



THE ROUND TABLE

Monthly Newsletter Of The Denver Radio Club

Since 1917

January 2024

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members.

Christmas and New Years have come and gone! I hope all of our members had a very Blessed Holiday season.

As the holidays have passed so has our DRC Holiday Party! To say it was a success would be an understatement. As promised, our caterer did a fantastic job with food and setup. Jim Langsted, KC0RPS, provided a very interesting program on various types of balloons that are launched by the Edge of Space Sciences group and weather balloons. His presentation included pico balloons (small party sized balloons) that travel around the globe, sometimes several times, and launched by ham radio operators. Thanks Jim for a super program! We ended the evening with prize drawings for very nice prizes including two VHF/UHF HTs, a PowerPole crimp set, cash and several other items.

Our January 17th, 2024 virtual program will be presented by Karin Thompson from RT Systems. As many of you know RT Systems provides software and cables to program most ham radios sold today using your computer. Karin will virtually discuss programmers, radios, cables and also provide several hints and tricks to radio programming. I am sure you will find this subject very interesting and informative.

The next hamfest for 2024 will be the NCARC Fest in Loveland, CO. Details can be found on the NCARC website. DRC will have tables at this event.

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?

FROM CATHY VILLHAUER, N0CRZ, DRC MEMBERSHIP

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:

Mark Ferguson - KFØNSI

Dave Hurlbut - KFØMRD

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

Why is the letter "i" used for current?

The answer can be found on page 5 of the July 2009 issue of the *Roundtable*:
[https://w0tx.org/RoundtableArchive/2009-RoundTables/RT200907\(JUL\).pdf](https://w0tx.org/RoundtableArchive/2009-RoundTables/RT200907(JUL).pdf)

2024 DRC HAMFEST

BY BILL WORTHINGTON, KE0YKV

The DRC 2024 Hamfest is scheduled for Sunday, August 25th and will be held at the Adams County Fairgrounds, 9:00 am to 1:00pm. As the new Hamfest coordinator, I am going to need some help. The most pressing need is to arrange the food and drinks. I also need help with ticket sales, door prize raffle, VE testing, equipment sales, and vendor registration. If anyone can offer some help, I would greatly appreciate it. I can be reached at drcfest@w0tx.org or 720-626-5485.



FCC REMOVING SYMBOL RATE RESTRICTIONS

BY BILL RINKER, W6OAV

The Federal Communications Commission (FCC) in October 2023, voted to eliminate symbol rate restrictions for amateur radio operators in certain frequency bands. This change allows operators to use more efficient digital modes of communication, which can transmit more data in a shorter amount of time.

The FCC's decision is expected to have several positive effects on the amateur radio community:

- Increased data throughput: Amateur radio operators will be able to transmit more data per unit of time, which will allow for faster and more efficient communication.
- Improved spectrum efficiency: The use of more efficient digital modes will allow for more operators to use the same amount of spectrum, which will help to reduce congestion.
- New possibilities for experimentation: Amateur radio operators will have the opportunity to experiment with new and innovative digital modes of communication.
- Increased public service capabilities: Amateur radio operators can use more efficient digital modes to provide better public service communications during emergencies.

However, there are also some potential concerns associated with the FCC's decision:

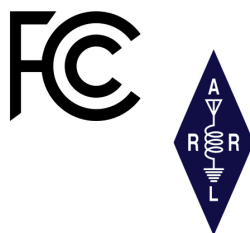
- Increased complexity: The use of more efficient digital modes may make amateur radio more complex for new operators.
- Compatibility issues: Some older amateur radio equipment may not be compatible with the new digital modes.
- Increased interference: The use of more powerful digital modes may increase the potential for interference to other radio services.

Overall, the FCC's decision to eliminate symbol rate restrictions is expected to have a positive impact on the amateur radio community. The increased data throughput, improved spectrum efficiency, and new possibilities for experimentation will benefit amateur radio operators in a variety of ways. However, it is important to be aware of the potential concerns associated with the decision and to take steps to mitigate them.

Here are some additional details about the FCC's decision:

- The decision applies to the 2.4 GHz, 5.8 GHz, 9 GHz, 10 GHz, 24 GHz, and 47 GHz frequency bands.
- The decision does not apply to the 220 MHz, 420 MHz, and 900 MHz frequency bands, which are used for voice and narrowband data communication.
- The decision will take effect 30 days after it is published in the Federal Register.

ARRL's bulletin: [arrl.org/news/arrl-hails-fcc-action-to-remove-symbol-rate-restrictions](https://www.arrl.org/news/arrl-hails-fcc-action-to-remove-symbol-rate-restrictions)



AI AND HAMS

BY BILL RINKER, W6OAV

The other day I was playing around with AI (Artificial Intelligence) and I asked it “*What is the best height for a shortwave antenna?*” The response was pretty good and if you are not happy with the response you can ask AI to regenerate the response. AI’s response is shown in italics below. Note that hams are mentioned at the end of the response. It appears that AI can be a good learning tool for our hobby!

Determining the best height for a shortwave antenna can be complex and depends on several factors, including the type of antenna, the frequency of operation, and the surrounding environment.

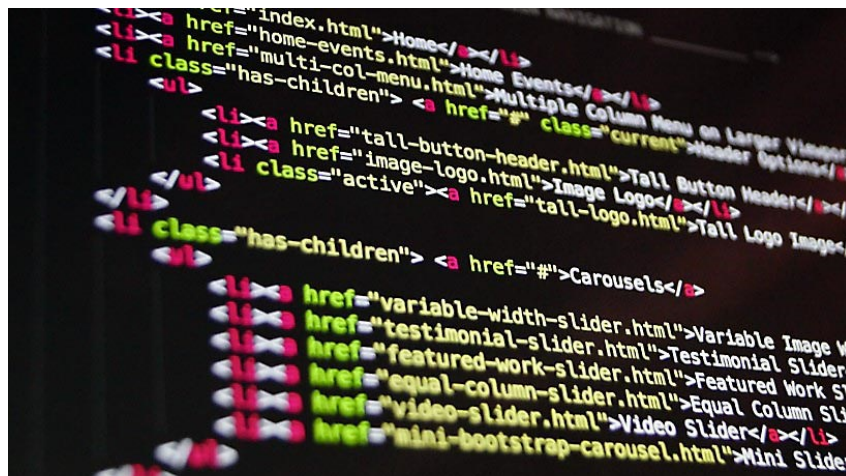
In general, for horizontal wire antennas, a height of at least half a wavelength ($\lambda/2$) above ground is desirable to reduce ground losses and improve radiation efficiency. However, depending on the specific frequency of operation, a height of $\lambda/4$ or $\lambda/8$ may also be effective.

For vertical antennas, the height above ground should be a minimum of $1/4$ wavelength ($\lambda/4$), and for ground-mounted vertical antennas, the length of the ground radials is also important.

The surrounding environment can also have an impact on the optimal height for a shortwave antenna. Trees, buildings, and other obstructions can affect the radiation pattern and signal strength, so a clear line of sight to the horizon is desirable.

Ultimately, the best height for a shortwave antenna depends on the specific application, and it may require some experimentation to find the optimal height for a given situation. It's generally recommended to consult with an experienced antenna engineer or radio amateur for guidance in designing and optimizing an antenna system.

I used <https://chat.openai.com/> for this example. I asked AI several technical questions and it did a good job with the answers. There are plenty of YouTubes detailing AI. Give it a try as AI is going to be a big event in our lives!!

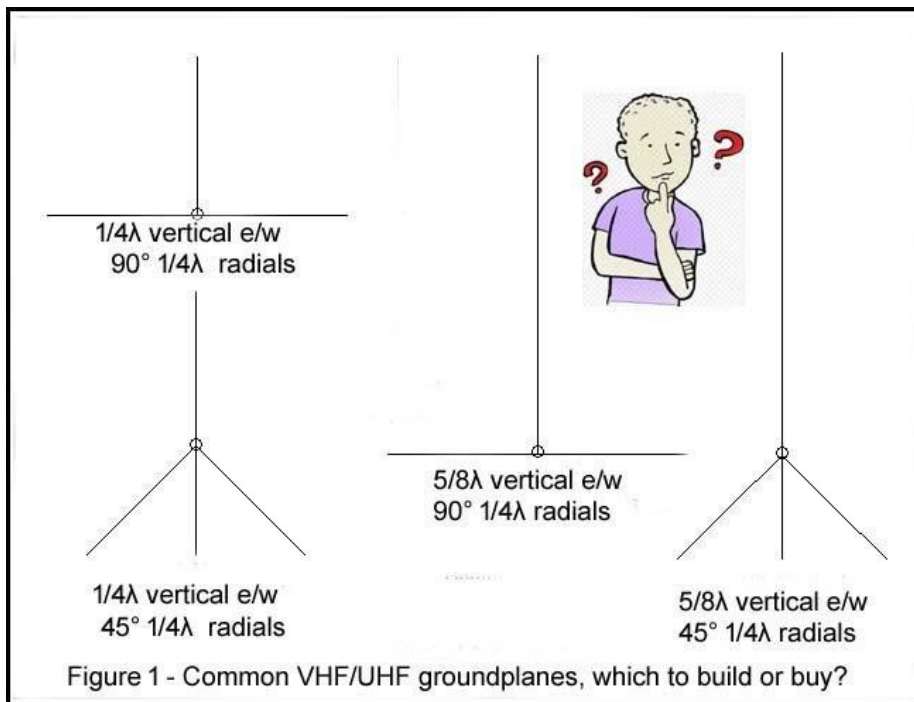


Artificial Intelligence - the future is here!

BUILD OR BUY A VHF/UHF GROUND PLANE ANTENNA?

BY BILL RINKER, W6OAV

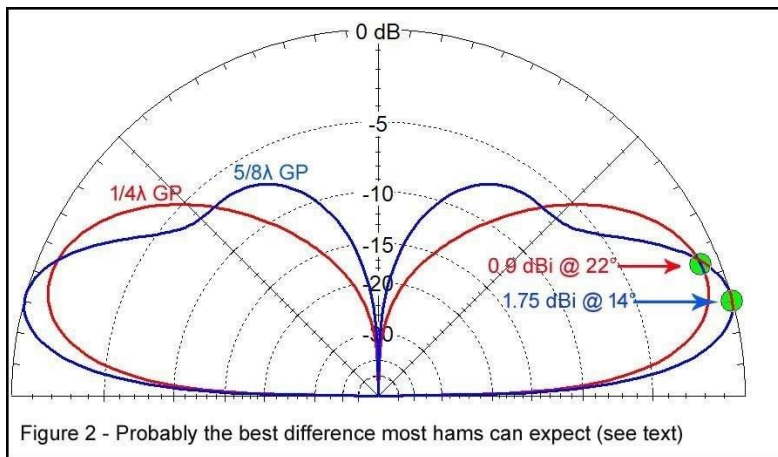
Many hams use ground plane (GP) antennas because they are a simple design, easy to build, install, troubleshoot and they work well. If you are considering building or buying a GP, then the question you should consider is whether to go with a $1/4\lambda$ or a $5/8\lambda$ GP with either horizontal or sloping radials. See Figure 1. The information and references below may help you to decide.



$5/8\lambda$ vs $1/4\lambda$ GP

The advantages of the $5/8\lambda$ GP over a $1/4\lambda$ GP are that they:

- Radiate at a lower angle. This lower radiation provides longer communication distances.
- Can have up to 3 dB gain over a $1/4\lambda$ GP, but only when the feed point is at ground level and the ground is perfect. Most ham radio antennas are elevated and have imperfect grounds and various environments, so the gain is usually less than 3dB. Figure 2 shows the gain and radiation angles that the average ham station may expect over average ground conductivity and a good environment.
- Have a smaller RF current maximum at the base. This reduces the reflection of the signal from the ground, which can be beneficial in situations where ground reflections can cause signal degradation or interference.



The disadvantages of the $5/8\lambda$ GP over a $1/4\lambda$ GP are that they:

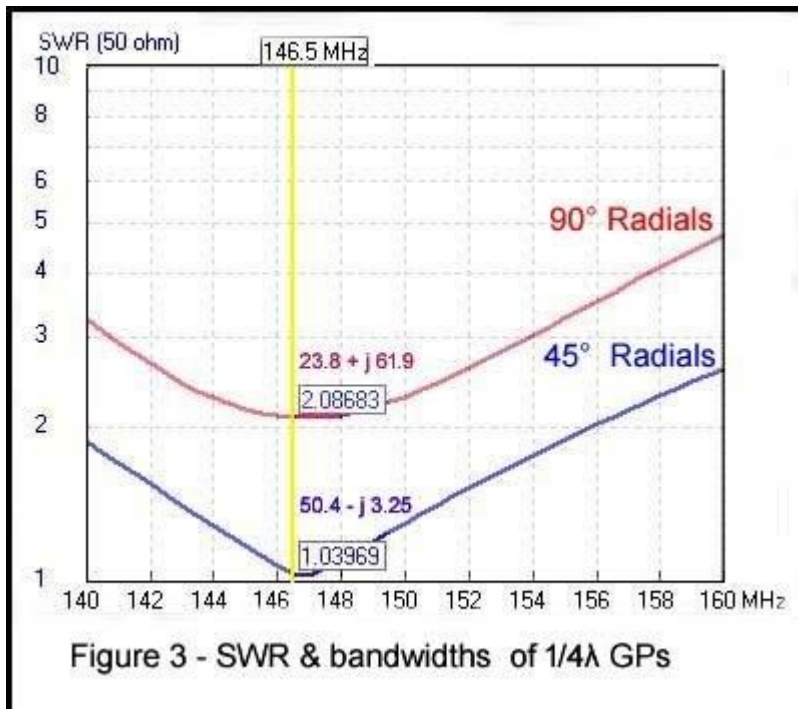
- Require a matching network. Because of this the $5/8\lambda$ GP is more complex, more expensive and harder to build and tune.
- Have a lower radiation angle may be detrimental when working close in repeaters that are quite high.
- Have a higher wind load.

45° sloping or 90° horizontal radials?

45° radials are not recommended for $5/8\lambda$ GPs due to radiation pattern distortion caused by RF current interactions on the antenna elements. Rarely do commercial manufacturers build $5/8\lambda$ GPs with 45° radials. However, 45° radials on $1/4\lambda$ GPs are very common.

The advantages of 45° radials as opposed to 90° radials on $1/4\lambda$ GP antennas are that they:

- Improve the impedance match to 50 ohm coax feed, reducing the SWR.
- Improve the bandwidth of the antenna. See Figure 3.
- Provide slightly higher gain (0.5 to 1.0 dB).
- Reduce the horizontal space requirements, making it easier to install and maintain.
- Are very easy to build and improve performance.



Build or Buy?

The advantages of building your own antenna are that you can customize it, **save money**, and **learn** more about antenna theory and design. The disadvantages are that you need some tools and materials, such as wire, connectors, soldering iron, etc., and an SWR meter or analyzer to tune the antenna.

The advantages of buying a commercial antenna are that you can get a ready-made antenna that is tested and tuned, and that may have better durability and quality. The disadvantages are that you will pay more and miss the opportunity to learn by doing.

References

Understanding the $1/4\lambda$ Ground Plane Antenna:

<https://practicalantennas.com/designs/verticals/gp2/>

A study of 2 Meter Vertical Antenna Radials:

<http://www.hamuniverse.com/w5alradialnotes.html>

Building a Simple a $1/4\lambda$ Ground Plane antenna:

https://practicalantennas.com/designs/verticals/gp_build/

$1/4\lambda$ Antenna Calculator:

<https://m0ukd.com/2017/06/14-wave-antenna-calculator/>

Understanding the $5/8\lambda$ antenna:

<https://practicalantennas.com/designs/verticals/5eights/>

$5/8\lambda$ Antenna Design:

<http://www.cainetworks.com/products/antenna/>

Making your own 146 MHz $5/8\lambda$ whip antenna:

<https://vk4adc.com/web/index.php/vhfuhf-projects/20-144mhz-antennas/168-2-metre-58th-wave-whip>

$5/8\lambda$ Antenna Calculator:

<https://www.qsl.net/w4sat/five8th.htm>

The History of Sparky

The club logo was originated by Miriam Juza, xyl of Marvin, W6FGD (SK), ex W0FYF. Miriam was looking for something to put on Marv's letterheads, and as a surprise for him, she drew "Sparky". Possibly in 1956, during the presidency of Carl Smith, W0BWJ (SK), permission was given to the club for its use as that was the year it first appeared on the club's publication, The Round Table. The original design of Sparky riding a lightning bolt, and holding a code key, has not been changed - but other alterations have been made in past years, namely the addition of "Denver Radio Club" encircling him and a coat of arms by Roy Raney, KØOVQ (SK).

~ 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.

DRC's Trading Post

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

PAST ROUND TABLE PAGES

PROVIDED BY WOODY LINWOOD, W0UI

From the October 1960 edition.

Readin' the Mail

My tutor used to tell me that there are few perfect home brew rigs. This set me to thinking about gizmos and gadgets, doo-funnies and various obfuscations of that ilk. I've been told that a gizmo is a gadget with moving parts, and a gadget is a gizmo the parts of which, if any, remain stationary on whatever duffchit it is attached to. I can readily see that a R. E. pump, for instance, would thus be a gizmo. Or is that what a widgeit is?

A doo-funny doesn't necessarily do anything. It can be a doodad that moves, or a thingamajig that doesn't, or vice-versatile!

Same way with a thingumbob. It's undoubtedly a thing, but it may or may not bob. It depends on what kind of dinwfid it's on.

Maybe someone somewhere has written a whateis that explains the whys and wherefores of all these dinguses. If you see one, let me know; I'd like to have it for my, uh, whatchamacallit!

A A A A A AH Side band rig



RESONANT FREQUENCY

In case you've always wondered, three scientists have now calculated the theoretical resonant frequency of the earth.

Prof. Chaim Leib Pekeris, Dr. Ziborah Alterman, and Hans Jarosch say that the first frequency of the earth is one cycle every 53.4 minutes. The first overtone is 35.6 minutes.

The calculation was made from readings of seismographic measurements. The theory was checked during the Chilean earthquake and several seismographic laboratories agreed that the figures seemed to be correct.

Talk about VLF!



Did U Know . . .

That Denverite George Sahl heads the new Denver office of G. E. for semi-conductors.



That The Round Table would like an article on local MARS activities. Who will come forth with the copy?



This sign appeared on the wall of an electrical contractors shop, "WE FIX YOUR LIGHTS BY REMOVING YOUR SHORTS."

Page Eight

QSLS
JOHN COX - PRINTER
 WE# 4-4739

Novice Net

Phil Bright, KNØZNV is drumming up a Novice C.W. Net under the auspices of the Denver Area AREC.

If you would like to get in on some CW net procedures, learning the QN signals etc., give Phil a ring at YUkon 5-4686 or look for him on 3739 kc. each evening and join in the fun.



TRANSMITTER HUNTERS

By Bill, WØGVT

The following will give you an idea of the new rules that are being incorporated on transmitter hunts. There is a trophy now available for the person that wins the first ten hunts. (They don't need to be consecutive in order). For the other hunters, there will be certificates for all, listing the number of wins they have had in the same period as the above winner. Even one for the person who never wins but shows good sportsmanship at all times.

Along with this there will be a credit of two wins for any person hiding it and "hanging-up" all the other hunters. This should help those who frequently have to hide, plus having all looking for top spots to hide.

The list of the present winners would include: Chic, WØSIN two wins; Ruas, WØEXR one win; Roy, KØOVQ one win; Tom, KØCTM one win; Howard, KØHPF one win and Jim, KØKZH one win. If you have not started to give these fellows competition, come on out. If any help is needed on getting set on loops and etc., call any of the regular hunters. Enough for now. See you at the next hunt.



"Buy-Sell-Swap" ads are available free to members of the Denver Radio Club at the rate of two ads per membership year. More than two ads per year or ads to non-members will be charged at the rate of \$2.50 per ad of reasonable length.

DRC'S EMERGENCY RESPONSES

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
[Southeast Louisiana ARC](#)

THE ROUND TABLE ARCHIVE

Go to: w0tx.org/roundtable

THE ROUND TABLE ARTICLE INDEX

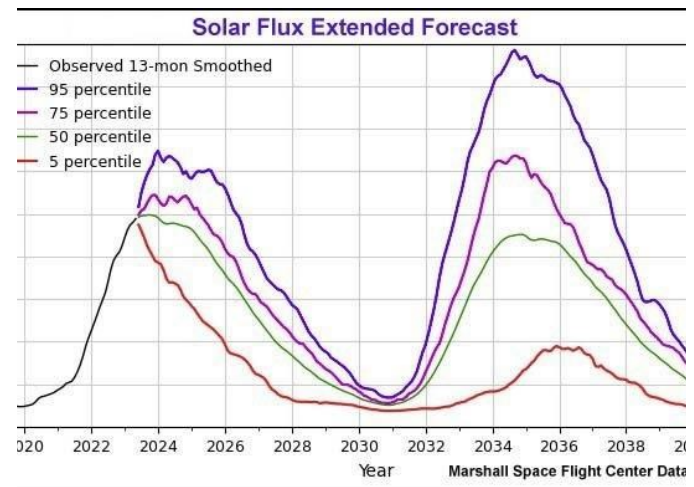
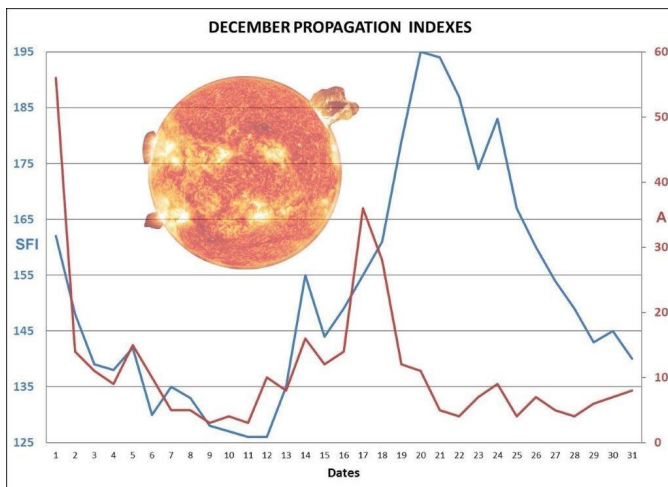
Go to: w0tx.org/RoundtableArchive/-RoundTables-Index.pdf

PAST & FUTURE PROPAGATION CONDITIONS

By Bill Rinker, W6OAV

The charts below show the Solar Flux and “A” indexes for last month and the forecast for this month’s Solar Flux index.

Refer to the September 2010 *Round Table* for more complete information on interpreting these charts, which is available at: [http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009\(SEP\).pdf](http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf)



UPCOMING EVENTS
HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
The Swapfest	2/18/24	Adams County Fairgrounds	rmham.org

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
Idaho	03/09/2024	03/10/2024	Idaho 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 the month and are open to any member. Due to scheduling of meeting space, the board does not always meet at the same location and on occasion meetings are held via Skype. Anyone wishing to attend, please contact a board member prior to 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. Has voting receivers. Does not TX a PL.
2m	147.330MHz (+) 131.8Hz PL	Test mode operation. Send signal reports to Tech Committee.
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







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JANUARY 2024		<i>DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)</i>				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 	2	3 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	4	5	6 ARRL Kids Day - 1800 - 2359 & ARRL RTTY Roundup 1800 - 2359  Full Moon
7 160 Meter Contest - Ends 1559 UTC	8	9	10 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	11	12	13 NA QSO, CW - Begins 1800 UTC
14 NA QSO, CW - Ends 0559 UTC  Last Quarter	15 	16	17 DRC Monthly Meeting Elmer 6 PM Meeting 7 PM	18	19	20 NA QSO, SSB - Begins 1800 UTC
21 NA QSO, SSB - Ends 0559 UTC  New Moon	22	23	24 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	25	26	27
28  First Quarter	29	30	31 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

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Board Member	KB0CHT	Jeff Irvin	Check Roster	Check Roster

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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...

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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