



# ROUNDTABLE

### PRESIDENT'S MESSAGE

By Bryan Steinberg – KB0A

Technology keeps marching forward at an ever increasing pace. I was reading an article in the March issue of **Spectrum**, monthly journal of the IEEE, about the human genome and our progress in decoding it. The Human Genome Project, which took more than a decade and cost \$3B to decode the first human genome. That task was completed 10 years ago. Today, technology has created a genome scanner that can accomplish the task in a few hours at a cost of \$1000. A lot of the technology is directly linked to microchip manufacturing tools and processes. But, the problem isn't entirely in the decoding, but in understanding what the code means. To have a geneticist interpret the code still requires significant time, and cost. The primary goal of reducing the cost is to increase the pool of samples available so that the data starts making some sense.

Even in the area of amateur radio we have seen significant advancements in technology lead to great new products, and usually at a better price point. A year or two ago it still appeared that the major radio manufacturers were hanging on to "old" technology such as RS-232 serial interfaces and hardware based filters. Recently this seems to be changing, and quickly. The top three now support USB and/or direct network connection, SDR based signal processing, integrated band maps and even touch screen displays. Wow, what a leap and I am sure it isn't over yet.

I would hope that some of this move into leading edge technology is due to the increasing numbers of hams (well over 710,000 now in the US) and a cross pollination between us and the "maker" community. Can't wait to see what comes out next year!

Jack McComb, W0JMC, has stepped up to volunteer for the Emergency Coordinator position in the club. Over the next month or so Jack will be easing into the new assignment. Please thank him and offer your help and support. On another front, Field Day is approaching and we need a coordinator for the event. If you are interested in helping out the club by taking on this function, please contact me. You won't be doing it alone, you will get a lot of support from the club. But, it helps if there is one person taking the lead.

Till next time...  
Bryan, KB0A

Happy  
April  
Fool's  
Day!



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## MARCH MEETING - WHAT'D I MISS

By Bill – W6OAV

There were 45 attendees this month. KB0A began the meeting by presenting an overview of the upcoming Colorado Ham Comm and all the activities available. He also announced that there are two new MotoTrbo repeaters in the area. After attendee introductions, the meeting was turned over to the guest speaker Brian Champlin of Battery Systems of Denver. Bryan and his team provided a very informative Power Point covering most aspects of batteries. Some of the items they covered were:



- How batteries function.
- Battery construction.
- Types of batteries, their advantages/disadvantages.
- Capacities of various types of batteries.
- Advantages/disadvantages of Lithium-ion batteries.
- Energy density versus capacity.
- Amp hours and reserve capacity.
- Effects of various issues on capacities.
- Battery maintenance and charging:
  - Physical Inspection.
  - Water levels on flooded type batteries.
- Charging:
  - Proper type of charger.
  - Charge after each use.
  - Verify voltages.
  - Prevent overcharging.
- Process for equalizing a flooded battery.

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## APRIL MEETING ANNOUNCEMENT

By Bill – W6OAV

Interested in seeing actual standing waves on a transmission line and how they inter-react to various types of load terminations? Interested in seeing how transmission line impedance transformers affect waves? If so, plan to attend the April meeting. Bill, W6OAV, will begin with a short tutorial on:

- An explanation of SWR with an animated visual.
- Wave superposition.
- Wave reflections.
- Wave transformers.
- Why not worry about SWRs 3:1 or higher.

After the tutorial Bill will show a video of the Shive Wave Generating Machine. This machine will demonstrate the above items and more.

## MARCH TECH COMMITTEE REPORT

By Bill – W6OAV

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

### Voter System Redesign

Goal: Find a site east of Denver which will provide good coverage into the Denver Metro area and which will support the voter system:

**Work still in progress.**

### Existing Voter System Tune Up

Goal: "Tune up" the existing test voter configuration consisting of the Station 4 central voter site and the N1ETV remote receiver site:

- Items to be completed:
  - Rewire link receiver to voter controller interface. KB0A to obtain configuration from WA2 YZT.
  - Adjust UHF link transmit antenna position - KB0A will use analyzer to check the receive antenna system.
  - Sync the hang times of Station 4 and the remote.
  - Calibrate the local and remote audio levels and responses - KB0A will use IFR to set levels.

**Work still in progress**

### MotoTRBO Repeater Tune Up

Goal: Tune the MotoTRBO repeater duplexer and replace the dual band antenna with a single band antenna.

**The club has ordered the antenna.**

### 145.49/448.625 Repeater Controller Upgrade

Goal: Replace the S Com 7k with an S Com 7330. Program the 7330 to allow the splitting of the repeaters when D13 ARES uses the 145.49 repeater for emergency activities.

**KB0A and WW0LF are reviewing the programming.**

### 147.33 Auto Patch

Goal: Program the auto patch controller to allow calls to the 720 exchange.

**KB0A is reviewing the programming and will re-write as necessary.**

### Emergency Cell/Laptop Charging Station

Goal: Discuss the construction of a TSA emergency cell/laptop charging station.

**N1ETV presented an arrangement based on what was learned in Hurricane Sandy.**

**The tech committee will evaluate the feasibility of building the charging station and providing use of it to the TSA.**

## Who's New In The DRC

By Bob – KC0CZ Memberchip Chairman

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.

Ron Jepsen                      KBOICN  
David Fieselman                KD0TIB

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 6:30pm before the regular meeting.

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

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## TECHNICAL TIP FOR APRIL FIRST

By Bill – W6OAV

As you may know, the Doppler Effect means that a mobile's signal appears higher in frequency to the repeater as the mobile approaches it and lower when the mobile recedes from it. Based upon this law, April's technical tip: if your mobile frequency is a little low, work the repeater only when approaching it. If your mobile frequency is a little high; work the repeater only when receding from it. For those of you who are proud of being right on frequency- you'll have to drive in circles around the repeater so that your distance from it doesn't change. Hope you had a happy April First.

### Please Note!

**The Denver Radio Club Meeting  
time has changed!**

**General Meeting start time is  
changing to 7:00PM**

**The Elmer Session will still start  
at 6:30PM.**

## NEWS FROM THE FCC

By Bryan – KB0A

The FCC has granted the waiver request, submitted by the ARRL, asking that "single slot" TDMA be allowed on certain amateur radio frequencies until such time that the FCC acts on the "Notice of Proposed Rulemaking" that involves the same type of operation. Check out the link below.

[http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2013/db0325/DA-13-542A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0325/DA-13-542A1.pdf)

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## MY STEALTH BIRDFEEDER ANTENNA

Part 1

By – W0QL

I have been on a quest this year for a suitable antenna to work DX if and when we downsize. Such an antenna has to be stealth, capable of working DX (low angle of radiation), and multi-band.

I came around to thinking a short vertical with a top hat might have some promise, especially if disguised as a birdfeeder.

I've had my eye on my wife's bird feeders for several years as a potential antenna but I can imagine what would happen if I ever moved forward on it. I got inspired this morning to build one of my own out of cheap and easily available materials. I like the "Shepard's pole" design because I suspected the hangers would make a pretty good top hat. In fact they seem to make an amazing top hat. I worked several stateside contacts this afternoon on 30m and 20m. I even worked a Russian on 15m, and that's all with no matching network.

I need to reveal a couple of secrets before you think this antenna is too good to be true. First, the mode I'm testing with is JT65 which is an extremely efficient digital mode and can make a bad antenna act like a good one. JT65 probably gets through the noise better than CW, a real advantage for limited antennas.

(Continued on page 4)





*(Continued from page 3)*

In addition, JT65 displays signal reports in decibels, an easy way to compare performance. Next, what you can't see in the picture is a very good radial system. There are 64 radials under the grass, each about 50 feet long, installed years ago. The better the radial system the better a vertical gets out. Let's take a look at building the birdfeeder.



First I bought two 10 foot lengths of 3/4" EMT conduit (\$4 ea) because I already had a bender in my toolbox. Bending the hook was easy. I made three hooks and bolted them together with 10-24 hardware. A piece of 1" dia PVC pipe is used as the insulator at the base to keep the EMT from touching the radial plate. I borrowed a couple of genuine feeders from my wife as

props and the visual part of the project is complete. It looks like a birdfeeder, not an antenna. Success. Next, the RF challenge.

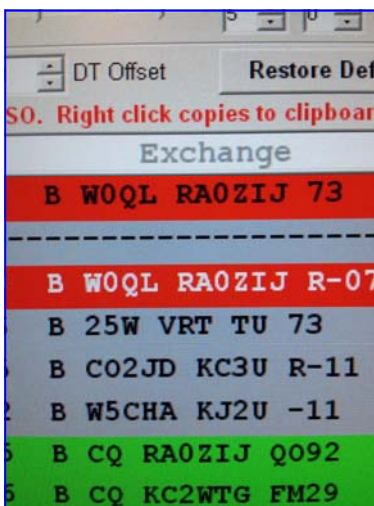
If there was no top hat this 7 foot tall pipe should resonate as a quarter wave vertical at 33MHz. I installed a coax connector between the base of the birdfeeder and the radial plate and attached a MFJ 239B antenna analyzer. I was surprised to find no dip anywhere above 28MHz. However, there is a dip at 17MHz which I was also surprised at. The top hat should not have made that much difference. A dip at 29MHz would have been consistent with what I have researched. Seventeen MHz means the antenna has an electrical length of 13 feet. Suspicious but I guess the proof would be if it gets out like a 13 foot antenna.



Will it perform? If 17MHz can be believed it should be useable on 14, 18, and 21 MHz with only a small matching network. How about no matching network? I decided to try connecting the coax directly with no matching network and using the tuner in the rig. A high SWR would cause the coax to waste considerable power, but let's just try it. I have a SGC 230 tuner I plan to install tomorrow. I inserted a line isolator to keep the coax from radiating.

For the heck of it I tried tuning up on 30m before going up to 20m. Amazingly, the tuner in the rig handled it. I put out a CQ and got a response. Unfortunately, I never got another reply and the qso was busted.

I tuned up on 20m, put out a CQ and again got an answer, and again the qso was busted before it could be completed.



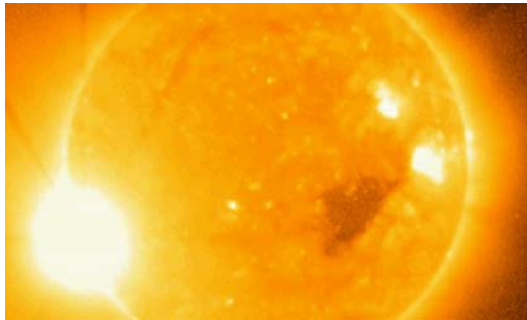
Next, 17m there was QRM so I skipped to 15m. A station was calling CQ, I answered him, and I got a signal report equivalent to S4. At last a QSO! After a two hour break I resumed the testing and tried for a Russian calling CQ. Voila! He came back to me and gave me a nice -7db, the equivalent of an S9.

I retried the lower bands and made some stateside QSOs with nice reports. Performance is promising considering the lack of a matching network. I can't wait til tomorrow when I stick in the SGC 230. This antenna could be a good solution for when we downsize to a patio home or townhouse in the future. Part 2: Installing the SGC 230 tuner and how it affects performance.

*Don't forget to join in Wednesday nights at 7:30pm for the DRC Learning Net! 145.49/448.625 machines Watch the RoundTable for Upcoming changes to Learning Net Schedule*

## SOLAR STORMS - A LOOK BACK

Courtesy of the NASA and the FEMA Daily Situation Report  
 Wednesday, December 29, 2010



*Photo Credit: NASA : A modern solar flare recorded Dec. 5, 2006, by the X-ray Imager onboard NOAA's GOES-13 satellite. The flare was so intense; it actually damaged the instrument that took the picture. Researchers believe Carrington's flare was much more energetic than this one.*

According to NASA, as electronic technologies become more sophisticated and more embedded into everyday life, they have also become more vulnerable to solar activity. The impacts of geomagnetic storms of the past have been researched in order to decrease the surprise and mitigate the impact of future storms. Of the past 160-years of recorded history of geomagnetic storms, the Carrington event of 1859 remains the largest. The event began in the morning on September 1, 1859 when two blinding white lights appeared over sun spots. It lasted only a minute and was witnessed by foremost solar astronomer Richard Carrington. Within five minutes, skies across the planet erupted in brilliant red, green, and purple aurora visible even near tropical latitudes over Cuba, the Bahamas, Jamaica, El Salvador, and Hawaii. The explosion produced not only a surge of visible light but also a mammoth cloud of charged particles and detached magnetic loops or coronal mass ejection "CME" cloud which was hurled directly toward Earth and crashed into Earth's magnetic field the next morning causing the global bubble of magnetism that surrounds our planet to shake and quiver. This event produced large scale disruption on the telegraph systems worldwide. Telegraph operators were shocked by spark discharges and telegraph paper was set on fire. Even when telegraphers disconnected the batteries powering the lines, aurora-induced electric currents in the wires still allowed messages to be transmitted. Solar flares recorded in Aug 1972, March 1989, and Dec 2005 and 2006 are responsible for disruption of electric power transmission from a hydro generating station,

producing blackouts, power surges and even melting power transformers. In December 2005, x-rays from another solar storm disrupted satellite-to-ground communications and Global Positioning System navigation signals for about 10 minutes.

Research has shown that solar flares occur frequently, especially during solar sunspot maximum. However, a rare Carrington class event such as occurred in 1859 would significantly impact modern infrastructure and cost billions of dollars in repairs. For additional information visit: [http://science.nasa.gov/science-news/science-at-nasa/2008/06may\\_carringtonflare/](http://science.nasa.gov/science-news/science-at-nasa/2008/06may_carringtonflare/)

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### A FAKE INDUSTRIES ANNOUNCEMENT

By Bill, W6OAV

It's been a while since FAKE Industries has introduced a new product in the ROUNDTABLE. Well, on April 1 FAKE brought out a brand new product increasing the radiation efficiency of any antenna. The product which is called LAUNCH-WAX takes advantage of the fact that RF flows on the outer surface of a conductor; in this case, the antenna elements. LAUNCH-WAX is a special wax that the user spreads over the surface of the antenna elements. This wax makes the surface slippery which allows the RF to flow faster with less loss along the element. Hence, the antenna launches a stronger faster radio wave into space. Only one application of LAUNCH-WAX will increase the antenna efficiency by 20 dB.

**FAKE Industries, a Division of WACK Inc.**  
**"If it's a fantastic product, it's out of WACK"**

### THE ROUNDTABLE ARCHIVE

Have you been looking for a back issue of the Roundtable or maybe that special "How To" article? Well you are in luck past issues of the RoundTable as well as an up-to-dated "Featured Article Index" by month and year are now available on the web at <http://www.w0tx.org>. On the left side of the home page in the "DRC Web Pages" menu click "The RoundTable" then click to accept the conditions of use and you will be redirected to the "RoundTable Archive."



### SPECIAL EVENT STATION K0WAR

By Paul – WG0V

Jun 8, 1400Z-2100Z, K0WAR, B-17 Fly-In at Centennial Airport Englewood, CO. Wings Over The Rockies Air And Space Museum. 14.252, 14.260, and 146.460 MHZ. QSL and Certificate will be sent to all contacts. Wings Over The Rockies Air and Space Museum 7711 E. Academy Blvd, Denver, CO 80230-6929. Celebrating the B-17 Flying Fortress, Aluminum Overcast's Fly-In at the Centennial Airport with rides from June 6-9 and static tours from June 6-9. Remote radio operation from the B-17's hangar at Centennial Airport. Contact Paul Turner, WG0V, 303-366-6770, or [paullinda@comcast.net](mailto:paullinda@comcast.net).



### DID YOU KNOW?

#### Li-Ion Battery Overcharge Danger

Lithium-Ion (Li-Ion) batteries are different than most types of rechargeable batteries in that they remain cool during normal charging. That can induce a false sense of safety, because Li-Ion batteries can burn, explode, and spread toxic material that inflicts human injury and damages equipment if they are overcharged. Most commercial Li-Ion batteries have several automatic protection devices built-in, because of that danger. Generally charging current is interrupted if the voltage across any cell exceeds 4.30 volts, internal pressure exceeds a preset threshold, or internal temperature rises to an unsafe level. Li-Ion batteries usually are left in an unusable state after any of those things occur. Never defeat any of the internal protection devices or otherwise try to charge a lithium-ion battery that has become unchargeable. ©2005 Martek International All rights reserved.

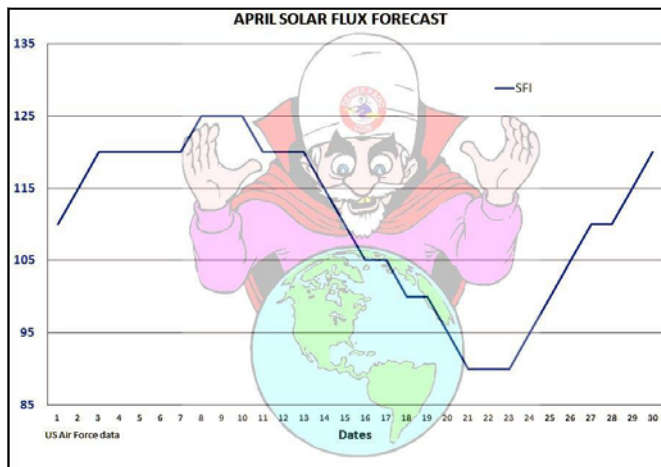
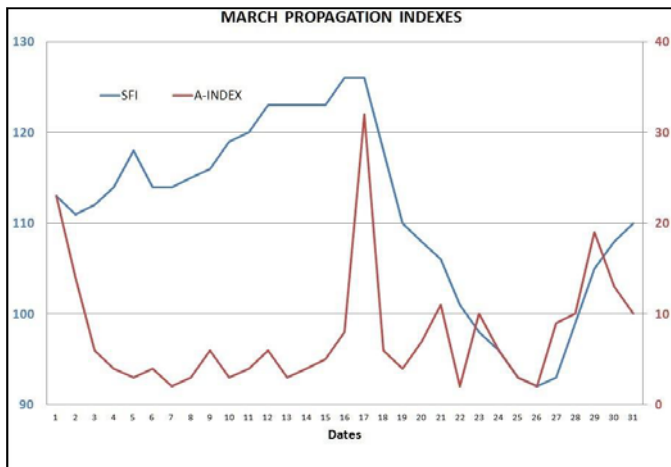
*Don't forget to join in Wednesday nights at 7:30pm for the DRC Learning Net! 145.49/448.625 machines*

### 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 [www.w0tx.org](http://www.w0tx.org).



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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](http://www.arrl.org/hamfests).

**April 6 – LARCfest**

Boulder County Fairgrounds  
<http://w0eno.org>

**June 28 – Rocky Mountain Division Convention**

Rocky Mountain Park Inn, Estes Park, Colorado  
<http://www.hamconcolorado.org>

**July 27 – PPRAA Megafest**

Lewis Palmer High School, Monument, CO  
<http://www.ppraa.org>

**August 18 – DRC HamFest**

Contact Bryan - KBOA for More info.  
<http://http://www.w0tx.org/hamfest.htm>

### 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".



**HRO 12 STORE BUYING POWER WORKS FOR YOU!**  
[www.hamradio.com](http://www.hamradio.com)  
8400 E. Iliff Ave #9, Denver, CO 80231  
303-745-7373 800-444-9476  
24 HOUR FAX 303-745-7394  
e-mail: denver@hamradio.com









### WANT TO BUY

Johnson Pacemaker transmitter - Working or Not. Curious if anyone has had experience troubleshooting these old transmitters? Contact Woody, WØUI



The Denver Radio Club  
Is an ARRL  
Special Service Club  
Support your hobby  
Join the ARRL TODAY



APRIL 2013							<i>DRC Net Sunday's at 8:30pm Local on 145.490 &amp; 448.625 (No PL)</i>						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Easter Sunday 	1 DONT BE A FOOL! 	2  Last Quarter	3 Learning Net 7:30pm	4	5	6 LARCfest	7	8	9	10 Learning Net 7:30pm  New Moon	11	12	13
14	15 	16	17 DRC Meeting Elmer 6:30pm General 7pm	18  First Quarter	19	20	21 SSB Rookie Roundup Begins 1800 U Ends 2359U	22  EARTHDAY	23	24 Learning Net 7:30pm	25  Full Moon	26 	27
28	29	30											

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Field Day	OPEN for 2013			
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Web Master	N0LAJ	Bill Hester	Check Roster	

## DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
2m	145.490mHz (-) 100Hz PL	<a href="#">Linked to the 70cm - 448.625mHz machine.</a>
2m	147.330mHz (+) 100Hz PL	<b>Local Area, Members Auto-Patch Does Not TX a PL!</b>
2m	147.330mHz (+) 131.8Hz PL	<b>Not in service at this time!</b>
1.25m	224.380mHz (-) 100Hz PL	
70cm	447.825mHz (-) 100Hz PL	<a href="#">Saint Anthony's</a>
70cm	448.625mHz (-) 100Hz PL	<a href="#">Linked to the 2m - 145.490mHz machine.</a>
70cm	449.350mHz (-) 100Hz PL	<a href="#">Wide area coverage with Echolink Node # 4140.</a>
70cm	446.7875mHz (-)	<a href="#">MotoTRBO Repeater   Slot 1 – DMR-MARC WW, Slot 2 – Local</a>

## EDITOR'S NOTE

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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 Month. **Editor**