



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

100 years of amateur radio in Colorado

February 2017

PRESIDENT'S MESSAGE

By Gerry Villhauer, W0GV

Hello DRC Members,

Here it is February 2017 already. I must say I won't be sorry when springtime rolls around. When I was young I always felt that the people who go South in the winter time, Snow Birds we call them, were a bunch of wimps. As I get older, I am not so sure ---The idea of going someplace warm in the winter sounds better and better all the time. This will be one of my shorter president's message as there is not a lot that I have to report on this month. Our January meeting had a near full house with only a few empty chairs remaining. What a good feeling to look out over a large attendance at our meetings. Thanks goes out to Mr. Jim Schoedler for his super presentation on how the radio frequencies are coordinated at large events like Bronco games, the super bowl and other major events. It is amazing the planning and work that goes into these events.

If you have looked at the ads in QST or maybe been to Hamvention in Dayton, Ohio, you may have seen the Sienna transceiver from DZKit's. Brian Wood (W0DZ) is a designer and operator of DZKit's, located right here in Colorado. Brian will be the presenter at our February meeting and will talk about and show us the latest kit called the Sienna XL, which is now in beta test mode. Kit building is nearly a thing of the past except for accessories and antennas. This will be a very interesting program to learn how a high performance kit transceiver is designed and presented in kit form. You can see more detail on this program in this issue of the Round Table.

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; see you at the February 15th meeting

Gerry (W0GV)
President



INSIDE THIS ISSUE

January Meeting - What'd I Miss?	2	W0TX BrandMeister Explained	7
Who's New In The DRC?	2	Solar Report	11
Technical Committee Report	3	Looking Back	14
February Meeting Presentation	4	Crossword Puzzle	15
EmComm Note	5	Past & Future Propagation Conditions	16
VE Session Report	5	DRC Calendar	19
Learning Net Report	6	DRC Board & Staff	20

JANUARY MEETING – WHAT'D I MISS?

By Brennan Pate, AD0UZ

President Gerry Willhauer (W0GV) greeted everyone and had a couple visitors introduce themselves, and then everyone else did as well. He requested that anyone who would be interested in helping with the club's 100th year anniversary events let him know. Jim Farllo (N0USN) then talked about the club's 100 year anniversary promo video he has produced and that will be posted on the club's Youtube page.

Next, Gerry introduced Jim Schoedler (ex WA3BHC), the Broncos game day frequency coordinator (GDC) who was the evening's guest speaker. Jim first outlined what the GDC does and why, and then laid out the process from pre-game setup to post-game cleanup. He talked about spectrum analysis for the venue, the different equipment used for finding interference (hams in particular have been helpful with this aspect), the coaches' intercom systems and the main communications units that are stored under tight security.

The GDC job for Jim was initially, essentially, a volunteer job but it is now an official NFL position. Naturally, with the proliferation of wireless radio and video the instances of interference have exponentially increased and the GDC's role has become more and more important. The assignment of frequencies to the media, teams, and other groups involved is very specific and strict protocol is followed.



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:

Justin Daniels K2BBJ

Michael Jordan K7MAJ

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.

More information can be found on the Denver Radio Club website at www.w0tx.org.

**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 January Technical Committee meeting. The project coordinators' call signs are in red.

DRC TRBO Upgrade to BrandMeister (K0HTX)

Goal: Determine the feasibility of upgrading the TRBO repeater to BrandMeister.

Status: K0HTX has upgraded the repeater to BrandMeister, which is available for users to test. The Tech Committee is requesting reports, especially if any issues occur. W6OAV has integrated a W0TX BrandMeister zone into the latest Rocky Mountain Ham code plug. 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: Three 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 has located some 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.

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.

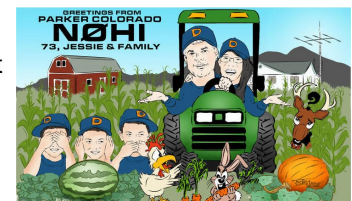


~ Editor's Note: The Technical Committee meeting is open to members of the DRC. It is held in the Arvada room, starting at 6:00 p.m. on the evening of the DRC monthly meeting.

PRESIDENT'S THANKS

By Gerry Villhauer, W0GV

I would like to take this opportunity to thank Jessie King (N0HI) for his years of service as the editor of the DRC RoundTable. I think you will all agree that every issue of the RT has been nothing short of superb! Now that Jessie has more family obligations with his triplet boys, he has found it necessary to move out of the editor position. Jessie has worked side by side with our new editor and will be available to fill in if necessary. Please, next time you see Jessie at a meeting or talk to him on the air, give him a personal thank you for his service to the DRC.



WHAT IF THE WEATHER CHANGES?

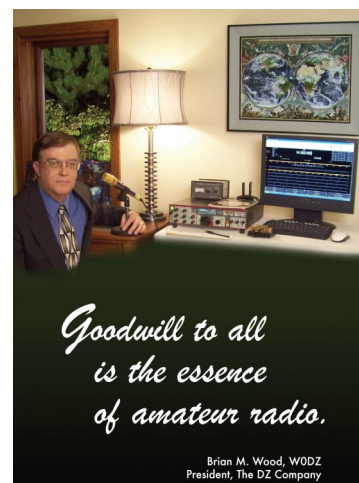
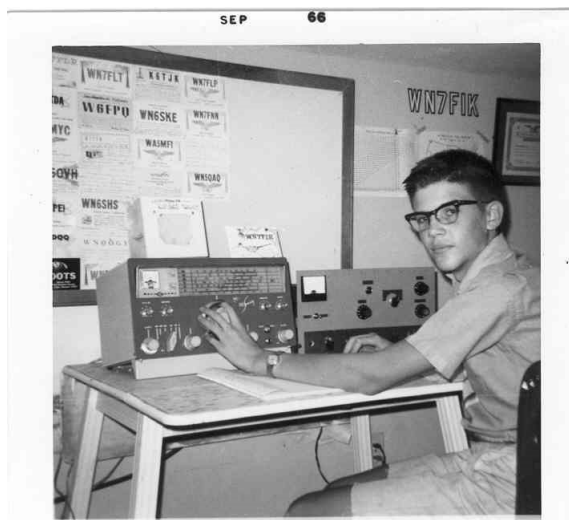
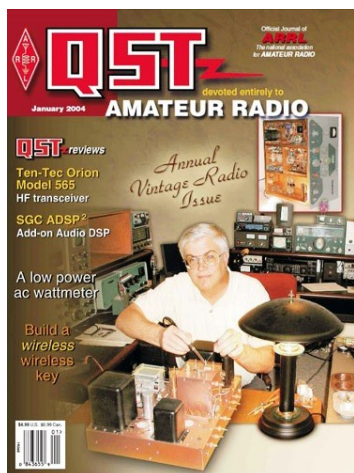
If we should experience a turn in the weather on the day of our monthly DRC meeting it may be necessary to cancel the meeting. If this should happen listen for meeting status reports on 145.49 or 448.625 MHz repeaters during the afternoon on the day of the meeting.

FEBRUARY MEETING PRESENTATION

By Brian Wood, W0DZ

At the February meeting, Brian will talk about, and show, the Sienna XL, DZKit's latest transceiver kit. Introduced at Dayton last year, it is currently being beta tested by eight customers. Full release is expected in a few more months after the beta testing is completed. Sienna XL has two color touch displays, voice recognition and synthesis in multiple languages, excellent performance, and world-class ease of use. It's a true kit, with soldering required on the less complex boards, but can also be provided as a modular kit with all pre-built boards, and assembled and tested.

Brian Wood, W0DZ was first licensed as WN7FIK in Scottsdale, AZ in 1966 at the age of 14. He moved to Colorado in 1973 after getting a BSEE degree from the University of Arizona and started his new job as an engineer at the Loveland Instrument Division of Hewlett Packard. He designed hardware, firmware and software for portions of the HP 3060, 3065, and 3070 in-circuit test systems, then the TS-5400 series of automotive functional test systems. In 1995 he moved into marketing as an application engineer, where he wrote lots of technical papers showing the superiority of HP instruments over the competition. The test and measurement side of HP became Agilent in 1999. Brian retired from Agilent in 2006, but went back for more in 2014 just before Agilent became Keysight. He's now the worldwide support manager for Keysight BenchVue software, which provides a graphical interface for communicating with and logging data from hundreds of Keysight instruments, such as DMMs, Scopes, Function Generators, Power Supplies, Spectrum Analyzers and more. In 2009, he and three other hams formed The DZ Company, LLC (dba DZKit and Valley Ham Shack), which he continues to run today.



MARCH MEETING ANNOUNCEMENT

Provided By Dave Baysinger, WG0N

Extreme weather...in Colorado? Yep, and amateur radio operators help report it. Want to know more? Want to become a qualified storm spotter? The sky is NOT the limit. March 15th's DRC meeting will feature Scott Entrenkin, a NOAA meteorologist with the National Weather Service...save the date. Get blown away!

- Please note that the meeting will start at 6 PM and there will be no Elmer and Tech Committee sessions. -

EmComm Note

By Brennan Pate, AD0UZ

I was curious what local EmComm nets, specifically for ARES and RACES, were available. A perusal of a few websites provided the following. For district info: coloradoares.org/wordpress/districts/ If you know of any others or have corrections, please email drc.editor@gmail.com.

Name	Days	Time	Frequency	Notes
Colorado ARES HF FSK Net	1st, 3rd & 5th Sundays	0730 MST	3.590 MHz	mark tone
Colorado ARES HF PSK-31 Net	2nd & 4th Sundays	0830 MST	3.590 MHz	mark tone
Colorado ARES HF CW	2nd & 4th Sundays	0730 MST	3.570 MHz	
Colorado ARES HF SSB Net	Sunday	0800 MST	3.810 MHz	
Colorado ARES Statewide VHF FM	Sunday	2000 MST	145.310 MHz	(-) 88.5, IRLP Node 9871
Colorado ARES Statewide VHF SSB	Monday	1900 MST	144.220 MHz USB	horizontal polarity
Arapahoe County ARES	Sunday	0930 MST	146.640 MHz	(-), 100.0
"	"	"	449.225 MHz	(-), 141.3
Colorado RACES FM Net	Wednesday	1930 MST	147.225 MHz	(+) 107.2, IRLP Node 9870
Colorado RACES HF Net	Sunday	1900 MST	3990.5 kHz	
Boulder ARES	Monday	2000 MST	146.76 MHz	(-), 100.0
Adams ARES	Thursday (except 1st TH)	1900 MST	448.225 MHz	(-), 141.3
District 10 ARES (Northern CO)	Thursday	1900 MST	145.115 MHz	(-), 88.5
ARES R1D6 (Jeff., Clear Creek, Gilpin)	Thursday	1930 MST	146.67 MHz	(-), 100.0
ARES DEC	Thursday (except 4th TH)	2000 MST	447.150 MHz	(-), 107.2

VE Session Report

By Tom Kocialski, KC2AG

On Saturday, January 21, eight members of the DRC VE Team supported the Tech Class training session conducted by our very own W1ZRV, Will Perkins. Will continued his awesome job of educating new (and upgrading!) hams. 30 of his 34 students successfully passed the Tech exam, and two of them went on to pass the General exam. We had an additional walk-in of a ham, Ted Dawson, KG6AJH, who successfully challenged the Extra class exam. As of January 30, the FCC had not yet listed callsigns for the new hams.

VE's supporting the exam included Kevin, AD0GX; Blake, AD0OZ; Brennan, AD0UZ; Tom, KC2CAG; Matt, KB2PCN; Robert, K0RCW; Jack, W0JMC; and Will, W1ZRV.



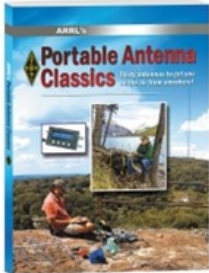
LEARNING NET REPORT

By Fred Hart, AA0JK

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



January Topics:



Hiking Mobile:

ARRL's Portable Antenna Classics. ISBN:978-1-62595-034-5

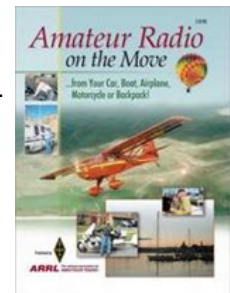
Amateur Radio on the Move: Get on the air from your car or RV, boat, airplane, motorcycle or backpack. Expert advice for radio operating on the go. ISBN:978-0-87259-945-1

Back Pack Mobile:

Turtlehead Peak On the Air by Mark Beaufait, WA7YER

Mark acquired the backpack-friendly Yaesu FT-817ND transceiver. It runs 5W and is intended to drive a portable multiband vertical antenna. See the

full article here: arrl.org/files/file/QST/This%20Month%20in%20QST/May2015/BEAUFIT.pdf



W6DWI Backpack mobile, equipment checklist: <http://www.arrl.org/soapbox/view/3211>

Batteries & Battery Life:

Honey, They've Shrunk the Batteries!, Ken Sturat, W3VFN in the December 2001 QST, pp. 31-35. Article provides a rundown on today's popular batteries, their uses, characteristics and care. See: <http://www.arrl.org/files/file/protected/Group/Members/Technology/tis/info/pdf/0112035.pdf>

Slim Jim Antennas:

http://www.ac8gy.com/dual_band_slim_jim_antenna.html

<http://www.n9tax.com/Slim%20Jim%20Info.html>

How does a J-pole antenna work? <https://youtu.be/GRJw3SCBGfA>

QSL cards:

How the QSL System Works: <http://www.arrl.org/incoming-qsl-service>

<http://www.eham.net/newham/qslcards>

Mobile Installation:

http://www.ve3nar.org/meetings_files/Presentations/Mobile%20Installation.pdf

<http://www.k0bg.com/wiring.html>

<http://www.arrl.org/auto-manufacturer-s-policies>

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 the [W0TX](http://www.w0tx.org) web-site, w0tx@w0tx.org or elmer@w0tx.org. If we don't have the answer 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 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, 145.490/448.625. (Note: The third Wednesday of the month is devoted to the DRC club meeting. See the [W0TX](http://www.w0tx.org) web site for additional information.)

73,

AA0JK
Fred

W0TX BRANDMEISTER EXPLAINED

By Bill Rinker, W6OAV

The conversion of the DRC's DMR repeater from C-Bridge to BrandMeister has generated a few user questions. The purpose of this article is to answer the most common questions concerning how BrandMeister differs from C-Bridge and how to properly use BrandMeister. This article is for DMR users who are somewhat familiar with the DMR protocol. This article does not go into explaining the DMR protocol. That information is provided in the links listed at the end of this article.

BRANDMEISTER VERSES DMR MARC

Before beginning, definitions must be made:

Time Slots – There are two digital time slots on a DMR repeater which provide two independent voice channels.

Talk groups – Independent “voice channels” available in each time slot.

Code Plug – A radio's configuration file.

1.) What are the differences between C-Bridge and BrandMeister?

The major difference between C-Bridge and BrandMeister is that BrandMeister allows a local user to key up and route any desired talk group whereas the C-Bridge network only allows a local user to key up and route talk groups as defined by the C-Bridge sys-op.

Both Networks have static talk groups and dynamic talk groups. Definitions:

- Static Talk group - A talk group which is always active meaning that DMR network traffic is always sent to the repeater on a designated time slot without any user intervention. Static talk groups are configured in the network and cannot be modified by the local user. A local user can only key up static talk groups that are configured on the repeater.
- Dynamic Talk group - A talk group which only sends DMR network traffic to the repeater when a local user keys up that talk group. The talk group network traffic will be sent to the repeater for a period of 15 minutes after the most recent key up by the local user. A BrandMeister local user can key up any of the many available talk groups. The local user's code plug programming controls talk group access.

In some cases, there are different equivalent talk groups between the two networks. For example, most C-Bridges use TG 1 as their worldwide talk group whereas the BrandMeister worldwide talk group is 91. However, some talk groups are shared and cross-connected.

2.) Why don't I hear as much talk group traffic on a BrandMeister repeater as I do on a C-Bridge repeater?

As described above, unlike a C-Bridge repeater, which carries “always on” traffic, a BrandMeister time slot will not carry talk group traffic until a local user keys up a talk group.

BRANDMEISTER QUESTIONS

1.) Where can I find a list of talk groups?

Good sources are:

<http://www.dmr-utah.net/talkgroups.php>.

https://dmrx.net/files/US_BM_User_Guide.pdf

2.) How can I monitor BrandMeister talk groups?

Using a computer, iPad or smart phone, access the BrandMeister Dashboard at <https://hose.brandmeister.network/scan/>. See Figure 1. Click the Scanner button at the top to display all the active talk groups. To scan and listen to a particular talk group, or to a set of talk groups, enter the talk group number (s) in the talk group list and click “Apply”. Figure 2 illustrates scanning and listening to talk groups 3100 (USA) and 3108 (Colorado).

If you hear a conversation that is of interest, key up that talk group (if it is in your code plug) and join the group! Note the Dashboard VU meter and spectrum display. These are great for checking your transmitter audio. See next page for images.

(Continued on page 8)

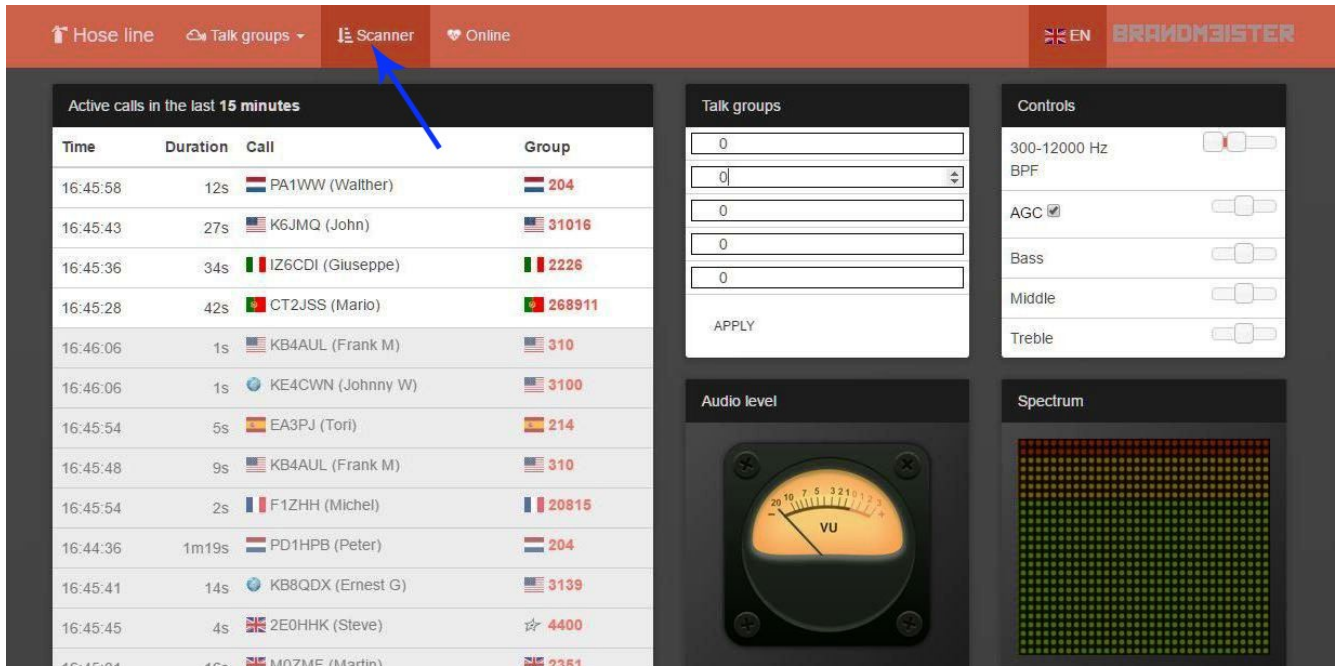


Figure 1 - Displaying all active talk groups

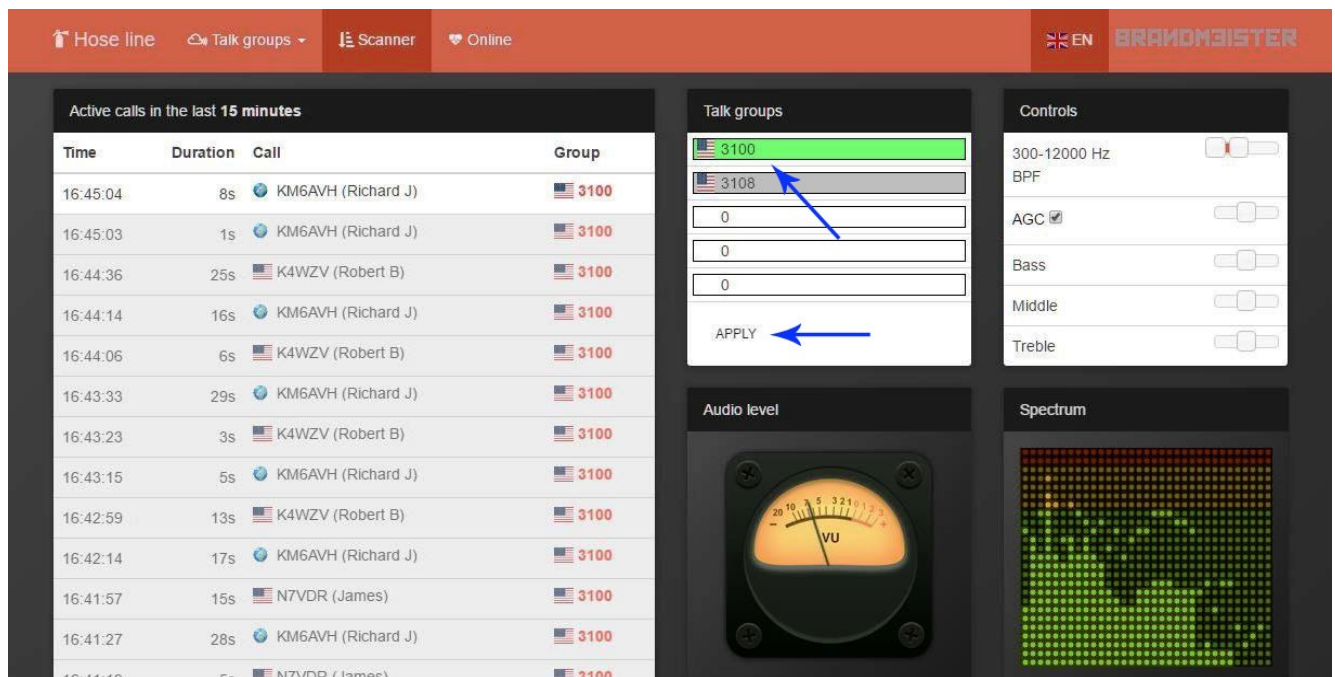


Figure 2 - Scanning and listening to TGs 3100 and 3108

(Continued on page 9)

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Another benefit of the scanner is that one can listen to various talk groups and decide which interesting ones to add to the code plug.

3.) Why is my Channel Busy LED on but when scanning I don't hear any talk group traffic?

A local user may have keyed up one of the many talk groups that aren't in your radio's code plug.

BRANDMEISTER TALK GROUP KEY UP PROCEDURE

Due to the nature of dynamic talk groups, specific procedures must be used when keying up a talk group. If done improperly several different issues can occur:

- A local user keying up a talk group can isolate another local user from a talk group he was using.
- A local user can key up a talk group and disrupt an existing conversation on that talk group.
- A local user can key up multiple talk groups on the same time slot which can possibly create talk group chaos.

Key Up Procedure

Before keying up a talk group, monitor the Channel Busy LED for at least a minute. If the LED doesn't light then both time slots are idle. Key up your desired talk group. Then listen for at least a minute before transmitting to determine if the talk group is busy. The reason for listening is because, if a remote talk group user is transmitting when you keyed up the talk group, you will not hear his audio nor will the Channel Busy LED light. You will hear audio, and the Channel Busy LED will light, when the next remote user begins transmitting.

If the Channel Busy LED is on, or flashes on and off, then one or both of the time slots are busy. To determine if your desired time slot is idle or busy, wait until the Channel Busy LED is on and then key up your talk group. If a busy tone results, then your desired time slot is busy. Do not key up again until the Channel Busy LED has been off for a minute indicating that the time slot is now idle. The Channel Busy LED will turn off and then back on between long conversation "overs".

If keying up while the Channel Busy LED is on results in a "connect confirmation tone", then your time slot is idle and your talk group has been activated. As mentioned above, listen before transmitting.

CODE PLUG PROGRAMMING FOR W0TX BRANDMEISTER

All wide area talk groups should be programmed for time slot 1. Only the local metro area talk group 2 should be programmed for time slot 2. This will provide priority availability for local users which will be the majority of usage on the repeater.

REFERENCES

Amateur Guide to DMR - http://www.dmr-utah.net/media/Amateur_Radio_Guide_to_DMR.pdf

What is BrandMeister? - https://wiki.brandmeister.network/index.php/What_is_BrandMeister

BrandMeister User's Guide - https://dmrx.net/files/US_BM_User_Guide.pdf

BrandMeister getting Started Guide - <http://papasys.com/dmr/BrandMeisterGettingStartedGuide.pdf>



In honor of the DRC's 100th birthday, Jim Fariello (N0USN) has produced a video and posted it for your viewing pleasure. Please head over to <https://vid.me/UQCv> to check it out.



More club history can also be found on the club's site, W0TX.org.

ELMER SESSION START TIME

The Elmer Session Starts at 6 p.m. before the regular 3rd Wednesday DRC Meeting! All are welcome. Meet in Hearing Room 2.

Come join in on the sharing of information.



THE SWAPFEST



Adams County Fairgrounds
Sunday February 19, 2017
9:00 am - 1:00 pm



For Additional Information
 Wayne Heinen N0POH
 303-699-6335
 Email: Info@n0ara.org

ARRL V.E. Testing at 10 AM
For Info call 303-360-7293

\$5.00
 ADMISSION
 Doors open at 9 am
 Tables Advance Purchase.....\$10.00
 Tables at the Door\$15.00
 (No guarantee of "at the door" availability!)

P R E S I D E N T S D A Y

TALK-IN ON 147.15/R (+) 100 Hz CTCSS

Vendor Setup begins at 7:15 am
 You will receive email confirmation prior to February 11, 2017
 (or snail mail if you don't have email)

ADVANCED TABLE PURCHASE ORDER FORM

NAME _____ **CALL** _____ **PHONE** _____

Email for confirmation: _____

If no email: SNAIL MAIL

ADDRESS _____ **CITY** _____ **STATE** _____ **ZIP** _____

#OF Advanced Tables: _____ **\$10.00=** _____

#OF Vendor Admissions: _____ **@ \$5.00=** _____

TOTAL ENCLOSED: \$ _____

Please mail all registrations with payment to: ARA, P.O. Box 471802, Aurora, CO 80047-1802

SOLAR UPDATE

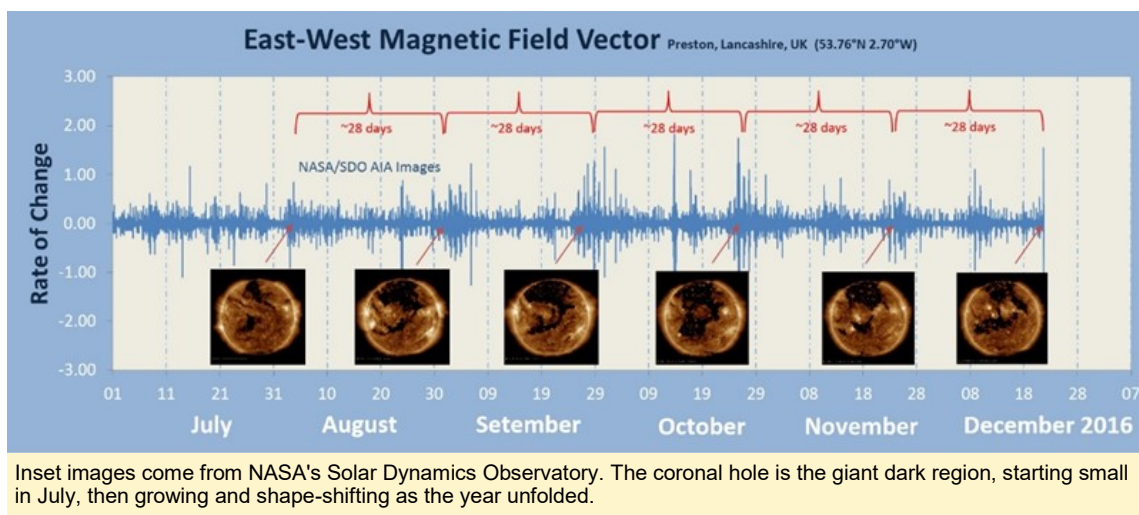
Provided By Fred Hart, AA0JK

HERE COMES THE SOLAR WIND (AGAIN): 2016 got one more blast before the year was over. Another stream of solar wind headed for Earth, and it arrived before New Year's Eve.

Evolution of this coronal hole has been spraying our planet with solar wind since it opened up back in July 2016. It has continued strobing ~ every 28 days as the hole spins around with the slowly turning sun.



A plot produced by Stuart Green shows the evolution of the coronal hole and the effect it has had on Earth's magnetic field.



Action really began surging in the late hours of December 30th, as a co-rotating interaction region (CIR) hit Earth's magnetic field. These are transition zones between slow and fast moving solar wind streams. Solar wind plasma piles up in these regions, producing density gradients and shock waves that do a good job of disrupting the HF bands.

Week One:

THE NEW YEAR: A solar wind stream hit Earth's magnetic field on New Year's Eve. Another, more potent solar wind stream was expected. Estimated time of arrival, January 4th or 5th. A G1-class geomagnetic storm: The stream of wind blew past NASA's STEREO-A spacecraft with peak speeds near 700 km/s.

Friday, January 6, 2017: Solar activity was at very low levels and the visible disk was once again void of sunspots.

SUNSPOTS VANISH, SPACE WEATHER CONTINUES: As 2017 began, one thing was clear. Sunspots were vanishing. Thus far, the sunspot number had been zero almost every day: January 1st, 2nd, 4th, 5th, 6th and 7th.

The increasingly blank face of the sun is a herald of Solar Minimum. Sunspot numbers rise and fall with a ~11-year period, slowly oscillating between Solar Max and Solar Min. In 2017, the pendulum is swinging toward minimum. Contrary to popular belief, space weather does not stop when sunspots vanish.

Week Two:

Monday, January 9, 2017: THE SOLAR WIND ... IT'S STILL BLOWING: For the fifth day in a row.

(Continued on page 12)

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Tuesday, January 10, 2017: **EXITING THE SOLAR WIND STREAM:** After almost a week inside, Earth was exiting a stream of solar wind. Tuesday, a relatively small Coronal hole was opening in the sun's atmosphere. On the sun, "small" means 25 times wider than Earth.

A stream of solar wind flowing from this hole was expected to reach Earth on January 12th. Because the hole was small, the emerging solar wind stream was narrow. Earth was expected to be inside it for only a day or so. Earth was also expected to cross a fold in the heliospheric current sheet. HF operators were to be alert for poor conditions as a result of this double whammy.

January 12th 2017: **East Limb Eruption** - The first real solar eruption of 2017! A filament eruption registering as a C3.8 Solar Flare on Thursday, January 12th, collapsed and launched a nice stream of plasma into space. Because the eruption was not facing Earth, it was directed towards the east and away from our planet. AR2625 broke a string of eight consecutive spotless days.

The following linked page contains a video of the eruption, courtesy of the Solar Dynamics Observatory (SDO) using the 304 angstroms channel and the coronagraph video is courtesy of LASCO C2:

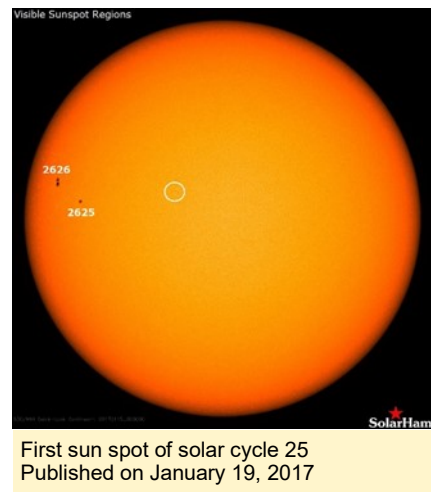
<https://youtu.be/6ZzpLjNVScw>

Week Three:

Sunday, January 15, 2017: Solar activity picks up this week after a lull, bringing some fast solar wind that is causing a mild solar storm. Amateur radio and GPS operators should only experience minor effects.



pbs.twimg.com/media/C2ep9dmUoAU9MoA.jpg



First sun spot of solar cycle 25
Published on January 19, 2017

Friday, January 20, 2017: **Fast Solar Wind & First Sunspot of a New Cycle Storm Forecast** by TamithaSkov:

<https://youtu.be/RMEJEwlm4gw>

Saturday, January 21, 2017: **AN UPTICK IN SOLAR ACTIVITY** - After weeks of no solar flares, there were half a dozen in a 24 hour period. The source of the activity was two new sunspots emerging in the sun's northern hemisphere: AR2527 and AR2528. The magnetic canopy of these sunspots were crackling with **C-class** solar flares. NASA's Solar Dynamics Observatory recorded this one (C9.3) on Jan 21st at 0726 UT: It is important to note that these were not major flares.

Extreme UV radiation from C-class flares can produce minor waves of ionization in Earth's upper atmosphere and interfere with the normal propagation of shortwave radio signals--mainly at frequencies 10 MHz and below.

Week Four:

Tuesday, January 24, 2017: **CORONAL HOLE FACES EARTH** - A hole in the sun's atmosphere was directly facing Earth, and was spewing a stream of solar wind in our direction. NASA's Solar Dynamics Observatory photographed the structure during the early hours of Jan. 24th. The emerging stream of gas was expected to reach Earth on or about **Jan. 27th** and influence our planet for 2 to 3 days.

SOLAR PROMINENCE: A giant cloud of plasma was dancing over the sun's western limb January 25th. Shown here in a snapshot from NASA's Solar Dynamics Observatory, the structure was more than 80,000 km tall and could swallow our planet more than 50 times with room to spare:




Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center and the U.S. Air Force. 2017 January 24 1230 UTC

24 hour summary - Solar activity remained at very low levels. Region 2626 continued to decay, becoming a simple unipolar spot. Region 2627 exhibited decay in its leader and intermediate spots, while Region 2628 had decay in its trailer spots. Region 2628 did experience slight growth in its overall areal coverage as it underwent separation between its leader and trailer spots. All spot groups remained mostly inactive throughout the period. 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 and a slight chance for M-class flares (R1-R2, Minor-Moderate) over the next three days (24-26 Jan) due to the flare potential from Regions 2627 and 2628.

73,

AAØJK



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Did You Know? - SOLDER

Written By John Mardock, KR0P. Adapted from the Lincoln Amateur Radio Club's February 2016 *Lincoln Log*.

John, that radio your are working on has a circuit board that is not as nice and shiny as the one you used to have. I thought you told me that if a solder joint was not shiny it could be a bad one.

Well, yes Margaret, that used to be the case. The European Union banned all lead from products being offered for sale in the EU in 2006. That forced the entire world to produce products without lead and has caused quite an issue with the electronics industry. Since the solder does not have lead it does not look the same or act the same anymore.

So do you have to use lead-free solder now?

No, the USA does not have a requirement to use lead-free solder. In fact, repairs are easier if I use my old solder, since it melts at a lower temperature and flows better.

I don't understand why you have so many rolls of the stuff, John.

Well, the most common diameter I used to use was 0.032. As components and circuits have become smaller, I use smaller diameter solder. For most of the surface mount components, I use 0.014 or 0.010 diameter.

What's the R, RA, and RMA mean on some of those spools?

Well the R means the solder contains rosin flux, RMA is mildly-activated rosin, and the RA is rosin-activated. RA is the most aggressive rosin flux and is used for slightly-corroded or less-than-clean joints.

Some are 63/37 others are 60/40. What's that?

Well, the first number signifies the tin content, the second the lead content. 63/37 is called the eutectic. It has the lowest melting point of the ratios, which is 361 °F.

So why did you ask me to pick up some 91% isopropyl alcohol at Walmart?

I use that to clean the rosin off the joints after I am done soldering.

So does that mean you can save money and buy that solder in the plumbing section of the hardware store?

No, that solder is acid flux solder and should never be used for electronic joints. No amount of alcohol will clean all of that acid flux off the circuit.

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

ROUNDTABLE, November 1960 - Member activities & VHF propagation report

ON FREQUENCY

By Walt, W0WRO

When you speak of DX, you have to mention Pete Wessel, W0JYW. Pete now has 244 countries confirmed on phone. He does it with an HT-32 running into a homebrew 600-watt final. He has three elements on 15 and three on 20. The receiver is the Heath kit Mohawk, and he's very happy with it.

Pete's wife, Martha, is K0EPE. She's fast closing the DX gap with 115 countries worked, 80 confirmed. Martha is district chairman of the YLRL and a member of the LCL net. Both Wessels are interested in getting some sort of DX organization formed in Denver—perhaps within the framework of the Denver Radio Club.

Milo Adamson, W0YEB, is more of a ragchewer than a DX hound, but he has the gear to tackle anything. He's using a pair of 4E27A's in a 750-watt homebrew final. He modulates with 803A's. If that isn't enough, he has a single-sideband linear kilowatt. The receiver is a 75A-4. The antenna farm consists of a 40 and 75 meter inverted doublet and a Gonset Tri-bander on 10, 15, and 20.

As announced last month, we're waiting for Denver amateurs to call the author with operating news for each column. We're still waiting.

○ — ○ — ○

NIGHT IS LIGHT

A new electronic vision tube will enable soldiers to fire weapons or drive tanks on the darkest night.

It could increase the range of night-time vision up to 20 times.

Development of the tube was announced at Army engineering center by John Johnson of the Army's research and development laboratories.

The new tube intensifies the images of objects bathed by "sky glow" light. That is the dim but always present light that exists in the sky at night even when there is no moon and the stars are blanked by clouds.

Amplifying on his report, Johnson said the newly developed tube would allow the following:

1. An infantry soldier could spot an object at 500 to 1,000 yards, even though he couldn't see it with his naked eye.
2. Drivers of military tanks and other vehicles would have vision up to 200 feet without the use of headlights.

SIX METERS AND UP

By GLENN, W0IJR

Preparations for the fourth annual Christmas Banquet of the Mile Hi Highbanders are in the final stages now. We have decided on the Little Banquet Restaurant near 13th and Broadway again this year.

Saturday, December 10, at 7:30 p.m. will be the time. The price, including everything, will be \$2.00 per person. We are asking that the reservations be made and paid for in advance this year. In order that we can make better plans for a memorable evening, we must know how many will attend by November 26. Please have your reservations and money in by that time.

Send your check or money order to our net secretary, Charles Simmons, K0MOH 1490 S. Hudson St., Denver.

All amateurs are welcome. You need not be a member of the Highbanders or even a VHF enthusiast. Members of the Denver Radio Club and their families are particularly welcome.

For any additional information, contact the writer at HA 9-7287 or Dennis Boruchin, K0BTO, at AT 7-4787.

Quite a number of very short openings were reported during October. On one opening via phone patch from Texas, Mark, K5JPG, sent his regards back to the six meter gang through K0BTO. He expressed thanks for all the consideration he received during his hospital stay at Fitzsimmons.

New calls to the six meter gang are: Tom, K0IUF; Dale, K9VIX/0; Tom, K5SBK/0.

XE3AIA is desperately looking for Colorado for his WAS certificate. He has every state but this one. Watch for him on 50.104 Mc.

We finally have a "Hootowl" in the group. John Cox, K0RRS, while roaming

(Continued on Page 11)

GOOFED

Last month's issue (page three) two names were inadvertently omitted from ARRL Official Bulletin #768. As you noticed from your official ballot, we left out the names of Chic Cotterell, W0SIN, for director and Les Richards, W0ICR, for vice director. We of the Round Table regret our error and promise to never make another one nearly so serious.

Page Three

This puzzle is provide courtesy of Chris Codella - W2PA. The URL for his website is w2pa.com. The solution for the puzzle is on page 16.

Signal Makers

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			
70					71						72			
73					74						75			

Across

- 1. Ant. meas.
- 5. Cousin of 38-across
- 10. Caucasus region prefix
- 14. Part of DE, on phone
- 15. Lid like
- 16. PW1 maker
- 17. Part of 23 across
- 18. Eastern zone-36 prefix
- 19. NA or SA, e.g.
- 20. Encoder, in a way
- 22. Last stage, with 62 across
- 23. Measuring dev.
- 24. W5LFL's employer, once
- 26. SDR part
- 29. Band booking
- 31. RX starter
- 36. Prefix with -band
- 38. Parasitic array

- 41. Part of a score, maybe
- 42. Political pundit?
- 45. Apple spray
- 46. Theories
- 47. Lisbon prefix
- 48. Seminal radio textbook author
- 50. Equipment seller
- 52. Homer's neighbor
- 53. Eastern zone-28 prefix
- 56. Dir., for one
- 58. Dit dah doer
- 62. See 22 across
- 67. Tea type
- 68. Dig, so to speak
- 69. Eight in some circles
- 70. HS denizen
- 71. Part of some joints
- 72. Dayton digs

- 73. QSL bureau process
- 74. Put up, as a crank-up, say
- 75. Lodges

Down

- 1. DVM predecessor
- 2. "QSY!"
- 3. "___ Thing"
- 4. Q followers
- 5. JD1 name
- 6. "Get ___!"
- 7. It's a gas
- 8. Probably contains a 4l across
- 9. W5 sect.
- 10. KP4 name
- 11. Harbor vessel
- 12. Turin prefix

- 13. Apache or Cheyenne, e.g.
- 21. Gates' job
- 22. Hole goal
- 25. Span's partner
- 26. Amateur 24 across partner
- 27. Having two parts
- 28. RIT button
- 30. Swindles
- 32. 90 degrees
- 33. Illegal lighting?
- 34. Belfast prefix
- 35. Cut down
- 37. School session
- 39. Ready for firing
- 40. "Geel!"
- 43. Kink companion
- 44. Gut bug

- 49. MI, MO and MT QP mo.
- 51. Give in
- 54. Water walker
- 55. Bratislava prefix
- 57. CD followers
- 58. SB-401, 301, 201 and 101, once
- 59. EME artifact
- 60. Y2K part
- 61. Menu option
- 63. CPU part, abbr.
- 64. EP place
- 65. Take home
- 66. SM-land rugs
- 68. Took the cake, say

FACT OF THE DAY

Removing Copper Antenna Tarnish
 Copper tubing or large-diameter bare copper wire is sometimes used to construct small VHF and UHF antennas of various types, because copper is a good conductor that is easy to bend and easy to solder. However, unprotected copper surfaces soon tarnish when exposed to the elements, increasing RF skin resistance. Furthermore, it is difficult to establish a low-resistance connection to tarnished copper if a copper antenna that has tarnished is subsequently modified. Tarnish can be sanded or scraped off copper surfaces, but sanding or scraping removes some untarnished copper below and it is difficult to sand or scrape cracks and other irregular surfaces. An easier method is to apply a generous coating of salt to a quarter-section of lemon and then rub the lemon over tarnished areas. Flood the copper and especially any insulators with water afterward to remove residual lemon juice and salt and you will have a clean, bright, and like-new copper surface. ©2005 Martek International All rights reserved.



HAM SITE OF THE MONTH
[Amateur Logic](http://www.amateurlogic.com)

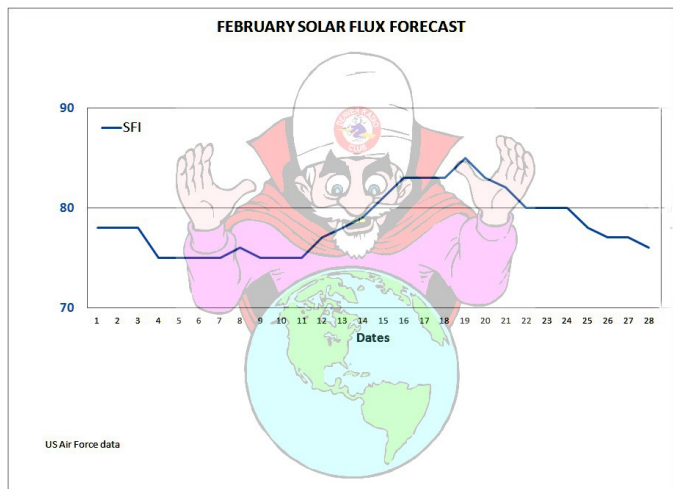
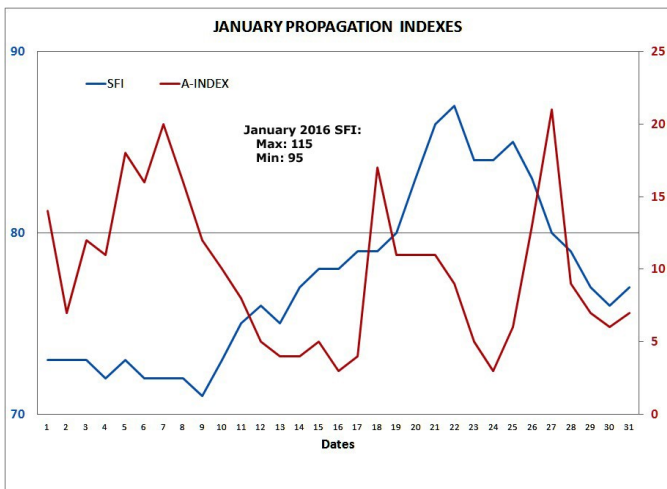
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THE ROUNDTABLE ARTICLE INDEX
 Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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)



UPCOMING EVENTS
HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
The Swapfest	02/19/17	Adams County Fairgrounds	Aurora Repeater Assn., Cherry Creek Young ARC, & Rocky Mountain

UPCOMING ARRL CONTESTS & EVENTS [ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
School Club Roundup	02/13/17	1300	02/17/17	2359	
International DX Contest CW	02/18/17	0000	02/19/17	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
Vermont	02/04/2017	02/05/2017	Radio Amateurs of Northern Vermont	Based on 2016 date.
Minnesota	02/04/2017	02/04/2017	Minnesota Wireless Association	Based on 2016 date.
British Columbia	02/04/2017	02/05/2017	Orca DX and Contest Club	Based on 2016 date.
South Carolina	02/25/2017	02/26/2017	Columbia Amateur Radio Club	
North Carolina	02/26/2017	02/27/2017	Raleigh Amateur Radio Society	Based on 2016 date.

ATTENTION

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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 (-)	BrandMeister Repeater Slot 1 – Wide Area Traffic, Slot 2 – Local Traffic (Talk Group 2)



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FEBRUARY 2017		<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 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	2 	3  First Quarter	4
5	6	7	8 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	9	10  Full Moon	11
12	13 School Club Roundup Starts 1300 UTC	14 School Club Roundup 	15 DRC Meeting Elmer 6:00 p.m. General 7:00 p.m. School Club Roundup	16 School Club Roundup	17 School Club Roundup Ends 2350 UTC	18 Int'l DX - CW Starts 0000 UTC (Sat)  Last Quarter
19 Int'l DX - CW Ends 2359 UTC	20 	21	22 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	23	24	25
26  New Moon	27	28				

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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.

Subject: I'm located in...

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DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to drc.editor@gmail.com. The submission deadline is the 20th of the Month. ~ Editor