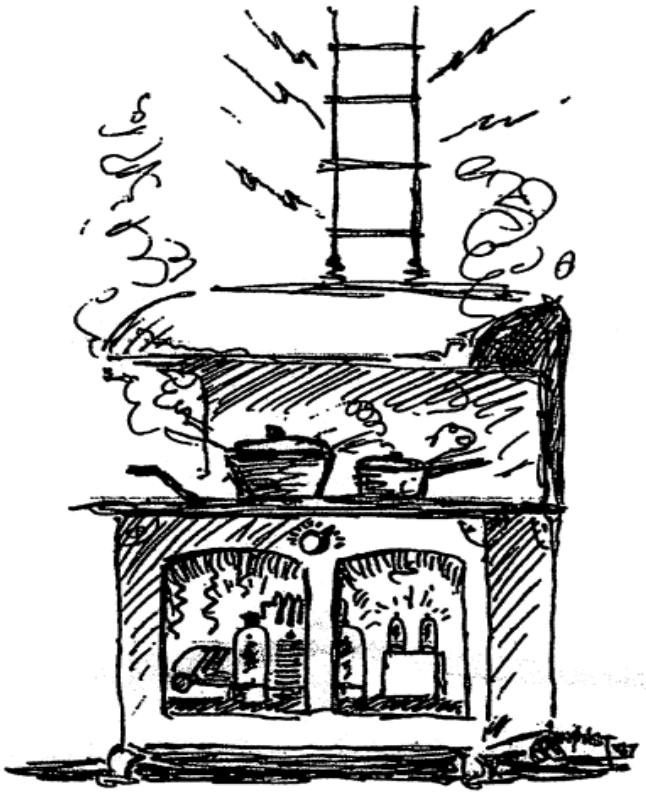
DRC Recipes

Provided By Cathy Villhauer, N0CRZ

Cathy sent over this recipe from a recipe book that was published by DRC members in 1988. This will become a regular installment. (Editor's Note: Raisins = Bad, Chocolate Chips = Good)

COOKIN' OVER THE AIRWAYS

The Denver Radio Club, Inc.



Now you're cookin'!

OATMEAL COOKIES

Mildred Chirhart
yl of KØDYT

1 c. shortening
1 c. sugar
2 eggs
1 tsp. salt
⅛ tsp. cinnamon
1 tsp. vanilla
1 c. raisins
2 c. oatmeal
1½ tsp. soda
5 tsp. raisin water

Cream shortening, sugar and salt. Add eggs, cinnamon and vanilla. Boil raisins in a little water. Save raisin water. Add raisins to creamed mixture. Mix well. Add flour and oatmeal. Dissolve soda in the raisin water. Add and mix well. Drop by teaspoonful on a greased cookie sheet. Bake at 375° for 12 minutes.

Monthly DRC Lunch—Reminder

By Kevin Schmidt, K0KPS

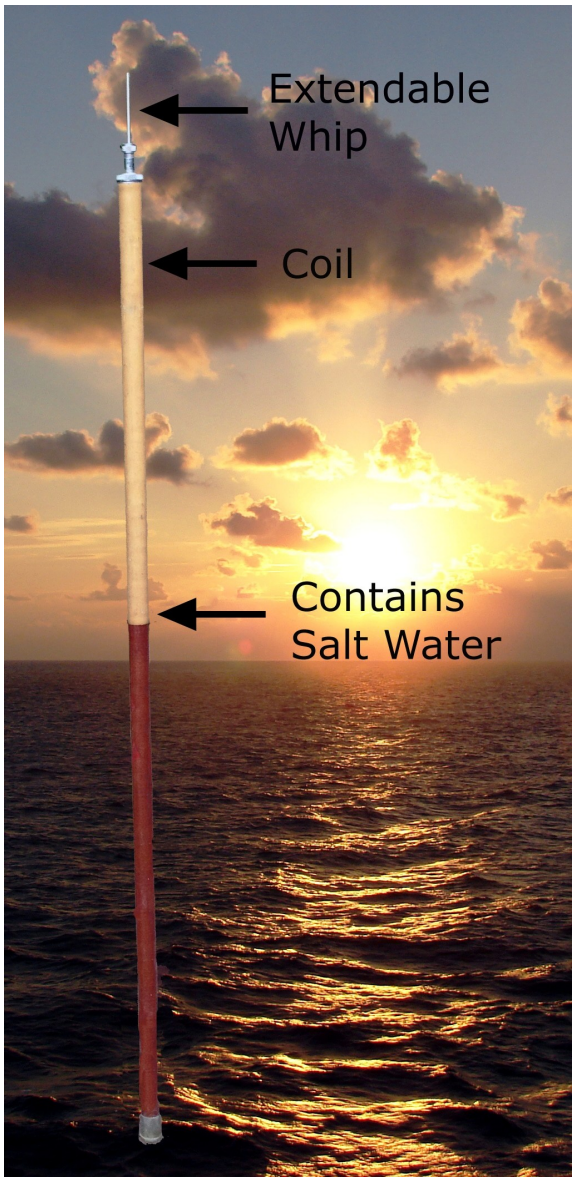
An informal face-to-face meeting of DRC members meets on the third Wednesday of each month at 11:30 a.m. The location is at the Valley Inn Restaurant, 1997 S Wadsworth Blvd, in Lakewood. This restaurant is on the southern edge of the King Soopers Shopping Center at Jewell and Wadsworth. No reservations are required. If you are interested in meeting and talking about radio, or other topics, don't hesitate in coming by.

— This is an Unpaid Advertisement —

A FAKe INDUSTRIES ANNOUNCEMENT

Provided By Bill Rinker, W6OAV

After years of intensive research and development, FAKe Industries is about to announce a new super gain mobile HF antenna! The theory behind the antenna is very interesting. Some time ago a FAKe Industries ham/engineer noticed that when he operated mobile HF next to salt water the signal reports he received were always much better. The engineer did some research and found that the ground conductivity in the U.S. ranges between 0.5 and 30 millimhos per meter. In contrast, the conductivity of seawater is an amazing 5,000 millimhos per meter! The engineer realized that the high conductivity of saltwater causes much less RF signal loss than that caused by low ground conductivity.



After thinking about this for a while, the engineer reasoned that if saltwater conductivity near an antenna causes less RF signal loss then why not design this feature into an antenna. So, he designed an antenna containing saltwater! Thus the AQUATENNA was born! Figure 1.

Another FAKe engineer, upon seeing the antenna, suggested a modification. Why not add a spike at the base of the antenna and fill the antenna with salty Margarita? That way, if the mobile operator is sitting somewhere and the bands are dead, he can grab a glass and enjoy a few drinks.

FAKe Industries, a Division of WACK Inc. "If it's a fantastic product, it's out of WACK"

Challenger Hafwave Antenna

Note by Editor

As a follow-up to the February meeting, Kevin (K0KPS), sent over some information about KJ6ER's (Greg Mihran) Challenger Antenna. Greg also provided an expanded list of links for various antenna models, as follows:

KJ6ER Antennas Primer – bit.ly/KJ6ERAntennasPrimer
PERformer 40M-6M Quarterwave Vertical – bit.ly/KJ6ERPERformer
Challenger 20M-6M OCF Halfwave Vertical – bit.ly/KJ6ERChallenger
Dominator 17M-10M EF Halfwave Vertical – bit.ly/KJ6ERDominator
Dominator 17M-10M EF Halfwave 2-Element Vertical Beam – bit.ly/KJ6ERDominatorBeam

If you have any questions, feel free to reach out to Greg:
www.qrz.com/db/KJ6ER
gmihran@me.com
(650) 714-7577

DRC - Blast From the Past

Provided By Woody Linwood, W0UI

Woody Linwood, W0UI, sent over some photos from various DRC events in the past. This one is from the 1982 Christmas banquet.

A Wealth of Antenna Design Programs

By Bill Rinker, W6OAV

VE3SQB has developed a website which provides design software for a large collection of amateur radio antennas. Some of the antenna covered include coaxial and loaded dipoles, dicones, quagis, verticals, J Poles, beams, skyhoppers and many more antenna types. VE3SQB also provides programs for building capacitors, baluns, ununs and different types of feed lines. Also, there are tips for troubleshooting antennas that are not working properly. All the above are available at: https://www.ve3sqb.com/

VE3SQB ANTENNA DESIGN PROGRAMS EN82NE

Hams go where no engineer has gone before.

How Far Into Space Will My RF Signal Go?

By Bill Rinker, W6OAV

Have you ever wondered how far your RF signals go when they leave earth? If so, read on.

Radio waves from Earth, being electromagnetic radiation, can theoretically travel through space indefinitely. In a vacuum, such as space, radio waves travel at the speed of light, which is approximately 186,000 miles per second. There is no theoretical limit to how far a radio wave can travel if you are just considering distance.

However, the detectability of radio waves diminishes over vast distances due to several factors. As they propagate, radio waves spread out, and their signal strength decreases, which makes them harder to detect. Additionally, the expansion of the universe can cause radio waves to redshift, decreasing their frequency over distances of billions of miles. Interstellar matter such as gas and dust can also absorb or scatter radio waves, further reducing their detectability.

There is evidence that radio waves can travel incredibly far before becoming undetectable. For example, the Voyager 1 spacecraft, which was launched in 1977, travelling 40,000 miles per hour is currently about 14.5 billion miles from Earth and is still sending back data via radio waves. Another example is the NASA Deep Space Network which is in communication with the MARS Rover on Mars. Depending on the date the distance between Mars and earth can vary from 33.9 million miles to 250 million miles.

The strength of a radio wave also depends on its frequency. Lower-frequency waves travel through space more easily than higher-frequency waves. This is why we can still detect radio waves from the Big Bang, which happened billions of years ago. The waves from the Big Bang are very low-frequency and have been able to travel through space for a very long time without being significantly weakened.

The earliest radio waves emitted from Earth (such as the first long-distance radio broadcasts in 1895 by Guglielmo Marconi) have traveled about 200 light years away (1 light year is approximately 5.88 trillion miles). However, by the time they are 100 light-years away, they are so attenuated and weak that they are essentially undetectable but still exist.

In summary, while radio waves can travel through space without a theoretical limit to their range, their ability to be detected diminishes with distance due to signal dispersion, redshift, and absorption or scattering by interstellar matter. Overall, while it's unlikely that any specific radio wave will last forever, the fact that radio waves can travel through space for billions of years is still a fascinating phenomenon.

References:

[1] What's the maximum distance that a radio wave can travel at full power:
https://physics.stackexchange.com/questions/390509/whats-the-maximum-distance-that-a-radio-wave-can-travel-at-full-power

[2] How far do radio waves travel?
https://ham.stackexchange.com/questions/12690/how-far-do-radio-waves-travel

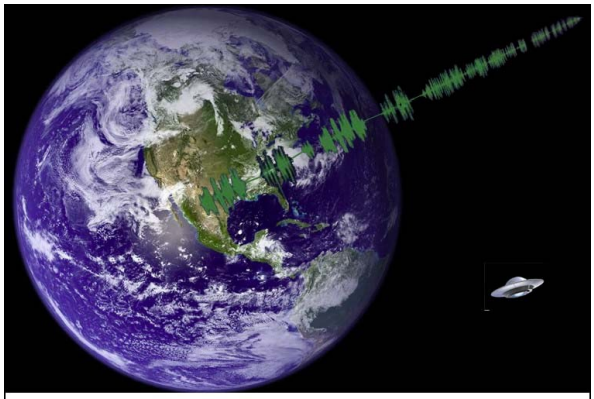


Figure 1 - How far into space will this radio wave propagate?

A Compact Bookshelf UHF Beam

By Bill Rinker, W6OAV

Like many hams these days I cannot have outside antennas due to HOA issues. So, I was looking for a small vertical UHF beam to set on top of a bookshelf to access the DRC's UHF repeaters. A standard two element UHF Yagi beam was too wide for the available vertical space. Then I remembered the Moxon beam which would fit my limited space. This article describes a UHF Moxon beam, how it compares to the equivalent 2 element Yagi and how to easily build a UHF Moxon.

The Moxon Beam

The Moxon beam is a parasitic 2-element array with the ends of each element folded towards each other providing additional coupling. See Figure 1. The result is an effective compact 2-element parasitic beam of good performance and easy to build.

Table 1 summarizes the differences between a UHF Moxon and a 2 element UHF Yagi. These differences exist on all bands from HF to UHF. The Moxon' s elements are about 70-75% of the size of a traditional 2-element Yagi beam making the Moxon more compact and suitable for cramped quarters or smaller spaces, especially on HF. The Moxon offers a stronger front-to-back pattern than the Yagi, while the Yagi has a consistent small edge in gain. The Moxon has a slightly wider beamwidth than the standard Yagi and offers a wider SWR passband compared to the Yagi, making it more forgiving in terms of frequency matching.

TABLE 1 – UHF MOXON VERSAS A 2 ELEMENT YAGI

Parameter	MOXON	2 EL YAGI
Forward Gain *	≤5.8 dbi	≤6.2 dbi
Front to Back Ratio *	≤30 dbi	≤20 dbi
Beamwidth (3dB) *	80°	70°
SWR Bandwidth ≤2:1	30 MHz	25 MHz
Element Length	9.5"	13.0"
Element Spacing	3.4"	4.0"

*First 3 parameters are illustrated in Figures 2 & 3.

Bookshelf Moxon Construction

As mentioned earlier, I built a UHF Moxon for mounting in a narrow space on top of a bookshelf. The following describes how I built the Moxon. Figure 1 shows the schematic with measurements listed in inches and millimeters. The reason for including millimeters is that they are easier to work with at UHF. However, some folks prefer the American system. Figure 1a shows the completed bookshelf UHF Moxon.

Required items:

- Several feet of 1/2" PVC pipe.
- A 90° PVC elbow.
- Two PVC end caps and one 4 way PVC Tee.
- PVC glue.
- Caulk or silicon sealer.
- 3' of 12 Gauge wire (either 1/16" or 3/32" welding rod may be used, available at Harbor Freight).
- Several inches of proper size heat shrink tubing (Available at Harbor Freight, Ace, Home Depot).
- A desired length of coax with the antenna end prepared to be soldered to the Moxon's driven element.
- A drill, a small saw and a source of heat such as a candle for the shrink tubing.

Construction procedure (referring to Figures 1 & 4):

1. Drill a hole in the 90° elbow slightly larger than the diameter of the coax as shown in Figure 4.
2. Cut the horizontal Moxon boom to the desired length.
3. Saw slots into the boom to accommodate the antenna elements as shown in Figure 4's "*Slot Cut Details*" insert diagram. (Cut Slot B the proper distance from the near end of Slot A).
4. Cut and bend antenna elements as shown in Figures 1 & 4.
5. Insert elements into heat shrink tubing with the spacing shown in Figures 1 and 4.
6. Heat the heat shrink tubing.
7. Glue the 90° elbow to the boom.
8. Push the coax through the elbow hole and out the antenna end of the boom.
9. Solder the coax shield and center conductor to each side of the driven element.
10. Slide the driven element into Slot A at the end of the boom.
11. Press the reflector element into side Slot B.
12. Seal the slots with caulk or silicon sealer.
13. Cut the vertical support PVC pipe to the desired length, insert and glue it into the 90° elbow.
14. Configure the desired support (Figure 5 shows the support I put together).

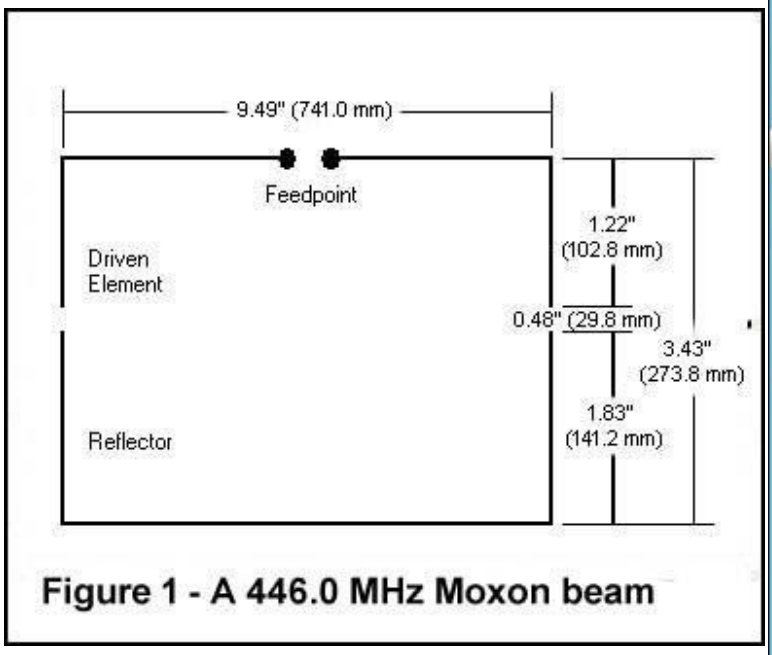


Figure 1 - A 446.0 MHz Moxon beam

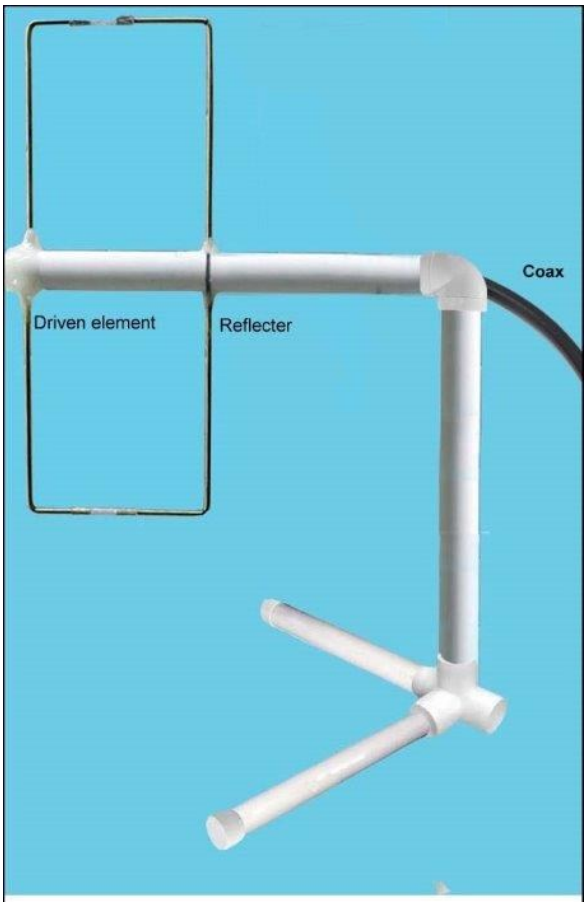


Figure 1a - Indoor UHF Moxon

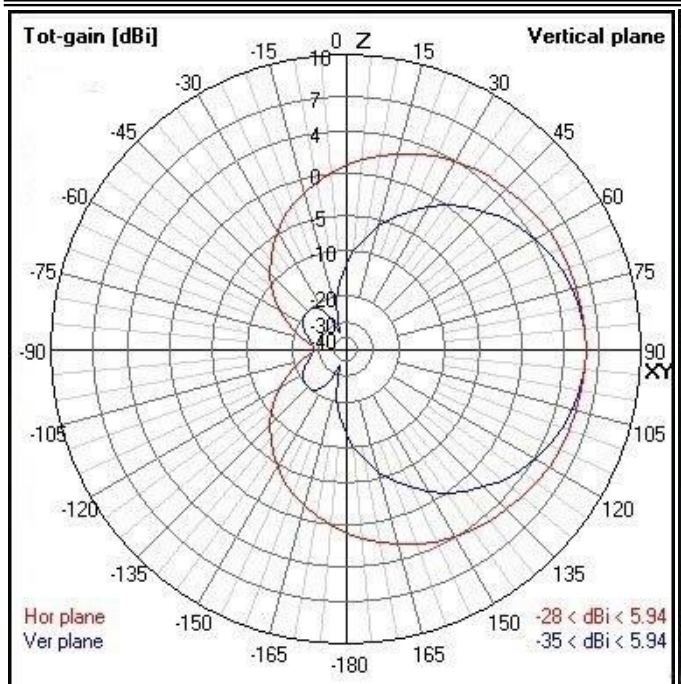


Figure 2 - Patterns of a Moxon beam

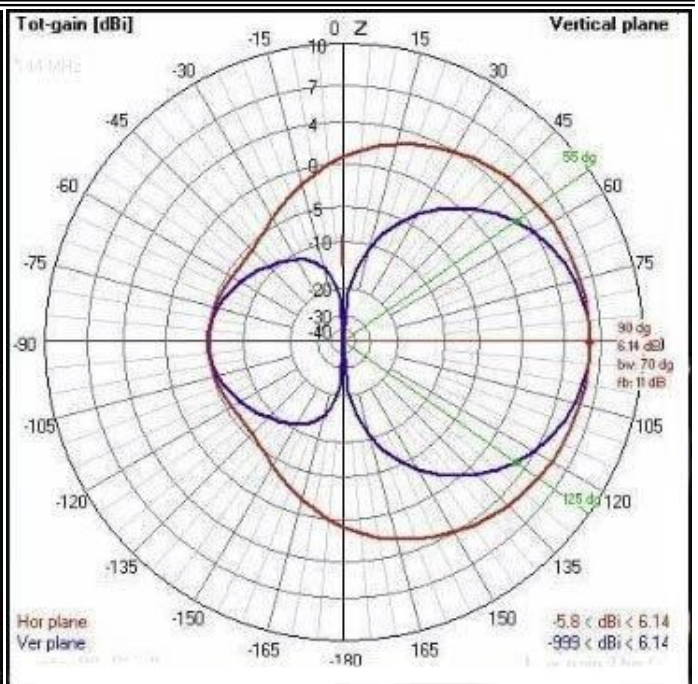


Figure 3 - Patterns of a 2 element Yagi

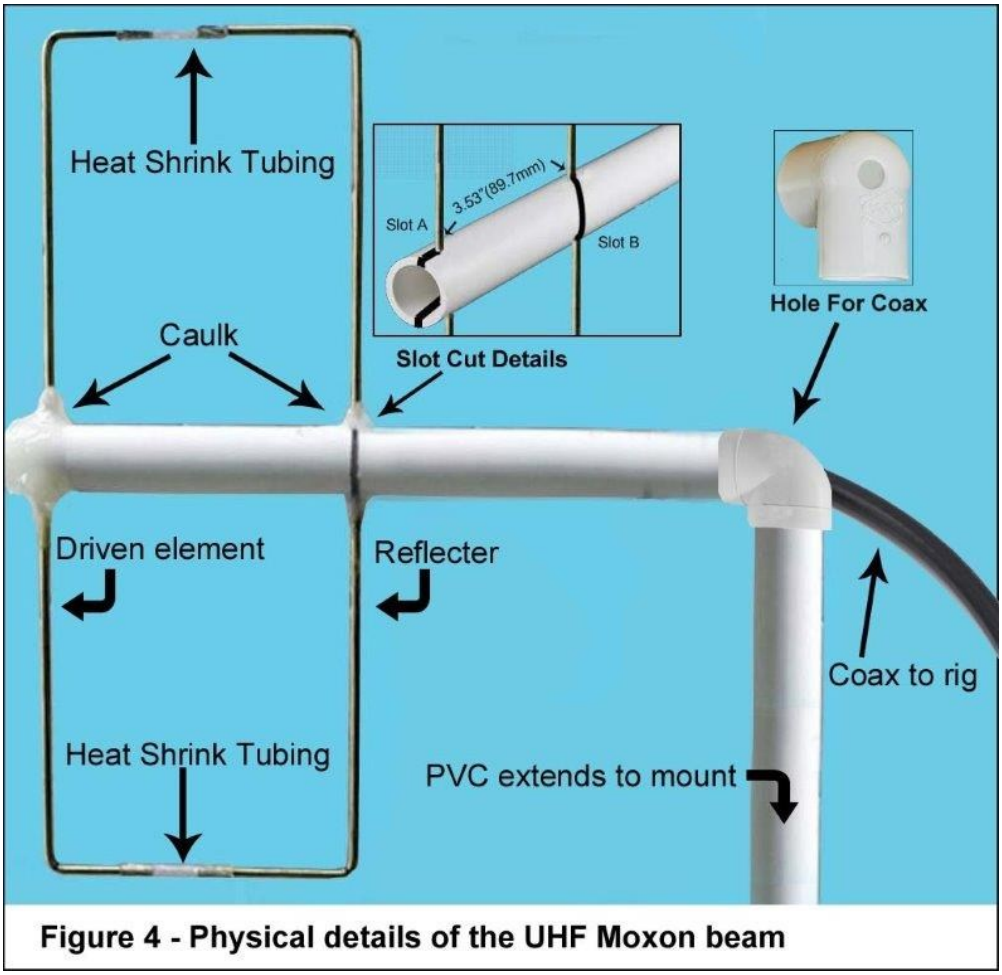


Figure 4 - Physical details of the UHF Moxon beam

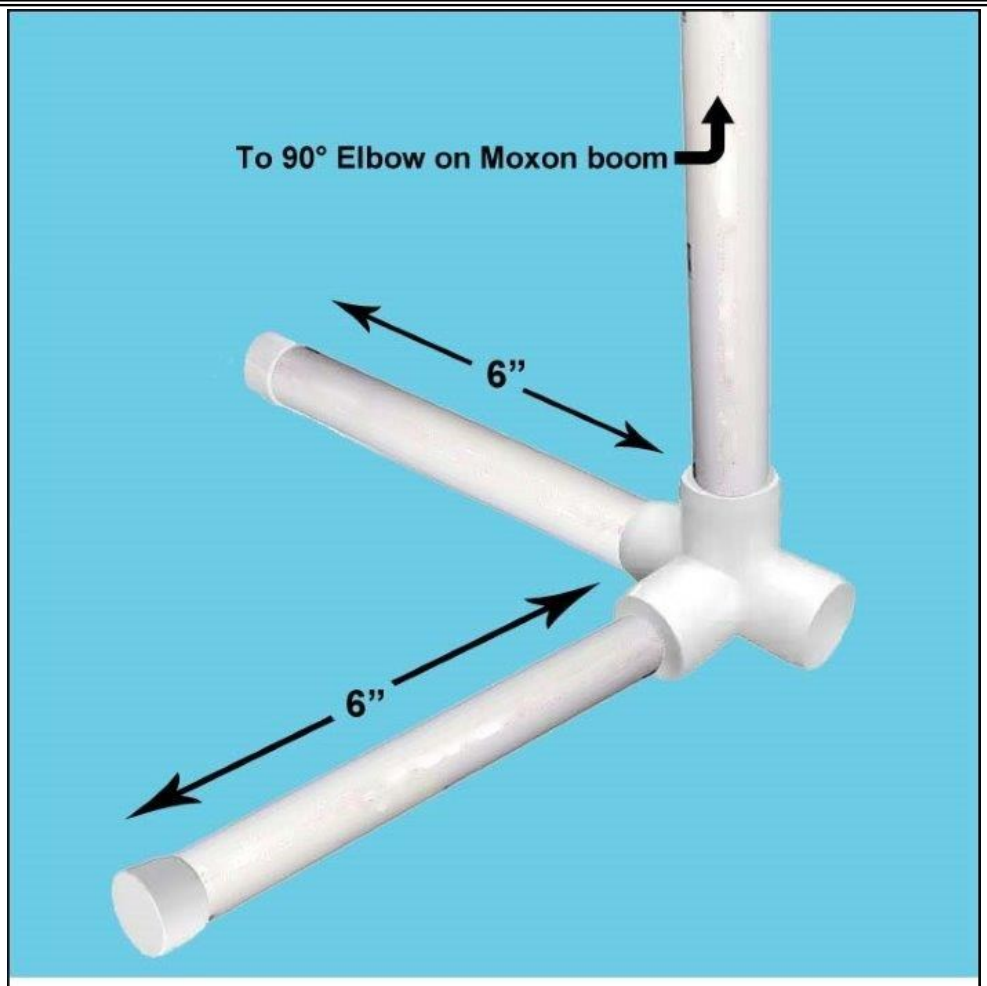


Figure 5 - A simple mount for the Moxon antenna

Summary
Comparison tests between a UHF Ground Plane and the Moxon were conducted to stations on simplex and to repeaters. Each antenna was separately set up in the same location. Tests indicated that the Moxon performed as indicated in Table 1 and Figure 2.

References
[1]. “Don’t Load It, Bend It”, Page 17:
https://w0tx.org/RoundtableArchive/2017-RoundTables/RT201710(OCT).pdf
[2]. Notes on the Moxon Rectangle Pattern:
http://www.antentop.org/w4rnl.001/moxpat.html
[3]. The Moxon-Beam:
https://www.qsl.net/dk7zb/Moxon/Moxon.htm
[4]. KD6WD Moxon Antenna Project Software:
http://www.k6sgh.com/antennas/moxon.htm
[5]. Designing Moxon Rectangles by Equation and by Model:
http://on5au.be/content/a10/moxon/moxgen.html
[6]. Moxon Antenna Project:
https://moxonantennaproject.net/

HamCon Colorado is Coming!

From John Maxwell, W0VG

The Rocky Mountain Division Convention is coming back to Colorado after nearly 9 years! We're going to have a great convention with some fantastic speakers and forums on every topic imaginable. We look forward to seeing you all October 23-26, 2025 in Grand Junction.

Thank you for your interest in HamCon Colorado. If you would like more information, go to hamconcolorado.com.

The DRC needs you!

The DRC is looking for Net Control operators for the Sunday night nets. A script, that will guide you through the process, will be provided. It is great practice for running a net and gaining additional experience. If you're interested, please email net@w0tx.org.

~ Get Published ~

We welcome and encourage all members to share their experiences and stories so that we can all learn from one another. It can be long or short. If we can't fit it into one newsletter, we can split it across multiple issues. Not a writer? We have volunteers that will listen to your story and put it into an article, and of course you will have the opportunity to review and approve prior to publication. Your contribution to the club is welcomed and appreciated. ~Editor

The DRC needs you!

Please contact W0GV (president@w0tx.org) if you are interested in helping with the open positions. See the list at the end of the newsletter.

FROM THE ARCHIVES

December 1954

The Denver Radio Club will meet December 15, 1954 at Carnegie Hall on the Denver University campus. This will be our Xmas Party and all the XYL's are invited to attend. Each one will bring a gift not to exceed One Dollar.

There will be a raffle held for a B & W coaxial Switch. A free chance will go to each one who has contacted his legislator. Chances will be sold at 25¢ each or special 5 for a dollar.

The winners of the Sweepstakes will be announced for the club.

Bob Jensen, WØWLN and his XYL are leaving for Brussels, Belgium. Bob will be stationed there for the next two years. It is with regret that we see them leave as Bob has been very active in the Denver Radio Club. Best of luck to them on their journey.

At the January meeting Len Wright, WØUQM, will give a talk and demonstration on Single Side Band. Plan now to attend!

We wish to welcome the following new members into the club: Gregory Norberg, Betty Rogers, WØTYB - W.D. Cozzens, W7BLE/Ø Larry Hastings, wØAL - Ray Richardson, WNØWUN, and Roy Earhart who should have a call to report soon.

The new membership list is being distributed now. If you are not on the list, please report the fact to the club secretary. Watch the round table for additions and corrections, which will be published as they are found. New members will also be added by way of the Round Table, so keep your copies for reference.

Don't forget to be working on your Legislator contacts, and if possible. be on the air Sunday morning at 0800 - Dec 12th.

73's

DRC's Emergency Response Info

In the event of a disaster in the metro area, please monitor our repeaters on 145.490/448.625 (primary) and 449.350 (secondary).

The emergency Net Control Operator will provide information and/or requests to members for assistance.

W0TX Repeater Directory

Kings Soopers Reward Program - Help the DRC.

kingsoopers.com/i/community/community-rewards

citymarket.com/i/community/community-rewards

Random Site Of The Month

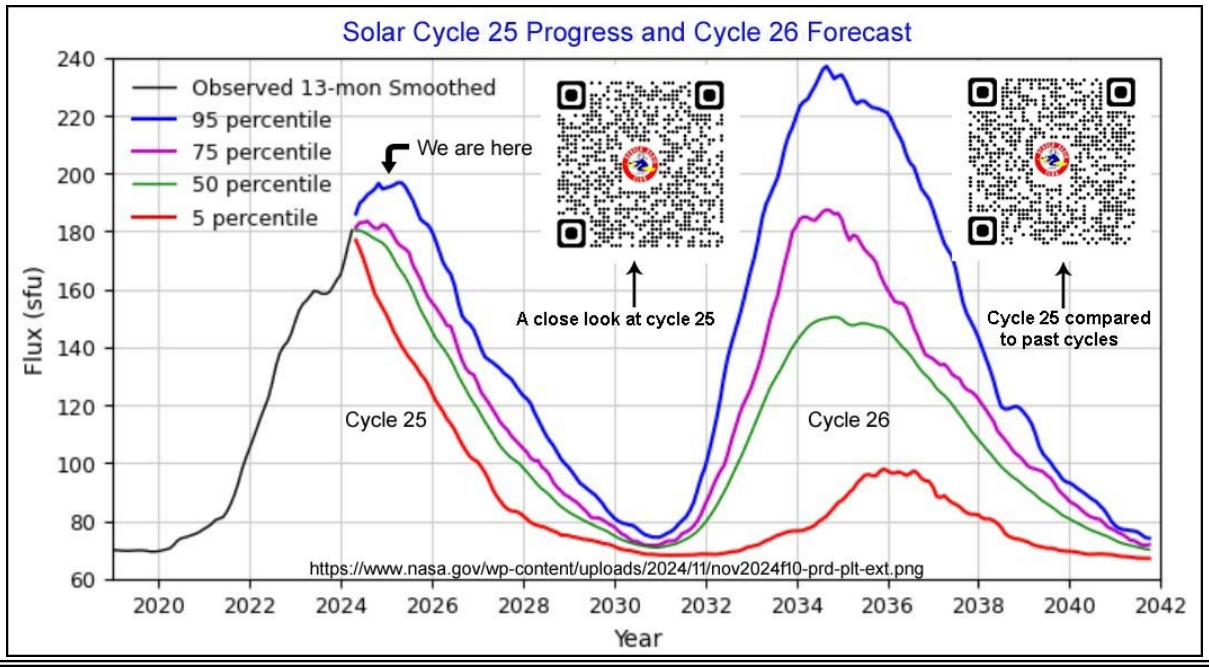
Wellington, New Zealand ARC

The Round Table Archive and Article Index

w0tx.org/roundtable

Propagation Forecast

By Bill Rinker, W6OAV



Upcoming Events

Hamfests & Conventions

Event	Date	Location	Sponsor Website
LARCfest 2025	04/05/25	Longmont	W0ENO page

Upcoming QSO Parties

The following are the Contests not sponsored by the ARRL. Please submit additions for future issues.

State/Province	Start Date	End Date	Sponsor Website	Notes
Louisiana	04/05/2025	04/06/2025	Louisiana Contest Club	
Mississippi	04/05/2025	04/06/2025	ARRL Mississippi Section	
Missouri	04/05/2025	04/06/2025	Boeing Employees' Amateur Radio Society – St. Louis	
Georgia	04/12/2025	04/13/2025	Georgia QSO Party	
New Mexico	04/12/2025	04/13/2025	New Mexico QSO Party	
North Dakota	04/12/2025	04/13/2025	ARRL ND Section Manager	
Michigan	04/19/2025	04/20/2025	Michigan QSO Party	
Nebraska	04/19/2025	04/20/2025	Nebraska QSO Party	
Ontario	04/19/2025	04/20/2025	Contest Club Ontario	
Quebec	04/20/2025	04/20/2025	Club Radio Amateur de l'Outaouais	
Florida	04/26/2025	04/27/2025	Florida QSO Party	

Source: qsoparty.eqth.net/index.html See contestcalendar.com/contestcal.html for a larger QSO parties list.

Attention

The DRC Board of Directors meetings are held on the 4th Wednesday of each month via Google Meet and are open to any member. If you wish to attend, please contact a board member prior to the meeting night for specific information.

DRC Repeaters

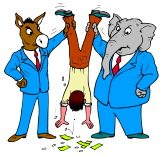
BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz	**Metro Denver Area Coverage**
2m	145.490MHz (-) 100Hz PL	**Linked to 70cm / 448.625MHz. Primary frequency during emergency net.**
2m	147.330MHz (+) 100Hz PL	**Local area. Does not TX a PL.**
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	**Saint Anthony's. Note: This is a narrow band repeater requiring DCS.**
70cm	448.625MHz (-) 100Hz PL	**Linked to 2m / 145.490MHz. 1° disaster net freq.**
70cm	449.350MHz (-) 100Hz PL	**Wide area coverage with Echolink, node # 4140. Secondary frequency during emergency net.**
70cm	449.775 MHz (-)	**Yaesu digital, C4FM, Wires-X, DN, VW & Data. No analog FM. W0TX Room 40931.**
70cm	446.7875MHz (-)	**BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804**

DRC's Trading Post

Don't forget you can find locally-sourced, ham-grown merchandise at: w0tx.org/trade

APRIL 2025

DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 	**2** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**3**	**4** First Quarter	**5**
6	**7**	**8**	**9** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**10**	**11**	**12** Full Moon
13 **Rookie Roundup: SSB** 1800 - 2359 UTC	**14**	**15** 	**16** **DRC Lunch** 11:30 @ Valley Inn Restaurant, Lakewood **DRC Meeting -TBD** Elmer 6 p.m. General 7 p.m.	**17**	**18**	**19**
20  Last Quarter	**21**	**22**	**23** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**24**	**25**	**26**
27 New Moon	**28**	**29**	**30** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)			

See arrl.org/contest-calendar for additional details about contests.

DRC Board of Directors

President	W0GV	Gerry Villhauer	303-467-0223	president@w0tx.org
Vice-President	K0KPS	Kevin Schmidt	303-475-9234	k0kps@arrl.net
Secretary	WW0LF	Orlen Wolf	303-279-6264	secretary@w0tx.org
Treasurer	N0CRZ	Cathy Villhauer	303-467-0223	treasurer@w0tx.org
Board Member	N0XRX	Mark Thomas	720-438-0848	n0xrx@w0tx.org
Board Member	K1DBC	Doron Ben Chaim	720-254-1561	k1dbc@w0tx.org
Board Member	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
Board Member	KB0CHT	Jeff Irvin	Check Roster	Check Roster

DRC Staff and Volunteers

Benevolent		Carolyn Wolf	303-279-1328	benevolent@w0tx.org
Club Librarian	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
Digital Committee	W6OAV	Bill Rinker	Check Roster	digital@w0tx.org
Education Coordinator	Open			elmer@w0tx.org
EmComm Coordinator	Open			emcomm@w0tx.org
Field Day Chairman	N6WHV	Dick Nelson	Check Roster	fieldday@w0tx.org
Membership	KB8OGP	Kelly Sobanski	Check Roster	membership@w0tx.org
Net Control	KS0E	Alex Acerra	Check Roster	net@w0tx.org
Public Relations	K0AXP	Dave Verlinde	248-515-2371	publicrelations@w0tx.org
RT Managing Editor	AD0UZ	Brennan Pate	Check Roster	roundtable@w0tx.org
RT Associate Editor	W6OAV	Bill Rinker	Check Roster	Check Roster
Hamfest Manager	KE0YKV	Bill Worthington	720-626-5485	drcfest@w0tx.org
Tech. Committee Chair	Open			tech@w0tx.org
Trustee	WW0LF	Orlen Wolf	303-279-6264	trustee@w0tx.org
VE Team	K0RAP	Robert Pickett	720-336-0114	k0rap@w0tx.org
Website & YouTube	K1DBC	Doron Ben Chaim	720-254-1561	websiteadmin@w0tx.org

Please Let Us Know

Over the years we occasionally hear from hams who have read the Round Table in other states and countries around the world. We appreciate the comments and we would like to know where you are located. So if you live outside the Front Range or Denver Metro Area and read the newsletter either online, email or hard copy please send a short note via email with your *City, State* or *City, Country*.
We will publish it at a later date in our new regular feature called Round Table Round World.
To respond to this request send your information to roundtable@w0tx.org.

Subject: I'm located in…

Editor's Note

DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you 'd like to write about, you may email your submissions to roundtable@w0tx.org. The submission deadline is the 25th of the Month. ~ Editor