



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

January 2020

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members,

The Christmas Holidays and New Years have come and gone for another year. I hope you all had a very merry and festive holiday season. We held our celebration over a few days to accommodate our grandson coming home on leave from the Navy. We are very proud of his accomplishment as a Nuclear Electrician on the Submarine, USS Santa Fe.

Along with Christmas and New Years, our annual DRC Holiday Party has also come and gone. We had a larger attendance than the year before and all reports I have received; a good time was had by all. I will not attempt to name all the members who help make it a success, you know who you are. Please know that your help is Very Much appreciated! As always, my biggest help is my wife Cathy (N0CRZ). Without her, there would be no party; at least in the form which we have been doing it the last three years.

Dave and Rita Baysinger. What a wonderful presentation you gave on Africa. You provided beautiful pictures and very interesting stories of your African adventures. I have received several comments on how much the program was enjoyed. Great Job!

Our aging 220 mhz repeater has arrived and has recently been installed. 220 is a great band and I encourage you to give it a try. 220 radios are not expensive and there are several models out there that do multiple bands. Please consider getting on 220; I know you will enjoy it and, as I have said before, it is a use it or loose it situation. We have already lost a porting of the band...lets not loose any more! Thanks to Orlen (WW0LF) and Dave (WG0N) for their technical assistance installing the new repeater.

Our January 15th program will be presented by Robert White (K0RCW) and titled: A portable Pi 4 Station with panel power. We will look at what's new on the Raspberry Pi model 4 and show how it can be integrated into a total portable station including a small LifePo battery, portable solar panels, an innovative KI0BK charge controller and a portable antenna to provide hours of RV, camping or picnic table fun.

Robert always has interesting presentations with a humorous style. Do not miss this one on Wednesday, January 15th.

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 Roundtable.

73 for now,

Gerry
W0GV
President



Who's New In The DRC?

By Bob Willson, KC0CZ

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 personally to make them feel welcome. Welcome to our newest members:

Nick Meacher - AA0NM	Michael Carter
Kevin Shaw - N0BEP	-

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.

DECEMBER MEETING - WHAT'D I MISS?

By Fred Hart, AA0JK



Cathy (N0CRZ) displaying the two beautiful club logo cakes.



Our event greeters: Victoria, Dave (K0HTX), and Katie.



These two did an outstanding job of greeting, and distributing our meal selection requests, and prize tickets. They also handed out our prizes as the winning tickets were drawn by Gerry, W0GV, and Cathy, N0CRZ. We really appreciate their enthusiasm, and support during club events. Thanks ladies.



Our guest presentation, *Ends of the Earth*. By Dave (WG0N) and Rita Baysinger.

Our guest speaker, Jack Ciaccia (WM0G), Colorado Section Manager, brought us up to date on ARRL, and local news and activities.

Jim (K0TOR) was presented with a Certificate of Appreciation for all his contributions to the Denver Radio Club. Thanks Jim for a job well done.

In closing, it was a great evening of great food, prizes, and camaraderie.

Thanks to all that made the event a great success.



SPEAKERS NEEDED

BY BILL RINKER, W6OAV

We are looking for folks who are interested in giving a presentation at any upcoming DRC meeting.

If you are interested, contact Bill at w6oav@arrl.net.



TECHNICAL COMMITTEE REPORT

BY BILL RINKER, W6OAV

The following is an overview of current issues discussed at the November meeting.

DRC/TSA Aurora Site

Goal: Work with the TSA relative to establishing a “communications room” for the DRC.

Status: The Board is reviewing the MOU received from the TSA and corresponding with the TSA relative to the installation of wiring and coax runs.

DRC Repository verses Cloud Services

Goal: Research using the DRC repository or another cloud service for off premise storing of club records.

Status: AD0UZ has submitted a recommendation to the board. The board is now considering the recommendation.

Repair the Station 4 Remote Power Control

Goal: Troubleshoot and repair the system.

Status: Still under investigation. Suspect an Internet issue at Fire station.

Station 4 Internet?

Goal: Determine if we can obtain reliable Internet access for the C4FM repeater and for the remote power control system.

Status: Exploring 2 options – Internet from the fire station or microwave via St Anthony to member’s home internet.

C4FM Repeater – Fusion Network configuration?

Goal: Remain on the Colorado-Link network or configure the DRC Wires-X Room (assuming Internet available)?

Replace Echolink Server

Goal: Replace existing Echolink server which has started to randomly crash.

Status: Work with N0OBA who is building an Echolink server.

LEARNING NET REPORT

BY FRED HART, AA0JK

Our group gathers here to discuss, and respond to topics aimed at enhancing a better understanding of our hobby. The net is open to all and we encourage your participation.

Topics:

- S9 QRN from local power sources, appliances, LED lights street, intersection traffic lights.
- The *ARRL RFI Book 3rd Edition*. Practical cures for radio frequency interference! Now including digital television and hybrid electric vehicles. [Item No. 0915](#)
- *ARRL RFI Pocket Guide*: Pocket reference offers essential data on radio frequency interference for advanced ham radio operators, wireless engineers and technicians. [Item No. 5008](#)
- ARRL's new *On The Air* magazine
- DMR
- Old vs New radios, and accessories
- Limited budget. Do you really save by buying older equipment?
- 50KHz-900MHz Vector Network Analyzer MF HF VHF UHF Antenna Analyzer

Great topics from our group. We certainly enjoy everyone's participation. Thanks to all. If you are listening and don't yet have your license, you can contact us via w0tx@w0tx.org or elmer@w0tx.org.

We are always looking for additional net control operators. If you would like to participate we can help you with the basics of becoming a net controller. This is a great opportunity to learn and get experience running a net.

Net controllers are always needed to perform Emergency Communications services. The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment, with their local ARES leadership, for communications duty in the public service when disaster strikes. <http://www.arrl.org/ares>. In the event of emergencies such as floods, fires, or other public service, the amateur radio community is always ready to help. If you have an interest in participating, when the need arises, learn and train now to be prepared. For additional information contact our EmComm Coordinator: Mike Vespoli (KE0HFH) at emcomm@w0tx.org.

If we don't have the answer here on the net, we have a lot of experienced hams in the club that can help.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. We would encourage those who have been Hams for several years to also join us. Your experience and input is welcomed. What topics would you like to discuss? Join us Wednesday nights, 7:30 PM, 145.490, 100 Hz PL tone & linked to 448.625, 100 Hz PL tone.

(Note: The third Wednesday of the month is devoted to the DRC club meeting. Elmer Session: 6 PM, Main Meeting: 7 PM. See the [W0TX web site](#) for additional information.)

73,

Fred
AA0JK



DRC's ECHOLINK REPEATER LIVES AGAIN!

BY BILL RINKER, W6OAV

In November the DRC Echolink server began to intermittently crash. Dave (K0HTX) would power cycle the server which would bring it back to life for a few days. The crashes became more frequent. So, it was time to replace the server. It had worked well since approximately 2003.

Scott (N0OBA) donated a PC which had earlier supported his own Echolink system. He reprogrammed the PC for use on the W0TX Echolink system. See Figure 1. When placed on line, there was no audio. Troubleshooting indicated that the sound card was bad. Scott donated a soundcard which required considerable tweaking for peak performance. The server operation turned out to be a bit sluggish. Tracy (KI0HC) donated additional memory which resolved that issue. The last problem was that the PC's monitor which wasn't working quite right. Dave donated another monitor. Now the rebuilt Echolink server is functioning well.

Dave and Scott checked out the old server and found that several electric capacitors on the mother board had begun to leak. The DRC had worn them out!

Thank you Dave, Scott and Tracy for the donations and for spending considerable time rebuilding and getting the DRC Echolink system back on line.



Figure 1 - Scott, N0OBA, programming the new DRC server

HAM UNIVERSITY CLASS - SOLAR CYCLE 25 IS HERE

BY ROBERT WHITE, K0RCW

Did you know that on May 23, 1967, the Defense Early Warning (DEW) line went down and that the nation came very close to a nuclear war? Fortunately, cooler heads prevailed and a powerful solar flare was identified as the cause of the blackout. (The Russians meanwhile experienced a similar phenomenon.) On December 21, 2019, Rob Steenburgh (AD0IU) from the government's Space Weather Prediction Center spoke at an RMHAM University session on the topic of Amateur Radio and Space Weather.

Rob addressed the new solar cycle 25, which began in December, 2019 with the appearance of two reversed polarity sunspots. He expects cycle 25 to reach a minimum in about April, 2020 (+/- six months). The forecast maximum number of sunspots should be 115 (+/- 10) in July, 2025. Enhanced solar activity risks include interference to GPS, excess exposure to ionizing radiation for astronauts and aircraft flying over the poles, and even causing racing pigeons to become lost.

The famous 1859 Carrington geomagnetic storm permitted railroad telegraph operators to operate their

rings without power and caused fires and sparking in some instances. A few years ago, a huge storm narrowly missed earth. "If it had hit, we would still be picking up the pieces," according to Dan Baker at the University of Colorado Laboratory for Atmospheric and Space Physics.

Rob discussed many aspects of solar weather including magnetism, convection and differential rotation of the sun's disk (about 27 days). The bigger the magnetic field is and the more complex it is, the bigger the flare will be. Hams care about the degree of ionization of the ionosphere's D, E, F1 and F2 layers as it correlates with propagation. Higher levels of ionization increase the Maximum Useable Frequency, or MUF, the frequency that is reflected back to earth.

Magnetic storms and solar flares, however, can be bad actors disrupting HF communications. Hams need to pay attention to the A index, K index and the Solar Flux. A good description of these parameters can be found here (<https://www.arri.org/files/file/Technology/tis/info/pdf/0209038.pdf>).

RMHAM offers ongoing Ham University Sessions covering a vast array of topics. You can sign up for these classes by creating an RMHAM-U login. A syllabus of upcoming courses can be found here (<https://www.rmham.org/wordpress/rmham-university-2019-2020>).

WHY THE BLUETOOTH NAME?

BY BILL RINKER, W6OAV

Most of us use the Bluetooth protocol with our cell phones, wireless speakers, remote control of devices, etc. Ever wonder about the origin of the name Bluetooth and the Bluetooth logo?

The protocol was invented in 1994 by Swedish Ericsson's electrical engineer Jaap Haartsen. He was looking for a wireless alternative for RS-232 data cables. The Bluetooth protocol is the result of his research.

In 1996 the protocol was named "Bluetooth" after the Danish king Harald "Blatand" Gormsson who reigned in Denmark between 940 and 981 AD. According to some scholars, Harald was nicknamed "Blatand" i.e. "Bluetooth" as he had a dead tooth that looked blue, or dark. Also he was known to wear a lot of blue, symbolizing royalty. A brave warrior, his main achievement was uniting the tribes of Denmark under the banner of Christianity and then uniting Denmark with Norway which he had earlier conquered. The protocol was named as the "Bluetooth" standard after the king because the Bluetooth protocol unites communication systems just as the king had united tribes in Denmark and Norway.

The Bluetooth logo is the combination of "H" and "B," the initials of Harald Blatand (Bluetooth), written in the ancient "Runes" characters used by Vikings.

Reference: <https://www.ancient-origins.net/history-famous-people/bluetooth-why-modern-tech-named-after-powerful-king-denmark-and-norway-007398>

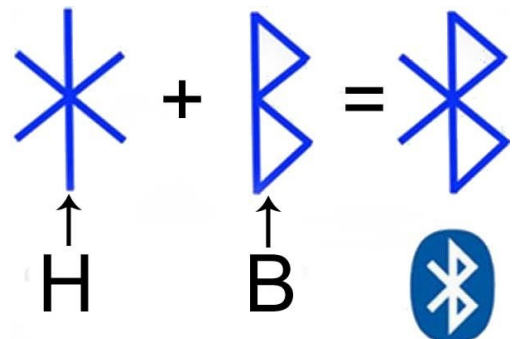
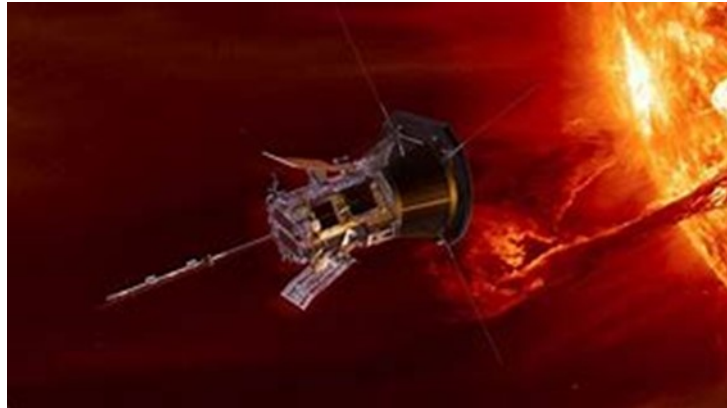


Figure 1 - Harald's initials in Viking Runes characters

SOLAR GEOPHYSICAL ACTIVITY REPORT

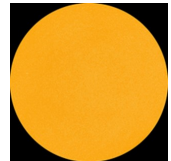
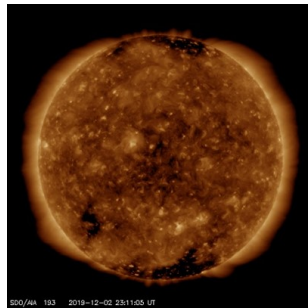
PROVIDED BY FRED HART, AA0JK



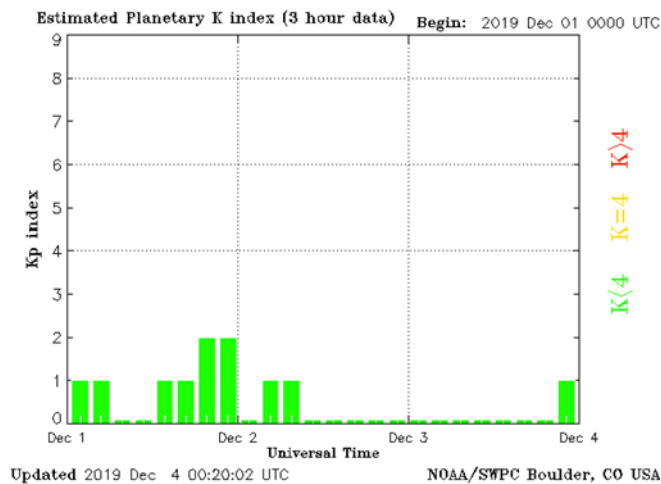
Parker Solar Probe | NASA

The Sun has been without spots for 36 consecutive days, a sign that Solar Minimum is underway. Many people think Solar Minimum is uninteresting. Not so. This phase of the solar cycle brings extra cosmic rays, and long-lasting holes in the Sun's atmosphere.

The Sun was blank, no sunspots. Image credits: SDO/HMI & SDO/AIA 193



The Solar, Earth facing disc, showed a patchy coronal hole, moving into central heliographic longitude. No sunspots or solar flares were present.



Solar activity generally quiet.

COSMIC RAYS ARE INTENSIFYING: Cosmic rays have been intensifying for more than four years. On December 5th and 6th, they surged within a percentage point of the Space Age record, according to data from neutron counters at the University of Oulu's Cosmic Ray Station in Finland.

The reason for this increase is the Solar Minimum that's underway now. During Solar Minimum, the Sun's magnetic field weakens, allowing more energetic particles from deep space to penetrate the solar system. The current Solar Minimum is one of the deepest, (perhaps the deepest), of the past century. Increases in cosmic rays are to be expected. The only question is, how high will they go?

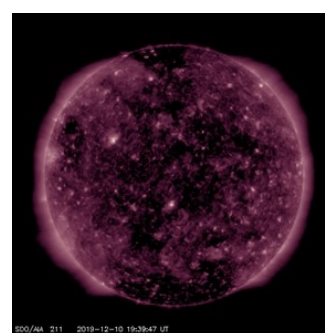
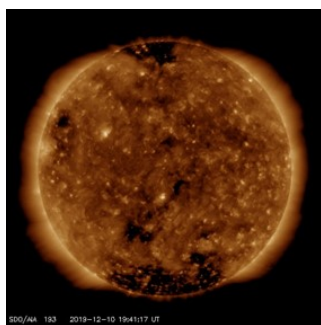
Week Two

A SPACE AGE RECORD: 2019 is about to set a Space Age record. So far this year, the Sun has been blank, (no sunspots), for 262 days, including the last 25 days in a row. If the streak continues for only 7 more days, 2019 will break the Space Age record for spotless suns.

The previous record-holder is the year 2008, when the Sun was blank for 268 days, making the Solar Minimum of 2008-2009 the deepest of the Space Age. Next weekend, barring a sudden Week Three profusion of sunspots, 2019 will move into first place.

Solar Minimum is a normal part of the 11-year sunspot cycle. The past two (2008-2009 and 2018-2019) have been long and deep, making them "century-class" Minima. To find a year with more blank suns, you have to go back to 1913, which had 311 spotless days.

What are the side-effects of Solar Minimum? On one hand, solar flares and geomagnetic storms subside. Space weather grows "quiet." On the other hand, cosmic rays intensify. The Sun's weakening magnetic field allows more particles from deep space into the solar system, boosting radiation levels in Earth's atmosphere. Indeed, this is happening right now with cosmic rays nearing a Space Age record.



Images: SDO/AIA 193 & SDO/AIA 211

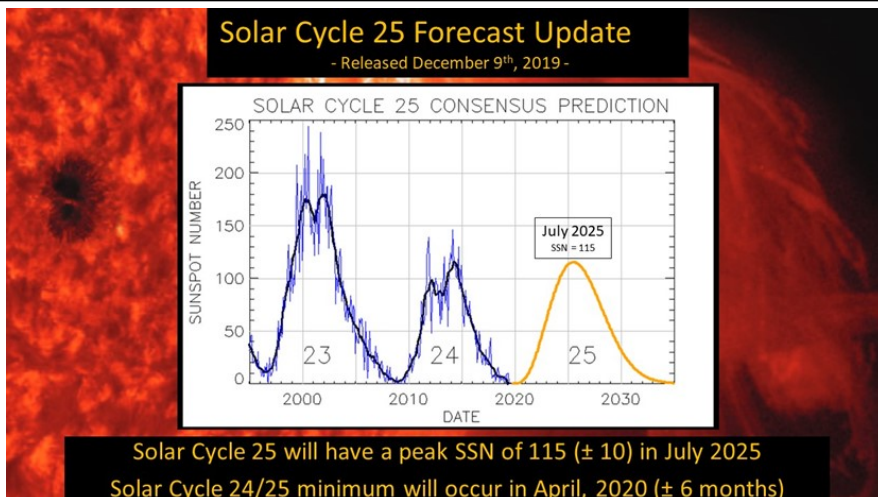
Southern coronal holes were approaching central Earth facing heliographic longitude.

While sunspot activity remained absent, the two brightest magnetic areas are signs that the next sun spot cycle is ramping up.

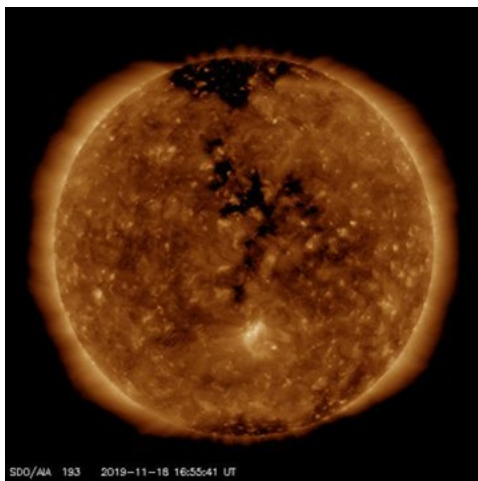
NOAA Space Weather: The latest Solar Cycle 25 forecast released: Cycle 25 to peak with a smoothed sunspot number (SSN) of 115 in July, 2025 (+/- 8 months), Cycle 24/25 minimum likely to occur in April, 2020 (+/- 6 months).

Week Three

SFI - 71. Solar Flux had boosted radio propagation into marginal range.



SUNSPOTS BREAK A SPACE AGE RECORD: Solar Minimum is becoming very deep. Over the weekend, the Sun set a Space Age record for spotlessness. So far in 2019, the Sun has been without sunspots for more than 273 days, including the last 36 days in a row as of December 20th . Since the Space Age began, no other year has had this many blank Suns.



The bright spot in this image shows a strong plage signature in white light. It was trying to become a sunspot. If it continues emerging from below the solar surface it will succeed. Yet another indicator that cycle 25 is coming!

Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center, UPDATED 2019 December 20 1230 UTC.

24 hr Summary: Solar activity was very low. The visible disk was spotless. No Earth-directed CMEs were observed in available satellite imagery.

Forecast: Solar activity was expected to be at very low levels on December 22.

73,

Fred
AA0JK

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](#)



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Search for Denver Radio Club @ smile.amazon.com

Note to DRC Members:

Our club depends on the involvement and participation of YOU, our members. Do you have a skill or interest that could help the club. Maybe you want to volunteer to be on a committee? Like to write? Have ideas for improving what we do? Speak up and let someone know, all ideas are welcomed and participation is always helpful. ~Editor

RANDOM SITE OF THE MONTH
[FEMA's ICS Training Courses](#)

THE ROUNDTABLE ARCHIVE

Go to: <http://www.wotx.org/roundtables.htm>

THE ROUNDTABLE ARTICLE INDEX

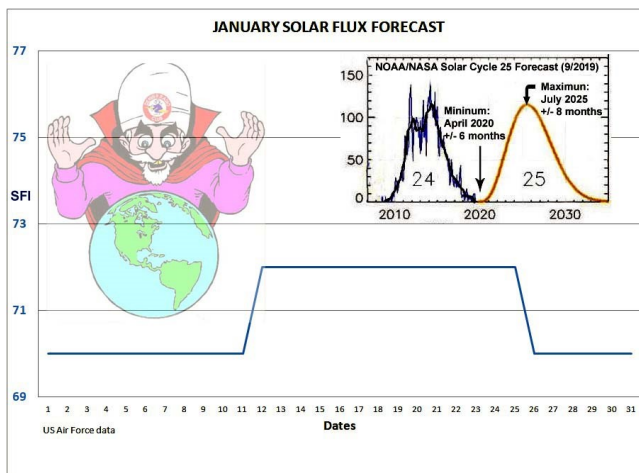
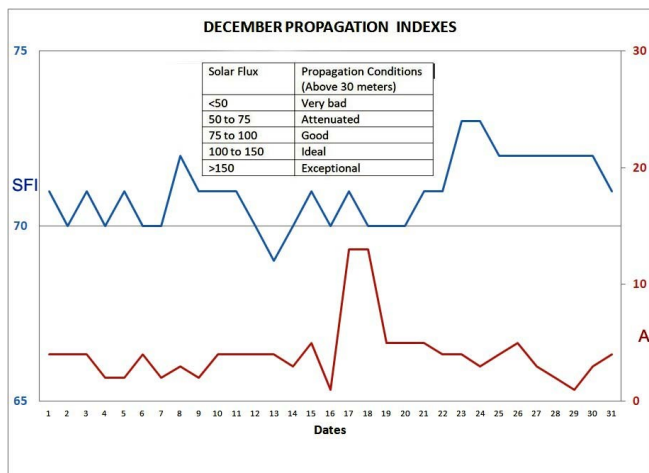
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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 *Roundtable* 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
Winter 2020 Hamfest	01/18/20	Larimer County Fairgrounds, Loveland	Northern Colorado ARC

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
British Columbia	02/01/2020	02/02/2020	Orca DX and Contest Club	
Minnesota	02/01/2020	02/01/2020	Minnesota Wireless Association	
Vermont	02/01/2020	02/02/2020	Radio Amateurs of Northern Vermont	
South Carolina	02/22/2020	02/23/2020	Columbia Amateur Radio Club	
North Carolina	02/23/2020	02/24/2020	Raleigh Amateur Radio Society	
Idaho	03/08/2020	03/09/2020	Idaho QSO Party	
Wisconsin	03/09/2020	03/10/2020	West Allis Radio Amateur Club	
Oklahoma	03/14/2020	03/15/2020	Oklahoma DX Association	

ATTENTION

SUPPORT THE DRC FROM YOUR AMAZON PURCHASES

You can now support your Denver Radio Club when you make purchases from Amazon.com. Amazon Smile donates 0.5% of your purchase to the non-profit (501.c.3) organization of your choice. This is at no additional cost to you. To support the DRC just visit smileamazon.com. Select Denver Radio Club, Inc. as the organization you want to support and proceed with your order as usual. Amazon Smile will credit the DRC automatically. Thank you for your support.

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	2m / 20m gateway. Useable by Technicians on 2m.
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.
70cm	446.7875MHz (-)	BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804



HRO 12 STORE BUYING POWER WORKS FOR YOU!!







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JANUARY 2020							<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 Learning Net None Planned  Straight Key Night Starts 2200 UTC	2  First Quarter	3	4 Kid's Day 1800 - 2359 UTC RTTY Roundup Starts 1800 UTC	
5 RTTY Roundup Ends 2359 UTC	6	7	8 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	9	10  Full Moon	11	
12	13	14	15 DRC Meeting Elmer 6 p.m. Meeting 7 p.m.	16	17  Last Quarter	18 January VHF Contest Starts 1900 UTC	
19 January VHF Contest continued	20 January VHF Contest Ends 0359 UTC 	21	22 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	23	24  New Moon	25	
26	27	28	29 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	30	31		

DRC BOARD OF DIRECTORS

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Board Member	KB0CHT	Jeff Irvin	Check Roster	Check Roster

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VE Team	KC2CAG	Tom Kocialski	720-284-1911	kc2cag@arrl.net
Website & YouTube	N0LAJ	Bill Hester	Check Roster	w0tx@w0tx.org

Please Let Us Know

Over the years we occasionally hear from hams who have read the RoundTable 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 RoundTable RoundWorld.

To respond to this request send your information to drc.editor@gmail.com.

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 drc.editor@gmail.com. The submission deadline is the 25th of the Month. ~ Editor