



# ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

100 years of amateur radio in Colorado

March 2017

## PRESIDENT'S MESSAGE

By Gerry Villhauer, W0GV

Hello DRC Members,

Although spring is just around the corner, as I start to write this message it is snowing. It has sure been a strange February this year in regard to weather and temperatures.

As usual there has not been much activity to report on during the winter months. That does not mean there is not a lot of planning going on behind the scene. The technical committee chair Bill Rinker (W6OAV) has been very busy with the DMR Brandmeister code plugs, especially after we made some technical changes to the system. Another item in the planning stage is arranging for internet service at our Centennial Cone site; in preparation to move our DMR (Brandmeister) repeater to the Cone. Also, we are in the testing stage of adding Wires-X to the Yaesu Fusion repeater. That addition will allow the fusion repeater to connect via the internet to the outside world.

Thanks to Brian Wood (W0DZ) for his presentation at our February meeting. Brian operates DZ Kit, based in Loveland, Colorado. He explained and demonstrated the Sienna XL high performance HF transceiver which comes in a partial kit form. It is amazing how much engineering goes into a radio with the all the features that are designed into the Sienna XL along with making it in a kit form.

The March meeting will be something out of the ordinary. We will be hosting a National Weather Service (NWS) Severe Weather Spotter Class. Attendees will have the opportunity to receive their NWS weather spotter number after completing the class. There are more details in this issue of the RT but, I would like to point out a few things. There will be no Elmer Session prior to the meeting. The Weather Spotter Class will start promptly at 6 p.m., March 15th. We are expecting a large attendance and have arranged to use the LARGE Conference Room at our usual meeting place. The class will be approximately 2 ½ hours, ending by 8:30 p.m. We are NOT opening this class up to the general public. Besides DRC members we are inviting other ham radio operators, public safety, police, fire, dispatcher and EOC personnel. I expect seating will fill up quickly. I am advising DRC members to come a few minutes prior to 6 p.m. because we have no way of knowing the response we will get until show time. Please see additional information elsewhere in this issue and our website w0tx.org. I guarantee this will be an excellent learning experience.

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 RoundTable.

73 for now,  
Gerry (W0GV)  
President



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## FEBRUARY MEETING – WHAT'D I MISS?

BY BRENNAN PATE, AD0UZ

The February meeting started off with President Villhauer's (W0GV) greeting everyone and then had the half dozen visitors introduce themselves. Next Jim (N0USN) passed around an example of the W0TX 100th anniversary pin to get an indication of interest. The example to the left may be available for purchase in the upcoming months.



Brian Wood (W0DZ) was then introduced and began his talk on the Sienna XL transceiver that his Loveland company is in the final stages of developing. Brian gave a brief history of the DZKit company and past product. He then went on to talk about the new Sienna XL and the improvements being made upon their previous model. The new features include things like touch display meters, additional filtering, and added attention to using high quality components. Brian also outlined how the transceiver is put together and the generally assembly process.



A model of the radio was available to play with and he also brought a couple other items that are currently in the development phase.

At the end of his talk he took several questions from the audience and was available after the close to answer additional questions for the curious.



## 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 member:

David Hill	KE0IPR
Gene Bitner	WA5ETK

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.

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

## TECHNICAL COMMITTEE REPORT

BY BILL RINKER, W6OAV

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

### DRC TRBO Upgrade to BrandMeister (K0HTX)

Goal: Monitor and "fine tune" the new BrandMeister repeater.

Status: The Tech Committee is monitoring and requesting reports, especially if any issues occur. W6OAV has integrated a W0TX BrandMeister zone into the latest Rocky Mountain Ham code plug for the MD-380. This code plug is available to anyone. Contact him at w6oav@arrl.net for a copy.

### AllStar Link Voter System (W0GV)

Goal: Establish an AllStar Link Voter network on 147.33.

Status: Four remote receiver sites are now on line and in the test mode. The Tech Committee is requesting reports, especially if any issues occur.

### AllStar Link Voter System (W0GV)

Goal: Locate possible remote sites.

Status: W0GV is looking for possible sites. W6OAV will develop propagation coverage maps to determine if the possible sites will fill in the 147.33 transmitter's "dead spots".

### 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. K0TOR worked with Burnie and did locate some of our equipment stored there. The site is still being remodeled.

### Redesign Packet Gateway (W6OAV)

Goal: Replace the KAM and the TS-430, which perform marginally in the high power line noise at Site 4.

Status: AC0UA has given the DRC a long-term loan of a FT-950 transceiver. The DSP filtering in the FT-950 and in the club's PK900 should improve the gateway's performance. AC0UA has constructed the interface cables. W6OAV will assemble and test the combination. Replacements may occur in the spring depending upon the propagation conditions of the slowly diminishing Solar Cycle 24.

### Fusion Repeater Upgrade (AC0UA)

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

Status: AC0UA is testing the Wires X interface at home.

### DRC TRBO Move (K0HTX)

Goal: Move the TRBO repeater to Centennial Cone to provide better coverage.

Status: CCARC approval has been obtained. Antenna has arrived. The move will occur when weather permits, probably in the spring.

### DRC TRBO Access to Station 4's Internet (KE0HFH)

Goal: Investigate the possibility of a microwave shot from St. Anthony's to Station 4 and to Centennial Cone.

Status: Investigation is in progress.

### Station 4 Remote Power Control (W0GV)

Goal: Investigate purchasing and installing Internet controlled power outlets.

Status: W0GV is investigating which pieces of equipment need remote power control and the best unit to purchase.



*~ 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. (Except at this March 15th meeting.)*

## ATTENTION DRC BRANDMEISTER USERS

BY BILL RINKER, W6OAV

The DRC BrandMeister repeater has a new powerful Local Talk group. The new Local Talk Group is 310804 which replaces the original Local Talk Group 2. The new Talk Group allows connections to it by remote users who either use a DMR Hotspot or have access to a remote BrandMeister repeater.

Group 310804 is statically programmed on Time Slot 2 which means it is always on. Therefore, local users monitoring this Talk Group will hear any incoming calls. Users without DMR radios can monitor this Talk Group by pointing their browsers to:

<http://hose.brandmeister.network/310804/>

This link will show any calls that have occurred in the last 15 minutes.

In order to properly use the new repeater configuration, you must load the latest code plug (W0TX\_BrandMeister\_MD380\_Issue 1.rdt) into your MD-380/390. This code plug is the 08-06-2016 version of the RMHAM code plug with the W0TX BrandMeister zone added. Contact me at [w6oav@arrl.net](mailto:w6oav@arrl.net) for a copy of this code plug.

### MARCH MEETING PRESENTATION

BY DAVE BAYSINGER, WG0N

The popular saying that, "Everybody talks about the weather, but nobody does anything about it" is attributed to Mark Twain. Twain didn't spend much time in Colorado, or he might have tried to do something about it. Our statewide weather can be dangerously amazing. In a few hours we can experience slashing rain, pounding hail, sleet, snow, flash floods, tearing wind and even a tornado or two.



As Amateur Radio operators, and having some of the finest communications systems in the World, we still can't change the weather, but we can warn of its approach. We do this with SKYWARN, a cooperative effort between Amateur Radio and the National Weather Service (NWS). Skywarn gives forecasters what they can't get any other way, eyes on the storm in real time. With repeater stations galore, with HF short wave from further away, and with great communication skills, we can deliver the facts, but only if we are trained to know what we're seeing. If we understand what is meant by scud, gust front, jet streak, wall cloud, cold advection, microburst, air parcel rotation, mesocyclone, Denver cyclone, and inflow, we can be very helpful to professional meteorologists. No, we aren't "storm chasers." We are "storm spotters." We make the accurate observations from the field and relay them to the NWS office in seconds, without phones or e-mail, twitter, or texting.



On March 15th at the Denver Radio Club meeting place, (detailed elsewhere in this Roundtable), Scott Entrekin, a 27-year senior forecaster from NWS in Boulder, will present a 2 1/2 hour spotter training class in place of our regular meeting. Entrekin began his career with the NWS in Los Angeles in 1990 and moved to Denver in 1994 to practice his craft predicting the complicated Front Range weather here on the eastern slope.

A beginner orientation to Colorado weather will begin promptly at 6 p.m. with an "advanced" session starting at about the half-way point in the evening. Successful completion of both sessions will entitle each of us to obtain a spotter number which can be used to call in vital information during real emergency conditions. Whether it's the terrible twisting winds of summer or the blinding blizzards of winter, we will be trained to use our radios to warn of danger to the citizens of our state. Join us for this important event...weather permitting of course.

~ The meeting will start at 6 PM in Hearing Room # 1, & there will be no Elmer & Tech Committee sessions. ~



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**LEARNING NET REPORT**

BY FRED HART, AA0JK

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



Topics discussed this past month:

ECOM ECom or Emergency Communication is one phase of the public service portion of Amateur Radio  
<http://www.w0ipl.net/ShouldI.htm>

Chameleon EMCOMM II Antenna  
<https://youtu.be/UPBJfiBJQY0>

<http://chameleonantenna.com/BASE%20ANTENNA/CHA%20EMCOMM%20II/CHA%20EMCOMM%20II.html>

FT-60 / 65  
<http://www.eham.net/reviews/detail/4286>

FT – 857D Yaesu  
<http://www.eham.net/reviews/detail/3046>

ATAS120 mobile antenna ground

LDG Auto Antenna Tuner

R7 Cushcraft HF multiband vertical antenna

Skywarn

Yaesu ATAS – 120 Active Tuning Antenna System

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](mailto:w0tx@w0tx.org) or [elmer@w0tx.org](mailto: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 <https://groups.yahoo.com>. 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 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.

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

73,

AAØJK

Fred

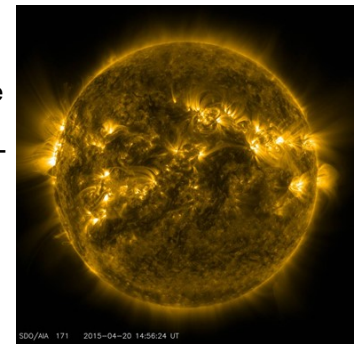
**SOLAR UPDATE**

PROVIDED BY Fred Hart, AA0JK

Week One

Wednesday, February 1st, 2017

As predicted, a high-speed stream of solar wind hit Earth's magnetic field during the early hours of February 1st. The impact literally rattled Earth's magnetic field.

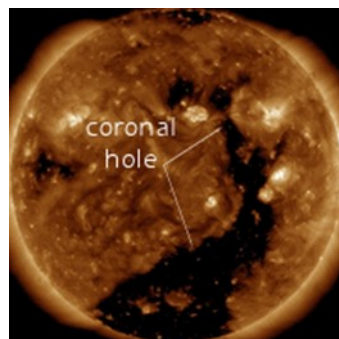
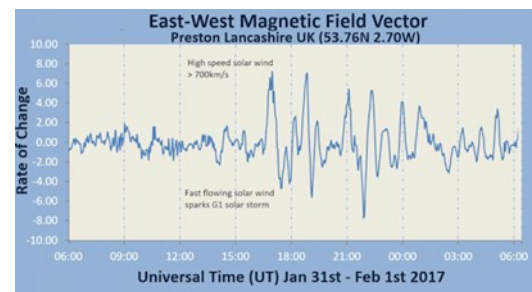


**G1** Minor storm warning in effect  
 Most likely area of Aurora Extent: to the vicinity of the green line (Kp=5)

For updating aurora visibility information go to the SWPC aurora (OVATION-Prime) model: <http://www.swpc.noaa.gov/products/aurora-30-minute-forecast>

The solar wind stream that sparked this display was flowing from a large canyon-shaped hole in the sun's atmosphere. It was a wide hole, and Earth would remain in the emerging stream for two days. NOAA forecasters estimate a 40% to 60% chance of continued geomagnetic storms on February 1 - 2.

What happens, exactly, when a solar wind stream hits Earth's magnetic field? Imagine yourself opening the door of your kitchen refrigerator and finding a bowl of jello inside. Go ahead. Thump the surface. The jello vibrates. Earth's magnetic field behaves a bit like that jello when thumped by a solar wind disturbance.



"The predicted solar storm arrived in the form of fast flowing solar wind, the result of which was twitching the magnetometers around the globe."

"There was no doubt from the data when exactly Earth entered the fast flowing wind stream", said Stuart Green. Stuart Green operates a magnetometer that measures unrest in his local magnetic field area.

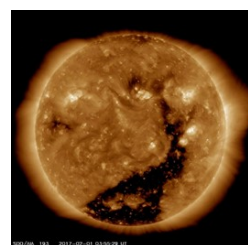
**Feb 2nd**

The Sun's activity picked up due to a set of two coronal holes that sent fast solar wind streams above 700 kms/s and some active regions that were firing off some mini-solar storms.

Coronal Holes: 01 Feb 17  
 Earth was inside a stream of solar wind flowing from the indicated coronal hole. Credit: NASA/SDO.

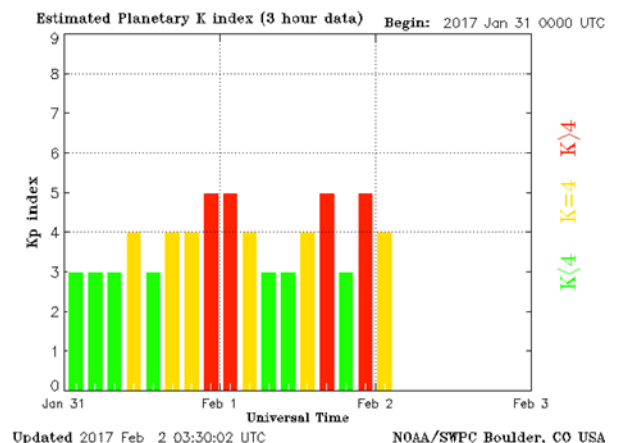
Amateur radio and GPS issues, due to the storm, were expected to last throughout Saturday (Credit: Tamitha Skov).

**NASA's Solar Dynamics Observatory Captures Returning Coronal Hole**



A substantial coronal hole rotated across the face of the sun and was again streaming solar wind towards Earth (January 30 - February 2). This same coronal hole was facing Earth about a month ago and was rotating into a similar position again (see a Gallery entry for this at: <https://sdo.gsfc.nasa.gov/gallery/main/item/769>).

Coronal holes are areas of open magnetic fields from which solar wind particles stream into space. In wavelengths of extreme ultraviolet light it appears as a dark area near the center and lower portion of the sun. Credit: Solar Dynamics Observatory, NASA.



Continued from page 6)

**Week Two**  
**Sunday, February 5**

THE SUN WAS FLAT-LINING: The X-ray output of the sun was flat-lining as sunspot counts plummeted. This situation was expected to continue for the following three days. NOAA forecasters said there was no more than a 1% chance of strong X-ray solar flares on February 5th, 6th, and 7th.

**Tuesday, February 7**

CHANCE OF STORMS Tuesday February 7th: NOAA forecasters estimated a 40% chance of polar magnetic storms on February 7th when Earth crossed through a fold in the heliospheric current sheet - a giant rippling system of electrical currents in space. Not long after the crossing, expected on February 8th, a stream of solar wind was expected to hit our planet's magnetic field. The source of the stream was a hole in the sun's atmosphere. The combination of these two events would likely disrupt the HF amateur radio bands.

What causes space weather and why should we be paying attention to it?  
<https://twitter.com/Discovery/status/829753242976399361>

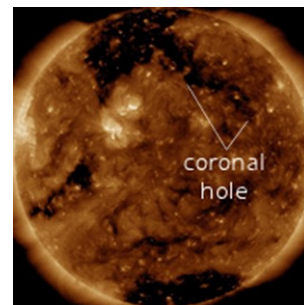
**Tuesday, February 9th**

It was very quiet on the sun for several days with the visible disk briefly going spotless. A new sunspot (2635) was forming in the northeast quadrant and was crackling with C-class Flare. These minor explosions, could intensify if the sunspot continued to grow.

**Saturday, February 11th**

Following the quick emergence of region 2635 and a few minor C-class flares, the region stabilized and solar activity declined back to very low levels. Only an isolated C-class flare was expected during the following 24 hours.

A stream of solar wind flowing from the indicated coronal hole was expected to sail north of Earth during the weekend, having little effect on our planet's magnetic field. Credit: NASA/SDO.



**Week Three**  
**Sunday, February 12th**

NASA's Solar Dynamics Observatory: Year 7 Ultra HD: <https://youtu.be/kJPz-oRnRDE>

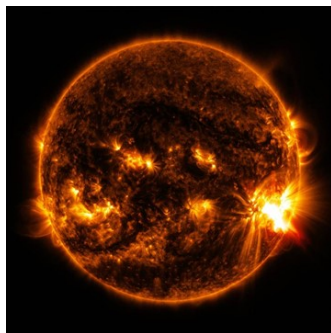
Published on Feb 11, 2017



The Solar Dynamics Observatory (SDO) has now captured nearly seven years worth of ultra-high resolution solar footage. This time lapse shows that full run from two of SDO's instruments. The large orange sun is visible light captured by HMI. The smaller golden sun is extreme ultraviolet light from AIA and reveals some of the sun's atmosphere, the corona. Both appear at one frame every 12 hours. SDO's nearly unbroken run is now long enough to watch the rise and fall of the current solar cycle. The graph of solar activity shows the sunspot number, a measurement based on the number of individual spots and the number of sunspot groups. In this case, the line represents a smoothed 26-day average to more clearly show the overall trend. Credit: NASA's Goddard Space Flight Center/Scott Wiessinger

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 NASA Goddard



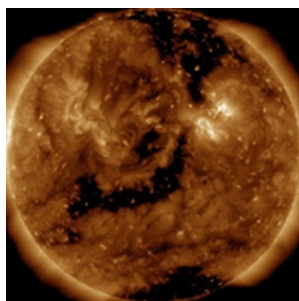
Source: [Twitter](#)

**Monday, February 13th**

**CHANCE OF STORMS:** NOAA forecasters said there was a 40% chance of polar geomagnetic storms on February 15th when a solar wind stream was expected to hit Earth's magnetic field. The stream was flowing from a canyon-shaped hole in the sun's atmosphere.

**Coronal Holes: 13 Feb 17**

A stream of solar wind flowing from the indicated coronal hole was expected to sail north of Earth, having little effect on our planet's magnetic field.



Credit: NASA/SDO

**February 15th**

Solar activity remained very low with nothing of interest expected. Region 2635 continued to slowly decay as it rotated across the northwest quadrant.

Coronal Hole 63 was expected to become geoeffective over the following respective days. A solar wind flowing from this zone was expected to skirt past our planet and lead to enhanced geomagnetic activity at higher latitudes. Geomagnetic storming was not expected in the forecast.

**February 16th**

*Solar Plasma Physics*

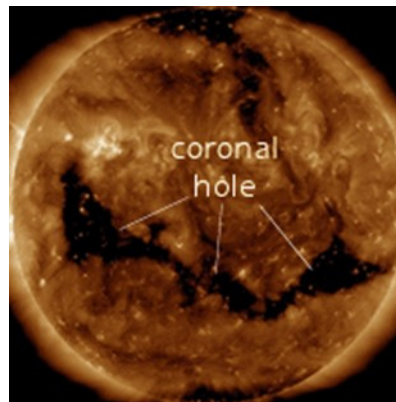
Erupting plasma on the sun is color-coded by temperature. The upper atmosphere of the Sun is dominated by plasma filled magnetic loops (coronal loops) whose temperature and pressure vary over a wide range. The appearance of coronal loops follows the emergence of magnetic flux, which is generated by dynamo processes inside the Sun. Emerging flux regions (EFRs) appear when magnetic flux bundles emerge from the solar interior

**Saturday, February 18th, 2017**

**A GASH IN THE SUN'S ATMOSPHERE:** An unusually wide and sinuous hole opened in the sun's atmosphere, and it was stretching like a gash across the sun's entire southern hemisphere. NASA's Solar Dynamics Obser-

vatory photographed the structure using false-color ultraviolet telescopes on Feb. 17th: This is a "coronal hole" (CH) - a region where magnetic fields open up and allow solar wind to escape. Solar wind flowing from this coronal hole could buffet Earth's magnetic field, off and on, for the following two weeks. Much of the material would pass to the south of Earth, mitigating its impact. However, even the glancing effects of a two-week solar wind event could support a sustained period of HF radio interference.

**Coronal Holes: 18 Feb 17**



An unusually broad coronal hole was cutting across the southern hemisphere of the sun. Credit: NASA/SDO.

*Week Four*

**Tuesday, February 21st**

**INCREASING CHANCE OF STORMS:** According to NOAA forecasters, the chance of polar geomagnetic storms will increase from 30% today to 40% on February 22nd, then 60% on February 23rd. This comes as Earth approached a fast-moving rivulet in a stream of solar wind already surrounding our planet.

**SOLAR TORNADO OVER-ROTATES, EXPLODES:**

Tuesday February 21st, an explosion on the sun's eastern limb hurled a twisted plume of debris more than 250,000 km (155,342.798059 miles) above the solar surface. NASA's orbiting Solar Dynamics Observatory recorded the blast:

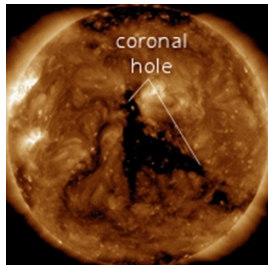
An 8-hr movie recorded by extreme ultraviolet telescopes on-board the spacecraft shows what happened: A tornado of magnetized plasma became





*Continued from page 8)*

unstable when the twister twisted a bit too much. Magnetic fields crisscrossed, and exploded in a process known as "magnetic re-connection." The flying debris was not expected to hit our planet; the blast was too far off the sun-Earth line.



Coronal Holes: 21 Feb 17

Solar wind flowing from the indicated coronal hole was expected to reach Earth on February 23-24.

**February 23**

SOLAR WIND ADVISORY: NOAA forecasters estimated a 60% chance of polar geomagnetic storms, February 23rd, when Earth entered a stream of fast-moving solar wind.

The gaseous material was flowing from a hole in the sun's atmosphere, and was expected to buffet Earth's magnetic field for at least two days.



Two Holes on the Sun Give Chances for Aurora: Solar Storm Forecast 2-23-2017:

<https://www.youtube.com/watch?v=vrVekU4O01c&feature=youtu.be>

<https://youtu.be/vrVekU4O01c>

Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center:

Solar activity continued to be very low. Region 2638 (N18E49, Dso/beta) became more visible as it rotated further onto the visible disc. The region still appeared to be in a simple bipolar configuration, but foreshortening effects continued to prevent a better analysis. No Earth-directed CMEs were observed in available coronagraph imagery.

Forecast...

Solar activity is expected to be very low with a chance for C-class flares all three days (23-25 February).

73,

Fred

AAØJK

**WHY ARE THERE SO MANY TECHS?**

BY DAN ROMANCHIK, KB6NU

Recently, one of my readers asked, "Why do most people have a Technician license and not a General or Extra? Is it simply not interesting enough to get more privileges?"

This is a very interesting question, one that I've written about before. I think there are several issues at play here. In no particular order:

- It's pretty easy to get a Tech license, so a lot of people get them just for the challenge, but really never intend to use the license.
- Some people get a Tech license, but then find out that amateur radio isn't what they thought it was going to be.
- Some people get a Tech license, then can't find an Elmer to help them. They lose interest and give up on ham radio.
- Some people get a Tech license, buy an HT, and think that's all there is to amateur radio. They quickly lose interest in amateur radio, because talking on the repeaters just isn't all that interesting.
- Some people get licenses to participate in local emergency communications or CERT organizations. There's no need for them to get anything more than a Tech license.
- Since it's so easy to get a Tech license, even those that aren't technically inclined get them. Getting a General Class license requires a fair amount of study, and because they don't see the benefits of putting in that kind of work, they just don't bother.

I posted this question to my blog and got several interesting replies. Perhaps the most cogent was by Kenneth, W6KWF. He wrote: "The only thing General/Extra gets you is HF, which is becoming an increasingly small fraction of the possibilities of the amateur hobby. Amateurs could easily spend their whole lives moving from FM repeaters to microwave to VHF packet to EME to CERT/event support, etc, etc, without having any interest to explore what few facets of the hobby need HF privileges."

I think this is a great point. When incentive licensing was put into place in the late 1960s, HF was where the action was. Nowadays, more of the "cool stuff" is happening on VHF, UHF and microwaves. Getting additional HF privileges is not really a big deal anymore for many hams.

*Continued from page 9)*

**Yet another new license class?**

Right on the heels of this discussion, the ARRL posted a news item, "ARRL Seeks Opinions Concerning Possible New Entry Level License" (<http://www.arrl.org/news/arrl-seeks-opinions-concerning-possible-new-entry-level-license>). According to this report, the ARRL Board of Directors set up an *Entry Level License Committee* in September 2016.

The committee is gathering member input via an online member survey (<http://www.arrl.org/license-1>) and will make recommendations to the Board for possible rules changes to submit to the FCC. They note, "The result could mean changes to the Technician license, but it could also be an additional, but simpler, license with privileges that would give a newcomer a taste of most facets of ham radio from HF to VHF and UHF. The survey will be online until April 7, 2017.

According to the survey page, the committee is trying to address several issues, including:

- The declining population of new hams under the age of 30.
- A decline in the number of new licensees who actually get on the air.
- Amateur Radio's lack of appeal for those under the age of 30, compared to other technical hobbies.
- The increasing challenge of engaging and retaining Technician licensees.
- A reluctance in much of the amateur community to embrace newer technologies of interest to the younger segment of the population.

Personally, I don't think that coming up with a new entry-level license class with privileges that are even more limited than the Technician Class is a bad idea, but whether or not it's successful will depend completely on the implementation. Unless the new class of license is accompanied by some kind of program that will help these new licensees really become engaged with amateur radio, then we're just creating another class of inactive licensees. I don't know exactly what this program would consist of, but without it, this effort is doomed to failure.

And, who's going to develop and run this program? The only organization that has the horsepower to make this work is the ARRL. They are going to have to step up big time. Most clubs don't have the people or resources to do it properly. If you have any thoughts on this, I urge you to contact your ARRL division director (<http://www.arrl.org/divisions>).

*When he's not pondering questions about the amateur radio licensing structure, Dan blogs about amateur radio at KB6NU.Com, writes the "No Nonsense" amateur radio study guides, and teaches ham classes. You can contact him by e-mailing [cwgeek@kb6nu.com](mailto:cwgeek@kb6nu.com).*

**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 (PDF or JPG, etc.) to [drc.editor@gmail.com](mailto:drc.editor@gmail.com). Alternatively, if you have received a unusual or exotic one in the past and would like to share it, then send it on over. It would be fun to feature some of them over the next few months.



To get the ball rolling, here's the one for my old call sign. - AD0UZ, Editor

### FEBRUARY VE SESSION

BY TOM KOICIALSKI, KC2CAG

The DRC VE Team provided an exam session for the students in Will's (W1ZR) General Class upgrade training session on February 25th. As usual, we announced this session via the ARRL's web page which lists upcoming VE Sessions. Surprise! We had more candidates for the exam from folks who were not part of the training class than those in the training class!

10 candidates took the exams. Of the ten candidates, five earned upgrades from Tech to General, and three new Tech licenses were earned.

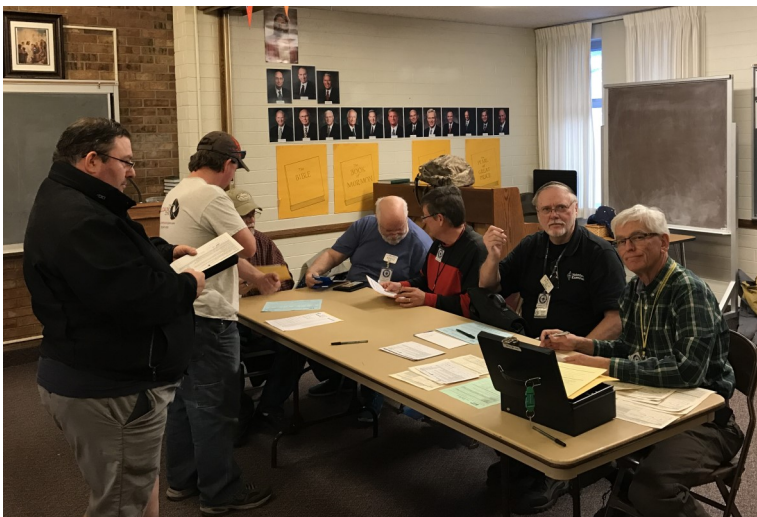
Thanks again to the team who supported the session, and thanks even more to Will who gives up Saturdays and more to run these training sessions.

Team members participating were:

- Fred, AA0JK
- Blake, AD0OZ
- Ron, W1RAP, and
- Roger, AD0WG, a first time VE Team member
- Along with Will himself, W1ZR

Congrats to KB2BBJ, KE0FIY, KE0LXD, KC9RWM, and KE0MEY who all earned upgrades. The new techs have not been assigned call signs as of press time.

On a very sad note, our January VE session included a very faithful VE Team member, now an SK, Jack, W0JMC. Rest in Peace, Jack.



## WHAT IS AN ELMER?

By Fred Hart, AA0JK

Ever wonder where the term Elmer derived from?

Teacher, helper, friend and mentor. Those who help us obtain our goals in areas of our interests. Going the extra mile in helping others.

In amateur radio today, we find it in the ARRL's "The Doctor is in" column's in QST, and their biweekly podcasts.

With this being the 100th anniversary of the Denver Radio Club, it was interesting to delve back, and look at what amateur radio was like in 1917.

Amidst the history, the war, and the amateur radio experimenters contributions to the art of radio, a name surfaced "Elmer E. Bucher". Could this be our original namesake we so often refer? In the early days of radio experimentation, articles written by Elmer E. Bucher appeared in magazines, answering questions, and helping the hobbyist with their pursuits in radio communications.

Could this be our original "Elmer"? We can only speculate, but it certainly would be fitting after having read several of his articles.

Today we should all strive to be an Elmer. Helping to further the advancement of our hobby, Amateur Radio. We should strive to be anything but amateur.



73,  
AA0JK  
Fred

## EmComm Note

BY BRENNAN PATE, AD0UZ

This year's siren tests in Lakewood and Wheat Ridge will be completed on the same day. Due to the joining of forces the officials wanted to do them together. So, over the coming month we will be sending out more detail on the timing of the tests and the logistics of the operation. We are hoping that the club's volunteers can cover both tests. If that is not feasible then we will work that out. Net control will be operating from the normal EOCs but the group meeting and pizza lunch will occur after the second test. More details forthcoming as they get worked out.



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is an ARRL Special Service  
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**HIGHLIGHTS OF RTTY HISTORY**

AS WRITTEN BY ROGER GHORMLEY, W0KK  
IN THE NOVEMBER 2014 LINCOLN LOG

**Radio Teletype**

It started soon after World War II. Hams obtained teletype machines no longer required by the military and commercial operators. Ham literature gave info on how to adapt the machine's DC operation to the Ham transceiver. Two-way Ham QSOs via teletype date from 1946. What one Ham typed on his teletype machine was printed on paper by the other Ham's machine. Interest grew and techniques improved. The FCC modified some regulations to allow frequency shift operation, which was superior to make and break. The number of Hams with RTTY increased rapidly.



The first RTTY contest was sponsored by the RTTY Society of Southern California. Held in October, 1953, the contest had 29 entrants! Interest in the new mode spread beyond the USA. In June 1959 the British Amateur Radio Teletype Group, BARTG (now known as the British Amateur Radio Teledata Group) was formed. Similar RTTY groups were organized in other countries. Weekend contesting via RTTY drew hundreds of entrants. Then along came personal computers.

In the 1980s Ham programmers soon developed computer applications that did all the work previously done by the teletype machine. Except for a few "purists," teletype machines started disappearing from the Ham ranks. RTTY programs provided for automatic logging and macros.

A Ham could enter a weekend contest and via the mouse never have to touch the keyboard. Up through the 80s and 90s the Baudot code—start bit, 5 code bits, stop bit—was the preferred code used for RTTY. Changing between Mark and Space was by **shifting the frequency** between two values, typically 170 Hz difference. Then along came a British Ham.

In the 1980s Ham programmers soon developed computer applications that did all the work previously done by the teletype machine. Except for a few "purists," teletype machines started disappearing from the Ham ranks. RTTY programs provided for automatic logging and macros.

**PSK31: A New Radio-Teletype Mode**

In December 1998 and January 1999 the journal RadCom, of the Radio Society of Great Britain, contained an article written by Peter Mar-

tinez, G3PLX. The article, "PSK31: A New Radio-Teletype Mode," described a completely new way of coding for RTTY – "Varicode." Details of Varicode are beyond the scope of this "History" (as well as the ability of this writer); but a few features are worth noting: Mark and Space are formed by a shift in phase. In text, characters are separated by "00," so no character includes a 00. The length of a character's code – 2 to 10 bits – is roughly inverse to how often the character is used in the English language. The space between words occurs most often and the code is 1. For example, "at the zoo" is 1011 00 101 1 101 00 101011 00 11 1 111010101 00 111 00 111 1. The space-between-words code, 1, also means "end of character"; so no further need for the 00. Ham programmers soon developed applications using PSK31. Hams found the new mode able to copy weak signals that were lost to the old Baudot mode. It is getting hard to find a Baudot signal. RTTY has come a long way in the last 80 years. Where will it go from here? If this writer were two score years younger and one score IQ smarter, he might try his hand at, say, "Voice Control of RTTY." That's likely better left to someone else.



—Roger Ghormley, W0KK

[Roger received his license in 1935.]

## LOOKING BACK AT THE DRC, PROVIDED BY WOODY LINWOOD (W0UI)

Roundtable June 1960 - Transmitter hunts and Field Day preparations.

***XMITTER HUNTERS***

The first hunt was a great big success with all participating parties heading towards home making plans for the coming weekly hunts. Many had comments about the loops they were going to change or construct. Others were thinking about the "S" meter they wanted to install.

Those present at the first summer hunt were: KØEVQ and his XYL, KØQGO (with only a whip to guide him, but not next time), KØHPF, WØGVT and his four comedians, Roger, Ken, Bill and Rich. As usual we took on a few donuts at the Virginia Village Creamery.

The innovation this year were thirty-minute hunts. This allows the group to have several hunts in a night. They are all to be conducted in a three-mile radius. The loser each time having ten minutes to (get lost). The next time, if you aren't getting there, you are missing a ball.

We hope to have them in different areas of the city each time. Example, first east, then north, etc. If you've got a mobile and don't have the loop, call one of the guys and borrow their mobile handbook and get the job done.

73, Bill, WØGVT.

P.S. Where were WØVDY, LO, EXR, SBE, VSN and all the other old timers?

Ø—Ø—Ø

***FIELD DAY***

June, 1960 and Field Day rolls around again; WØOUI will be on the air from the Hinman property in Indian Hills for the second time.

Mr. Hinman was pleased by the clean way we had left his property, so was kind enough to let us use it again. For which we thank him very much.

We can go up there, the weekend of June 18 and 19 to erect antennas or whatever there is to do to make it a little easier on the next weekend.

Anything to keep the pressure off on Saturday the 25th, so that all may be in readiness at 1400 hours for "CQ Field Day."

Please let Ralph, WØVDY, know if you intend to participate so that any con-

It is with sincere regret that we record the passing of Mr. Harold D. Worley, KØUKK.

Harold realized his desire to become a general class operator, but died after only one day on the air.

flicts can be ironed out ahead of time.

Maximum input power is to be 30 watts again. Transmitters are easier to handle and we get the extra multiplier. The Club will supply the portable power and each individual group will take care of all other parts of their setup, equipment, food, shelter, etc.

Even with poor propagation conditions, do you suppose we can better last year's score? LET'S TRY!

WØSIN's telephone number is YUkon 5-0428.

Ø—Ø—Ø

**DID U KNOW**

That Fstell's has a basement full of used car radios, which are being sold out for \$4.85 each.

—Ø—

Did you see the rare DX cards Merle, WØSBE, had at the last DRC meeting? Perhaps at some meeting next year prizes could be offered for the best exhibits of such DX cards.

—Ø—

That you get a Colo. Ham Directory with a ticket to the Hamfest.

—Ø—

That KNØAJM Perry, and KNØATU Larry, are among the first of the re-issued calls.

***BUY - SELL - SWAP***

WANTED—Help with preparations for the Hamfest. Call Bille Green WØGVT, West 6-1861.

—Ø—

FOR SALE—Exceptionally clean (honest!) DX-35 transmitter. Might even trade. Roy Raney, KØOVQ. FLorida 5-5278.

*This puzzle is provide courtesy of Chris Codella - W2PA. The URL for his website is [w2pa.com](http://w2pa.com). The solution for the puzzle is on page 16.*

### Sport Sort

**Across**

- 1. Internet spec.
- 4. Word with radiation
- 9. A contest meth.
- 14. Wil' Wright's bro'?
- 15. Acquired relative
- 16. Icom rig
- 17. Word with CQ
- 19. Cut loose
- 20. Western ham org.
- 21. Add 50 ohms, say
- 23. Types of cap.
- 26. DXCC awd. unit
- 27. Contester's objective, often
- 30. The end of CW
- 31. Amp. opp.
- 32. FMT unit
- 35. Wire coating
- 37. W4 state
- 38. Market type
- 39. Rock group calculators?
- 42. Coalition
- 43. QRS followers
- 44. Belonging to WIAW
- 45. Non-OMs
- 46. Game piece
- 47. Dot follower
- 48. ZL dir. from JA
- 49. Military address
- 50. Navigation acronym
- 52. Cover, as with fabric
- 56. New Englanders
- 60. Emit photons
- 61. Words with Europe or Continents
- 64. Hidden
- 65. In the ether
- 66. PY or CT saint
- 67. It's clean, in November
- 68. City in 37-across

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	63				
64						65						66		
67						68						69		

- 69. SWR meter label
- Down**
- 1. Kind of hall
- 2. Gator's cousin
- 3. Eastern ham org.
- 4. A hand
- 5. LA dir. from JA
- 6. Murphy's work
- 7. Puts on cargo
- 8. The America's Cup trophy, e.g.
- 9. Quick test
- 10. Ain't right?
- 11. VE1 first name
- 12. JA assembly
- 13. Lot of loot
- 18. Polarized light disp.
- 22. Figure of speech
- 24. Footnote word
- 25. Officers, and others
- 27. Like duck feet
- 28. Collectively
- 29. Milli-micros?
- 31. 1996 Olympic flame lighter
- 32. They're entered in court
- 33. Makes waves?
- 34. All together, with en
- 36. W3 sect.
- 37. One way to C U on the bands
- 38. Cone maker
- 40. Solder target
- 41. Mike lead-in
- 46. Hoped-for response to CQ test
- 47. OK was one
- 49. Weather balloon unit, with radio
- 50. 9L ender
- 51. Affirmative action
- 52. IRC seller
- 53. "That was close!"
- 54. Take on
- 55. New Yorkers and others
- 57. Sat. org.
- 58. Flamboyance
- 59. Tab target
- 62. P5 authority
- 63. Diamond stat

**FACT OF THE DAY**

**Why Copper Ground Rods?**

Copper ground rods actually are copper clad steel, because copper rods would be too soft to drive in the ground and unnecessarily expensive. Most people probably assume that copper is used because of its high conductivity. That is a slight added advantage, but not the real reason. The resistance of the soil surrounding a ground rod is so high compared to the resistance of any metal that the series resistance of a rod and the soil surrounding it would be almost the same regardless of the metal used. The real reason copper is used is copper a noble metal that has high corrosion resistance. It becomes a cathode when joined together with a less noble metal such as steel in the presence of an electrolyte such as moist soil. The less-noble steel becomes a sacrificial anode that corrodes away first, leaving a relatively corrosion-free copper shell in contact with the soil. ©2005 Martek International All rights reserved.

T	C	P		A	N	G	L	E		S	A	N	D	P
O	R	V		I	N	L	A	W		P	R	O	I	I
W	O	R	L	D	W	I	D	E		R	E	V	E	L
N	C	C	C			T	E	R	M	I	N	A	T	E
				D	I	S	C	S		E	N	T		
W	I	N		D	A	H		A	T	T		P	P	M
E	N	A	M	E	L		A	L	A		F	L	E	A
B	A	N	D	M	U	L	T	I	P	L	I	E	R	S
B	L	O	C		T	U	V		H	I	R	A	M	S
Y	L	S		P	E	G		C	O	M		S	S	E
				S	I	R		L	O	R	A	N		
U	P	H	O	L	S	T	E	R			O	N	E	S
S	H	I	N	E		W	O	R	K	E	D	A	L	L
P	E	R	D	U		O	N	A	I	R		S	A	O
S	W	E	E	P		S	E	L	M	A		A	N	T

✂

**HAM SITE OF THE MONTH**

[ARRL Question Pools](#)

✂

**THE ROUNDTABLE ARCHIVE**

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

**THE ROUNDTABLE ARTICLE INDEX**

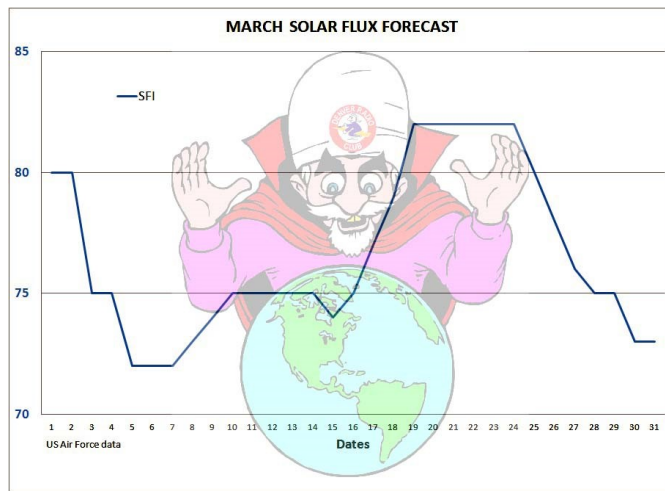
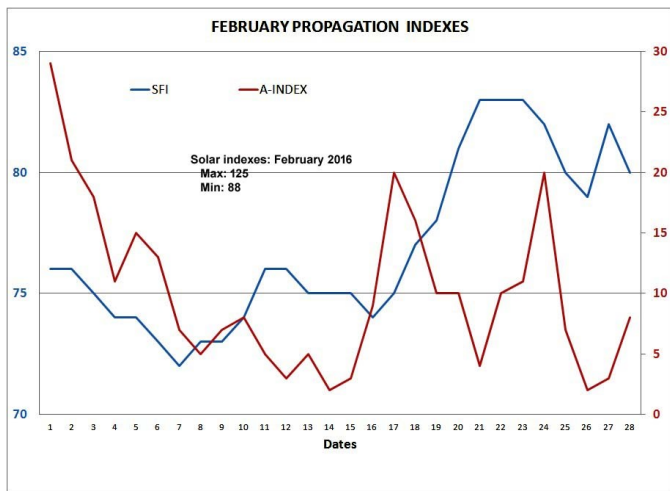
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

**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. 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
-------	------	----------	-----------------

LARCFest	04/01/17	Boulder County Fairgrounds	<a href="#">Longmont Amateur Radio Club</a>
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**UPCOMING ARRL CONTESTS & EVENTS**    [ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
---------	------------	------------	----------	-----------	-------

International DX Contest Phone	03/04/17	0000	03/05/17	2359	
Rookie Roundup - SSB	04/16/17	1800	04/16/17	2359	

**UPCOMING QSO PARTIES**

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

State/Province	Start Date	End Date	Sponsor Website	Notes
----------------	------------	----------	-----------------	-------

Idaho	03/11/17	03/12/17	<a href="#">Idaho QSO Party</a>	
Oklahoma	03/11/17	03/12/17	<a href="#">Oklahoma DX Association</a>	
Wisconsin	03/12/17	03/13/17	<a href="#">Louisiana Contest Club</a>	Based on 2016 date.
Louisiana	03/18/17	03/19/17	<a href="#">Virginia QSO Party</a>	
Virginia	03/18/17	03/19/17	<a href="#">ARRL Mississippi Section</a>	Based on 2016 date.

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	<b>2 meter / 20 meter gateway. Useable by Technicians on 2 meters. See January 2015 RT.</b>
2m	145.490MHz (-) 100Hz PL	<b>Linked to the 70cm - 448.625MHz machine.</b>
2m	147.330MHz (+) 100Hz PL	<b>Local Area, Members Auto-Patch Does Not TX a PL!</b>
2m	147.330MHz (+) 131.8Hz PL	<b>Test Mode Operation. Send signal reports to Tech Committee.</b>
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	<b>Saint Anthony's Note: This is a narrow band repeater requiring DCS.</b>
70cm	448.625MHz (-) 100Hz PL	<b>Linked to the 2m - 145.490MHz machine.</b>
70cm	449.350MHz (-) 100Hz PL	<b>Wide area coverage with Echolink Node # 4140.</b>
70cm	449.775 MHz (-) 100Hz PL	<b>Yaesu Fusion Digital / Analog, 100 Hz Tone Required for Analog.</b>
70cm	446.7875MHz (-)	<b>BrandMeister Repeater   Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804 (Talk Group 2)</b>



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<b>MARCH 2017</b>		<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
			<b>1</b> <b>Learning Net</b> 7:30 p.m. 145.490 / 448.625 (No PL)	<b>2</b>	<b>3</b>	<b>4</b> ARRL International DX - Phone. Start 0000 UTC
<b>5</b> ARRL International DX - Phone. End 2359 UTC  First Quarter	<b>6</b>	<b>7</b>	<b>8</b> <b>Learning Net</b> 7:30 p.m. 145.490 / 448.625 (No PL)	<b>9</b>	<b>10</b>	<b>11</b>
<b>12</b>   Full Moon	<b>13</b>	<b>14</b>	<b>15</b> <b>DRC Meeting</b> 6 PM start No Elmer session	<b>16</b>	 <i>Happy                      St. Patrick's                      Day</i>	<b>18</b>
<b>19</b>	<b>20</b>   Last Quarter	<b>21</b>	<b>22</b> <b>Learning Net</b> 7:30 p.m. 145.490 / 448.625 (No PL)	<b>23</b>	<b>24</b>	<b>25</b>
<b>26</b>	<b>27</b>  New Moon	<b>28</b>	<b>29</b> <b>Learning Net</b> 7:30 p.m. 145.490 / 448.625 (No PL)	<b>30</b>	<b>31</b>	

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EmComm Coordinator	AD0UZ	Brennan Pate	303-578-6283	<a href="mailto:ad0uz@outlook.com">ad0uz@outlook.com</a>
Field Day	AC0UA	Jason Smallwood	Check Roster	<a href="mailto:sjason67@msn.com">sjason67@msn.com</a>
Membership	KC0CZ	Bob Willson	303-659-0517	<a href="mailto:rwillso2@centurylink.net">rwillso2@centurylink.net</a>
Net Control	K0TOR	Jim Beall	303-798-2351	<a href="mailto:k0tor@arrl.net">k0tor@arrl.net</a>
Public Relations	N0USN	James Fariello	303-659-3319	<a href="mailto:jamesfariello@gmail.com">jamesfariello@gmail.com</a>
RT Managing Editor	AD0UZ	Brennan Pate	303-578-6283	<a href="mailto:drc.editor@gmail.com">drc.editor@gmail.com</a>
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**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](mailto: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](mailto:drc.editor@gmail.com). The submission deadline is the 20th of the Month. ~ Editor