



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

May 2016

PRESIDENT'S MESSAGE

By Gerry Villhauer – W0GV



Hello DRC Members,

Well it is May and hopefully the snow has ended and any upcoming moisture will be in the form of rain. In Colorado it is difficult to out guess Mother Nature.

We had a great turnout for our program last month. Thanks to Robert White (K0RCW) for his very informative and entertaining presentation where he compared the differences between the Alex (Mag) Loop and Buddistick antennas. Robert also showed his home brew, all self contained backpack HF station. Thanks Robert, great job!

Our May presentation will be given by Bill Rinker (W6OAV). He will be explaining in detail, how magnetic transmitting loop antennas work. These antennas are also known as STLs. Bill will have audio recordings comparing his home brew STL to several other types of HF antennas. Bill is our resident HF antenna guy and always has interesting and educational presentations. You will see more detail on his presentation in this issue of the RT.

This month is the "Big Event" for ham radio in our state is HamCon Colorado, the ARRL Rocky Mountain Division Convention being held in Keystone, Colorado on May 12, 13 and 14. If you have not yet registered for the convention or made a room reservation, PLEASE DO SO NOW! You still have time to get in and enjoy a wonderful convention. Go to the website Hamconcolorado.org and see the terrific speaker lineup, like the new President of the ARRL, Rick Roderick (K5UR), our newly elected ARRL Vice President, Brian Milesosky (N5ZGT), former FCC attorney, Riley Hollingsworth (K4ZDH), ARRL General Counsel, Chris Imlay (W3KD), Gordon West (WB6NOA) and many more! Think about it... to see a speaker lineup like this, the only other place I can think of is the Dayton Convention...and this is right in your back yard! Go to the website above and check it out.

Thanks to all of you who recently joined and made the DRC "Your Club". Please stay active on the air, come to meetings, programs and events. Your name and call will be listed in the body of the Round Table.

73 for now,
Gerry (W0GV)
President



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W0TX

<http://www.w0tx.org>



APRIL MEETING - WHAT'D I MISS?

By Bill Rinker, W6OAV

There were 55 attendees. After Gerry Villhauer (W0GV) coordinated introductions, he gave an overview of the upcoming HamCon Colorado event in May and the June DRC Field Day. Jim Beall (K0TOR) then announced the results of April's Wheat Ridge siren test and that the Lakewood siren test will take place in May. The meeting was then turned over to the guest speaker, Robert White (K0RCW). Robert began his presentation with an update on the latest Raspberry PI and a description of the various ham radio applications available for the Raspberry PI.

Robert started his portable HF station presentation with the following activities:

- An overview of the station chassis and its backpack.
- Setting up a Buddistick vertical and an Alex Magnetic Loop.

Robert then discussed the follow topics:

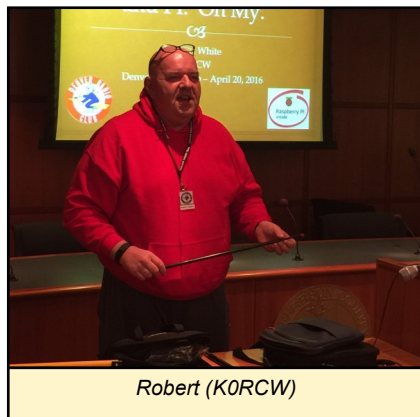
- His requirements for a small portable QRP station.
- Description of the 8' Buddistick vertical antenna and the 3' diameter Alex magnetic loop antenna.
- The pluses and minuses of each antenna.
- Method used to comparing the two antennas using the Weak Signal Propagation Reporter (WSPR).
- Interpreting the WSPR data.
- Conclusion - Antennas roughly comparable.

There were many good questions at the conclusion of the meeting. Robert presented many tips for building, setting up and operating a portable HF station.

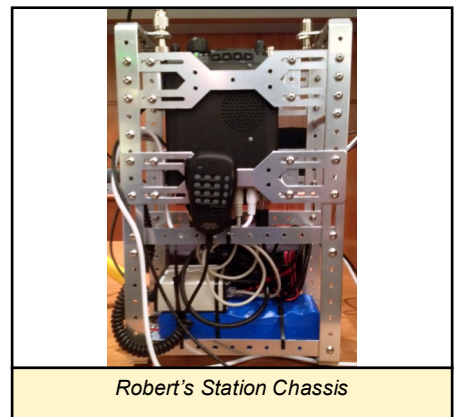
Footnote: A very interesting 2 part YouTube video showing a 3' diameter Alex Magnetic Loop outperforming a 16' Buddypole vertical on 20 meters can be viewed at: <https://www.youtube.com/watch?v=df3v41Y4u60> and <https://www.youtube.com/watch?v=buTame4aQ5w>.



Gerry (W0GV) & Dave (K0HTX)



Robert (K0RCW)



Robert's Station Chassis

UPCOMING LAKEWOOD SIREN TESTS

By JIM BEALL, K0TOR

The Denver Radio Club will be supporting the City of Lakewood siren test at 11:00 AM on Wednesday, May 11th. Lakewood has 27 sirens. If you covered a Lakewood siren on last years siren test you will be contacted to cover this same site this year. If you did not participate last year and would like to this year please email Jim Beall at k0tor@arrl.net or call me at 303-798-2351. If I am unavailable please leave me a message.

We need additional radio operators to replace those that worked last year and are not available this year. We request that you be on site by 10:30 AM and the test is completed by 11:30 AM. For those who are available we will meet for pizza and soft drinks following the siren test at the Lakewood Public Safety Building. This is a great public service and a fun exercise. If you would like to help, please email or call me. Thank you.



Jim (K0TOR)

ELMER SESSION REPORT

By FRED HART, AA0JK



The first hour Elmer session started out slow but soon came to life as attendees presented their questions and comments to the group. It was great to see the members who also join us on the 145.490 Wednesday night learning net. Questions there were brought up and expanded on here.

New topics were presented with the aid of the internet connection and overhead display. We used the ARRL web page to illustrate the ease of obtaining answers to any question you may have concerning amateur radio.

We also encouraged the use of our YAHOO Learning Net web site to connect with us to get answers, make comments, and reflect on past topics.

Great participation from all. Thank you, and looking forward to seeing you all for our next Elmer session.

**Don't forget to join in Wednesday nights at 7:30p.m. for the
DRC Learning Net on 145.49/448.625 Repeaters!**

I'M EXTRA IGNORANT

BY DAN ROMANCHIK, KB6NU

On Sunday, I received the following e-mail from a reader:

"Just wanted to let you know I passed the General exam using your study guide. It was very helpful. I am now generally ignorant whereas before I was only technically ignorant. Ha!"

My reply to him was:

"Well, if you're generally ignorant, I guess that makes me EXTRA ignorant!"

This isn't just a joke--being ignorant is part of the hobby. Amateur radio operators will always be ignorant about something or other. Even if you could master every facet of the hobby at some point in time, your mastery would be short-lived as the technology continued to advance.

Over the course of my amateur radio career, we've gone from equipment that primarily used vacuum tubes, to solid-state gear that first used discrete transistors and then integrated circuits, to software-defined radios. I could have, at some point, simply given up on the new technology and still enjoyed amateur radio. Some guys do that, and that's OK. It is only a hobby after all.

I'm not one of those guys, though, and if you're not one of those guys, then you have to resign yourself to being ignorant. But, that's a good thing, as long as you realize that you're ignorant. Realizing that you're ignorant will spur you on to learn new things and accept new challenges.

Recently, I realized that I'm mostly ignorant about satellite operation. I know some of the basics from having read articles and writing about the topic in my study guides, but I have never made a contact using a satellite. I think that might be one of my next challenges. With the advent of CubeSat, there are many new satellites up in the air and many more opportunities to have interesting contacts.

So, what are you ignorant about? By that I mean, of course, what's going to be your next challenge in amateur radio?

When he's not challenging himself with new things, Dan falls back on something he knows pretty well--operating CW. You'll find him mainly on the 80m, 40m, and 30m bands. Dan is the author of the "No Nonsense" amateur radio license study guides, and blogs about amateur radio at KB6NU.Com, and you can contact him by e-mailing cwgeek@kb6nu.com.

**DX University**

Will be held at

Keystone Conference Center

Thursday May 12, 2016 1:00 pm to 9:00 pm

DX University™ is a multi-media program offering information, instruction and varied learning opportunities for DXers, Contesters and DXpeditioners alike. Don't miss this opportunity to learn DX and Contesting skills from some of the best in the hobby. Being a competent DXer is a "learned" skill that requires both knowledge and practice to achieve, and DXU is designed to give you a "jump start" on these skills.



If you are new to DXing techniques, procedures and operating practices DX University will help you become a successful DXer on all of the amateur bands.

A cadre of seven top DXers (big guns and little pistols) from the Rocky Mountain Division have been assembled; many of whom traveled to some of the rarest DX entities on earth to guide your journey.

Don't miss this opportunity to learn about the world of DXing.



This is an entirely separate event from the HamCon Colorado Convention and does require a separate registration fee.

Registration available at: www.hamconcolorado.org

~ ATTENTION ~

The Denver Radio Club is looking for volunteers to join the Round Table newsletter development team.

The ideal volunteer should have knowledge and skills with the Microsoft Publisher platform, photo editing, file conversion, PDF creating and editing, FTP protocol.

If you don't have these skills, but have super computer skills and a strong interest in learning, you would be a great addition to the team.

Please contact the DRC President Gerry Villhauer at W0GV@hotmail.com or 303-467-0223.

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. We have a number of activities throughout the year and we'd like very much for you to participate in serving your community.

David "Dave" Sparks	N0BQH
Fred Ackermann	W4CWO
Sarah Sparks	N0SMS

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.

More information can be found on the Denver Radio Club website at <http://www.w0tx.org>.

TECHNICAL COMMITTEE REPORT

By Bill Rinker, W6OAV



The following is an overview of the subjects discussed at the April Technical Committee meeting. The project coordinators' call signs are in red.

AllStar Link Voter System (W0GV)

Goal: Determine the feasibility of establishing an AllStar Link Voter network.

Status: W0GV is working with Skyler, KD0WHB, and Larry, K0LAI, to install the main server with Asterisk software and get familiar with it. N0ETV is building a remote AllStar Link receiver for testing. W0GV will order additional equipment this month. One voter is in test mode.

DRC/TSA Aurora Site (W0GV)

Goal: Maintain contact with TSA relative to establishing a "communications room" for the DRC.

Status: W0GV is attempting to meet with the new TSA contact. The TSA contact has had medical issues so the meeting is on hold for a while.

Noise at Station 4 (W6OAV)

Goal: Monitor noise level.

Status: Xcel has replaced equipment on a nearby pole. Noise level is now down to the original level. The HF port is now back on line. Packet performance has been normal.

Redesign Packet Gateway (W6OAV)

Goal: Re-design the gateway for more reliability.

Status: Kantronics sent a new firmware upgrade which W6OAV installed in the KAM XL TNC. Now that the HF port is back on line, W6OAV is monitoring the KAM performance. W6OAV has obtained the proper cables and will begin wiring up an interface for a PK900 TNC. Should the KAM not perform properly, the PK900 will be installed in place of the KAM.

Establish a DRC YouTube Channel (KB0A)

Goal: Provide access to various DRC videos.

Status: N0LAJ will administer the channel.

Fusion Repeater Upgrade (KB0A)

Goal: Equip the Fusion repeater with a Wires-X Link unit to connect it to the Wires network.

Status: KB0A will mentor AC0UA who will take over administering the upgrade.

~ Editor's Note: The Technical Committee meeting is open to members of the DRC. It is held in the Arvada room, starting at 6:00 p.m. on the evening of the DRC monthly meeting.

EMCOMM ANNOUNCEMENT

By Gerry Villhauer, W0GV

I am happy to announce that we have filled the position of Emergency Communications Coordinator, (EmComm) which was vacated recently.

Mike Vespoli (KE0HFH) and Brennan Pate (KE0FBK) will co-chair this position. We thank them both for stepping forward and volunteering for this very important position. They have some very good ideas for increasing our involvement in emergency communication, which as you know, is at the core of our existence as amateur radio operators.

More to come on EmComm as they develop the program.

ELMER SESSION START TIME

The Elmer Session Starts at 6 p.m.
before the regular 3rd Wednesday DRC Meeting!

Come join in on the sharing of information.

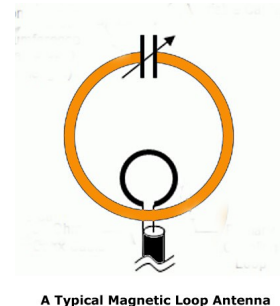
MAY MEETING PRESENTATION

By Bill Rinker, W6OAV

Are you interested in learning about magnetic transmitting loop antennas which are also known as Small Transmitting Loops (STLs)? If so, plan to attend the May DRC club meeting. I will provide an in depth STL presentation. I will also have an audio recording I made comparing my home brew STL to several other types of HF antennas.

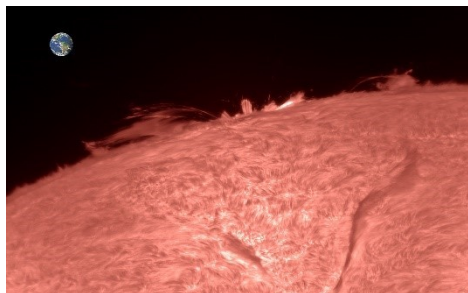
The agenda will cover the following:

- What is an STL.
- Why STLs are becoming so popular.
- The pros and cons of STLs.
- Radiation patterns.
- Examples of commercial and homebrew STLs.
- Design considerations.
- Audio recording showing the performance of W6OAV's homebrew STL compared to those of a G5RV and a ground plane on 10 meters.



SOLAR UPDATE

PROVIDED BY FRED HART, AA0JK



Week One

April geomagnetic activity was subsiding as Earth made an exit from a solar wind stream that hit our planet's magnetic field on April 2nd. The quiet wasn't to last long, as another stream of solar wind was coming. G1-class geomagnetic storms were due on April 5th.

Giant Solar Prominences: This week, sun spots were outnumbered by the solar prominence count.

Prominences are clouds of plasma held above the sun's surface by unstable magnetic fields.

April 7th, Earth crossed a fold in the heliospheric current sheet, plunging our planet into a region of space filled with "negative-polarity" magnetic fields. This sparked a G1 class geomagnetic storm. The Arctic Circle sky's exploded with color from bright auroras.

The heliospheric current sheet is a vast undulating system of electrical currents shaped like the skirt of a ballerina.

Earth dips in and out of it all the time. (<https://en.wikipedia.org/wiki/Heliosphere>)

April 7th saw sunspot AR2529 emerge into view over the sun's northwestern limb.

Week Two

Sunspot AR2529 more than doubled in size over the weekend, making it the largest of 2016 to date. Astronomers were fixated on this behemoth, wide enough to swallow our planet twice. Fortunately we are 93 million miles away.

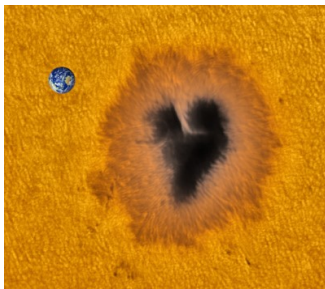
NASA's Solar Dynamics Observatory (SDO) was keeping a close eye on this active region. Magnetic fields near the sunspot's core were crackling with minor C-class solar flares. None of these flares were very strong, but the ensemble of explosions were doing a good job heating the sun's atmosphere above the sunspot.

April 11th

NOAA forecasters were expecting a 50% chance of G1-class geomagnetic storms by April 13th. A solar wind stream was expected to hit Earth's magnetic field. The incoming solar wind stream was pouring out of a hole in the sun's atmosphere – a "coronal hole", where the sun's upper atmosphere's magnetic field is peeled back allowing solar wind to escape.

(Continued from page 6)

All solar wind streams carry some of the sun's magnetic field into space. The stream was heading for Earth appearing to be filled with "negative polarity" magnetic fields. Such fields can easily link to Earth's magnetic field, opening a crack in our planet's defenses against solar wind. As a result, this solar wind stream could effectively disrupt radio communications and sparking auroras. April 14th A CME sideswiped Earth's magnetic field at 0700 UT. The glancing blow produced a G1-class storm. The giant sunspot AR2529 has tripled in size and morphed into a heart shape. This sunspot is more than three times the size of Earth.



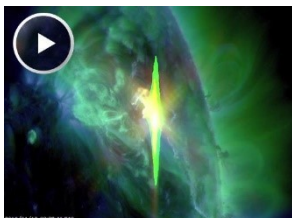
SOLAR RADIO STATIC: Giant sunspot AR2529 was making noise, and it sounded like static. On April 14th, amateur astronomer Thomas Ashcraft heard a gentle crescendo of noise emerge from the loudspeaker of his shortwave radio telescope in New Mexico. "It was a Type III radio burst from the sun."

<http://www.theatlantic.com/technology/archive/2013/02/heres-what-a-solar-flare-sounds-like-when-it-reaches-earth/272935/>

Type III radio bursts are caused by solar flares. Electrons accelerated by magnetic explosions race through the sun's atmosphere, causing a ripple of plasma waves and radio static. Sunspot AR2529 has been crackling with C-class flares, almost non-stop, and these are apparently the source of the static.

"The burst was recorded in stereo using two separate short wave receivers, one tuned at 20.030 MHz and the other at 21.119 MHz.

Week Three

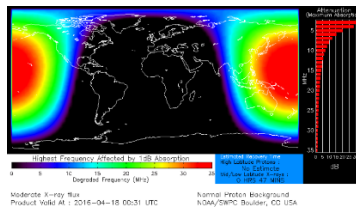


A Solar Wind Stream was on the way. Geomagnetic

activity was expected to remain low throughout the weekend. The Earth would enter a stream of high-speed solar wind. ETA was 48 hours. The incoming solar wind stream was filled with positive-polarity magnetic fields. This meant it could do a good job of sparking interference to radio communications. These positive -polarity magnetic fields do not easily link to Earth's planetary magnetic field. As a result, their effect on our magnetosphere is often muted.

Massive sunspot AR2529 Erupts. April 18th (00:39UT) producing a strong M6.7-class solar flare. NASA's Solar Dynamics Observatory recorded the flare's extreme ultraviolet flash.

A pulse of UV radiation from the flare ionized the top of Earth's atmosphere. This, in turn, disrupted shortwave radio communications over the day-lit side of our planet. Mariners, aviators, and ham radio operators around the Pacific Ocean noticed fading signals at frequencies below ~15 MHz.

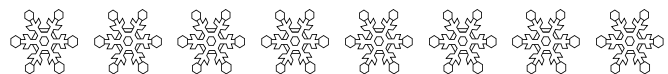


April 22nd CORONAL CANYON SPEWS SOLAR WIND: A gaseous canyon in the sun's atmosphere turned toward Earth, and it was spewing solar wind in our direction.

Week Four

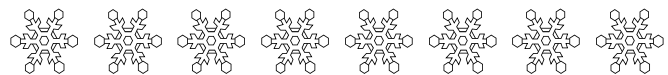
Geophysical Activity Forecast: The geomagnetic field is expected to be at quiet to minor storm levels, quiet to unsettled levels throughout the week.

(An Intimate View: Our Sun in 30 Minutes in Ultra-High Def 4k <https://youtu.be/sq4PlyNkm2Y>)



WHAT IF THE WEATHER CHANGES?

If we should experience a turn in the weather on the day of our monthly DRC meeting it may be necessary to cancel the meeting. If this should happen listen for meeting status reports on 145.49 or 448.625 MHz repeaters during the afternoon on the day of the meeting.



MY HAM RADIO STORY

By Bryan Steinberg, KB0A

How did you get interested in ham radio?

I've always been interested in electronics and a friend from school and I even got our 3rd Class Radio Telephone licenses while in high school. The Morse requirement was always a barrier to me. When my brother told he had gotten his Tech license, N1RWF (sk), I went and bought the ARRL study guide and got started. This was in 1998 so in order to get your Tech license you had to pass the novice written test, too. Now that I have my Amateur Extra class license, I completed an online class to learn Morse code. (Through CWops.org)

What are your favorite activities in the hobby?

I always like learning new things and challenges. Ham radio today is so diverse that it truly contains something for everyone. I enjoy the technical challenges of using the new digital technologies such as D-Star, System Fusion, MotoTRBO, etc. I have been a member of Jeffco ARES ever since I was first licensed. I also enjoy being involved with the technical aspects of our club, such as installing and maintaining our club repeaters.

What is your most memorable experience(s)?

One of my memorable experiences was working communications on the first day of what would become the Hayman fire. We were operating bare bones in Georgetown, CO supporting the local wildfire teams. I had to sleep in the back of my car that first night. And, as I lay in my car I could see the glow of the fire still burning strong through the night not more than a mile away.

What is your background?

My background is in electrical engineering and IT architecture. I'm now retired after working 34 years at IBM. I started in NYC then moved to Lexington, KY where I worked on manufacturing robotics at the plant where IBM made typewriters (now Lexmark). In Detroit I worked with GM to integrate their manufacturing systems. Consulting, and hiring on with Boston Market got me to Colorado. Back at IBM I finished my career as the Enterprise Architect for the Global Services division developing the IT strategy that would support the business model.

What are your additional hobbies?

I really like building electronic kits. I also do a lot of photography and woodworking.

~Editor's Note: As long as we have material, we will continue to publish a monthly column profiling DRC members' stories about how they got into the ham radio hobby, their interests and backgrounds. The purpose of this column is to introduce DRC members to each other and to find commonalities between them. Please participate by answering the questions as shown in the article above. We will publish in the order we receive them. Please use Microsoft Word set to Arial and 10 point and submit your story to w6oav@arrl.net. *Thanks to Bryan for his story.*

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.

REMEMBER WHEN

By Bill Rinker, W6OAV

The purpose of this article is to bring back memories to old time hams like me and to let newer hams know what ham radio was like in the 50s, 60s and 70s.

Back in July 1976 I was on 15 meters in California chatting with a ham in Florida. All of a sudden I heard an extremely strong pulsing signal. I told the ham in Florida to stand by as I thought my neighbor was welding. The ham in Florida told me that he was hearing the same strong pulsing signal! We were totally mystified.

Later monitoring showed that the signal appeared at different frequencies between about 4 and 30 MHz with a bandwidth of about 0.5 MHz. The pulses would last about 7 minutes on each frequency and vary between 10 and 20 pulses per second. Hams and commercial shortwave stations including military and aeronautical systems were suffering from this pulsing signal. This strange pulsing signal became the talk of the ham bands.

Several months later, the signal was identified as coming out of Russia. Further investigation determined that the system was over the horizon radar.

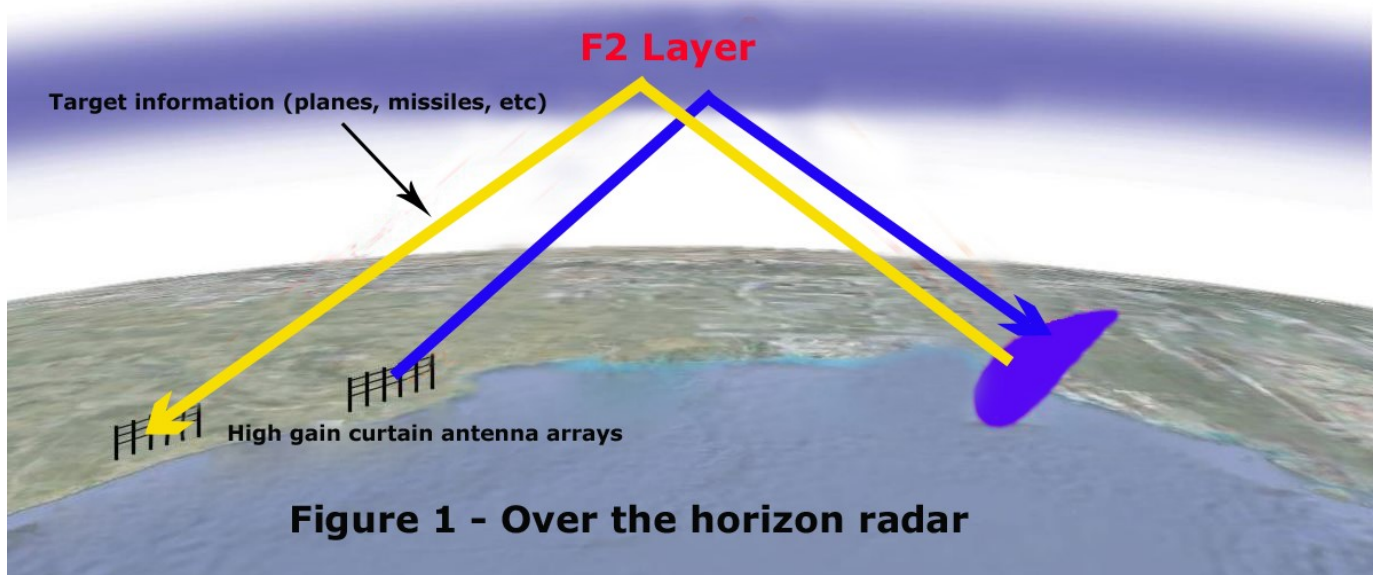




Figure 1 - Over the horizon radar

The system ran many megawatts to an extremely high gain antenna transmitting array. The array was approximately 500 feet tall and over 3,000 feet wide. It would electronically change the radiation take off angles to obtain reflections from different distances. A second smaller array received the reflected signals. Hams named it the Russian Woodpecker. The radar was on line until December 1989. During that time, ham radio manufacturers began incorporating special "Russian Woodpecker" noise blankers in ham receivers to resolve some of the interference issues.

The following YouTube video ([Click Here](#)) shows the Russian Woodpecker antenna array and provides audio of the pulses interfering with the 15 MHz National Bureau of Standards time station WWVH in Hawaii. When you hear what the Russian Woodpecker was doing to the high power WWVH signal you can imagine what it did to much lower power ham signals! Hams really celebrated when the station was turned off!

More detailed formation can be found at this website ([Click Here](#)).






*Do You Know
How Your
Antenna
Radiates?*

Bill Rinker - W6OAV
Will Answer Your Questions

**Why and How
Do Antennas Radiate**

This is a non-mathematical forum which covers the nature of fields, charged particles in space and in wires, how antennas develop three fields, and how these fields propagate.

HamCon Colorado 2016
May 13-15, 2016
Keystone Conference Center
Keystone, CO

Register Now at: www.hamconcolorado.org

DRC SUPPORT OF WHEAT RIDGE SIREN TEST

BY JIM BEALL, KOTOR

On April 13th the DRC supported the annual Wheat Ridge siren and listening site test. This year 15 siren sites and 5 listening sites were covered. Listening sites are identified by the city to evaluate surrounding siren coverage. This evaluation is used to identify where surrounding siren sites need upgrading or new siren sites need to be added. These tests are performed in the spring to verify siren functionality prior to severe weather season.

This years test results showed all siren site tone and voice announcements were clear and understandable. There were two minor mechanical conditions reported on two sites. Two of the five listening sites reported hearing the siren(s) and were able to understand the voice announcement. The remaining three listening sites reported hearing the siren but were unable to understand the voice announcement. The intention of these warning sirens is to alert people who are outside and in the area of impending threatening conditions.

We had a total of 23 ham operators that supported this years' siren test. All sites were covered. You can see from the number of personnel needed to support this test, that it represents a great cost savings to the City of Wheat Ridge.

I appreciate Paul (K0WSU), Brennan (KE0FPK) and Mike (KE0HFH) for their help in contacting volunteers and assigning siren sites. Also thanks Brennan and Mike for your help at net control. And I thank each one of the following hams who volunteered and supported the siren test this year; Paul (K0WSU), Jim (KC0OLW), Kenny (KE0CNS), Bob (KX0I), Doug (N4ATA), Chris (KD0ZYF), Ken (K0YES), Steve (KD0WMO), Bill (WZ0S), Terry (N0PQV), Orlen (WV0LF), Dave (WG0N), Reid (KD0NRO), Bill (W6OAV), Chris (KD0DUJ), Larry (K0LAI), Rita (N0UEW), Jay (K0LJW), Alvin (N0AY) and Fred (AA0JK). I commend each one for volunteering to support this siren test. This test would not have been successful without the support of each one of you. JOB WELL DONE!!!

Commander Wade Hammon, Wheat Ridge Police Department, Larry Stodden, Wheat Ridge Communications Manager, Lakewood/Wheat Ridge radio communications staff and the City of Wheat Ridge thank you for your help in testing the siren system.

W0QL REMOTE BASE

By Bill Rinker, W6OAV

Remote bases are becoming very popular on the HF bands. Ever wonder what it can take to design and install an HF remote base? If so, you might read DRC member Mark Edward's (W0QL) blog concerning his experience designing and installing his HF remote base. Not only does the blog contain his experiences but it also contains some very detailed analysis of various HF antennas. There's a lot to learn! Mark's blog is at: <https://w0qlremotebase.wordpress.com/?order=asc>.



Figure 1 - The W0QL Remote Base

HAM SITE OF THE MONTH

WB8NUT

Digital Modes Information & More

LEARNING NET REPORT

PROVIDED BY FRED HART, AA0JK

Thanks goes out to our Net controllers: Alex (W2PBR), Larry (K0LAI), and Gary (KD0SQA).



We have been getting some positive feed back from those listening to the Net. Thank you for your comments. We encourage any thoughts you may have as to topics you would like to discuss on the net and on our Yahoo Groups web page (HamLearningNet.com). We are here to help you with your Amateur Radio questions. If we don't readily have an answer, we will do our best to get one. We encourage all new to Amateur Radio and seasoned Hams to participate. Your input is greatly appreciated.

- Older radios, pros cons.
- MFJ 2982, 33 foot telescopic portable antenna.
- HF Loop antennas.
- TM-281 Kenwood.
- First hour Club meeting topics.
- Crystals in older radios. Is it worth the expense to buy crystals?
- The new IC 7300. A lot of interest here, and the new technology incorporated into this new radio. Is it entry level or more for your dollar that ICOM has brought us?
- The ARRL web-site. Using the web page to get answers to your questions.
- The digital modes. Software and hardware needed for your radio / computer to use these modes.
- Lightning protection.



Fred (AA0JK)

Resource information:

- [Lightning Protection on a Budget.pdf](#) This is a good Introduction to lightning protection and grounding on a budget, by Kenneth J. Meyer, K9KJM.
- [W8JI's website on grounding.](#)
- [Series of articles on grounding on the Hard Core DX website.](#)
- [Articles on the original ICE website on lightning protection.](#) These do favor the ICE products as you would expect.
- Three part QST articles on grounding by Ron Block, KB2UYT.
- Two part Lab Notes from QST on lightning protection by Mike Tracy, KC1SX
- Here is a [good power point presentation on lightning](#) (in PDF form) by Phil Salas, AD5X.
- Polyphaser has a great page of tech notes [here](#). Note that there are 5 pages of articles. The one titled "Ham Radio Station Protection" is of particular interest.
- [IEEE paper](#) on lightning protection.
- HamRadioNow Episode 15 – Grounding for Lightning Protection. N4TL https://youtu.be/_sKDuwQA_p0 (Fast forward through the first minute to the presentation)

Great topics from our group. We certainly enjoy everyone's input and participation. Thanks to all.

If you are listening and don't yet have your license, you can contact us at the [W0TX web-site](#) , w0tx@w0tx.org or at elmer@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.

Questions can also be submitted on the [YAHOO Learning Net](#) web page. Here you will also find information from past activity that you might find of interest.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. We 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 at 7:30 PM, on 145.490 or 448.625.

(Note: The third Wednesday of the month is devoted to the DRC club meeting. See the [W0TX web-site](#) for additional information.

LOOKING BACK AT THE DRC PROVIDED BY WOODY LINWOOD (W0UI) ROUNDTABLE, AUGUST 1960

Several DRC club members' experiences. Note the old style phone numbers!

The Round Table

Published Monthly by

THE DENVER RADIO CLUB, INC.

P. O. Box 356 Denver 1, Colorado, U.S.A.

HARLEY FEHLMAN, *Printer*

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The SCM Reports . . .

By **HOWARD, KØDCW**
 Assistant SCM

Members of the six meter mobile patrol gave assistance to sheriff's officers in corralling an unbalanced and irate woman driver, who was endangering lives and property on the Valley Highway.

WØVGZ helped to locate a Texas man on a trip in Colorado, who was desperately

needed at home owing to serious illness in his family.

Members of the HNN assisted Colorado State Patrol in locating a Texas ham, W5YQG, whose home had burned. Sorry to report one member of his family was lost in the fire.

Members of the DARN assisted Park and Lake County sheriff's officers in coverage of the Pack Burro Races.

WØGVT/M assisted in locating a doctor for a man seriously injured at the Park County Rodeo.

WØFKY assisted a truck driver who had turned over near Eagle, Colo.

Members HNN-CEPN—DARN assisted Colorado area police in keeping a constant lookout for stolen automobiles. One such auto was the property of Lo!a Burtis, KØRXK.

Members of the DARN helped to maintain communications at Civic Auditorium for the Shriners Convention.

Colorado WX Net maintained a daily flow of information to Hospitality Center. The information consists of road conditions, WX conditions, fishing conditions, and local happenings and events of interest to the tourist. This in addition to their regular WX reports.

Ø—Ø—Ø

Readin' the Mail

Les Richards, WØICR, learned that it pays to advertise, even when you don't know you're doing it.

During a QSO with a ham in St. Louis some weeks ago, the conversation turned to the audio limiter Les was using with his Viking II. The St. Louis amateur was keenly interested and Les remarked that he had two of the limiters and would sell one of them for the cost of the parts—about \$20.

Les had nearly forgotten the conversation when several weeks later he received a check in the mail for \$30 and a note requesting that he send along the limiter. From the ham in St. Louis? Nope. From a KP4 in Puerto Rico!

Ø—Ø—Ø

Did U Know . . .

That the DRC Hamfest was the most successful yet in this area.

That the Auction and Eye-Ball QSO at the August 17 meeting will be fun, even if we don't bid.

This puzzle is provide courtesy of Chris Codella - W2PA. The URL for his website is <http://www.w2pa.com>. The solution for the puzzle is on page 14.

Radiogrammar

Across

- 1. Sea eagles
- 5. 1950s car maker
- 9. Face-to-face exams
- 14. Ham's OM
- 15. Director Preminger
- 16. Come again
- 17. N N, on 7.007, say
- 18. Start of a conclusion
- 19. It might be airtight
- 20. Four and four ninths?
- 23. Coax adapters
- 24. Rcvr ckt
- 25. Squirrel food
- 28. KH6IJ (SK)
- 30. Smart or Bond
- 33. QRS sending, not
- 34. FD abode
- 35. Joint with a cap

- 36. 1, 13, 53 and 56-down, and a puzzle sub-theme
- 39. Swimming power supplies?
- 40. Bit of trivia, slangily
- 41. A Czech Republic prefix
- 42. Driller's deg.
- 43. Tiny parts
- 44. Plates
- 45. W7 sect.
- 46. Flower tower?
- 47. Two-hundred ten?
- 53. Jeered
- 54. Surf sound
- 55. TA-33 part
- 57. Kazakhstan prefix
- 58. Gawk at
- 59. Dipole terminators

- 60. Dings
 - 61. SU river
 - 62. Compass symbol
- Down**
- 1. FB RST., in the DX test, say
 - 2. Easy antenna place
 - 3. Smaller than a micro
 - 4. Popular beef cuts
 - 5. Meaning of 17-across
 - 6. Monk Apollo's QTH
 - 7. R followers
 - 8. Nozzle site
 - 9. Three on a resistor
 - 10. Museum piece
 - 11. Label on a DC supply, say
 - 12. Garage job

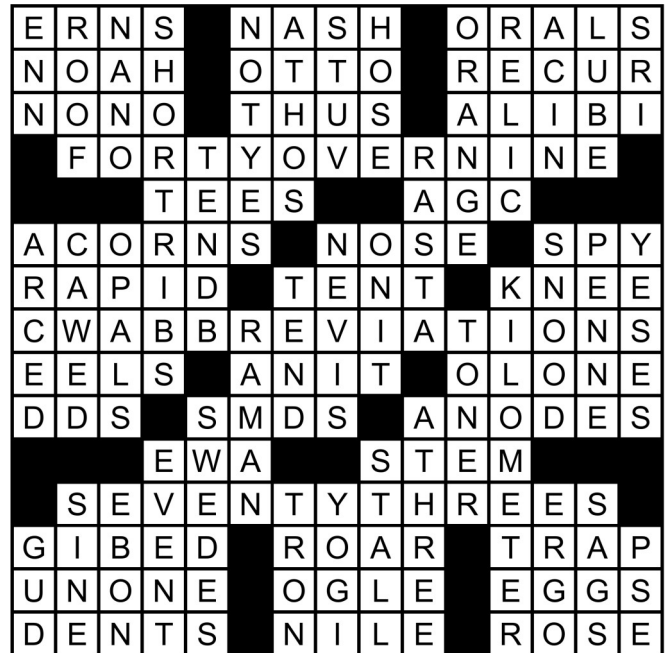
- 13. Apologize, on 30m, say
- 21. Big gain
- 22. Bob Marley fan
- 25. Flashed over
- 26. Crowed
- 27. Milky gems
- 28. V4 place
- 29. "Put a lid ___!"
- 30. Hair net
- 31. Edible tubes
- 32. C C, on 7007, say
- 34. Be inclined
- 35. KM, on 7.007, say
- 37. VU physicist and Nobel Prize winner
- 38. Copier stuff
- 43. SM ops
- 44. AM
- 45. Special _____ station
- 46. Play for time
- 47. Kind of wave
- 48. Like some piano keys
- 49. High-tech suffix
- 50. Cartoon bear
- 51. Start of a conclusion
- 52. What a long element does
- 53. Not bad, on 7.007, say
- 56. Word with QSL

1	2	3	4		5	6	7	8		9	10	11	12	13
14					15					16				
17					18					19				
	20			21						22				
			23					24						
25	26	27					28	29				30	31	32
33						34					35			
36						37					38			
39						40					41			
42					43					44				
			45					46						
	47	48					49	50				51	52	
53							54					55		56
57							58					59		
60							61					62		

FACT OF THE DAY

Antenna Sag Curve

A flexible antenna wire supported from two end points forms a catenary curve due to the pull of gravity if no other weight, such as a feed-line, is attached. The name 'catenary' comes from 'catena,' which is Latin for 'chain.' Galileo claimed a parabola was formed by a hanging chain. However, Jungius disproved Galileo's claim in 1669. Sometime later Gottfried Leibniz challenged geometers to submit geometric methods for construction of a catenary curve by mid-1691. After making that challenge he submitted his own solution. His solution was followed by other solutions from Jean Bernoulli and Christian Huygens. The catenary curve equation is now known to be precisely the hyperbolic cosine function $y = a \cosh(bx)$. ©2005 Martek International All rights reserved



~ Ham Tip ~

If you have knowledge of a **GREAT** ham radio related website or just a general tip, let us know and we will share it with the rest of the DRC membership here in the RoundTable. Send to n0hi@arrl.net.

THE ROUNDTABLE ARCHIVE

Go to: <http://www.w0tx.org/RoundtableAccessPage.htm>

THE ROUNDTABLE INDEX

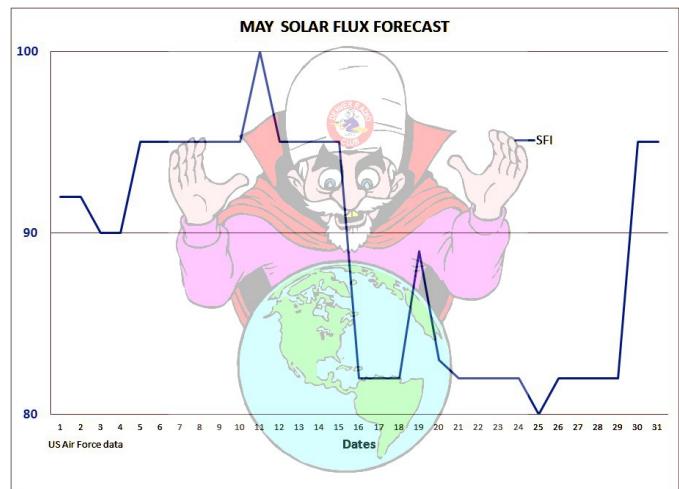
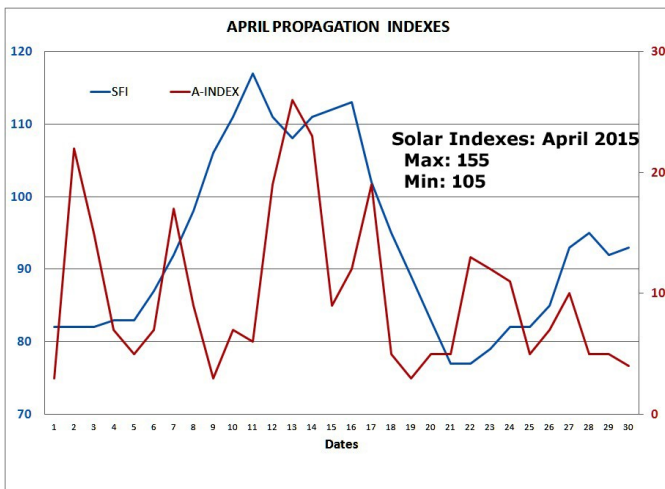
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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. Issues of the *Roundtable* are available at [http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009\(SEP\).pdf](http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf)



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UPCOMING EVENTS
HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
Rocky Mountain Division Convention	05/13/16	Keystone, CO	HamCon Colorado
MARC Tailgate Party	06/04/16	Delta, CO	Montrose Amateur Radio Club
PPRAA Megafest	07/09/16	Monument, CO	Pikes Peak Radio Amateur Association
Denver Radio Club Hamfest	08/21/16	Golden, CO	Denver Radio Club

UPCOMING ARRL CONTESTS [ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
June VHF	06/11/2016	1800 UTC	06/13/2016	0259 UTC	
Kids Day	06/18/2016	1800 UTC	06/18/2016	2359 UTC	
Field Day	06/25/2016	1800 UTC	06/26/2016	2059 UTC	
IARU HF World Championship	07/09/2016	1200 UTC	07/10/2016	1200 UTC	



**The ARRL
 Rocky Mountain Division Convention**

May 13-15, 2016

**At the beautiful Keystone Conference Center
 in Keystone, Colorado**

**Two action packed days of informational forums, nationally recognized speakers,
 opportunity to get on the air at the W1AW/Ø special event station, vendors galore,
 VE testing, fun contests and of course the Wouff Hong ceremony.**

Registration Now Open!

REGISTER AT: www.hamconcolorado.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
Florida	04/30/2016	05/01/2016	Florida QSO Party	
Montana	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Washington	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Vermont	05/07/2016	05/08/2016	New England QSO Party	
Utah	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Idaho	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Rhode Island	05/07/2016	05/08/2016	New England QSO Party	
Indiana	05/07/2016	05/08/2016	Hoosier DX and Contest Club	
New Hampshire	05/07/2016	05/08/2016	New England QSO Party	
Nevada	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Oregon	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Arizona	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Maine	05/07/2016	05/08/2016	New England QSO Party	
Connecticut	05/07/2016	05/08/2016	New England QSO Party	
Delaware	05/07/2016	05/08/2016	First State Amateur Radio Club	
Massachusetts	05/07/2016	05/08/2016	New England QSO Party	
Wyoming	05/07/2016	05/08/2016	Central Oregon DX Club	7QP
Arkansas	05/14/2016	05/15/2016	Amateur Radio Klub of the Arkansas Northwest	
USA	05/14/2016	05/15/2016	Mobile Amateur Radio Awards Club --- Rules	

~ 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

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	2 meter / 20 meter gateway. Useable by Technicians on 2 meters. See January 2015 RT.
2m	145.490MHz (-) 100Hz PL	Linked to the 70cm - 448.625MHz machine.
2m	147.330MHz (+) 100Hz PL	Local Area, Members Auto-Patch 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 the 2m - 145.490MHz machine.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink Node # 4140.
70cm	449.775 MHz (-) 100Hz PL	Yaesu Fusion Digital / Analog, 100 Hz Tone Required for Analog.
70cm	446.7875MHz (-)	MotoTRBO Repeater Slot 1 – DMR-MARC WW, Slot 2 – Local



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

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MAY 2016		<i>DRC Net Sunday's at 8:30 p.m. on 145.490 / 448.625 (No PL)</i>				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	5	6  New Moon	7
8	9	10	11 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	12	13  First Quarter	14
15	16	17	18 DRC Meeting Elmer 6:00 p.m. General 7:00 p.m.	19	20	21  Full Moon
22	23	24	25 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	26	27	28
29  Last Quarter	30	31				

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	EmComm Coordinator	KE0FBK	Brennan Pate	303-578-6283	ke0fbk@outlook.com New!
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	Web Master	N0LAJ	Bill Hester	Check Roster	Check Roster

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 n0hi@arrl.net.

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 n0hi@arrl.net. The submission deadline is the 20th of the Month. ~ Editor