ROUNDTABLE

The Denver Radio Club Newsletter

September 2014 — Since 1917

PRESIDENT'S MESSAGE

By Gerry Villhauer – W0GV

Hello DRC Members,

It has sure been a busy summer around here. My wife Cathy and I just returned from a cruise on the Rhine River that we have had planned for about a year and a half. It was a wonderful experience and we have hundreds of pictures to prove it. Thanks to Dave, K0HTX, for stepping in and covering the presidential duties in my absence.

From all reports our Hamfest went very well. We did not meet our attendance from last year but it was still well attended. Thanks to all of you who helped pull off this annual event and especially to Bryan, KB0A, for chairing the event.

Welcome to our new members! THANK YOU! Your name and call signs are listed in this publication. We appreciate you choosing the DRC as YOUR radio club and encourage you to become active with club activities.

Our technical committee has been busy finishing the installation of our 147.330 East site near Franktown. The problems incurred with the repeater intended for the installation have been corrected by Jason, AC0UA. The final installation and touch up was completed this last week by Jason and Dave, WG0N. Thanks guys for all the good work. Please try out the East site and let the tech committee know the results.

Thanks to Jim, K0TOR, for his presentation at our August meeting on the "Failure Analysis Lab" at Lockheed Martin. Remember his presentation was a precursor to the tour of the Failure Analysis Lab on September 6th. Also remember, for security reasons, you must contact Jim several days prior to September 6th with your name and other basic information to gain admission. This small inconvenience will be well worth the effort to visit a facility that few outsiders have the opportunity to see. Jim's contact information is in the DRC Roster.

Our September program will be presented by David Stillman, KI6YMZ. David's presentation will be on amateur weather balloon launches, including launching, tracking, recovery and other details of weather balloons. Don't miss this very interesting presentation at our September 17th meeting.

73,
Gerry, W0GV

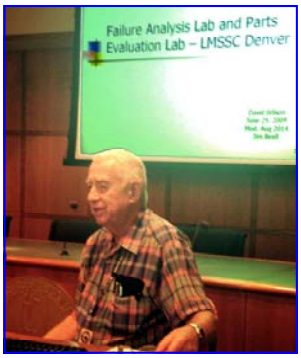
The DRC elections are this month during the September meeting. Please, take an active role in your club and come to the meeting and vote. Better yet, stand up and run for a position on the Board or an Officer position. The DRC depends on it's membership to function in the world of Ham Radio. Rest assured, if you decide to run for office you will not be alone, outgoing board members and officers are always there to lend a hand and advice. They are as close as the nearest repeater. We need you! So, now is the time.

INSIDE THE ROUND TABLE

AUGUST MEETING - WHAT'D I MISS

By Bill – W6OAV

There were 38 attendees. After Dave, K0HTX, completed introductions, he announced that the club officer election will take place at the September meeting. Jim, K0TOR, then announced that he plans to conduct a 14 week general license class. Dick, K8ZTT, followed announcing that he's looking for volunteers for the ARRL Centennial QSO Party.



The meeting was then turned over to the guest speaker, K0TOR. The title of his PowerPoint presentation was "Failure Analysis Lab and Parts Evaluation Lab – Lockheed Martin".
Jim covered the following areas:

- History of the labs' growth.
- Defined the labs' missions.
- Backgrounds of the lab personnel.
- The processes for complex failure analysis.
- The processes for destructive failure analysis.
- Types of complex equipment required for failure and destructive failure analysis.
- Examples of different types of component failures and how they were identified.
- Why semiconductor reliability has vastly improved over the years.

Jim's presentation gave the audience an appreciation on what types of failures can occur within a semiconductor device and what it takes to identify these failures.

Jim will conduct a tour of the labs on Sept 6th. See announcement in the President's Message.

SEPTEMBER MEETING PRESENTATION

David Stillman (KI6YMZ) will discuss his DIY amateur weather balloon launches. Gathering weather data, photos and video from well over 100,000 feet is fun and rewarding. He'll show how to do this using amateur radio. Topics will include launching, tracking, recovery and everything in between. David has launched and recovered five balloons, and has plans on launching a zero pressure balloon in December to be carried by the jet stream well into the Atlantic and beyond.

He has been a ham since 2009, and does software development for SparkFun Electronics during the day and tinkers on robots and goes outside on nights and weekends.

Who's New In The DRC

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.

Bruce Iverson	KD0YBD
Daniel Moss	KD0ZBK
Glen Newell	KD0KVJ
Mike Powney	KV4FN
Ric Clark	KD0MNM
Ronald Castle, Jr.	AC0UV
Thomas Jones	KE0AFE
Travis Balcome	KD0JJP
Ryan Fitzjarrell	K0LRF

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. 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 7pm. For new hams we have the Elmer session which starts at 6:00pm before the regular meeting.

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

MEETING LOCATION

The new meeting location is in the Jefferson County Administration & Courts Building. Hearing Room #2, AKA the "Small Hearing Room". Located at 100 Jefferson County Parkway, Golden.
GPS Coordinates: N 39.727962– W -105.201500

Come to the main entrance (facing east). Enter and keep left, walking west on the main floor, down a large hallway. You pass Hearing Room #1 and then arrive at Hearing Room #2 (our meeting room).

Please bring your Colorado Driver's License and club ID badge. Also no weapons are allowed because it is a County building.

AUGUST TECH COMMITTEE REPORT

By Bill – W6OAV

ACTIVE PROJECTS

TS-940 Repair (K0TOR)
Goal: Determine if re-soldering and cleaning connectors will fix radio.
Work in progress as time permits. Most issues have been resolved.

Voter System Performance Testing - East (W0GV)
Goal: Evaluate the test location at N1ETV's site:

- Have members, when mobile, note coverage compared to plots.

Voter system is working well.

Voter System Redesign - South (W0GV)
Goal: Complete installation of the test repeater at K8ZTT's site:
AC0UA has the Mastr II ready to go. A work party to be scheduled to replace the Kenwood repeater with the Mastr II, build a shelf for the repeater and install the PolyPhasers. W6OAV will create a RF coverage plot for the new installation.

145.49/448.625 Repeater - New Controller Programming (AC0UA)
Goal: Program and test our 7330 controller to allow the splitting of the repeaters when D13 ARES uses the 145.49 repeater for emergency activities (plus other features).
AC0UA has completed Phase 1 (repeater control). Phase 2 will be programming the voice announcements, etc. Controller will be installed when the Kenwood is freed up from the K8ZTT test site.

145.49/448.625 Repeater - Controller and Radio Upgrade (WW0LF)
Goal: Replace the S Com 7k with the preprogrammed S Com 7330 and replace the Sytnors with Kenwoods.
WW0LF has all cables assembled and ready to go. Installation will occur when the Kenwood is freed up at the K8ZTT test site.

DRC/TSA Station Move (W0GV)
Goal: Dismantle the station and install in the new TSA location:

- Inspect the new location and design the new station layout.
- Develop a move plan and move date.
- Obtain volunteers.

No move date yet. W0GV will write up a document for the TSA specifying DRC requirements for the new station.

Voter System Expansion - East (W0GV)
Goal: Locate additional sites.
No reports.

DRC IRLP/Allstar (Group discussion)
Goal: Determine if Allstar will add enhancements to the DRC/Echolink system.
No reports. W0JMC will put a tech committee member in touch with an Allstar guru.

PROJECTS TO BE SCHEDULED

Reconfigure Station 4 Auto Patch
Goal: Reprogram auto patch to allow access to all Colorado and Wyoming area codes.

145.49/448.625 Repeater – Upgrade Linking
Goal: Configure system to allow linking to the 449.35 repeater using the 3rd controller port..

Configure UHF Remote Base Link Units
Goal: Configure Sytnors and hardware for the next Remote Voter station.

Centennial Repeaters
Goal: Ground DRC & Intermountain Repeater Association hard lines.

Station 4 Site Maintenance
Goal: Implement weed control and clean up the radio shack.

The calls in red are project coordinators.

MEETING LOCATION

The new meeting location is in the Jefferson County Administration & Courts Building., Hearing Room #2, *AKA the "Small Hearing Room".* Located at 100 Jefferson County Parkway, Golden;
GPS Coordinates: N 39.727962– W -105.201500

Come to the main entrance (facing east). Enter and keep left, walking west on the main floor, down a large hallway. You pass Hearing Room #1 and then arrive at Hearing Room #2 (our meeting room).

Please bring your Colorado Driver's License and club ID badge. Also no weapons are allowed because it is a County building.

Elmer Session is 6pm
and
Regular Meeting is 7pm.

HAMFEST 2014

By Bryan – KB0A

The 2014 DRC Hamfest is now in the books. We had a great showing, but attendance was a bit lower than last year. Some vendors had to pull out at the last minute which created some empty areas in the exhibit hall.

Again this year we used the local Lion's Club to provide food service.

Channel 4 brought their "Mobile Weather Lab" for the attendees to see and ask questions. Jefferson County Sheriff also brought their "Emergency Management, Incident Communications" van, both very interesting vehicles. The mother load of communications technology on wheels.

Bill, W6OAV, and all the presenters did a great job in setting up the technical seminars.

The DRC VE team who administered license tests to prospective hams and upgraders had a productive day. Of the

applicants there were 5 Technician, 3 General, and 2 Extra class licenses awarded.

I would like to thank the club members who showed up to help get the tables covered and check-in the vendors. Also a big thank you to all the vendors who purchased tables to support our club.

SEPTEMBER ELECTION MEETING

Part of this month's meeting will cover the election of four of the eight board members (each is a 2 year term). We will also elect the new club officers (President, Vice-President, Treasurer and Secretary) from among the eight members of the new board. Please consider stepping up to increase your participation in the club. Even if you aren't ready to be a board member or officer consider one of the other positions or assisting an existing committee chair.

At the current time we are in need of a Editor for the RoundTable. If you have an interest in this position please contact the club president. If you wish to assist an existing committee chairman please contact them directly. All contact information for club officers, board members and committee chairs can be found on the last page of the "RoundTable" and on the club website on the Club Officers page.

ROUNDTABLE NEWS

DRC IS LOOKING FOR A NEW EDITOR

After 7 years, George the RoundTable Editor has decided it is time to pass the gauntlet to another. In those 7 years we have grown as a club and gained many friends around the world. At one point the RoundTable was distributed to 19 states in the US and 4 countries outside the US. (Hams in other states joined the DRC as out-of-state members just to receive the RoundTable.) And the RoundTable travels with a group of RV hams every month.

At any rate, we need a new Editor to take the RT to a new level. He or she needs the desire to edit and compile the newsletter to make it informative and fun. Once a month you pass it on the Bob, KC0CZ, for distribution to the membership. The RT is presently produced in MS Publisher. The new Editor will get all the back issues, graphics and Publisher templates. Also, George, AG0S, and Bill, W6OAV, will be there to help. We'd like to develop a committee to handle the various articles and reports so one or two people are not doing all the work.

Call George, AG0S, or Bill, W6OAV, with your questions.

LET'S VOTE

DRC VOTING REPEATER PROJECT

By Bill Hester – N0LAJ

On May 3rd, members of the Voter System Tune Up Project improved voting for the Denver Radio Club. Not in the political sense, but rather for the Green Mountain 147.330 MHz (100 Hz. PL) repeater.

The Voter Panel (top) and the Repeater Controller (bottom).

Club Members, Gerry, (W0GV), Bryan, (KB0A), and Paul, (WA2YZT), met at Lakewood Fire Station 4 to work on the voter system hardware. Lance, (N1ETV) worked at the remote receiver location, just west of Buckley AFB in Aurora.

Paul and Bryan installed a new UHF link receiver at the repeater site and connected it into the voter system panel and power supply. Then, with Gerry and Lance providing input signals from their radios, they adjusted and balanced the audio signal levels to provide the same output level from either the repeater's local receiver or from the remote receiver.

Bryan wires the Link Receiver to the Voter.

Paul is using a Service Monitor to check signal levels.

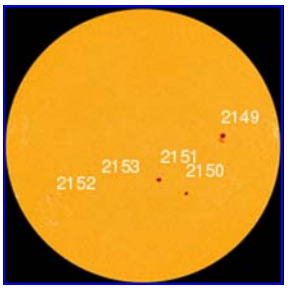
A voter repeater system is designed to improve the reliability of communications, especially with low power radios such as handie-talkies (HTs). It does this by utilizing multiple receiver locations to better "hear" low power signals which are nearer to the remote receiver locations than to the main repeater location.

The audio signals received at the remote locations are retransmitted back to the repeater location using UHF link radios. At the main repeater location, a device known as the voter measures the level and quality of each of the received audio signal and picks, or votes, for the best one. The voter then connects the best signal to the repeater's transmitter and sends it out over the air. This technique is successfully used by many police and fire departments to extend their radio system's usable coverage.

At present, the DRC Green Mountain voter repeater uses two receivers: its own local receiver which is at the repeater transmitter location, and a remote receiver near Buckley. The plan for future system expansion is to install more remote receiver locations around the metro area. This will provide the Club with an increased repeater coverage area where HTs can be used reliably.

Amateurs, especially those located in east Denver and Aurora using low power, are encouraged to use the Green Mountain voter repeater and test its operation. Please let us know how well it works for you at w0tx@w0tx.org.

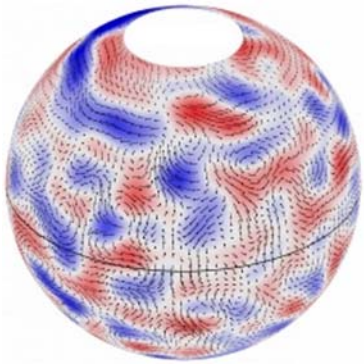
SOLAR UPDATE



Solar activity is low. Not one of the sunspots on the solar disk has the kind of complex magnetic field that poses a threat for strong flares. This should be a quiet weekend on the sun.

SDO – Solar Dynamic Observatory

In March of this year, I reported, in a "Solar Update" article regarding the Solar Dynamics Observatory, SDO and the images are coming back to earth. SDO is returning early images that confirm an unprecedented new capability for scientists to better understand our sun's dynamic processes.

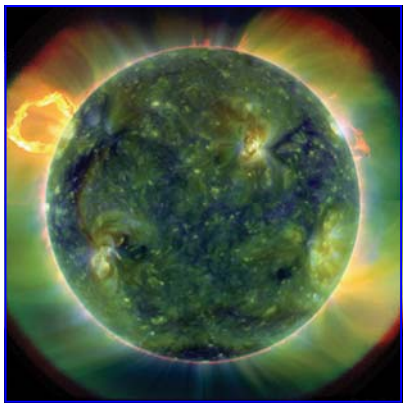


SDO has enabled scientists to confirm the existence of giant flows of gases and plasma moving heat from the sun's interior to its surface.

(Continued from page 5)

The findings end 45 years of speculation about the "giant convection cells" and advance understanding of the formation of sunspot activity that causes space weather events, which can impact power grids and disrupt telecommunications infrastructure on Earth.

"The key to this discovery was that we were able to get continuous observations that are only available from space," said Dr. David Hathaway, an astrophysicist at NASA's Marshall Space Flight Center in Huntsville, Ala. "We may be able to look at these flows and identify areas where new sunspots are going to emerge, before we see them on the sun's surface."



Rising gases and plasma carry heat generated by nuclear reactions in the sun's core to the surface by convective motion long observed in the rapid movement of small, short-lived cells of solar material. In 1968, researchers proposed the existence of "giant convection cells" made up of these smaller groups.

In a paper published today in the journal Science, Hathaway and his co-authors describe how data from the Helioseismic and Magnetic Imager (HMI) instrument on SDO made it possible to track the movement of gases and plasma within the giant cells, which can be up to 15 times the diameter of Earth and can last through multiple 27-day solar rotations.

The existence of the giant cells may also help explain why gases and material at the sun's equator rotate about 30percent faster than at the poles, a key part of the origins of the sunspot cycle. The movement within the giant cells can cause flows of material moving toward the equator to move in the direction of rotation, keeping the sun spinning more quickly around its equator, and flows away from the equator to move in the opposite direction. These giant cells ultimately help drive the 11-year solar cycle and are likely to help highly magnetic active regions rise to the solar surface.

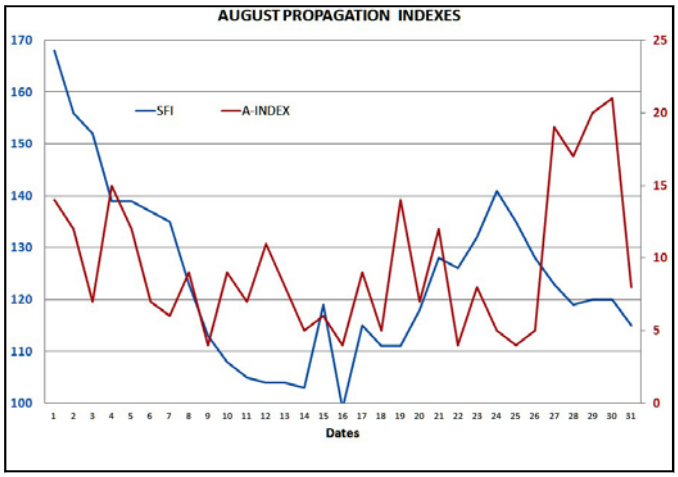
SDO is the first mission of NASA's Living with a Star Program. The program's goal is to develop the scientific understanding necessary to address those aspects of the sun-Earth system that directly affect our lives and society.

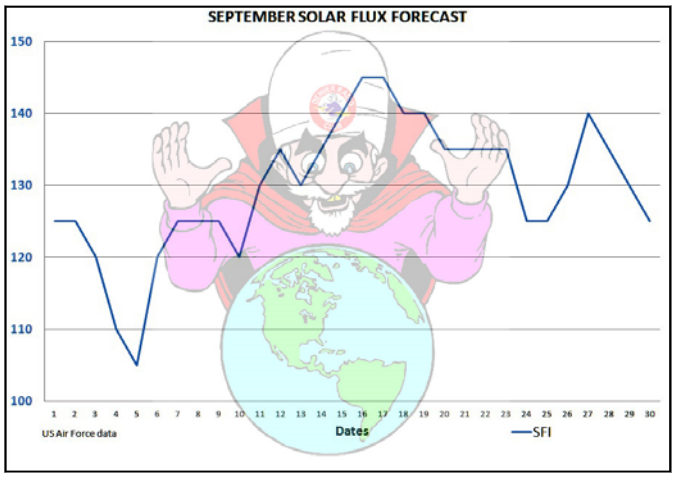
Past & Future Propagation Conditions

By Bill – 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/RoundtableAccessPage.htm.





UP COMING EVENTS

HAMFESTS & CONVENTIONS

*The following are the HAMfests & Conventions which have been registered with the ARRL so far. More information can be found on **www.arrl.org/hamfests**.*

Sept. 13 – **PHC Pueblo HamFest**
First United Methodist South Building
Email: sworley.sw@gmail.com

Sept. 28 – **BARCfest**
Boulder County Fairgrounds
http://www.qsl.net/w0dk
Email: BARC70@arrl.net

Nov. 1 – **TechFest 2014**
Lakewood Elks Club
http://na0tc.org
http://www.na0tc.org

2015

Feb. 8 – **ARA The Swapfest**
Adams County Fairgrounds
http://www.n0ara.org

HF *— On the calendar indicates a HamFest is on that date.*

FEED-LINE IMPEDANCE MATCHING

Engineers discovered long ago that any electrical circuit that can be constructed from a finite number of lumped inductor and/or capacitor elements has an impedance that is a rational function of frequency (i.e., an impedance that changes with frequency). Because of that, no finite network composed of inductors, capacitors or inductors and capacitors can match the characteristic impedance of a transmission line over a band of frequencies. *©2004 Martek International All rights reserved.*

September 2014

DRC Net Sunday's at 8:30pm Local on 145.490 & 448.625 (No PL)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Labor Day	2 First Quarter	3 *Learning Net* 7:30pm	4	5	6
7 *Grandparent's Day* 	8 Full Moon	9	10 *Learning Net* 7:30pm	11	12	13 *ARRL* VHF QSO Party Begins 1800U HF
14	15 *ARRL* VHF QSO Party Ends 0300U Last Quarter	16	17 *DRC Meeting* Elmer 6:00pm General 7:00pm	18	19	20 *ARRL* 10GHz & Up Round 2 Begins 0600L
21 *ARRL* 10GHz & Up Round 2 Ends Midnight	22	23 *First Day of Auttumn*	24 *Learning Net* 7:30pm New Moon	25	26	27
28 HF	29	30				

Check www.ARRL.org for Contests and Rules!

DRC Board of Directors

President	W0GV	Gerry Villhauer	303-467-0223	w0gv@arrl.net
Vice-President	K0HTX	Dave Gillespie	303-795-8225	k0htx@comcast.net
Secretary	WW0LF	Orlen Wolf	303-279-6264	owolf@mines.edu
Treasurer	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
Board Member	N4ATA	Doug Parker	303-922-3305	n4ata@arrl.net
Board Member	K0BAT	Art Thayer	303-340-2657	artthayer@comcast.net
Board Member	W0JMC	Jack McComb	303-885-9098	w0jmc@arrl.net
Board Member	N3PQ	Frank Ortega	303-452-0283	n3pq@hotmail.com

DRC Staff and Volunteers

Trustee	WW0LF	Orlen Wolf	303-279-6264	owolf@mines.edu
Net Control	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
EmComm Coordinator	W0JMC	Jack McComb	303-885-9098	w0jmc@arrl.net
TSA Coordinator	KA0BBQ	Barry Wilson	*Check Roster*	ka0bbq@arrl.net
Membership	KC0CZ	Bob Willson	303-659-0517	kc0cz@comcast.net
Club Librarian	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
VE Team	KC2CAG	Tom Kocialski	720-284-1911	kc2cag@arrl.net
Swapfest Manager	KB0A	Bryan Steinberg	*Check Roster*	drcfest@w0tx.org
Field Day	AC0UA	Jason Smallwood	*Check Roster*	sjason67@msn.com
Tech. Committee Chair	W6OAV	Bill Rinker	*303-741-2537*	w6oac@arrl.net
Benevolent		Carolyn Wolf	303-330-0721	
RT Editor RT Assoc. Editor	AG0S W6OAV	George McCray Bill Rinker	303-751-7246 *303-741-2537*	ag0s@arrl.net w6oav@arrl.net
Education	AA0JK	Fred Hart	303-420-3536	elmer@w0tx.org
Web Master	N0LAJ	Bill Hester	*Check Roster*	

DRC Repeaters

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	
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	446.7875MHz (-)	**MotoTRBO Repeater | Slot 1 – DMR-MARC WW, Slot 2 – Local**

Editor's Note

DRC members - this is your newsletter. If there is something which is club or amateur radio related that you'd like to see as a regular feature, email suggestions to the editor. Members are the heart of The Denver Radio Club, 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 AG0S@arrl.net. Submission deadline is the 25th of the Month. **Editor**