



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

December 2016

PRESIDENT'S MESSAGE

By Gerry Villhauer, W0GV

Hello DRC Members,

Where did this year go? It is hard to believe it is December and 2016 is about to come to an end. Our big event this month is our annual DRC Holiday Party. This is a big event for our club and a real good time to get together, reflect on past, present and future. It is always a great time for fellowship and a good time to see folks that in some cases, we have not seen since last year. We will have good food, prize drawings, fellowship and a great general interest program. This year Robert White (K0RCW) will be telling us about a place he has visited and has prepared a slide show and talk. Robert tells us it has the world's oldest democracy, the largest glacier and the largest national park; and it is only a 7 hour flight from Denver. Where is it? Iceland. That is just a touch of the history and interesting things Robert will be sharing with us; along with pictures. I guess I should tell you where all this will take place; The Golden Corral at 3677 South Santa Fe Drive on Wednesday December 21st. Show up around 5 p.m. and select your meal from the all you can eat buffet; then proceed to the reserved room in the rear of the restaurant. About 7 p.m. we will have the drawings and then proceed with the program. It will be a fun evening, don't miss it.

I don't want to forget to thank Lee Reedy (KE0COP) for the very interesting November program on how scientists communicated with a deep space satellite with a form of Morse code after its normal mode of commanding the satellite failed shortly after it was launched. Morse code was able to accomplish this feat and save the program from being scrapped and losing millions of dollars.

We have made changes to our DMR repeater by switching over to a format called BrandMeister. Watch for more information on our webpage and in the Round Table on this change.

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.

Merry Christmas and Happy New Year!

73 for now,
Gerry (W0GV)
President



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NOVEMBER MEETING – WHAT'D I MISS?

By Brennan Pate, AD0UZ

President Gerry Villhauer (W0GV) greeted everyone and had the visitors introduce themselves to the group. He then made an announcement about the annual holiday dinner party / meeting and presentation by Robert White (K0RCW).

Vice President Dave Gillespie (K0HTX) then provided the latest news on the repeaters and talked about the addition of the BrandMeister software and network to the Moto TRBO repeater. To get more information on the latter, please visit the Club's homepage at W0TX.org.

Next, Lee Reedy (KE0COP), who did July's club meeting presentation regarding the Kepler Mission, continued along the same vein with a presentation on the AIM mission and the communication problems with the satellite. AIM stands for "Aeronomy of Ice in the Mesosphere" and the satellite is being used to study noctilucent or "night-shining" clouds.

Lee gave an overview of the instruments on board, how the satellite is normally given commands and what they had to deal with when the receiver on the craft malfunctioned right after launch. The problem, they found, was that the receiver was not able to absorb the normal flow of command data even though the transmitter was working just fine. Fortunately, the mission engineers soon discovered that there was specific code written into the satellite's software that provided a path for a backup form of communication. This was accomplished by varying the strength of the signal being sent to the spacecraft by +/- 3 dB. In so doing they could transmit the necessary data to the craft at around about 3 bits per minute using a variation of digital signaling akin to Morse code. After Lee finished presenting he took a few questions and President Villhauer closed out the meeting.

For more information on the AIM mission please visit: aim.hamptonu.edu/mission.

Elmer's Session

By Jessie King, N0HI

Each month the DRC's "Learning Net" volunteers hold a session just before the regular club general meeting. They will do their best to answer any questions you may have about Ham Radio. It is an interactive session where the group joins in and shares information with each other. Come join in at 6:00 p.m. and contribute to the discussion.



Who's New In The DRC?

By Bob Willson, KC0CZ

The DRC is a very active club in the Denver metro area and we'd like to have all of our members listen for these new calls and personally to make them feel welcome. Welcome to our newest members. We have a number of activities throughout the year and we'd like very much for you to participate in serving your community.

Robert Harrison	KD0REX
Bill Moore	KE0KVV
Jorge Basulto	K9CDE
Edward Dill, Jr.	N1CCO
Charles Gilbert	N0PIC
John Lanning	N0AXH
Sooze Gilbert	KS0OZE

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.

**TECHNICAL COMMITTEE REPORT**

By Bill Rinker, W6OAV

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

DRC DMR Upgrade to BrandMeister (K0HTX)

Goal: Determine the feasibility of upgrading the DMR 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.

DRC DMR Move (K0HTX)

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

Status: CCARC approval has been obtained. An antenna has been ordered but not yet delivered.

AllStar Link Voter System (W0GV)

Goal: Establish an AllStar Link Voter network.

Status: **W0GV is looking for volunteers to assist him.**

One voter is in test mode. Three remote receivers are built but not tested. The server is installed at Station 4 and on the net. It is not yet connected to a radio.

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: The site is still being remodeled. We are waiting for an "official" TSA contact.

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 the club's PK900 DSP should improve the gateway's performance. W6OAV has drawn the schematic for the FT-950 to PK900 interface cables. AC0UA has all the connectors and wiring for the interface cables, which he will construct, time permitting.

Fusion Repeater Upgrade (AC0UA)

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

Status: AC0UA has the Wires X plugged into a computer at his house for testing. He is will obtain a new node number for the DRC.

DRC DMR 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.

~ 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.

THE DRC DMR REPEATER GOES BRANDMEISTER!

By Bill Rinker, W6OAV

Dave (K0HTX) has converted the DRC DMR repeater from the MARC network to the BrandMeister network. The BrandMeister DMR Network uses a series of worldwide servers which allows a BrandMeister user to access any talk group. This is the opposite of the standard DMR network where all connections are defined at the C-Bridge network level and all talk group access is defined at the DMR repeater. The end user can only access those defined talk groups.



The BrandMeister talk groups are dynamic talk groups. Dynamic talk groups are not always on. A dynamic talk group becomes active for a user when the user keys up that particular talk group. The dynamic talk group will drop after 15 minutes of no use by the user that activated the talk group. There are many dynamic talk groups available on the BrandMeister network.

The DRC is initially following the BrandMeister recommendations. Local talk group 2 and statewide talk group 3108 are to be used on time slot 2 and all other talk groups are to be used on time slot 1. Keeping the latter talk groups on time slot 1 will ensure that time slot 2 will be available for local and statewide traffic.

The DRC BrandMeister project is a work in progress. Additional information will be published as the DRC Tech Committee and Board learn more about the protocol and make possible operational changes.

References:

DMR-utah.net/ contains detailed information about BrandMeister and examples of code plugs for various radios.

The following are BrandMeister tutorials:

papasys.com/DMR/resources/DATA/docs/BrandMeisterGettingStartedGuide.pdf

papasys.com/DMR/resources/DATA/docs/PAPA-Brandmeister-Presentation--KC6N-20160515.pdf

brandmeister.us/files/US_BM_User_Guide.pdf

A BrandMeister dashboard showing networks and users is at:

brandmeister.network

Live BrandMeister audio streaming is accessible at:

hose.brandmeister.network

News, Information and help for BrandMeister users in the US are available at:

brandmeister.us

The DRC BrandMeister repeater is on line for testing purposes. All are welcome to use and test it. Should anyone find any issues, please notify me at w6oav@arrl.net.

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

DECEMBER MEETING PRESENTATION

By Robert White, K0RCW

Which nation hosts the world's oldest democracy, the largest glacier and the largest national park? Just seven short hours travel away from Denver, it is Iceland! Join us for an after dinner slide presentation on this beautiful island nation, its rich culture and history, dynamic geology, amazing people, and abundant wildlife.

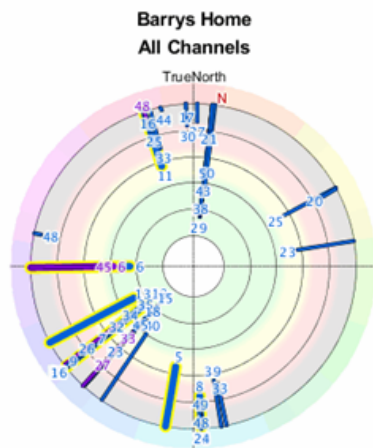
During the evening, learn more details about the interesting facts of Iceland:

- Learn about Glíma - a very popular wrestling sport!
- Iceland celebrates Christmas - but the kids believe in 13 Santas!
- You can stand in and/or scuba dive in the space between two tectonic plates.
- There are more than 130 active/dormant volcanoes in Iceland.
- Learn how Iceland may have influenced the French Revolution!

TV TOMFOOLERY

Provided By Barry Wilson, KA0BBQ

Barry sent over a note about tvfool.com. Apparently you enter your address and it outputs a list of various TV transmitters that are likely to be received at your location. It also gives you the actual broadcast channel and the virtual channel. e.g. KCNC CBS Channel 4.1 is broadcast on channel 35. TV Fool also tells you about the propagation information from your location, in terms of NM(dB), Pwr(dBm), Path, Distance Miles, Azimuth True Degrees and Magnetic Degrees. The stations are rated from strongest to weakest. The following is an example output he provided.



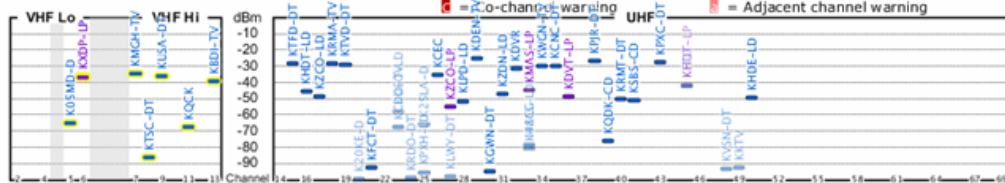
Search Criteria

Address: exact
Thornton, CO
Postal code 80241
Height: 30.0 ft.

db datecode
201610201558

www.tvfool.com

Call	sign	Real	(virt)	Netwk	NM(dB)	Pwr(dBm)	Path	Dist	Azimuth
								miles	True (Mag)
KDEN-TV	29	(25.1)	TEL		65.5	-25.4	LOS	12.8	7° (359°)
KPJR-DT	38				64.1	-26.7	LOS	12.8	7° (359°)
KPXC-DT	43	(59.1)	TON		63.5	-27.3	LOS	12.8	7° (359°)
KTFD-DT	15	(14.1)	Te1		62.8	-28.0	LOS	22.8	223° (214°)
KRMA-TV	38		PBS		62.5	-28.3	LOS	22.8	223° (214°)
KTVD-DT	19	(20.1)	MyN		62.1	-28.7	LOS	20.5	232° (224°)
KCNC-DT	35	(4.1)	CBS		61.2	-29.7	LOS	20.5	232° (224°)
KWGN-TV	34	(2.1)	CW		60.8	-30.0	LOS	20.6	232° (224°)
KDVR	32	(31.1)	Fox		59.6	-31.2	LOS	20.9	232° (224°)
KMGH-TV	7	(7.1)	ABC		56.1	-34.8	LOS	20.5	232° (224°)
KCEC	26		Uni		55.5	-35.4	LOS	20.6	232° (224°)
KUSA-DT	9	(9.1)	NBC		54.7	-36.1	LOS	20.5	232° (224°)
KXDP-LP	6	(6.1)			54.4	-36.4	LOS	19.3	270° (262°)
KBDT-TV	13	(12.1)	PBS		51.3	-39.6	LOS	34.3	242° (234°)
KETD	45				48.8	-42.1	LOS	22.8	223° (214°)
KHDT-LD	16				45.0	-45.9	LOS	20.8	232° (224°)
KZDN-LD	31				43.5	-47.3	LOS	20.8	232° (224°)
KZCO-LD	17				42.5	-48.4	LOS	20.5	232° (224°)
KXDP-LP	6				42.3	-36.5	LOS	19.3	270° (262°)
KHDE-LD	50				41.5	-49.4	LOS	12.8	8° (360°)
KRMT-DT	40	(41.1)	Ind		40.4	-50.5	LOS	26.4	215° (206°)
K5BS-CD	41				40.1	-50.7	LOS	20.8	232° (224°)
KLPO-LD	28				39.4	-51.4	LOS	20.8	232° (224°)
KHDT-LP	45				37.1	-41.7	LOS	19.3	270° (262°)
KMAS-LD	33				34.3	-44.5	LOS	22.7	223° (215°)
KDEO-LD	23	(23.1)			32.8	-58.1	LOS	22.7	223° (215°)
KDVT-LP	36				30.3	-48.6	LOS	20.6	233° (224°)
K05MD-D	5				25.9	-64.9	2Edge	37.1	190° (182°)
KZSLA-D	25				24.8	-66.1	2Edge	13.3	61° (53°)
KZCO-LP	27				23.7	-55.1	LOS	22.7	223° (215°)
KQCK	11	(33.1)			23.6	-67.3	2Edge	45.8	342° (334°)
KCDO-TV	23	(3.1)			23.3	-67.5	2Edge	53.2	81° (73°)
KQDK-CD	39				14.7	-76.2	1Edge	16.8	170° (162°)
KMAS-LD	33				12.5	-78.3	1Edge	17.6	168° (160°)
K48CG	33	(48.1)			10.4	-80.5	2Edge	17.3	344° (336°)
KTSC-DT	8	(8.1)	PBS		4.2	-86.6	2Edge	80.8	177° (169°)
KFCT-DT	21	(22.1)			-1.7	-92.6	1Edge	50.5	7° (359°)
KKTV	49		CBS		-1.8	-92.6	2Edge	80.8	177° (169°)
KVSN-DT	48				-2.7	-93.5	2Edge	80.8	177° (169°)
KGWN-DT	30	(5.1)	CBS		-3.8	-94.7	1Edge	81.9	357° (349°)
KPXH-LD	25				-4.5	-95.3	2Edge	45.9	342° (334°)
KLWY-DT	27	(27.1)	Fox		-7.0	-97.8	1Edge	78.2	1° (353°)
KRDO-DT	24	(13.1)	ABC		-7.8	-98.6	2Edge	80.8	177° (169°)
K20KE-D	20				-8.6	-99.5	2Edge	43.0	61° (53°)
KXRM-DT	22	(21.1)	Fox		-10.0	-100.9	2Edge	80.8	177° (169°)
KBRO-LD	16				-11.5	-102.4	2Edge	45.8	342° (334°)
KZ7MA-D	27				-14.6	-105.4	LOS	20.8	232° (224°)
K48CG	48				-14.9	-93.8	2Edge	45.9	342° (334°)
K48MN-D	48				-15.5	-106.4	1Edge	15.4	282° (274°)
KWYM-LP	17	(14.1)			-16.5	-107.4	1Edge	81.9	357° (349°)
KOAA-DT	42	(5.1)	NBC		-16.9	-107.8	2Edge	80.8	177° (169°)



LEARNING NET REPORT

By Fred Hart, AA0JK

Thanks goes out to our Net controllers: Gary (KD0SQA), Larry (K0LAI), Alex (W2PBR), and Steve (KD0WMO).



November Topics:

- EchoLink: echolink.org
- Software Defined Radio: arrl.org/software-defined-radio
- BTECH UV-2501+220 Tri-Band Amateur Radio from BTECH: qrznow.com/btech-uv-2501220-released/#respond
- Bi-weekly ARRL The Doctor is In podcast: <http://www.arrl.org/doctor>
- SARK100 Antenna Analyzer Kit: eham.net/reviews/detail/8960
- Mini-60 HF ANT SWR Antenna Analyzer SARK100 For Ham Radio eham.net/ehamforum/smf/index.php/topic,106914.0.html
- YAESU TECH SUPPORT: Feedback from local ham reported excellent response from tech support. Eham.net has some interesting comments to consider when talking to tech support, not only Yaesu, but any support service.
- The BrandMeister Network: dmr-utah.net/

The YAHOO Learning Net web page groups.yahoo.com is a good resource for asking and finding answers to your questions. Note also that the American Radio Relay League is the best source for information on all topics related to amateur radio. There is a wealth of information available from past articles in QST. Publications are available on all aspects of the hobby. Some even come with software. If you are not already a member of the ARRL, its highly recommended. arrl.org/home

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.

If you are listening and don't yet have your license, you can contact us via w0tx@w0tx.org and 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.

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

EmComm Note

By Brennan Pate, AD0UZ

One of the ways the we Hams can help our fellow citizens is to join a local CERT, or Community Emergency Response Team. As stated on [FEMA's CERT page](#):

"CERT educates individuals about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using training learned in the classroom and during exercises, CERT volunteers can assist others in their community following a disaster when professional responders are not immediately available to help. CERT volunteers are also encouraged to support emergency response agencies by taking an active role in emergency preparedness projects."

To find your local CERT program, visit: citizencorps.fema.gov/cc/searchCert.do?submitByZip. While not everyone in CERT is interested in amateur radio, those Hams that take part can certainly be of assistance through utilizing their radio skills.

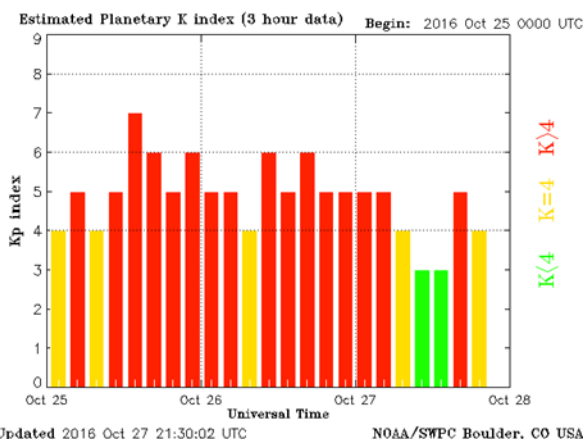
SOLAR UPDATE

Provided By Fred Hart, AA0JK

The last days of October were anything but quiet. What happened? The forecasts for calm abruptly turned to a sky sparking geomagnetic storm around both poles with one episode of storming reaching strong G3 levels. The planetary Kp indices spiked up to over 7+ levels.

A persistent high speed solar wind stream was streaming past Earth at over 700 km/s. The broad and fast current was expected to influence our planet for some days to come.

Sky watchers reported that Auroras were zooming all over the sky. "Flash-like bursts of distinct pink colors clearly visible and bright to the naked eye," were reported to be almost too bright to photograph.



The pink color was probably a sign of cosmic rays striking nitrogen atoms.

Most Auroras are green--a verdant glow caused by energetic particles from space hitting oxygen atoms 100 km to 300 km above Earth's surface. Seldom-seen pink appears when the energetic particles descend lower than usual, striking nitrogen molecules at the 100 km level and below.



The NOAA Deep Space Climate Observatory, (DSCOVR), experienced problems from galactic cosmic rays rebooting its onboard main computer, causing the space weather satellite to drop offline at least five times the past few months, resulting in 42 hours of downtime. This occasionally affects NOAA's ability to pinpoint the arrival of solar storms.

Thursday, October 27th - **GEOMAGNETIC STORMS:** Minor (G1) to moderate (G2) geomagnetic storms were expected on **Oct. 27th** as Earth continued to move through a fast-moving stream of solar wind.

The persistent coronal hole stream, was around 700 km/s continuing to stream past our planet and fueling an on-going geomagnetic storm. Minor (G1) to Moderate (G2) storming was expected to persist during the following 24 hours.

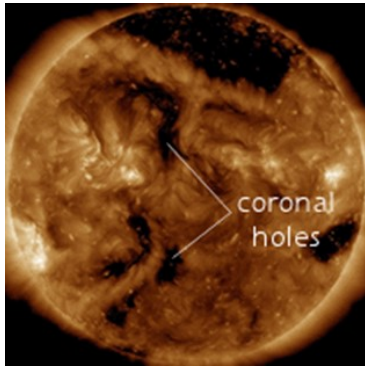
A G2 storm could affect high-latitude power systems, causing voltage alarms, while long-duration storms can cause transformer damage. In addition, HF radio propagation can fade at higher latitudes.

November - Week One 1st - 5th

Tuesday, November 1st, 2016 - A VERY QUIET SUN: Solar activity was very low. There was only one tiny sunspot on the face of the sun, and it was stable and quiet. NOAA forecasters said the chance of strong flares were no more than 1%.

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Coronal Holes: 1st November 16
Credit: NASA/SDO.

Streams of solar wind flowing from these minor coronal holes were expected to reach Earth on November 4th-5th.

Earth was exiting a stream of solar wind. Despite predictions of solar activity subsiding, the sky over Iceland exploded. Northern Lights were reported as coming fast and furious.

What happened? The Earth passed through a region of space filled with negative polarity (south pointing) magnetic fields. These fields opened a crack in Earth's magnetosphere. Solar wind poured in.

Week Two November 6th-12th

became unstable and erupted. The blast split the sun's atmosphere, hurling a CME into space and creating a "canyon of fire."

November 6th, 2016 - CANYON OF FIRE OPENS, SPITS A CME TOWARD EARTH: November 5th, a filament of magnetism in the sun's northern hemisphere

The glowing walls of the canyon traced the original channel where the filament was suspended by magnetic forces above the sun's surface. From end to end, the structure stretches more than 200,000 km--a real Grand Canyon. Fragments of the exploding filament formed the core of a CME that raced away from the sun faster than a million mph. NOAA analysts had modeled the trajectory of the CME and concluded that it would probably strike Earth's magnetic field on November 8th.

November 11th - Minor (G1) geomagnetic storming was being observed at higher latitudes, thanks to an elevated solar wind stream. Further periods of isolated storming was expected to be possible during the next few days.

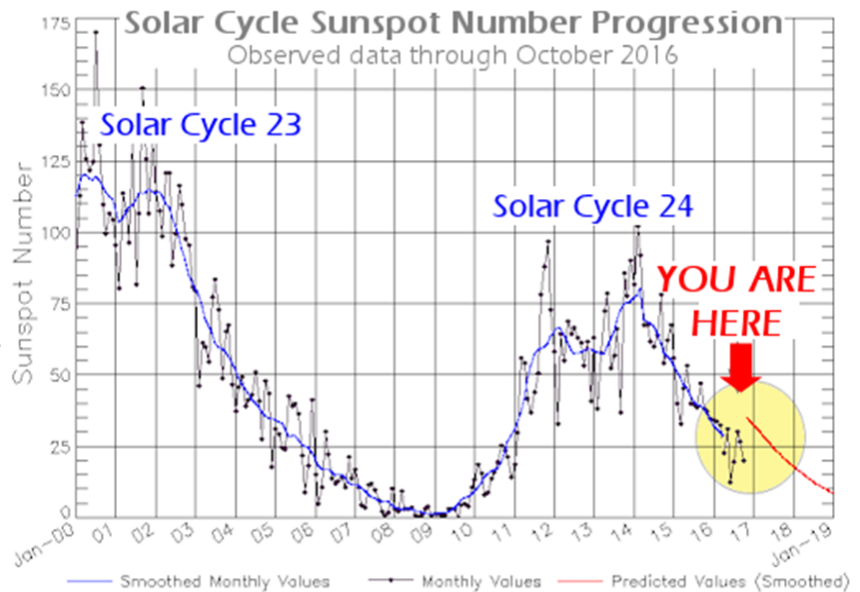
November 12th - A high speed solar wind stream above 600 km/s was moving past Earth. Enhanced geomagnetic activity reaching minor (G1) storm levels was forecast for the following 24 hours.

Week Three November 13th - 19th

Wednesday, November 16th - SOLAR ERUPTION MISSES EARTH: A dark filament of magnetism in the sun's northern hemisphere became unstable and erupted on November 15th. However, none of the debris was expected to be Earth-directed.

Thursday, November 17th - SUNSPOT CYCLE AT ITS LOWEST LEVEL IN 5 YEARS: The sun has looked remarkably blank in November, with few dark cores interrupting the featureless solar disk. This is a sign that Solar Minimum is coming. Indeed, sunspot counts have just reached their lowest level since 2011.

The solar cycle is like a pendulum, swinging back and forth between periods of high and low sunspot numbers every 11 years. This data from NOAA show that the pendulum is swinging toward low sunspot numbers even faster than expected. (The red line is the forecast; black dots are actual measurements.) Given the current progression, forecasters expect the cycle to bottom out with a deep Solar Minimum in 2019-2020.



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Solar Minimum is widely misunderstood. Many people think it brings a period of dull quiet. In fact, space weather changes in interesting ways. For instance, as the extreme ultraviolet output of the sun decreases, the upper atmosphere of Earth cools and collapses. This allows space junk to accumulate around our planet. Also, the heliosphere shrinks, bringing interstellar space closer to Earth; galactic cosmic rays penetrate the inner solar system and our atmosphere with relative ease. Meanwhile, geomagnetic storms will continue, caused mainly by solar wind streams instead of CMEs. Indeed, Solar Minimum is coming, but it won't be dull.

November 17th continued - Solar activity remained settled at very low levels. Region 2610 located in the north-west quadrant grew slightly, but was not considered a threat for strong solar flares.

A large coronal hole (CH) present during the previous two rotations, responsible for geomagnetic storming in both September and October, was now moving back into view. Although still a little early to properly analyze, the middle latitude extension of the hole was at least partially closed up. This meant the solar wind stream flowing from this zone was not as potent this time around.

Week Four November 20th-26th

Sunday, November 20th - SOLAR SECTOR BOUNDARY CROSSING: Earth was expected to cross through a fold in the heliospheric current sheet. This "solar sector boundary crossing" was expected to cause geomagnetic unrest around the poles.

NOAA forecasters expected the leading edge of the emerging solar wind stream to reach Earth on November 22nd, bringing with it a chance of G1-class geomagnetic storms.

Since our last encounter with this hole in late October it has been transiting the far side of the sun, carried around by the sun's 27-day rotation. Now that it is back we can see that the hole is not quite as large as it was a month ago--but it is still impressive, covering almost 1/3rd of the visible solar disk.

BLANK SUN: The sun is blank - no sunspots. Even during times of low sunspot count, however, space weather continues.

Wednesday, November 23rd - ENTERING THE SOLAR WIND STREAM: As predicted, Earth entered a high-speed stream of solar wind flowing from a large hole in the sun's atmosphere, the stream was broad and expected to take several days to cross.

Remainder of November Forecast:

3-Day Forecast, Issued: 2016 Nov 25 0030 UTC
Prepared by the U.S. Dept. of Commerce, NOAA,
Space Weather Prediction Center

A. NOAA Geomagnetic Activity Observation and Forecast: The greatest observed 3 hr Kp over the past 24 hours was 5 (NOAA Scale G1). The greatest expected 3 hr Kp for Nov 25-Nov 27 2016 is 4 (below NOAA Scale levels).

NOAA Kp index breakdown Nov 25-Nov 27 2016

	Nov 25	Nov 26	Nov 27
00-03UT	4	4	2
03-06UT	4	3	3
06-09UT	4	3	3
09-12UT	4	2	3
12-15UT	4	3	2
15-18UT	3	3	2
18-21UT	2	3	2
21-00UT	2	2	2

No G1 (Minor) or greater geomagnetic storms are expected. No Significant transient or recurrent solar wind features are forecast.

B. NOAA Solar Radiation Activity Observation and Forecast: Solar radiation, as observed by NOAA GOES-13 over the past 24 hours, was below S-scale storm level thresholds.

Solar Radiation Storm Forecast for Nov 25-Nov 27 2016

	Nov 25	Nov 26	Nov 27
S1 or greater	1%	1%	1%

Rationale: No S1 (Minor) or greater solar radiation storms are expected. No significant active region activity favorable for radiation storm production is forecast.

C. NOAA Radio Blackout Activity and Forecast: No radio blackouts were observed over the past 24 hours. Radio Blackout Forecast for Nov 25 - Nov 27 2016. No R1 (Minor) or greater radio blackouts are expected. No significant active region flare activity is forecast.

73,
AAØJK
Fred

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.

IS THERE A MARKET FOR A \$400 "PREPPER" RADIO?

By Dan Romanchik, KB6NU

A couple of days ago, a reader wrote: "I would like to know if it would be feasible to build a radio with the following features:

- * SSB operation (only SSB is required, CW would be an additional benefit)
- * 20 – 50W of power
- * Portable-friendly (lightweight, capable of operating at lower voltages from small portable batteries)
- * Low receiver current drain
- * Coverage of 40m and 80m bands. Very limited coverage is acceptable. Even channelized coverage of a few select frequencies would be acceptable.
- * S-meter

"It strikes me that there is a large market for ham radio products for "preppers," and there has been a lot of interest in the Baofeng line of radios from that market. I think there would be a LOT of interest in a radio that could go far beyond line-of-sight and contact friends or family hundreds of miles away. Preppers would have little interest in contacts more than a state or two away, and no interest at all in novel operating modes. I wonder if a radio that trims away excess features (all-mode operation, wide frequency coverage, high power output, sophisticated audio filtering) could be produced for a lot less cost than currently available HF rigs. If so, and it was paired with a decent NVIS dipole and some General-class study materials and sold as a package deal, it could be a huge hit – Something you could tuck in a bug-out-bag, set up in the field, and use to make contacts in a reasonably local area, or set up in your backyard at home and use minimal power to operate.

"Is there a reason why I don't see radios like this on the market, some kind of technological limitation that would make this sort of thing impractical? If something like this was built, what kind of cost and performance would you expect? I'm certainly not expecting any kind of detailed analysis, but even just a speculation about if such a project could be feasible would be appreciated."

I replied:

"I think one of the reasons you don't see radios with the feature set you describe is that more full-featured radios are already pretty inexpensive. The Yaesu FT-450D, for example, costs less than \$800 and offers 100W output. The FT-817ND, which is designed for portable operation, costs less than \$700. Is that too much for preppers?"

"While it might seem like you could sell a radio with fewer features for less, I think that you hit the law of diminishing returns. At some point, removing features, doesn't reduce the cost all that much. For example, removing the CW capabilities from a transceiver capable of SSB operation really doesn't save that much because in a way CW operation is really just a subset of SSB operation. You'll save the cost of a key jack, but how much is that? Maybe a buck or two. Having said that, it could be that the big amateur radio manufacturers are overlooking an opportunity here."

We swapped a couple more e-mails about this. He noted, "Most preppers would probably rather buy a high-end AR-15 or several months worth of storage food for \$800 than a radio." I suggested, "If there was a catastrophic event, and you really needed to communicate, wouldn't it seem silly to have not spent the extra \$400 on a really decent radio?"

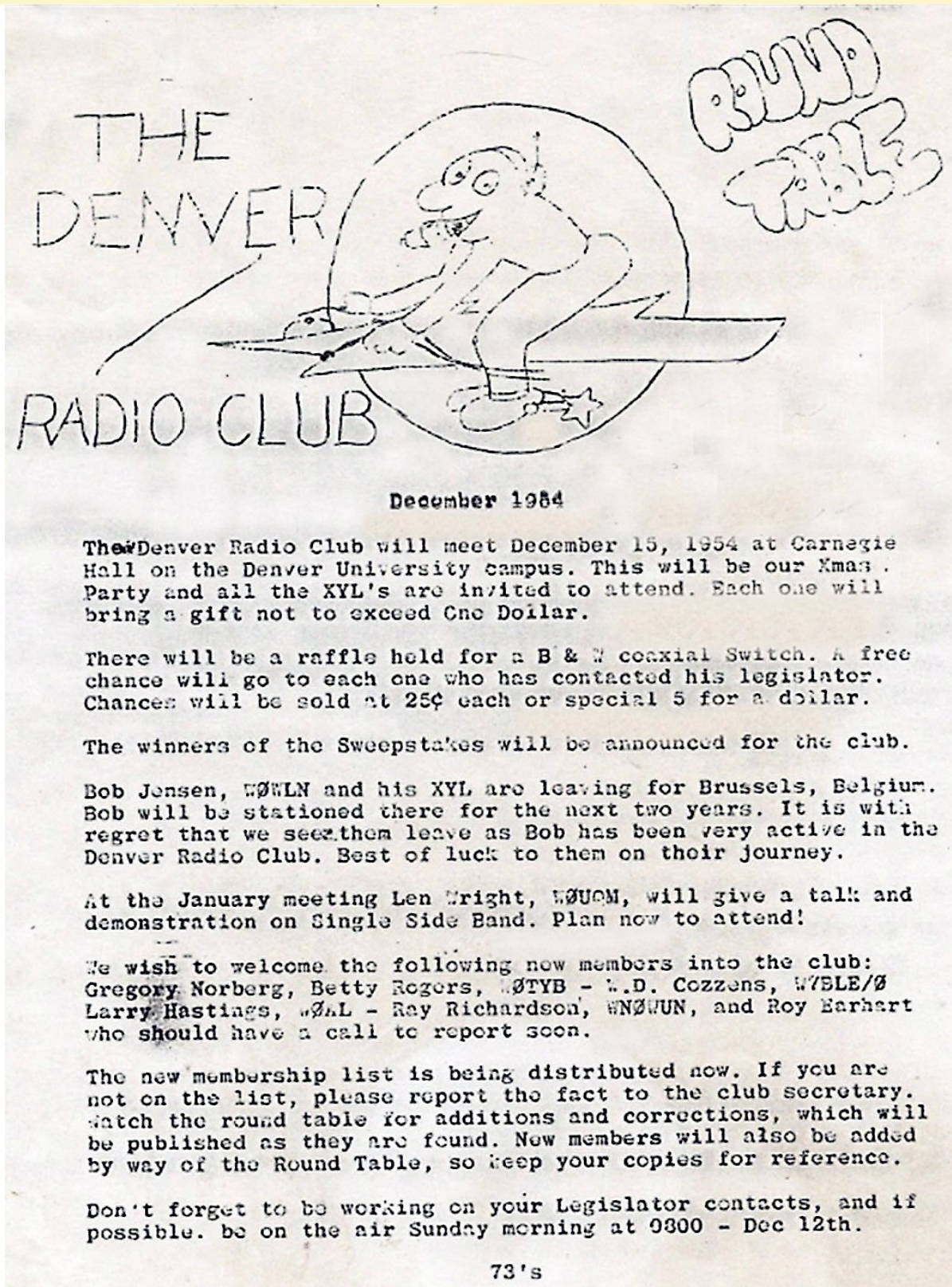
What do you think? Is my analysis a little too simplistic perhaps? Are amateur radio manufacturers ignoring a potential market?

=====

When he's not Elmering new hams, you'll find Dan building kits and working CW on the HF bands. He is the author of the "No Nonsense" amateur radio license study guides, and blogs about amateur radio at KB6NU.Com. You can contact him by e-mailing cwgeek@kb6nu.com.

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

ROUNDTABLE, December 1954 - The first mimeographed issue of the RoundTable.



GOOD ONES BY FAMOUS PEOPLE

Courtesy of the Rockwell Collins Amateur Club, submitted by Bill Rinker, W6OAV

Sometimes, when I look at my children, I say to myself, "Lillian, you should have remained a virgin." *Lillian Carter, mother of Jimmy Carter.*

The secret of a good sermon is to have a good beginning and a good ending; and to have the two as close together as possible. *George Burns.*

Be careful about reading health books. You may die of a misprint. *Mark Twain.*

I was married by a judge. I should have asked for a jury. *Groucho Marx.*

My wife has a slight impediment in her speech. Every now and then she stops to breathe. *Jimmy Durante.*

Until I was thirteen, I thought my name was SHUT UP. *Joe Namath.*

I have never hated a man enough to give his diamonds back. *Zsa Zsa Gabor.*

Santa Claus has the right idea. Visit people only once a year. *Victor Borge.*

I never drink water because of the disgusting things fish do in it. *W.C. Fields.*

We could certainly slow the aging process down if it had to work its way through Congress. *Will Rogers.*

Don't worry about avoiding temptation. As you grow older, it will avoid you. *Winston Churchill.*

I don't feel old. I don't feel anything until noon. Then it's time for my nap. *Bob Hope.*

The cardiologist's diet: If it tastes good, spit it out. *Unknown*

ATTENTION

The DRC Board of Directors meetings are held on the 4th Wednesday of the month and are open to any member. Due to scheduling of meeting space, the board does not always meet at the same location and on occasion meetings are held via Skype. Anyone wishing to attend, please contact a board member prior to meeting night for specific information.

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 14.

Spot Not

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			

- 1. Eight furlongs
- 5. Propagation predictor, with solar
- 9. Early ham technology
- 14. 7700 maker
- 15. Network, especially in I-land
- 16. Blender setting
- 17. Solar WX org.
- 18. Kit maker of the 1960s
- 19. Poem of lament
- 20. Propagation predictors, with 58 down
- 22. OX dir. from XE
- 24. Formerly known as
- 25. Chop (off)
- 26. Solar minimum result
- 28. Fed. fiscal agency
- 31. "Encore!"
- 33. 144 MHz

- 34. Phoned
- 36. Deteriorates
- 38. Post det. stage
- 42. Hams eagerly await it
- 45. 1970s sat.
- 46. Garbage barge
- 47. "I'm ___ your tricks!"
- 48. Checks in check ins
- 50. Calls from NJ or NY
- 52. What some amateurs are, professionally
- 53. The 2009 sun, mostly
- 57. W7 ARRL sect.
- 59. 440 MHz region, say
- 60. Prefix, opposite of 63 down
- 61. Early receiver maker
- 65. Wanderer
- 67. Generate RF sig.
- 69. Handle

- 70. Nonsensical
- 71. Tropospheric propagation path
- 72. Connectors with shells
- 73. FD abodes
- 74. Ckts. for CW
- 75. Put in stitches

Down

- 1. Subcompact
- 2. Desktop feature
- 3. PA front panel label
- 4. In-box contents
- 5. C6 city
- 6. KH6 rings
- 7. GMT replacer
- 8. Veracruz prefix
- 9. Indy place
- 10. YA cent

- 11. Hara, for example
- 12. Superhet alternative
- 13. Sent CW
- 21. It may follow a dot
- 23. ___ King Cole
- 26. Picks up, on the air
- 27. Fab
- 28. Shamu, for one
- 29. W0 Clinic
- 30. Locking connectors
- 32. Column crossers
- 35. Sparkle
- 37. KC4 WX
- 39. Code for code
- 40. Receiver rear panel label
- 41. Con cons
- 43. Rules out

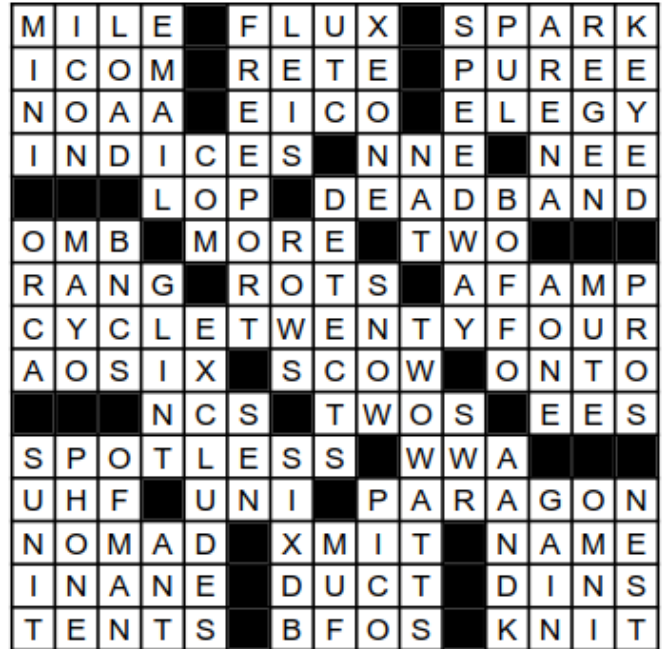
- 44. 33 dBm
- 49. K7UGA, once: Abbr.
- 51. Ant. measurement
- 53. 56 down measurement
- 54. Second SS weekend
- 55. GD isle
- 56. See 53 down
- 58. Types of 20 across
- 61. Micro micro
- 62. Antenna measurement
- 63. Prefix, with directional
- 64. What crank-up sections do when cranked-down
- 66. Dip. or Inv.-V, e.g.
- 68. Propagation condx indicator

FACT OF THE DAY

Fiber Optics Transmission Distance

Several factors control the distance information can be transmitted down a fiber optics line. Light signal attenuation is an obvious factor. Some light leaks out of glass fibers and some is absorbed by the glass, so the further light travels down a line the weaker it becomes. At some distance it becomes too weak to detect. Attenuation can be offset by higher light transmitting power, but high-power light transmitters are more expensive and tend to have narrower bandwidths. Pulse dispersion is another distance-limiting factor that is less-obvious. Light reflections off the inner walls of glass fibers cause light pulses to spread-out and increasingly overlap as they propagate down a line. That has the effect of reducing the transmission bandwidth. Consequently, the longer a fiber optics line is, the narrower its bandwidth is. At some length its bandwidth becomes too narrow to meet communication needs.

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HAM SITE OF THE MONTH

[Ham Cram](#)

THE ROUNDTABLE ARCHIVE

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

THE ROUNDTABLE ARTICLE INDEX

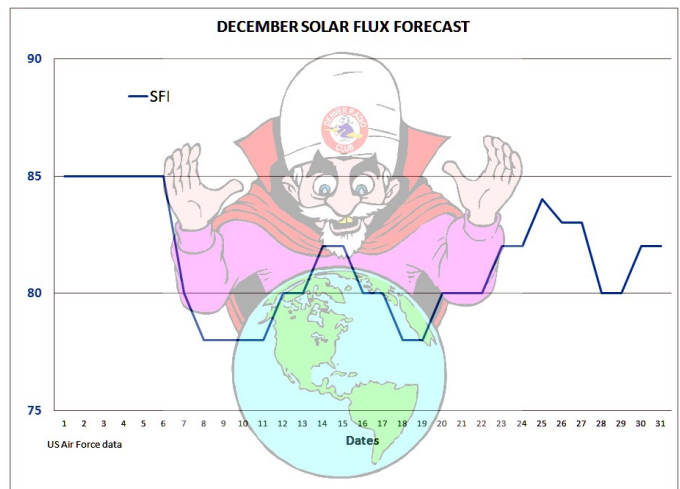
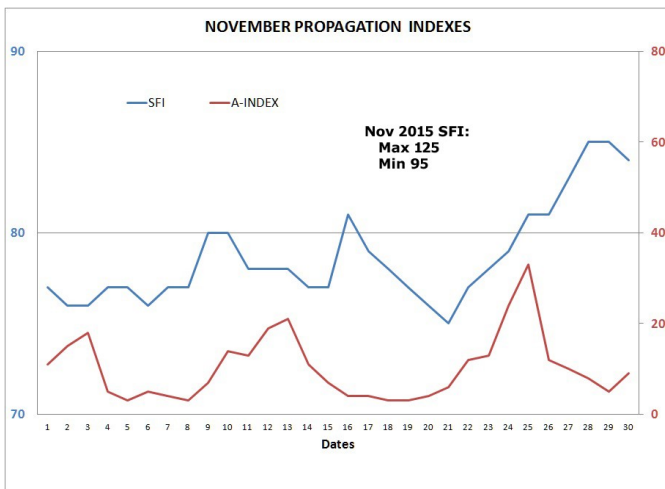
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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
Winter Hamfest 2017	01/14/17	Larimer Cnty Fairgrounds	Northern Colorado ARC
The Swapfest	02/19/17	Adams County Fairgrounds	Aurora Repeater Assn., Cherry Creek Young ARC, & Rocky Mountain

UPCOMING ARRL CONTESTS [ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
160-Meter, CW	12/02/16	2200	12/04/16	1600	arrl.org/160-meter
10-Meter, CW & Phone	12/10/16	0000	12/11/16	2359	arrl.org/10-meter
Rookie Roundup, CW	12/18/16	1800	12/18/16	2359	arrl.org/rookie-roundup

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
Montana	01/28/2017	01/29/2017	Flathead Valley Amateur Radio Club	Based on 2016 date.
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

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	2 meter / 20 meter gateway. Useable by Technicians on 2 meters. See January 2015 RT.
2m	145.490MHz (-) 100Hz PL	Linked to the 70cm - 448.625MHz machine.
2m	147.330MHz (+) 100Hz PL	Local Area, Members Auto-Patch Does Not TX a PL!
2m	147.330MHz (+) 131.8Hz PL	Test Mode Operation. Send signal reports to Tech Committee.
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	Saint Anthony's Note: This is a narrow band repeater requiring DCS.
70cm	448.625MHz (-) 100Hz PL	Linked to the 2m - 145.490MHz machine.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink Node # 4140.
70cm	449.775 MHz (-) 100Hz PL	Yaesu Fusion Digital / Analog, 100 Hz Tone Required for Analog.
70cm	446.7875MHz (-)	MotoTRBO - BrandMeister Slot 1 – All Talk Groups, Slot 2 – Local TG 2 and Statewide TG 3108



HAM RADIO OUTLET
WORLDWIDE DISTRIBUTION

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


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DECEMBER 2016							<i>DRC Net Sunday's at 8:30 p.m. on 145.490 / 448.625 (No PL)</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2 ARRL 160-Meter, CW, begins 2200	3	
4 ARRL 160-Meter, CW, ends 1600	5	6	7 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)  First Quarter	8	9	10 ARRL 10-Meter, CW & Phone, begins 0000	
11 ARRL 10-Meter, CW & Phone, ends 2359	12	13  Full Moon	14 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	15	16	17 	
18 ARRL Rookie Roundup, CW, begins 1800, ends 2359	19	20  Last Quarter	21 DRC Party @ The Golden Corral, 5 PM dinner, 7 PM program 3677 South Santa Fe Dr.	22	23	24	
25 	26	27	28 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)  New Moon	29	30	31	

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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