



ROUNDTABLE

PRESIDENT'S MESSAGE

By Gerry Villhauer, W0GV



Hello DRC Members,

I hope you have been better health-wise than I have. I got clobbered with an upper respiratory infection which really knocked me down. After suffering a few days I finally went to my doctor and came home with 3 prescriptions and the usual doctor advice; rest, drink lots of fluids, etc. and by the way, you are still contagious for 3 or 4 more days. Not good news for Cathy, but so far she has stayed well. Anyway, I am on the mend and looking forward to getting back to full activity soon.

The January meeting that did not happen! On meeting day I was on my way home from DIA on a very dry I-76 highway. At about 4 p.m. big snowflakes started falling at my house in Westminster. By 4:30 I could barely see the house across the street. I contacted a couple members in the Lakewood and Golden area and found out that conditions were worse out west. Lakewood Police were closing several major roads because vehicles were unable to get up the hills and accidents were being reported everywhere. I decided cancelling the meeting would be the best option for everyone's safety; and at 4:40 p.m., with the help of Dave (WG0N), we started making cancellation announcements on the 145.490, 448.625 and 449.350 repeaters. I understand there were 4 people who showed up at the meeting location. Please---please as we say in the Round Table, our website and on

the nets; monitor the repeater on questionable weather days. Usually we have a little more time to make a cancellation decision, but not this time when conditions changed so late in the day.

Since programs are scheduled in advance, Robert's (K0RCW), program on the Raspberry Pi microcomputer will be postponed until April or May. I have been asked if we could have a makeup meeting. That is not possible due to everybody's schedules including scheduling another night at the courthouse.

Our February 18th meeting program will be on ARES. Do you as an operator really know what ARES is about? According to Jack (W0JMC), many hams do not. Jack will be showing a PowerPoint presentation on what is ARES, why it exists and how it operates. Also, members of the Jefferson County, Denver County and Arapahoe County ARES groups will be present to answer questions about their organizations. This will be a real learning experience and a chance for you to get involved in ARES. Don't miss the opportunity.

73,
Gerry, W0GV
President



INSIDE THE ROUND TABLE

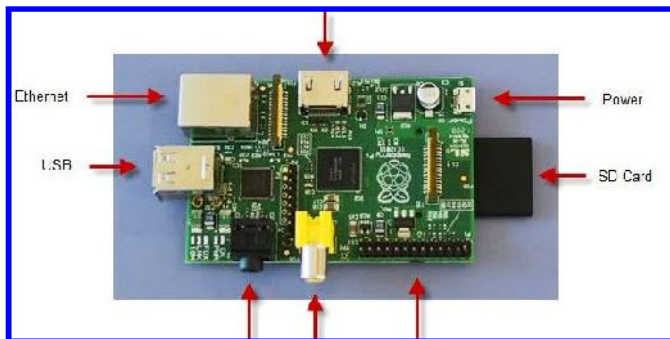
January Meeting - What'd I Miss?	Pg. 2	Crossword Puzzle	Pg. 6
February Meeting Presentation & Who's New	Pg. 2	Propagation Charts & Fact of The Day	Pg. 7
Adventures in Antennas	Pg. 3	Up Coming Events & Calendar	Pg. 8
VE Session & HF Radio Communications	Pg. 5	DRC Information	Pg. 9

JANUARY MEETING - WHAT'D I MISS?

By Bill, W6OAV

As it turned out, the meeting was cancelled at 4:30 p.m. on the meeting day. At 3:30 p.m. it had begun to rain in the North West part of town where the club's meeting room is located. As the rain hit the pavement it immediately turned to black ice! Traffic came to a complete standstill with many wrecks occurring. Some sand trucks even got stuck due to the black ice. So the decision to cancel the meeting was a very good one!

We have speakers scheduled for February and March. Robert (K0RCW), hopes to give his Raspberry Pi presentation in April, his work schedule permitting.



Raspberry Pi Board

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.

Lee Lampert	KD0WCN
Warren Gaspar	NU7R

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

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

NO TECH COMMITTEE REPORT FOR FEBRUARY

Reports from the Tech Committee are on hold pending relevant information to share with the general membership.

FEBRUARY MEETING PRESENTATION

By Jack, W0JMC

Amateur Radio Emergency Service (ARES), sounds kind of cool, but what the heck is it? It's a corner of the amateur radio hobby that many avoid mostly because they don't really understand the why's, what's and wherefores. Come to the DRC meeting on February 18, 2015 and learn about what is going on out there and ask all of the questions that have been rolling around in your mind. I will present a PowerPoint presentation on what ARES is, why it exists and how it operates. Most importantly he will tell you how you can become a part of ARES while learning new skills and joining in the camaraderie that ARES members enjoy while being of service to their community. Members of Jefferson County, Denver County, Arapahoe County ARES groups will be present to answer questions for you about your county ARES organization. Don't miss this meeting, it will be a learning experience to remember.

BIO - Jack McComb W0JMC

Just another guy who was introduced to amateur radio in 1960 while on a Boy Scout trip to Nova Scotia. One of our adult leaders, Larry (K0IIX) (SK), installed a 20m transceiver on the bus we used for transportation. Every evening we attempted to contact hams back in the Denver area without much success I might add. However, we did make many other contacts around the globe and that lit a small fire that burned within until 2008 when I finally stepped up and passed my technician and general class tests at the same time. During those years I worked for and retired from the FAA as an air traffic controller. A second career took me to the trucking industry where I travelled 48 states and 4 provinces of Canada. It was during that time I became a licensed ham and operated a station out of my truck which presented many interesting scenarios. While being trapped in a parking lot a short distance Southeast of Hattiesburg, MS during hurricane Katrina, I became aware of ARES and it became a passion of mine to be an active participant serving my community.



THE ROUNDTABLE ARCHIVE

Have you been looking for a back issue of the Roundtable? Many are available on the DRC web site. Access <http://www.w0tx.org>. On the left side of the page, click on "Roundtable".

ADVENTURES IN ANTENNAS - CREATING A SUITABLE CLOUD WARMER FOR A NEW HOME

By Tom, KC2CAG

Once upon a time, KC2CAG moved into a new home in a "semi" antenna restricted neighborhood. The "semi" restrictions as stated in the property's covenants were:

10.7.3. Except as may otherwise be permitted in writing by the Board, no exterior radio antenna, television antenna, or other antenna, satellite dish, or audio or visual reception device of any type shall be placed, erected or maintained on any Lot further forward on such Lot than the front line of the living space of the residence located on such Lot; provided, however, that any such devices may be erected or installed by a Declarant during its development, sales or construction; and provided further, however, that the requirements of this subsection shall be subject to the Telecommunications Act of 1996 and applicable regulations, as amended from time to time.

False Start: Well, that seemed to indicate that a backyard antenna would be fully compliant with the covenants! In preparation for implementation of such an antenna, CAG took the opportunity to have the builder's low voltage wiring contractor route a spare RG-6 line (I know...RG-6 is not "ham" cabling...but it was the only coax that the subcontractor dealt with) from the central distribution box in the basement to a junction box on the exterior wall of the walkout basement. That would allow wiring from the basement "shack" to the back yard. Another obstacle was the paver patio between the back wall of the house and the usable portion of the back yard. The solution was to have the landscaping contractor, who installed the paver patio bricks, emplace a pair of conduits under the pavers between the exterior wall of the house near the junction box, and the edge of the patio and the usable portion of the back yard. Two conduits could carry the signal cabling as well as any power need for antenna couplers, etc. So far so good!

A few months after move in, the moving boxes with the ham radio equipment were unpacked and the beginnings of a radio station began to appear. Suitable connectors and adapters were secured to allow the radio's SO-239 connection to mate with the type F connection at the central distribution panel in the basement. At the rear of the house, RG-8X cabling and power wiring was snaked through the conduit under the patio pavers to interface with an SG-237 antenna coupler. All that was left was to put up some wire and ionize the neighborhood air! The prototype antenna "mast" was a 20 foot telescoping fiberglass fishing pole mounted in a cast iron umbrella stand in the middle of the usable portion of the back yard. A diminutive 30 gauge copper wire was run up the pole, and some hastily laid ground radials were connected to the antenna coupler. Despite all the cabling and impedance mismatches between the radio and the coupler, the good old '237, achieved a reasonable match on bands between 10 and 40 meters. Hooray! CAG was ready for future improvements! Until

the black fishing pole on the umbrella stand in the middle of the all-too-expensive landscaping in the back yard caught the attention of Mrs. CAG. It was a mistake to assume that a 20 foot upright black fishing pole would go un-noticed in the middle of the newly planted but much smaller trees and shrubs.

Plan B. In the far corner of the usable back yard, a neighbor had allowed a cottonweed (yes, some people call them cottonwood) tree to grow unchecked. Branches of this unwanted specimen invaded that particular corner of the yard. The immature tree was skinny and perhaps only about 40 feet at its topmost, but it looked like it might provide seasonal camouflage for an antenna mast. Hmm...40 feet. Why bother with a 20 foot fishing pole? CAG searched the internet and his thrift got the best of him. A 31 foot fiberglass telescoping pole was secured on Amazon.com for \$69.95, shipping included. The customer reviews included much glowing praise about the use of said pole for supporting light weight antenna wiring. A 30 gauge wire is pretty light, so he thought he was good to go!

Then the fun began.

Mounting the pole was easy. A pair of large plastic conduit clamps from Home Depot was screwed to a fence post near the corner of the yard and they provided fine support for the base of the pole.

The 30 gauge wire was threaded into the tip top guide of the top section of the pole and sections were successively raised and secured with a twist. The blankety-blank cottonweed tree branches kept impeding the upward progress of the pole, and the thread-like wire kept getting tangled in them as well.



Time to un-telescope the pole and do some judicious tree trimming on the portion of the neighbor's tree impinging on CAG's property. An hour or so later, the entire 31 foot section of the pole was airborne, supporting the tiny wire from the top. Now to run the wire alongside the house and down to the relocated SG-237 coupler. Yep, the carefully planned basement RG-6 wiring and subterranean conduit were abandoned, as the direct route to the 'shack' was more practically achieved through a basement window well. As Robert Burns once wrote, "The best laid plans of mice and men..." you know the rest. The coax and power leads to the coupler were laid into the window well and run into the basement slider window. The side of the slider was "weather proofed" with a section of foam pipe insulation, and the window was secured with a sturdy piece of 2x2 pine cut to prevent the slider from sliding and to press tightly against the intruding wiring. Time to lay out the ground radials and fire up the radio. (In the window well photo, the SG-237, enclosed in a weather resistant case, is buried in the snow adjacent to the top

of the window well. The clutter of radio equipment can be seen dimly inside the window.) All was well and good, and the addition of a few more ground radials resulted in an observed SWR at the radio of less than 1.5:1 (mostly 1.1:1) from 10 through 80 meters once the '237 completed its tuning cycle.



Window Well



Foggy Frost on the 30 Gauge Wire



SG-237 Embedded in Weather Resistant Enclosure - No Snow!

Then more fun began. After a somewhat windy week, the 31 foot pole de-telescoped into its base at some point in time. The 30 gauge wire dangled limply from the tip top, which was now about 4 feet above ground. The sections of the pole needed to be twisted a lot tighter than initially imagined to survive the wind, right? With a bit more struggling with the cottonweed's branches, the tiny little wire was back again 31 feet high and CAG was back on the air...for a while. A cold snap the next week brought the pole back down to the 4 foot level again. And again the valiant little 30 gauge wire survived. And again even more torque was applied to the telescoping section in re-erecting the mast. And again the pole came collapsing down the next week. The master antenna consultant, W6OAV, suggested using something like hose clamps to crank down on the pole sections after tightening them. Brilliant! Up she went again and CAG was back on the air again...for about another week. OAV dug deeper into his bag of tricks and recommended some flexible friction tape or something at the pole's joints this time in addition to the hose clamps. CAG reached into his bag of junk and sliced up an old bicycle inner tube to serve as the friction material, and the rest is history.

So far, the patched up pole has survived the minus 19 degree cold snap as well as the recent high winds, and has kept the brave little 30 gauge wire at the 31 foot level for four weeks in a row and counting!

Below are some photos of the completed arrangement. Note that the cottonweed does not really provide a lot of camouflage in the winter, but it is a good compromise for now.



Antenna Mast NE Corner of Yard



Close Up of Hose Clamp & Inner Tube Friction Device

Editor's Note: The following is Tom's follow-up to this story that he wrote almost one year ago.

"Here I am almost a year later with a bit more to the story. The cottonwood provided great camouflage for the pole as soon as the tree leafed out. Perfect. Not so perfect was the effect of the virtual wind load that the tree branches added to the pole! Very little wind sway was present with the bare tree, but as soon as the leaves sprouted, the pole was blown and twisted every which way...and loose! The antenna clamps held, but the plastic conduit clamps holding to pole to the fence post fractured from the loading. And, the poor little 30 gauge wire was whipped so much by the wind that it fatigued at the point where it was attached to the tip top. So spring time repairs included a set of galvanized steel conduit clamps and 24 gauge wire. The result survived all that the rest of the spring, summer, fall and, so far, the winter could throw at it.

I am not a DX operator, and prefer longer chit chats with US hams. The antenna, such as it is, has provided me with suitable SSB and PSK-31 contacts up and down the west coast and into the Midwest. I even managed to contact one of my former STARS (South Towns Amateur Radio Society) club members back in Western New York, searching out his small station during last year's School Club Roundup contest. It was a real treat for me to pick out that needle in a haystack! All in all, the structure of the antenna looks like it will serve me well, and the wire seems to provide enough signal into the ether to allow me to make the kind of contacts I enjoy."

We hope you enjoyed reading Tom's article on his personal experience with one of his Ham Radio projects. We welcome and encourage all members to share their experiences and stories so that we can learn from one another. It can be long or short. If we can't fit it into one newsletter, we can split it across multiple issues. Not a writer? Even if you are not comfortable with writing something, we have volunteers that will listen to your story and put it into an article, and of course you will have the opportunity to review and approve prior to publication. Your contribution to the club is welcomed and appreciated. ~ Editor

VE SESSION RESULTS

By Jessie, N0HI

Congratulations are in-order for the candidates who took their exams at the VE session on January 8, 2015. The following people passed the exam for an upgraded to General.

K0ETR	K0LRF	K0SIS
KD0OMN	W0ELK	W9RIK

The VE session was conducted primarily for students in Jim Beall's (K0TOR) class, however there were other folks also taking tests.



A huge thanks to Jim (K0TOR) for providing the classes and to the VE's, Robert (K0RCW), Mel (K0MEL), Kevin (KC9PDX), Dave (K0HTX), Frank (N3PQ), and Tom (KC2CAG).

~ ATTENTION ~

There will be a one-day Technician one day class on Saturday February 7, 2015. The class starts at 8 a.m. and ends at 5 p.m. The examination will follow the class at 5 p.m.

A General upgrade one-day class will be held on Saturday February 28, 2015 starting at 8 a.m. and ending at 5 p.m. The examination will follow the class at 5 p.m.

NOTE: Registration is required for both classes. No Walk Ins! Contact Will Perkins W1ZR@arrl.net for class information and registration. Class information is also posted on the ARRL website. Class location is the LDS Church, 6564 West Jewell Ave. Lakewood, Co.

~ HELP!!! ~

The DRC VE team is looking for help to administer exams for the classes listed above.

Feb 7th Technician class (1-day) – VE testing at 5:00 p.m.

Feb 28th General Upgrade class (1-day) –VE testing at 5:00 p.m.

HF RADIO COMMUNICATIONS

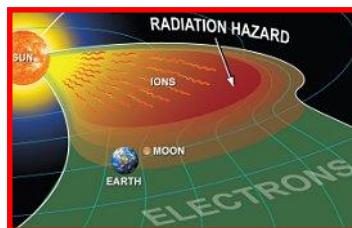
Source, noaa.gov

Space weather impacts radio communication in a number of ways. At frequencies in the 1 to 30 mega Hertz range (known as "High Frequency" or HF radio), the changes in ionospheric density and structure modify the transmission path and even block transmission of HF radio signals completely. These frequencies are used by amateur (ham) radio operators and many industries such as commercial airlines. They are also used by a number of government agencies such as the Federal Emergency Management Agency and the Department of Defense.



There are several types of space weather that can impact HF radio communication. In a typical sequence of space weather storms, the first impacts are felt during the solar flare itself. The solar x-rays from the sun penetrate to the bottom of the ionosphere (to around 80 km). There the x-ray photons ionize the atmosphere and create an enhancement of the D layer of the ionosphere. This enhanced D-layer acts both as a reflector of radio waves at some frequencies and an absorber of waves at other frequencies. The Radio Blackout associated with solar flares occurs on the dayside region of Earth and is most intense when the sun is directly overhead.

Another type of space weather, the Radiation Storm caused by energetic solar protons, can also disrupt HF radio communication. The protons are guided by Earth's magnetic field such that they collide with the upper atmosphere near the north and south poles.

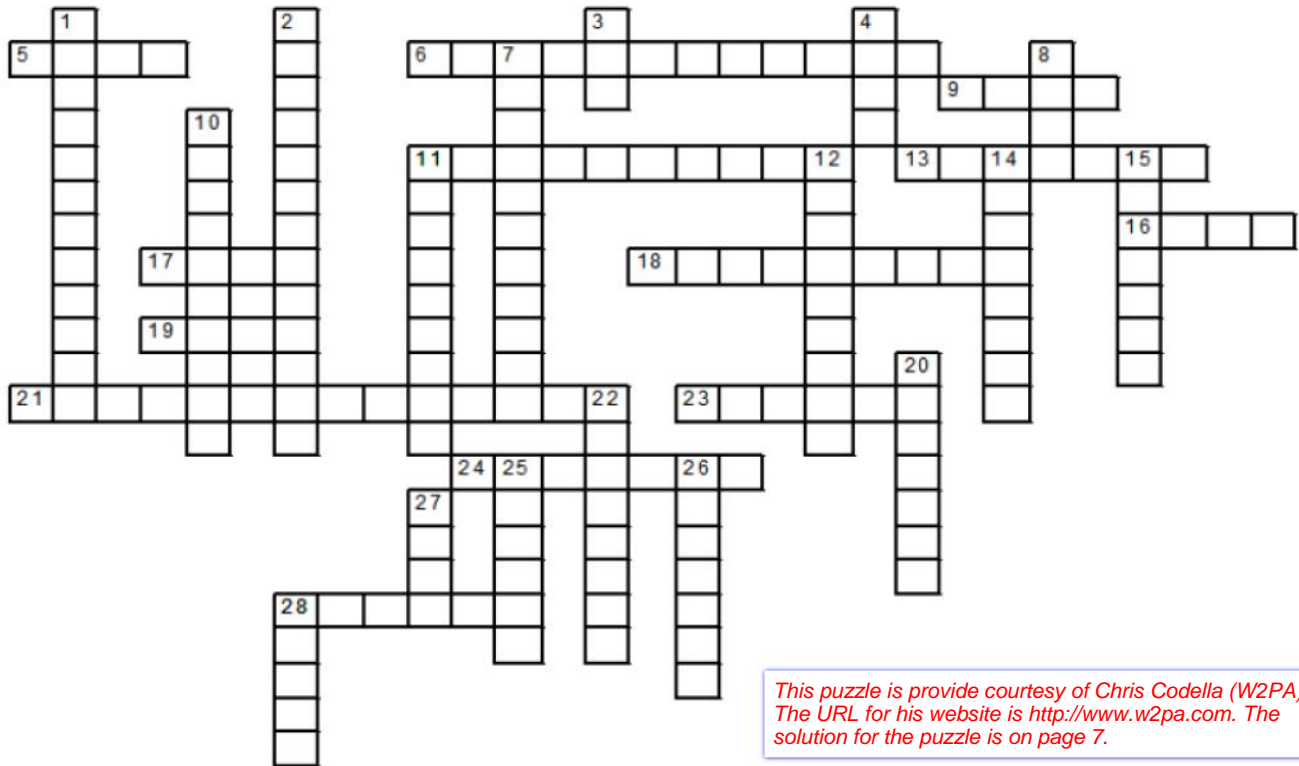


The fast-moving protons have an affect similar to the x-ray photons and create an enhanced D-Layer thus blocking HF radio communication at high latitudes. During auroral displays, the precipitating electrons can

enhance other layers of the ionosphere and have similar disrupting and blocking effects on radio communication. This occurs mostly on the night side of the polar regions of Earth where the aurora is most intense and most frequent.

More information on solar activity from an amateur radio operator's perspective is available at:

<http://www.aoc.nrao.edu/~pharden/hobby/FDIM81.pdf>



*This puzzle is provide courtesy of Chris Codella (W2PA).
The URL for his website is <http://www.w2pa.com>. The
solution for the puzzle is on page 7.*

ACROSS

5. A defined field of energy that radiates from a directive antenna.
6. The sense of the wave radiated by an antenna.
9. The electrical entity to which power is delivered.
11. Insulating materials used in antenna systems.
13. An antenna that consists spiral conductor.
16. Parallel L-C network inserted in an antenna element to provide multi-band operation with a single conductor.
17. Not a power ratio, rather this is the ratio of forward to reflected voltage on a line.
18. The Ohmic value of an antenna feed point, matching section or transmission line.
19. The increase in ERP in the desired direction of the major lobe.
21. The ratio of the velocity of radio wave propagation in a dielectric medium to that in free space.
23. An antenna that is split at the exact center for connection to a feed line.
24. Transmission lines of various type that are used to route RF to an antenna.
28. A circuit used in measurements of impedance, resistance or standing waves in antenna system.

DOWN

1. A wire or group of wires mounted close to ground, but insulated from ground, to form a low-impedance, high-capacitance path to ground.
2. The intensity of a radio wave as measured at some distance from the antenna.
3. Effective radiated power.
4. A transmission line that has the outer shield (solid or braided) on the same axis as the center conductor.
7. Transmission path of a wave that travels directly from the transmitting antenna to the receiving antenna.
8. An antenna named after one of two Japanese inventors.
10. An antenna tuner.
11. A non-radiating substitute for an antenna.
12. A metal body such as tubing, rod or wire that permits current to travel along its length.
14. The power lost in a transmission line, expressed in dB.
15. This electrical conductor or array of conductors is used to collect signal energy when not in use to radiate signal energy.
20. A logarithmic power ratio, abbreviated dB.
22. The discrete conductor which radiates RF energy in an antenna system.
25. The ionospheric layer nearest to the Earth from which radio signal can be reflected.
26. An antenna with the shape of an oblique-angled parallelogram with only the opposite sides equal, having legs (sides) that are one or more wavelengths.
27. A parasitic array using rectangular or diamond shaped loop elements.
28. A device for feeding a balanced load with an unbalanced line.



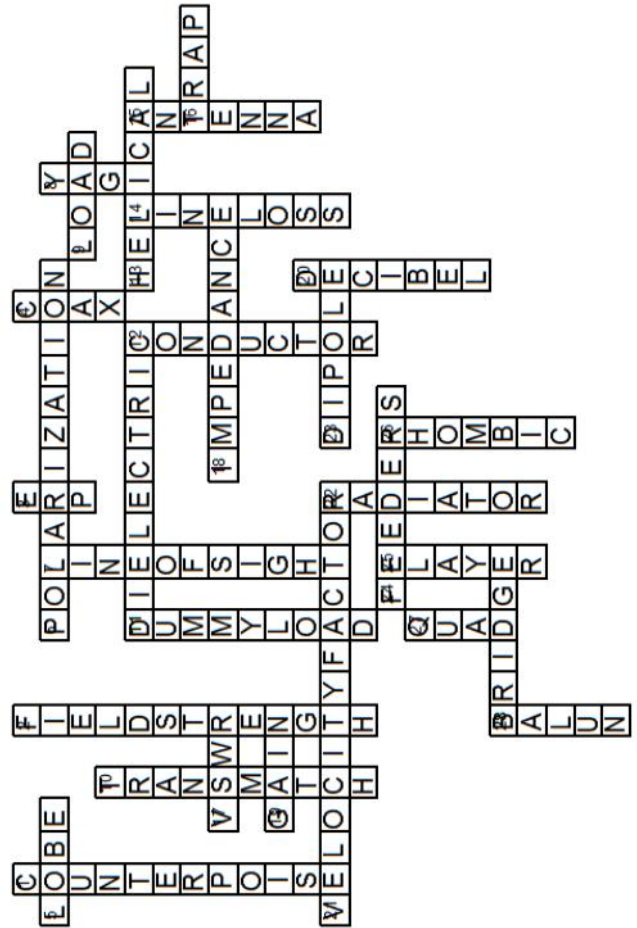
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FACT OF THE DAY

Fiber Optic Cable Types

There are two fundamental types of fiber optic cable, singlemode and multimode. Singlemode fiber generally is usable up to about 100KM (62 miles) without a repeater. Laser light transmitters normally are used to send information over singlemode fiber, because high light power is needed to reach long distances. Multimode fiber generally is usable up to about 2KM (1.25 miles) without a repeater (sometimes farther, depending on the required bandwidth). LED light transmitters normally are used with multimode fiber, because less light power is needed to reach much shorter distances. ©2004 Martek International
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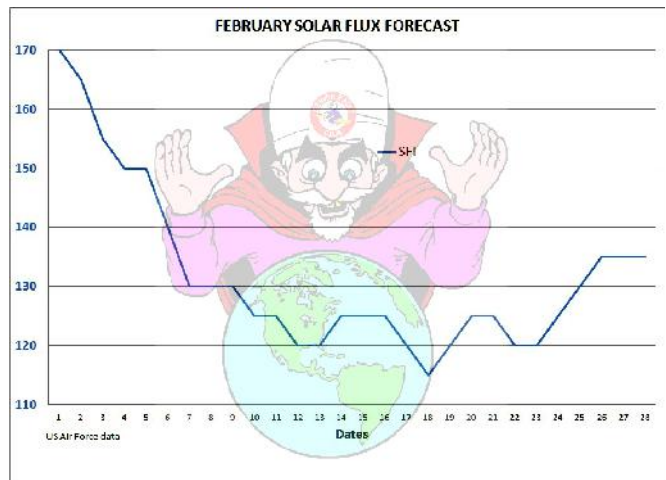
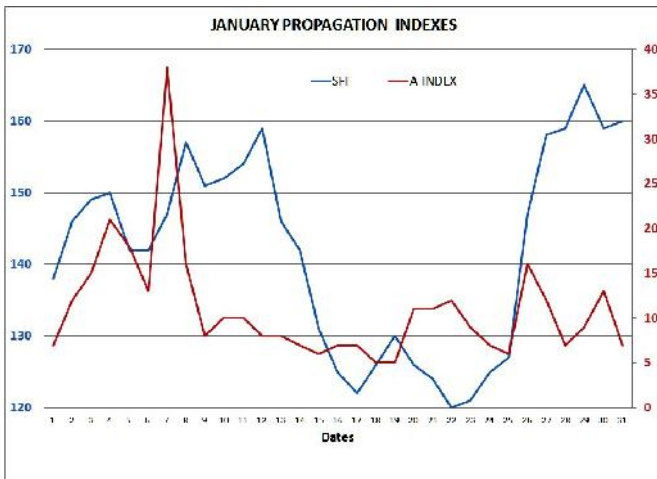


PAST & FUTURE PROPAGATION CONDITIONS

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>.



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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.

2015

- February 8** – **The Swapfest**
Brighton, CO
Adams County Fairgrounds
<http://www.n0ara.org>

- April 4** – **LARCFest**
Longmont, CO
Boulder County Fairgrounds
<http://www.w0eno.org>

- July 11** – **PPRAA MegaFest**
Monument, CO
Lewis-Palmer High School
<http://ppraa.org/megafest>



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ELMER SESSION START TIME

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

Come out and join in on the sharing of information.

FEBRUARY 2015							DRC Net Sunday's at 8:30 p.m. on 145.490 / 448.625 (No PL)
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1 National Freedom Day 	2 Groundhog Day 	3  Full Moon	4 Learning Net 7:30 p.m. 145.490 / 448.635 (No PL)	5	6	7	
8	9 ARRL School Club Roundup Begins 1300 UTC	10	11 Learning Net 7:30 p.m. 145.490 / 448.635 (No PL)  Last Quarter	12	13 ARRL School Club Roundup Ends 2359 UTC	14 Valentine's Day 	
15	16 Presidents Day 	17	18 DRC Meeting Elmer 6:00 p.m. General 7:00 p.m.  New Moon	19	20	21 ARRL International DX - CW Begins 0000 UTC	
22 ARRL International DX - CW Ends 2359 UTC	23	24	25 Learning Net 7:30 p.m. 145.490 / 448.635 (No PL)  First Quarter	26	27	28	

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	WWOLF	Orlen Wolf	303-279-6264	owolf@mines.edu
Treasurer	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
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DRC STAFF AND VOLUNTEERS

Trustee	WWOLF	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	<i>Check Roster</i>	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 Kocalski	720-493-1426	kc2cag@arrl.net
Swapfest Manager	KB0A	Bryan Steinberg	<i>Check Roster</i>	drcfest@w0tx.org
Field Day	AC0UA	Jason Smallwood	<i>Check Roster</i>	sjason67@msn.com
Tech. Committee Chair	W6OAV	Bill Rinker	<i>Check Roster</i>	<i>Check Roster</i>
Benevolent		Carolyn Wolf	303-330-0721	<i>Contact Orlen - owolf@mines.edu</i>
RT Editor	N0HI	Jessie King	720-427-2992	n0hi@arrl.net
RT Assoc. Editor	W6OAV	Bill Rinker	<i>Check Roster</i>	<i>Check Roster</i>
Education	AA0JK	Fred Hart	303-420-3536	elmer@w0tx.org
Web Master	N0LAJ	Bill Hester	<i>Check Roster</i>	<i>Check Roster</i>

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

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DRC members - this is your newsletter. Email your club or amateur radio related 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 N0HI@arrl.net. The submission deadline is the 20th of the Month. ~ Editor