



ROUNDTABLE

PRESIDENT'S MESSAGE

By Robert White – K0RCW

Greetings,

April has been a very active month for the Denver Radio Club. The details are elsewhere in this issue, but please read the article on The Salvation Army Garage Project. I want to again acknowledge the dedication of nine of our members who have completed the work on this critical installation to a served agency. I want to thank KB0BZZ - Bob for his organizational leadership in this project. This effort is the heart and soul of what we stand for as amateur radio operators and DRC members in particular.

Secondly, we have finally broken ground on the long awaited voter system. Thank you WA2YZT – Paul and KB0A – Bryan. The details of this effort can be found elsewhere in this edition. Separately, we are awaiting installation of our antenna for the St. Anthony's hospital repeater site. Stay tuned for a progress report on that project as well.

I wanted to remind everyone about Field Day coming up on the 25th and 26th of June. We will get together on the 24th of June to clean up the repeater site at Hudson in exchange for a place to put our equipment. You are welcome to overnight at the site. K0HTX - Dave is our field day coordinator this year. We will meet one final time for planning at the South Restaurant 3535 S. Huron Street on May 25th at 5:30 pm. Contact Dave if you have any questions.

I'll be travelling the month of May to the People's Republic of China and then returning to North America by cruise ship via Alaska with my 90 year old father and 80 year old mother. I will be on the lookout for anything of interest to radio amateurs. Perhaps I can arrange for a tour of the radio room of the Diamond Princess. I hesitate to take anything resembling a transmitter to the PRC, particularly in these troubled times, but will see if I can check in via Echolink. You can also follow me on Twitter @K0RCW to keep track of my progress or send me a note.

For those of you not familiar with Echolink, it is a software program interfacing phone (voice) communication with the Internet. I was sold on this mode of communication when KC0CZ - Bob demonstrated a QSO with an HT hitting our 449.35 repeater which connected to another repeater in New Zealand and then to another ham's HT at a McDonald's there at the Hamcon a few years ago. Amazing. Use of our 449.35 Echolink equipped repeater is one of the benefits of belonging to the DRC and I suggest giving it a try.

Those will be short QSOs as the cost-per-minute shipboard using Wi-Fi is on the order of \$.50/minute. I'm not sure the bandwidth is big enough to conduct a QSO, will be an interesting experiment from the middle of the Pacific, but then experiments are what it's all about in ham radio. Until June, good DX and 73!

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APRIL MEETING - WHAT'D I MISS

By Bill – W6OAV

There was a great turn out for the meeting. Bryan, KB0A, began the meeting with attendee introductions. After the introductions, Bryan reminded everyone about the upcoming Ham Fest and Field Day. Jim, K0TOR, then gave an over view of the Wheat Ridge siren test and thanked everyone for their participation. He announced that he will be contacting members for participation in the Lakewood siren in May.

Then the meeting was then turned over to the guest speaker, Ed Callaway, N4II. Ed gave a great, and easy to understand, Power Point presentation on propagation.



Some of the topics Ed covered were:

- The history of the early years and the development of the understanding of propagation.
- The composition of the ionosphere and how it develops.
- Myth busting of common ideas about propagation.
- Basic ionosphere rules.
- Causes of ionosphere variations.
- Definitions of solar indexes and their derivations.
- Why the solar cycles are actually 22 year cycles.

Overview of propagation software and propagation sites. (Ed's favorite propagation site is: <http://dx.qsl.net/propagation/index.html>)

After the meeting many folks were heard discussing what they had learned! Thank you, Ed.

TECHNICAL COMMITTEE REPORT

By Bill – W6OAV

This report provides an overview of the items discussed during the April Technical Committee meeting.

Voter System

Goal: Design, build and test a 147.33 MHz voter system consisting of a central voter site and one remote site (phase1).

- See article elsewhere in this publication concerning activities which occurred on April 16th.

DRC/SATURN station:

Goal: Complete station installation.

- See article elsewhere in this publication concerning activities which occurred on April 16th.
- W6OAV and N1ETV are in the process of designing and building the NVIS antenna. They hope to have it operational in a couple of weeks.
- W6OAV will build cables and test the club's old TNC. If working, he will put together the packet station.

St. Anthony Medical Center

Goal: Establish a UHF repeater.

- KB0A will:
 1. Coordinate the Medical Center's purchase and installation of a UHF antenna and the completion of the required FCC paperwork.
 2. Obtain a frequency pair assignment.
- Once the above is completed, the club's Kenwood repeater will be installed and tested.

ARDF- Amateur Radio Direction Finding

Goal: Explore the feasibility of implementing DRC "Foxhunt" activities.

- Committee members to find an active "Fox Hunter" to make a presentation to the club.
- If there is interest, select a project leader who will:
 1. Review DF techniques with interested parties.
 2. Develop directions for making simple DF antennas.
 3. Coordinate club Fox Hunts.

VOTING REPEATER UPDATE

By Bryan – KB0A

Paul, WA2YZT, and I worked on the Voter System out at Station 4 this morning. We were able to wire up the interface cable and check the voter unit using the receive side of the 147.33 repeater. We ran into a couple of problems, the CTCSS signal output voltage from the Mastr II radio is only 4.5 volts, the Voter unit needs at least 6 volts to activate the input. We were able to get the system working using the receiver's COR signal, it puts out 9.6 volts on active. However, we did not want to run the station without the CTCSS input so we will need to wire up a small low voltage relay or transistor switch circuit to that we can use the CTCSS signal from the radio. Paul's commercial radios, that we were going to use for the remote voting site receivers, will not go below 440 MHz. So we will need to find a link frequency above 440 MHz and reprogram the remote voter radio at Lance's, N1ETV, house. Paul and I hope to take care of these issues over the next week or two.

TSA PROJECT REPORT

By Bill – W6OAV

On April 16th, DRC members completed several projects at the new DRC/Saturn station. The details are shown in the email below received from Bob, KBOBZZ dated April 16th.

On behalf of The Salvation Army (TSA) and the Denver Radio Club's Emergency Communications Team, I want to extend a heartfelt "Thank You" to the DRC club members that participated in the work party at The Salvation Army's garage today. Today's work completed a yearlong project by the DRC to move the station to the new garage, design and install 3 antenna masts and antennas, run nearly 300 feet of coax, integrate the ground system into that of a commercial complex, and bring the station operational on HF (All Bands), Dual-Band VHF/UHF, VHF Packet, and the TSA's duplex Business Band radio. I look forward to returning The Salvation Army's Intermountain Division to a leadership role in the National SATERN emergency Disaster Service (EDS) radio network.

One additional point I would like to make is all of folks that participated in this project over the past year selflessly brought tremendous engineering expertise, energy and enthusiasm, and integrity to this project. The DRC Tech Committee and Board of Directors was with us every step of the way and made sure our decisions were based on sound technical footing and done with frugality and the good common sense that typifies the very best of Amateur Radio Operators.

We completed several key projects at the TSA garage today:

- The antenna system is now tied to the building ground system.
- The TSA Business Band Yagi is now mounted, cabled back to the shack, tuned and the radio service operational.
- The shack was straightened up and electrical power is now integral to the DRC desk and radios.
- The PC was put back together and checked out.
- The R7 antenna on the roof was re-tuned and we were able to do a 5:9 QSO with a station in Michigan!

A strategy was decided on to implement the remote speakers in the canteens. Jack Dowd will follow up. The same for the Business Band radio speaker in the garage area to aid the TSA Logistics folks during large operational situations. The ability for TSA Command and our Drivers in the Field to grab a mic and request additional logistical support instead of playing phone tag is a huge step forward for TSA EDS.

The following club members participated today:

- Dave Gillespie - KOHTX
- Jerome Davidson - N0OMA
- Frank Ortega - N3PQ
- Bill Hester - N0LAJ
- Dave Baysinger - WG0N
- Jack Dowd - N0QHF
- Doug Parker - N4ATA
- Bill Rinker - Telephone consult on R7 tuning issues - W6OAV

Bob Zimprich - KBOBZZ

CCYARC NEEDS HELP

Cherry Creek Young Amateur Radio Club (WØCCY) is attempting to have an ARISS contact during a summer gifted & talented class called "Inside Out". We have a new STEM (science, technology, engineering and math) building on the Overland High School campus and will be having radio classes for students in the program. If the contact can be coordinated we will have the opportunity to expose around 200 "gifted" students to the amazing world of radio and space. We are in need of some help with the equipment and operation during the contact. Listed below are the requirements on the application that we need help with. There is also going to be a request for the local news agencies to cover the contact so this will be good for the whole amateur radio community as well as for the students.

Minimum station requirements for the primary station (radio station #1) are:

Output power of at least 75 watts, receive pre-amp, OSCAR style circular polarized beam antenna, azimuth/elevation rotor control. (Rotor with computer control required. A manual method of aiming the beam antenna is not accepted.)

Bob Sterner
KNØBOB
720-635-7930

AMATEUR DIGITAL TV COMES TO DENVER

By Ed Mersich – WA6RZW

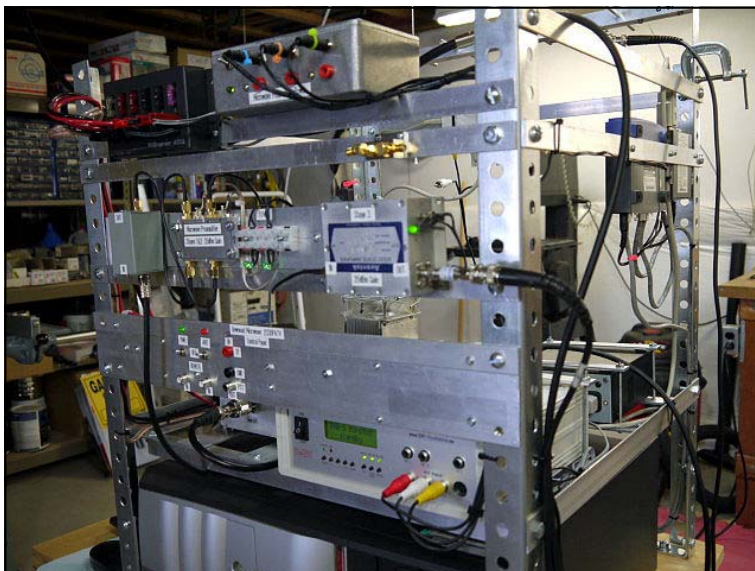
I began my interest in digital video in 2005, when I discovered MythTV. I built a four tuner-recorder MythTV system. After the U.S. ATSC conversion in 2009 I was giving thought to constructing a HD audio-video distribution system using component and HDMI cabling, for the house. One day I made a visit to Best-Buy and looked behind their wall of TVs all displaying the same program. I noticed Best-Buy used coax to the antenna jack, and had programming on several ATSC channels. Best-Buy is using QAM (Cable TV format) digital signage modulators. This is a great solution if you have a lot of coax cable and tons of money. It isn't the solution for amateur DTV.

The DVB-S protocol is the de facto standard for European, Australian and U.S. ADTV experimentation. It works well in weak signal, high path loss environments, and incorporates a robust FEC (forward error correction) strategy. It uses MPEG-2 video compression, a widely used standard for all manner of video applications, including the U.S. commercial ATSC broadcasts. The DVB-S protocol supports several types of audio encoding, amateurs have settled on MPEG-2 audio and it produces high quality stereo sound. In addition to satellite up and down links, DBV-S is also used in a type of products known as "digital signage". The modulators used for the DVB-S digital signage applications operate in the 950-2150 MHz range. It conveniently happens to encompass the 23cm amateur radio band. That's the good part, the bad part is that the modulators have a fixed output power level (in the U.S.) of about 1uW (1 micro-watt), and are operated on coax cable systems, such as the Best-Buy example.

I found a commercial DVB-S computer based PCI board modulator model DTA-107 made by Dek Tec Digital Video B.V. in Netherlands. While the DTA-107 was not my first choice, it was usable and provided an opportunity to actually produce an ADTV signal. The DTA-107 requires a program file preformatted as a TS (transport stream) file. Fortunately, there is free soft-

ware available to convert an MPEG-2 video/audio file into the TS format. Now that I had a modulator capable of producing an amateur DTV signal, the question of reception arises. How do you view the DVB-S signal on a receiving screen? Yet another stroke of serendipitous good fortune awaits the resourceful ham.

There is a class of space satellite receivers known as FTA (Free to Air). FTA receivers today are primarily used for "KU" band satellites; in years past they were popular on "C" band, using those big 10-12 ft. diameter backyard dish antennas. FTA receivers use, you guessed it, DVB-S protocol, and as luck would have it, the first IF (intermediate frequency) of the FTA receiver just happens to be, you guessed it again, 950-2150MHz. The combination of DVB-S modulators and FTA receivers is a solution just begging for a problem; how do you implement amateur digital television. While the use of "C" and "KU" bands for entertainment programming has declined dramatically since the advent of the DSS, such as DIRECTV, and Dish Network, these satellites are still used for entertainment, educational, religious, and corporate programming. Many FTA receivers have reached the used market, and are available on sites such as eBay. Prices range from \$25.00 to \$200+, a good FTA receiver with remote control can be purchased for under \$50, shipping included.



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The DBV-S modulator and FTA receiver combination works splendidly on a cabled network. I now faced the problem of raising the -30dBm modulator power level to the 30 to 40 milliwatts that would be required to drive the final amplifier, a Downeast Microwave, Inc, model 2330PATV; a solid state amplifier with a proven ATV track record. The gain required for the pre-amplifier stages is 45dBm. I used two pre-amps from Mini-Circuits, Inc. and a surplus commercial microwave pre-amplifier found on eBay. The total gain of the three stage preamplifier circuit is 55dBm, more than enough to drive the final amplifier. One of my main concerns was that at some point I would lose the linearity of the signal and it would no longer produce a usable digital TV signal. My concern was unfounded; the pre-amplifier stages produce a beautiful signal and TV images up to the required +20dBm drive level. I was confident that a viable DTV transmitter was a feasible undertaking.

You can learn more about the Denver ADTV project at: <http://wa6rzw.homelinux.net/addon/adtv>

Coming in Part 2 "More power Scotty!"

WHEAT RIDGE SIREN TEST SUCCESSFULLY COMPLETED

By Bill – W6OAV & Jim – K0TOR

On April 13th the DRC participated in the annual Wheat Ridge siren test. The purpose of the test was to verify the physical and operating condition of Wheat Ridge's 15 sirens.

The following hams were stationed at various siren sites: KC0UZU, KD0HMT, KD0MRY, KX0I, N4ATA, K8ZTT, AC7SX, AC0UA, KA5DKS, K0WSU, WW0LF, W6OAV, K0HRT, K0RCW, and KD0DUJ. Their mission was to inspect the siren hardware and to verify that the siren worked properly during the test.

The following hams were stationed at various locations common to coverage by several sirens: KC0CXX, KB0A, N2PDQ, K0HTX, N0KEX, N6LD, N0GWM, and N0LAJ. Their mission was to determine how well the sirens were heard at these locations.



The following hams were stationed in the Lakewood/Wheat Ridge EOC: KB0BZZ, K0TOR, and KC0WWW. Their mission was to coordinate the test and collect the test results from the hams in the field.

After the test the hams met at the Wheat Ridge city hall. A map of the siren locations was projected and the group was debriefed by Wheat Ridge officials. At the conclusion of the debriefing they expressed their appreciation for the DRC's participation and treated the participants to pizza and pop for lunch.

A big THANK YOU, to all the hams listed above. A total of 16 hams participated in this test. This represents a considerable commitment by each one. They took time from their schedule with many taking time off of work to support the siren test. This speaks highly to the willingness of hams to support public service events. There were two major accomplishments. 1) Proper operation of 15 sirens was verified and 8 sites were evaluated for siren coverage in about one hour. This resulted in a significant cost savings to the City of Wheat Ridge. 2) And, siren verification and evaluation ensures functionality of the sirens for emergency warning should an emergency situation occur. This is important to complete prior to severe weather season. This was a job WELL DONE!!

BROWSING... NEW AND INTERESTING STUFF FROM THE INTERNET

By Bryan – KB0A

I came across a couple of items this month on the web that may be of interest to you. First, after discussing my interest in getting a start at DX'ing, Mark, WØQL, clued me in to an item in the April issue of CQ Magazine. Bryce K Anderson, K7UA, had put together "The New DXer's Handbook" and made it available for download at dx-code.org/newdxer.pdf. Bryce originally wrote the eBook for members of the Utah DX Association, but decided to post it on the web and share it with all us hams. Thanks Bryce! I have read the book and it is definitely a worthy starting point for anyone considering the excitement of DX hunting.

Another item I came across was a major on-going effort by Charles Johnston III, W8KWA. Charles is a member of the Central Ohio D-Star Net (CODSN) which was formed to hold weekly nets on a D-Star repeater to help new users understand the technology. Based on all the questions he was getting on the air about setting up their new D-Star radio, which was cutting into his "rag chew" time, Charles put together a beginner's D-Star

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document. "D-Star for Dummies" is currently 100 pages long and full of good information for anyone who is looking to learn the basics, and the details in more understandable way than those offered by the radio operating manual. It includes an exhaustive amount of radio model specific setup information. You can find the document on the CODSN website at <http://sites.google.com/site/codsnet/Resources>. Charles has informed me that updates are being made, which will add information specific to additional radios. So, this is definitely a work in progress.

Well that's it for now; I will try to make this a semi-regular column in our newsletter. If you know of any interesting Internet items, please let me know so that I can include them.

MILITARY/AMATEUR RADIO COMMUNICATIONS TEST

The army, air force, navy, marine corps, and coast guard are cosponsoring the annual military/amateur radio communications tests in celebration of the 61th anniversary of armed forces day.

Although the actual Armed Forces Day is celebrated on Saturday, May 21, 2011, the AFD Military/Amateur Crossband Communications Test will be conducted 14 may 2011 to prevent conflict with the Dayton Hamvention (20-22 may 2011), which is the same weekend as the actual Armed Forces Day.

Check out the following link.
<http://www.eham.net/articles/25788>

Lakewood Siren Test Information

Check Page 7

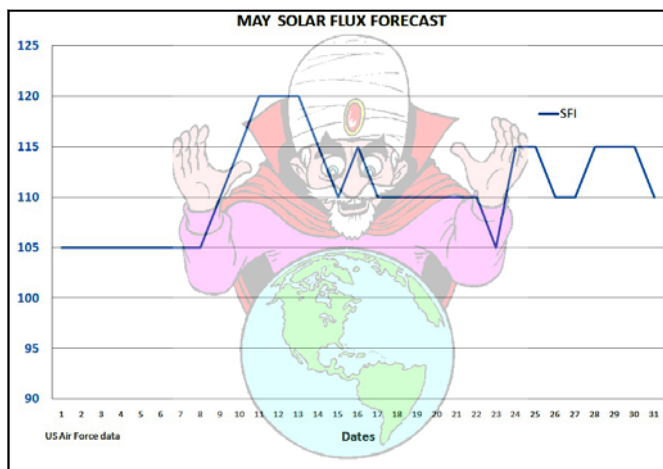
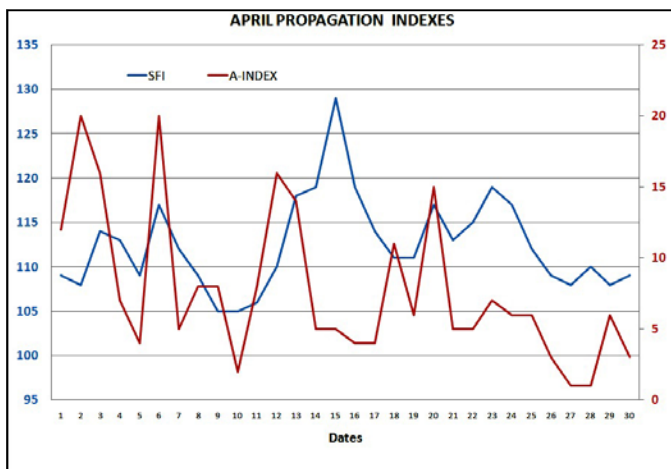
PAST & FUTURE PROPAGATION CONDITIONS

By Bill – W6OAV

This article provides two charts: the propagation conditions for last May and a forecast of next May's propagation conditions.

USING THE PROPAGATION INDEX CHART

Note two things on the chart: the trend of the SFI and A indexes and the date of largest SFI peak. The trend of the SFI shows the progress of the solar cycle during the past May. The SFI peak allows the rough forecasting of the reoccurrence of SFI peak in the next May. In order to "forecast" the next SFI peak, note the date when the SFI peak occurred and project out to about 28 days. Due to the sun's 28 day rotation, the SFI peak will often re-occur in about 28 days. The reason is because the sun spots causing the SFI peak move with the sun's rotation and face the earth every 28 days. This 28 day repetition will become more pronounced as the solar cycle improves. Refer to the September 2010 *Roundtable* for more complete information on the "SFI" and "A" indexes.



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UP COMING EVENTS

HAMfests

May 11 – Lakewood Siren Test

July 16 – PPRAA Megafest, Lewis Palmer High School, Colorado Springs

June 25-26 – DRC/ARRL Field Day More info later

August 5-7 – 2011 Rocky Mountain Div. Convention Taos, New Mexico

August 21 – DRC HAMfest, Jefferson County Fair Grounds

September 25 – Boulder Amateur Radio Club, BARCFest, Boulder County Fair Grounds, Longmont, CO

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LAKEWOOD SIREN TEST

DRC will be supporting the Lakewood siren test on Wednesday, May 11th at 11:00 AM. I ask that you be on station by 10:30 AM so you can check in with net control and have time to check out the siren facility. There are 27 siren sites with two new sites being added since last year. If you covered a Lakewood siren last year we will be contacting you for this year's test. If you have not participated in a siren test and would like to, please contact Jim Beall, K0TOR, at 303-798-2351. If I'm unavailable please leave a message. We need additional radio operators to replace those that are not available this year and we have two new sirens. Those that can are invited to join us for pizza at the Lakewood Public Safety building, 445 S. Allison Parkway. This is a great public service to Lakewood, an enjoyable exercise, where the siren test and reporting are done by 11:30 AM. Please come out and join us.

| MAY 2011 | | | | | | | <i>DRC Net Sunday 8:30pm Local</i> |
|------------------------------------|-------------------------------|---------|--|----------|---|-----------------------------------|------------------------------------|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | |
| 1 <i>May Day</i> | 2 | 3 | 4 <i>Learning Net 7pm</i> | 5 | 6 | 7 | |
| 8 <i>Happy Mother's Day</i> | 9 | 10 | 11 <i>Learning Net 7pm Siren Test</i> | 12 | 13 | 14 <i>AFD Comm. Test</i> | |
| 15 | 16 | 17 | 18 <i>DRC Meeting Elmer 6:30pm General 7:30pm</i> | 19 | 20 | 21 <i>Armed Forces Day</i> | |
| 22 | 23 | 24 | 25 <i>Learning Net 7pm</i> | 26 | 27 | 28 | |
| 29 <i>Division Convention</i> | 30 MEMORIAL DAY | 31 | | | <i>Rocky Mountain Division Convention</i> | <i>Division Convention</i> | |

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Check www.ARRL.org for Contests and Rules!

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DRC REPEATERS

| BAND | Freq / Shift / PL Tone | Additional Information |
|--------|---------------------------|--|
| 10m | 29.620mHz (-100kHz) FM | Not In Service |
| 6m | 53.090mHz (-1mHz) | |
| 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 | NE Area Remote Does Not TX a PL! |
| 1.25m | 224.380mHz (-) 100Hz PL | |
| 70cm | 448.625mHz (-) 100Hz PL | Linked to the 2m - 145.490mHz machine. |
| 70cm | 449.350mHz (-) 100Hz PL | Wide area coverage with Echolink Node # 4140. |

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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 and sole 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 May. **Editor**