THE ROUND TABLE

Monthly Newsletter Of The Denver Radio Club

Since 1917 July 2023

President's Message

By Gerry Villhauer, W0GV

Hello DRC Members.

I hope you all are doing well as we get into the summer season. There have been a lot of activities with the club. Our DRC Saturdays have been very well attended and by all accounts, very much enjoyed by the attendees. If you have not yet attended one, please come out to the next on Jul 15, 2023. Details will be available soon on the DRC website. Then we had ARRL Field Day. The weather was great, no rain and just enough wind to make a perfect Colorado day. The RF filters we purchased proved to be very beneficial keeping the different bands from interfering with each other. Money well spent! Thanks to everyone who helped with the setup and tear down of the site. And thanks to Cathy, N0CRZ for preparing the food and refreshments. If you have constructive comments or suggestions; we would like to hear from you.

Remember, our BIG Event for the year is coming up on Aug 27, 2023 The DRC HAMFEST! We need every member's support for this yearly event. This is the big money maker of our club. Table reservations and admissions are available on our website. Early reservations really help with our planning.

Thanks to Bill Worthington, KE0YKV for his presentation on the Earth's Magnetic Field and K-Indices at the June meeting. Very interesting and informative presentation.

Our July meeting (July 19, 2023) will be given by Amanda Alden, K1DDN our Rocky Mountain ARRL Section Manager. Amanda will be telling us about what is going on with the League and especially things particular to our division and answer questions. Plan to attend our virtual meeting. The meeting link is on our website.

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:

Ryan Gardner KØCTR	Bonnie Leahy KBØHTC
Steve Sybesma - Associate Member	Zee Dalton KFØJSQ
Joel Clipperton K1DEF	Ed Sampson AEØLT
Desiree Herrera - Associate Member	Bruce Voiland KØMBV
Michael Burton KFØMYG	Christopher Chadwick KCØZNT

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.

Lakewood Siren Test

By Editor, AD0UZ

A big thank you to all those who participated in the Lakewood siren test on June 7th. They were:

KC0RPS	K0KPS	KD0UPC	KF0FPI
KU5X	WG0N	K6HJV	KE0CNU
N5CMK	W0GV	KE0WHU	AE0YR
KE0GXB	AE0SF	KC0WWW	KC8HCF
KJ6BIT	NB0P	KD0DUJ	WB0HWP
WW0LF	WZ0S	K0LAI	KN0TTS
KD0NRO	AA0DH	AE0TS	KF0MCM
KC2CAG	AE5IT	K0DES	N0DBS

The test went well and W0GV sent the results over to the powers that be. The club could not do it without the significant amount of help from all those listed above.

If you are interested in helping in the future contact AD0UZ (w0tx.org/officers). We can always use the help and it is a great opportunity to practice your radio skills while helping a local community. If you can't help but know of someone who may be able to, please pass this along.

The cities of Wheat Ridge and Lakewood really appreciate the time and effort of those who help with the tests.

DRC Saturday—July 15th

By Mark Thomas, N0XRX

This event will be a Parks on the Air activation (POTA) so it will NOT be held at the typical location. This event will be held at the Rocky Flats Wildlife Refuge.

The public access is on the North side of the park off of Hwy 128 (West 120th Ave)

Rocky Flats Wildlife Refuge is located at the Southwest corner of Hwy 93 and Hwy 128.

We are going to try to activate 2 to 3 stations and we should have access to a restroom at this location. The activation starts at 10:00AM and should be done by Noon. We are going to try and be there by 9:00AM to get everything setup.

We have set up a Club account with POTA and all contacts will be made using the club call and will get sent in.

We will have a talk-in freq to assist people find us at our POTA site so we will be monitoring DRC's 145.490 & 448.625.

If you have any questions please feel free to contact one of the following people:

Kevin Schmidt KØKPS k0kps@w0tx.org
Alex Acerra KS0E alex.acerra@google.com
Mark Thoms N0XRX n0xrx@w0tx.org

Hope to see everyone there.

King Soopers Rewards Program & Helping the DRC

Provided By Cathy Villhauer, N0CRZ

The DRC is now registered with the Kings Soopers Reward program. If you register your loyalty card with the DRC in their system, the club benefits. Here are their instructions:

For King Soopers Stores - go to kingsoopers.com
For City Market Stores - go to citymarket.com

Once logged into their King Soopers or City Market account they can search for The Denver Radio Club either by name or VK146 and then click Enroll. New users will need to create an account which requires some basic information, a valid email address and a loyalty card.

*Customers must have a registered King Soopers or City Market loyalty card account to link to your organization.

*King Soopers or City Market loyalty cards are available at the customer service desk.

Purchases will not count for your organization until after your participants register their loyalty card. Participants must swipe their registered card or use the phone number that is related to their registered card when shopping, for each purchase to count.

Seeking DRC Website & WordPress Admin Volunteer

By Mark Thomas, N0XRX

Are you familiar with web site management and more importantly WordPress? Do you want to be more involved with the club? Do you have some knowledge or drive to learn web hosting and management techniques?

If so, we have the opportunity for you!!

The Denver Radio Club's WordPress Administrator role doesn't take a lot of time as our content doesn't change much. We have some initiatives that will take a few more hours to complete but once finished the site only needs general maintenance. If you don't know WordPress but have been interested in learning, and are a fast learner, please let us know.

Job duties (generic):
- Responsible for implementation and management of the website
- Offering site recommendations or improvements
- Review and manage plugins
- Troubleshoot and correct issues
- Backup, creation, transfer and restoration of a WordPress site

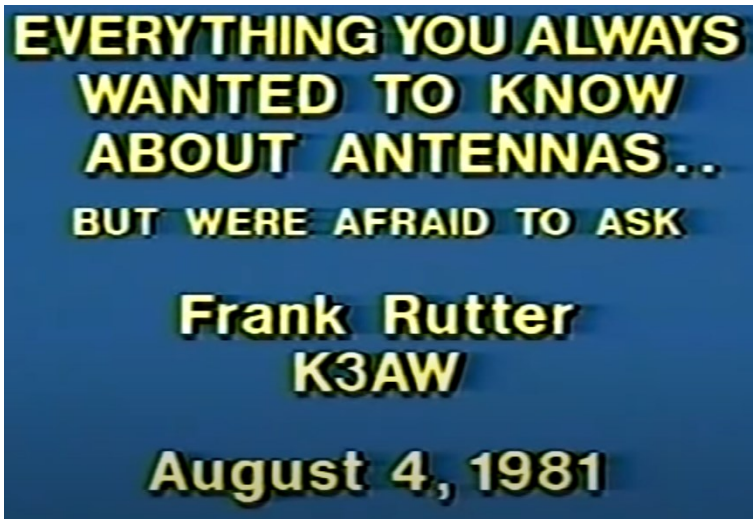
We would like to have multiple people in this role to provide backup and support if possible.

If interested or know someone that is, please contact Mark Thomas, n0xrx@w0tx.org

A Unique Demonstration of Antenna Radiation Patterns

By Bill Rinker, W6OAV

There is a very interesting and unique YouTube video titled “Everything you wanted to know about antennas….but were afraid to ask”. This video covers a presentation given by Frank Rutter, K3AW (SK). Frank started his presentation by stating that he is going to show the audience how antennas work, not why they work (no Maxwell equations!). He then used a unique setup to demonstrate the radiation patterns of most antennas that hams use. Frank’s demonstration setup consisted of a ground plane for the antennas and an audio generating detector system to illustrate the various radiation patterns. Listening to the audio as Frank moved the detector probe around the antenna allowed the audience to visualize the radiation patterns. The video is accessible at: youtube.com/watch?v=LEigIMS6bo4



Calling all QSLs…

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.

This one came from a place called “the Internet.”

Does Weather and Topography Affect VHF/UHF Radio Waves?

By Bill Rinker, W6OAV

Have you ever experienced not being able to reliably access a particular repeater, especially a digital repeater? Well, I do when using the W0TX Fusion repeater. Some days I can access it with 5 watts and on other days I have to use 50 watts and even then, the access is not always solid. After a while I noticed that this situation usually occurs when it is raining, snowing, or windy. In other words, weather seemed to be affecting my access to the repeater. These conditions got me to doing some research. Here is what I found.

I began the research by making a land profile between me and the W0TX Fusion repeater. I discovered that there was a small hill with a lot of trees between me and the repeater. Research later showed that I was experiencing diffraction, wind static and refraction. So, what are these phenomena?

Diffraction

The definition of diffraction is: A change of the direction and/or the intensity of a radio wave as it passes over or around an obstacle. Buildings, small hills, and other large objects in the path of the radio wave often cause diffraction.

Figure 1 shows the diffraction phenomenon which I always experience with the W0TX Fusion repeater. As the UHF signal crosses close to the hilltop the radio wave closest to the hilltop is affected (slowed) by the different conductivity by and near the hilltop. This causes some of the signal to bend (diffract) down towards the repeater. The opposite diffraction occurs from the repeater to my antenna. The diffracted signals are weak but usable. [1]

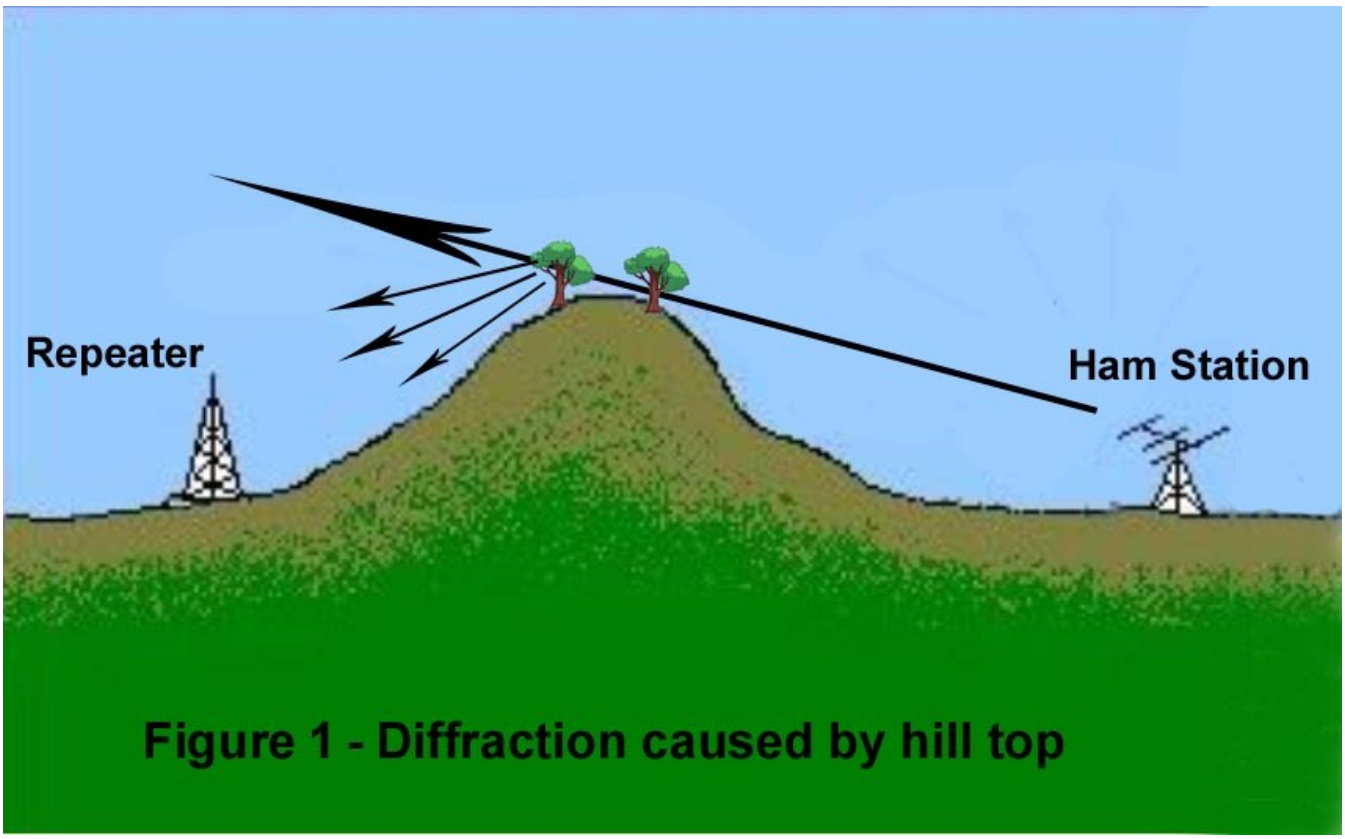


Figure 1 - Diffraction caused by hill top

To visually see diffraction, hold your hand close to a wall; shine a flashlight on your fingers to cast their shadow on the wall. Note that the shadow of the figures is not sharp. That is because the light waves are bending (diffracting) around the edges of the fingers. (Light waves have basically the same propagation properties as radio waves).

Wind

When the wind blows two issues occur between me and the repeater. First, the UHF signal fluctuates all over the receiver S meter. Second, repeater access is marginal. The fluctuating is caused by the trees moving on top of the hill which changes the propagating medium through them and tends to scatter the radio wave. The antennas are not the issue. My antenna is indoors, and the repeater antenna is well mounted.

The marginal repeater access is caused by the wind creating sand/dirt static. This static degrades the signal to noise ratio. This is a common problem for hams, especially in sandy areas like Arizona. The wind blows sand/dirt particles against the antenna elements which generates static noise. Hence, weak incoming signals, such as my diffracted signal, are buried in the static noise.

Refraction

The definition of refraction is: A change in a radio wave's direction (scattering) as it passes through mediums with different dielectric constants. Heavy rain and snow having different dielectric constants can create changes to the propagation medium that the radio wave passes through. Figure 2 shows how rain/snow can cause refraction. Hence, in my case, heavy rain and snow can scatter some of my weak diffracted radio wave thus attenuating the power that reaches the repeater antenna. [2]

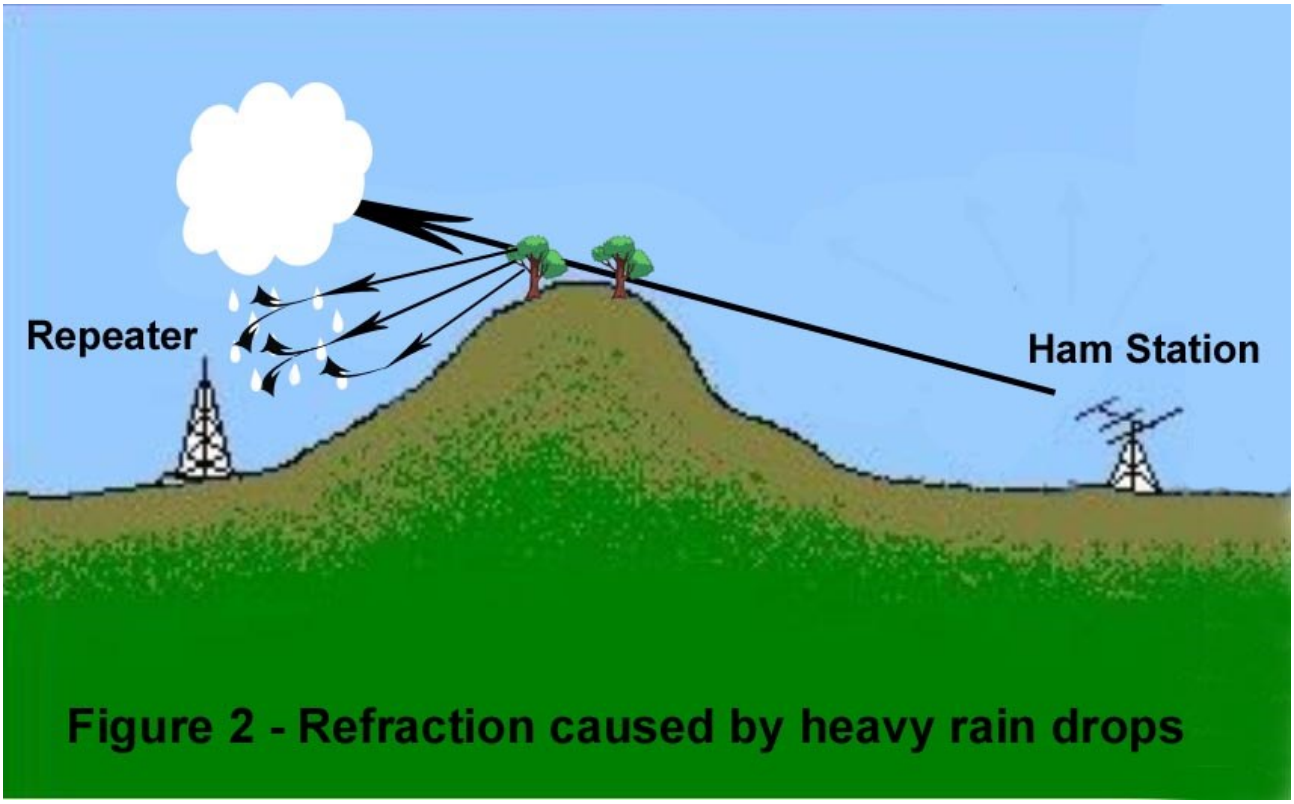


Figure 2 - Refraction caused by heavy rain drops

To visually see refraction, stick a straw into a glass of water. The straw will appear to be bent in the water. The bending effect is due to the conductivity of the water being different than that of the air around the glass.

So, yes weather and topography can affect vhf and uhf signals. And we haven't even discussed reflections of radio waves!

[1]. Radio Wave Diffraction:
https://www.electronics-notes.com/articles/antennas-propagation/propagation-overview/radio-em-wave-diffraction.php

[2]. Atmospheric Factors that Influence VHF Radio Propagation:
https://vu2nsb.com/radio-propagation/free-space-propagation/atmospheric-vhf-radio-propagation/

[3]. Reflection, Refraction and Diffraction:
https://www.physicsclassroom.com/class/waves/Lesson-3/Reflection,-Refraction,-and-Diffraction

DRC's Trading Post

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

The Denver Radio Club
is an ARRL Special Service Club

Support your hobby and *join the ARRL today!*

http://www.arrl.org/

Which is Better, a Ground Plane or a J Pole?

By Bill Rinker, W6OAV

A subject often discussed on the repeaters is “Which is better, a vhf/uhf ground plane or a vhf/uhf J Pole?” This article will attempt to answer that question and also provide information on building either antenna.

Antenna descriptions

Figure 1 illustrates the two antennas discussed in this article. The ground plane has sloping 45˚ radials. Why wasn’t a ground plane with horizontal radials included in this article? Well, according to EZNEC, rotating the radials from horizontal to 45˚ downward does nothing more than provide a better match to the transmission line. The radiation pattern and gain efficiency remain unchanged. Thus we don’t need to compare both types of ground planes to a J Pole. For the home brewers, a nice publication discussing the affects of the length of radials and the angles of radials is available at reference [1] below.

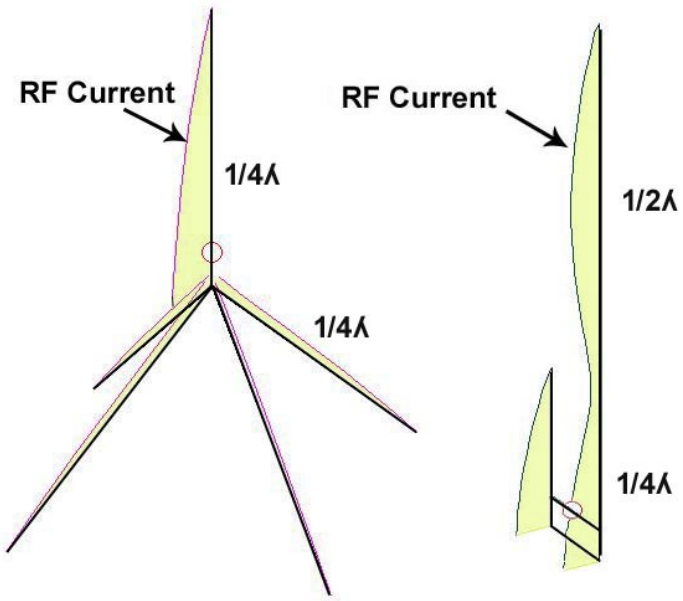


Figure 1 - Groundplane and J Pole compared

The J Pole shown in Figure 1 is the standard configuration. It consists of a 1/2λ radiator matched to the transmission line by a 1/4λ **non** radiating matching section. The RF currents in the matching section are equal and opposite and thus self cancel. The 50 ohm feed point is determined by tapping up from the base of the J Pole. Radials are not required. For home brewers, a very nice publication discussing J Poles is available at [2] below.

Comparing the antennas

Figure 2 (next page) shows the theoretical radiation patterns of a 2 meter ground plane compared to that of a 2 meter J Pole. (The patterns are valid for any vhf/uhf band). In this example, both antennas are mounted 25’ above ground. Note that the J Pole has a slight gain over the ground plane at most angles. This relationship is the same whether the antennas are in space or mounted at any height above ground.

So, are there any advantages of a J Pole over a ground plane? Yes, there are a few:

- Very slight gain improvement, especially at lower physical elevations.
- Slender design as radials are not required.
- Entire antenna is at same dc potential allowing a grounded mount to dissipate static charges.
- Can be “stuffed” into a PVC pipe (Class 200), good for “anti-HOA” installations. Also very good for portable operation. [3]

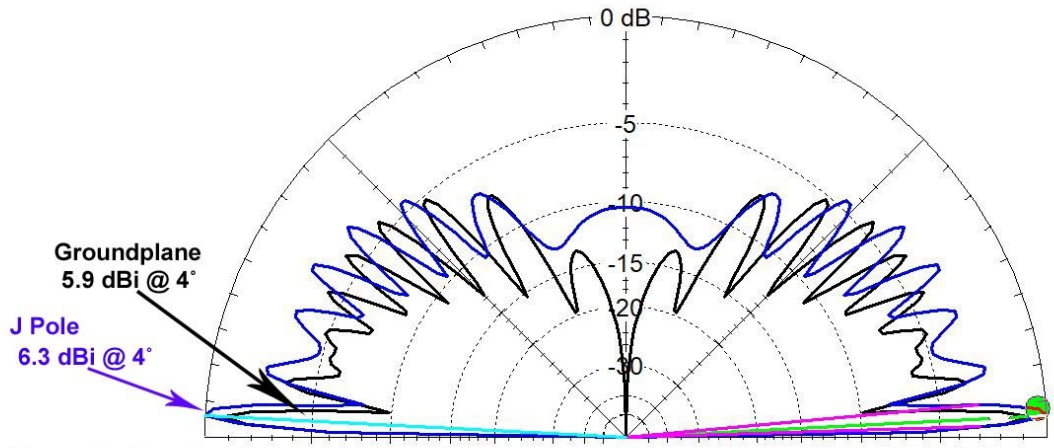


Figure 2 - 2 meter Ground Plane pattern compared to a 2 meter J Pole, both 25' above ground

Additional Notes

A vertical 2 meter dipole, a vertical 2 meter coaxial dipole and a 2 meter Slim Jim folded vertical dipole were not discussed in this article. EZNEC shows that they have identical patterns to within a db of those for a ground plane and the J Pole. Also, these antennas are a little more difficult to build. So, if you want additional gain over simple vertical antennas a beam is in order, or you can build a Super J Pole! [4]

The ground plane and J Pole are easy to build. Nice ground plane and J Pole dimension calculators can be found at [5] and [6] below.

[1]. W5ALT Antenna Radial Notes:
https://www.hamuniverse.com/w5altradialnotes.html?msclkid=77969ce2b07111ec8a4f655ce9ba8f8a

[2]. Some J-Poles That I Have Known, W4RNL (SK):
http://on5au.be/content/a10/vhf/jp2.html

[3]. Build a PVC Pipe J Pole:
https://w0tx.org/RoundtableArchive/2013-RoundTables/RT201301(JAN).pdf

[4]. Super J-Pole Antenna: hamuniverse.com/superjpolecal.html?msclkid=b7fb1ed7b5f411ec93a35c6b4479e7f0

[5]. J Pole calculator:
https://www.hamuniverse.com/jpole.html?msclkid=894a169cb5c511ec84b16e33b45dc55c

[6]. Ground Plane calculator:
https://m0ukd.com/calculators/quarter-wave-ground-plane-antenna- calculator/?msclkid=b21f10b2b5c511ec9064a561154d814b

Sunday August 27, 2023

DENVER RADIO CLUB HAMFEST

Adams County Fairgrounds

9755 Henderson Road in Brighton

Sunday August 27, 2023

9:00 am – 1:00 pm

$6.00 Admission
(Children under 13 free w/adult)

Exact Change appreciated

Doors open to the Public at 9am
Six-foot tables Advance Purchase..... $13.00 each
Tables at the Door..... $20.00
No guarantee of availability of "at the door" tables!

Vendor Setup begins at 7:30 on August 27th
Table assignment will be available at check-in
License Testing/VE Exams at 10 am
Talk-In: 145.490 or 448.625 PL 100.0Hz
GPS: Lat 39d 43' 19" N Lon 105d 10' 15" W
Handicapped Parking & Access Available

Visit our website for table reservations or email our Hamfest manager Bill Worthington at
drcfest@wØtx.org

Past Round Table Pages

Provided By Woody Linwood, W0UI

From the October 1960 edition.

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

Random Site Of The Month

Durango ARC Article - Durango Herald

The Round Table Archive

Go to: w0tx.org/roundtable

The Round Table Article Index

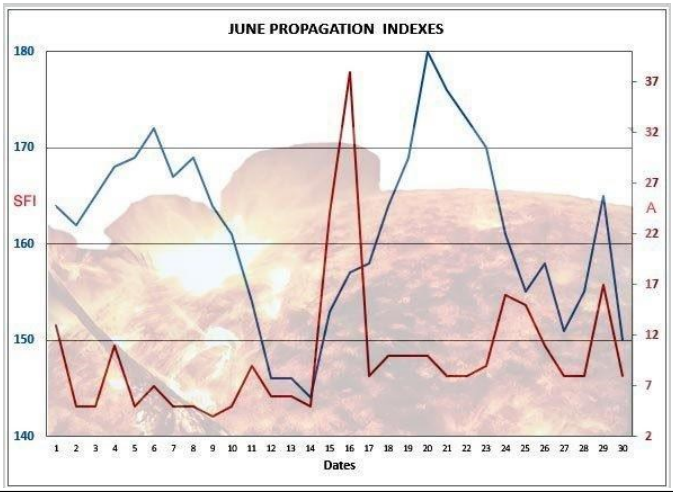
Go to: w0tx.org/RoundtableArchive/-RoundTables-Index.pdf

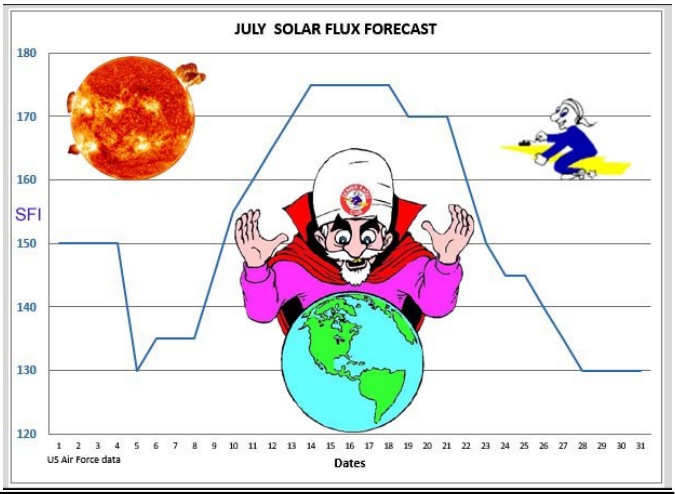
Past & Future Propagation Conditions

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





Upcoming Events

Hamfests & Conventions

Event	Date	Location	Sponsor Website
Megafest	7/22/23	CSU-Pueblo Occhiato University Center	ppraa.org/megafest
WCARC Hamfest	8/12/23	First Christian Church	arrl.org/hamfests

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
Maryland-DC	08/12/2023	08/13/2023	Anne Arundel Radio Club	
Hawaii	08/25/2023	08/27/2023	Hawaii QSO Party	
Kansas	08/26/2023	08/27/2023	Kansas QSO Party	
Ohio	08/26/2023	08/27/2023	Ohio QSO Party	
Colorado	09/02/2023	09/03/2023	Pikes Peak Radio Amateur Association	
Tennessee	09/03/2023	09/04/2023	Tennessee Contest Group	
Alabama	09/09/2023	09/10/2023	Alabama QSO Party	
Iowa	09/16/2023	09/17/2023	Story County ARC	
New Hampshire	09/16/2023	09/17/2023	Port City Amateur Radio Club	
New Jersey	09/16/2023	09/17/2023	Burlington County Radio Club	
Texas	09/16/2023	09/17/2023	Texas DX Society	
Washington	09/21/2023	09/22/2023	Western Washington DX Club	
Maine	09/23/2023	09/24/2023	Wireless Society of Southern Maine	
Nevada	10/06/2023	10/08/2023	Sierra Nevada Amateur Radio Society	
California	10/07/2023	10/08/2023	California QSO Party	

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

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**

JULY 2023

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Full Moon	4 	5 **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	6	7	8 **IARU HF World Championship -** Begins 1200 UTC
9 **IARU HF World Championship -** Ends 1159 UTC Last Quarter	10	11	12 **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	13	14	15
16	17 New Moon	18	19 **DRC Online Meeting** Elmer 6 p.m. Meeting 7 p.m.	20	21	22
23 30	24 31	25 First Quarter	26 **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	27	28	29

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	KE0HFH	Michael Vespoli	303-215-8862	emcomm@w0tx.org
EmComm Coordinator	AD0UZ	Brennan Pate	*Check Roster*	emcomm@w0tx.org
Field Day Chairman	N6WHV	Dick Nelson		fieldday@w0tx.org
Membership	N0CRZ	Cathy Villhauer	303-467-0223	membership@w0tx.org
Net Control	K0TOR	Jim Beall	303-798-2351	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