ROUNDTABLE

The Denver Radio Club Newsletter

April 2012 Since 1917

PRESIDENT'S MESSAGE

By Bryan Steinberg – KB0A

There was a very interesting, and thought provoking article in the March issue of CQ Magazine. In his "The Ham Notebook" column Wayne Yoshida, KH6WZ, discusses a "most sensitive topic…" regarding what's going to happen to your stuff when you're gone? If you are like most hams you have your own collection of radios, connectors, cables, spare parts and assorted electronic paraphernalia. I, like most hams, do not have a spouse who would know what everything is, what it's worth and, most importantly, what to do with it If anything happened to me. Wayne captures that dilemma and provides some nice hints on how to make the disposition of your "stuff" a bit easier for your family. I've been to too many basements helping families understand what it is, if it's worth anything and how to get rid of the stuff they're left with. Yes, this is a sensitive topic, but should definitely be part of your estate planning.

Now, on to more cheerful topics a thanks to Paul, KD0CXX, who is filling in, temporarily, as our club Education Chairman. We still need someone full time in this position. If you're interested let me know. Also, a thanks to Joe, AC7SX, who spent one of his Wednesday evenings in March with Jim, K0TOR, and me, doing our annual treasurer's records review for the club. By the way, Joe said that everything looked OK.

Here's a reminder to mark your calendars for Field Day, which is June 23rd and 24th this year. If you would like to help out, speak with Dave, K0HTX for ideas.

Remember to use the club's calendar (http://w0tx.org/calendar.htm) to keep track of upcoming events (e.g. Hamfests, Field Day, Meetings, etc.) of interest to the Denver ham community.

Thanks to Wayne Heinen, N0POH, for his presentation on Meteor Scatter and other weak signal VHF activities at the March Meeting. Our April meeting will feature a presentation by Gerry Villhauer, W0GV, and Jim Beall, K0TOR, on Software Defined Radios. Gerry and Jim have had FlexRadio SDRs for a year or so. Their insight into their experiences should be very enlightening. More info can be found in the pages of this issue of the RoundTable. Join us at our regular meeting location, the El Jebel Shrine in Denver. 7:30 PM for the membership meeting and 6:30 for the Elmer or Tech Committee meetings. Also, don't forget our weekly nets at 8:30 PM Sundays on the 145.49/448.625 repeaters. BTW, on those same repeaters every Wednesday, except meeting night, join the Elmer Net at 7:30 PM.

Remember that we are now making available past issues of the Roundtable, our club newsletter, on our website. As time allows we're trying to build up an issue index to make it easier to find a particular article.

Until next month…

Bryan – KBØA
President

INSIDE THE ROUND TABLE

MARCH MEETING - WHAT'D I MISS

By Bill – W6OAV

There were 34 attendees this month. After KB0A completed introductions, K0TOR announced that the Wheat Ridge siren test will occur on April 11 and the Lakewood siren test will take place on May 13. He's asking for volunteers for both tests. KB0A then described the plans for creating a DRC MotoTRBO repeater. A motion was presented to, and approved by, the membership for funding the purchase of the necessary equipment.

The meeting was then turned over to the guest speaker, Wayne, N0POH. Wayne gave a presentation about weak signal digital communications, especially meteor scatter. He covered the following:

- ***Mechanics of meteor scatter communications.***
- ***Advantages of meteor scatter communications.***
- ***Operating system (XP) and hardware (PC soundcard) requirements.***
- ***Overview of WSJT weak signal software.***
- ***Setting up and using the WSJT software.***

Wayne also presented a reenactment of an actual 6 meter meteor contact with a portable station in Albuquerque using saved audio files.

The presentation ended with a list of various weak signal resources available on the Web. A wealth of weak signal information, including Wayne's presentation and the list of weak signal resources, are available at http://www.rmvhf.org. Also, there is a 144.220 MHz net every Monday at 8 PM local time.

APRIL MEETING PRESENTATION

By Jim – K0TOR

Gerry Villhauer and Jim Beall will present an overview of the FLEXRADIO model 5000A, Software Defined Radio. This radio technology has been on the market for several years. It is an HF through VHF/UHF transceiver. It represents a major improvement in Ham radio technology. The FLEX provides a number of circuitry and performance enhancements that increase the enjoyment of Ham radio. We will describe some of our operational experiences, explain performance benefits and describe how they are accomplished. Comparisons will be made with current Superhetrodyne radio technology. Being a software defined radio it continues to be updated with the latest radio performance improvements. Also it provides the ability to demonstrate the operational performance using prerecorded spectra. This demonstration will be available for you to take home so you can better experience its' capability.

MARCH TECH COMMITTEE REPORT

By Bill – W6OAV

This report provides an overview of items discussed during the March Technical Committee meeting. Comments on items are red.

Power Line Noise at Station 4

Goal: Reduce the power line noise affecting all systems:

KF0RW has contacted the proper Xcel authorities. They have identified the poles that are causing the noise and will correct the problems this week. They have asked WW0LF to verify the work when done. KF0RW will birddog Xcel.

Club ATV

Goal: Investigate possibility of the DRC building a digital Amateur TV (ATV) system:

N1ETV and K0HTX will develop a plan and present it to the board.

Voter System

Goal: Design, build and test a 147.33 MHz voter system consisting of a central voter site and one remote site (Phase 1):

- Phase 1 Items to be completed as time permits:
  - Re-install the voter controller.
  - Adjust UHF link transmit antenna - KB0A will use his 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 the IFR to set levels.
- Phase 2 initial items:
  - Determine the transmitter's coverage areas and "dead zones" for possible remote sites:
    - Use Radio Mobile plot to identify the "dead zones".
    - Pick predominate "dead zones" for possible remote sites.

KB0A will install the voter ASAP.

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Centennial Repeaters
Goal: Ground the hardlines:

- Determine hardware requited.

Schedule a work party.
WW0LF has the grounding kits. He will contact our tower climbers to coordinate an antenna party.

New MotoTRBO Repeater
Goal: Build a new MotoTRBO repeater:

- KB0A has received RSC approval which specifies the St. Anthony Hospital campus as the site.

Develop a project plan.
KB0A will present a motion to the membership at the meeting to approve funding this project. If so, a project plan will be developed.

6 Meter Repeater Dropouts.
Goal: Determine cause of dropouts.
KB0A and WW0LF will investigate.

TS-940 Failure
Goal: Determine if re-soldering and cleaning connectors will fix radio:
K0TOR has re-soldered many bad connections and replaced several bad solid state devices. He is now troubleshooting the built in automatic tuner.
K0TOR is making good progress on fixing the radio.

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

Siren Test

By Jim – K0TOR

DRC will again be supporting two siren tests. The first will be for the City of Wheat Ridge. It will be conducted on Wednesday, April 11 at 11:00 AM. Please be on station by 10:30 AM so you can check in and have time to inspect the siren site. Wheat Ridge has 15 sirens and they requested we monitor the siren level at 3 senior citizen facility parking lots. If you covered a Wheat Ridge siren site last year we will be contacting you again this year. We will meet for a debriefing and pizza at the Wheat Ridge Police Department following the siren test.

The second siren test will be for the City of Lakewood. It will be conducted on Wednesday, May 9 at 11:00 AM. Requested arrival is 10:30 AM. Lakewood has 25 sirens. Following the siren test we will meet for pizza at the Lakewood Public Safety building.

If you did not participate in a siren test last year and you would like to this year, please contact Jim Beall, K0TOR at 303-798-2351. If I'm unavailable please leave a message. All you need is a VHF or UHF mobile or HT. If you have not worked a siren test in the past and would like to see what is involved, we would welcome you as well. This is a great public service, a fun exercise and is a big benefit to the Cities. The siren test and reporting is completed by 11:30 AM. If you would like to help out, please call.

How Do They Compare The MFJ and AEA Magnetic Loop

By Bill – W6OAV

This article describes a test that Mark, W0QL, and I performed comparing the MFJ-933 and the AEA magnetic loop antennas. Before describing the test, a bit of back ground information on magnetic loop antennas is in order.

The graphic at right shows the configuration of a typical magnetic loop antenna. Magnetic loops have been very popular for years in many countries and are becoming very popular in the United States. The reason is because more hams are moving to covenant controlled areas which do not allow antennas or into condos or townhomes where installing outside antennas is an issue.

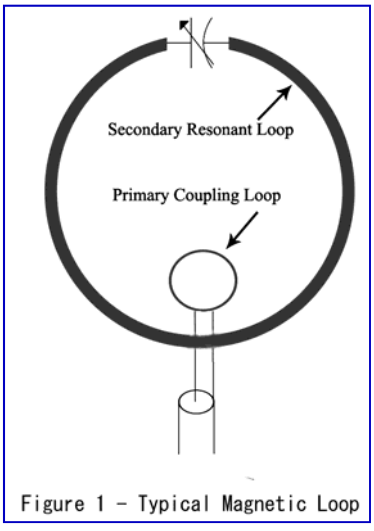

Figure 1 – Typical Magnetic Loop

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The following features make magnetic loops popular:

- Relatively stealthy.
- Multiband.
- Usually smaller in circumference than a quarter wavelength at the highest operating frequency.
- Very close to the efficiency of a dipole.
- Do not require radials.
- Can be operated very close to the ground when mounted vertically.
- Very low receive noise.

Unfortunately, commercial magnetic loops can be expensive. However, they are relatively inexpensive to build. One can obtain plenty of construction information on the Internet by Googling "magnetic loop antennas" or "small transmitting loops".

I'm always researching information concerning magnetic loops. One day I happened to see an ad for the MFJ-933 magnetic loop tuner. Two things caught my eye. The first was that the price was much less than that of other commercial magnetic loops. The second was that the tuning and matching system was totally different than the typical magnetic as shown in Figure 1. It appeared that the MFJ-933 (*graphic shown at right*) version would be easier to build than the typical version with the tuning capacitor at the top. The question was how well it would perform compared to the typical version. I had reservations because MFJ recommends using #10 wire for the loop. Also, the variable capacitors have plates pressed into the shafts. These two facts violate good magnetic loop design. Good magnetic loop design calls for a wide surface conductor and capacitors with no slider contacts or plates pressed into the shafts. This is due to the extremely large RF currents circulating within these components.

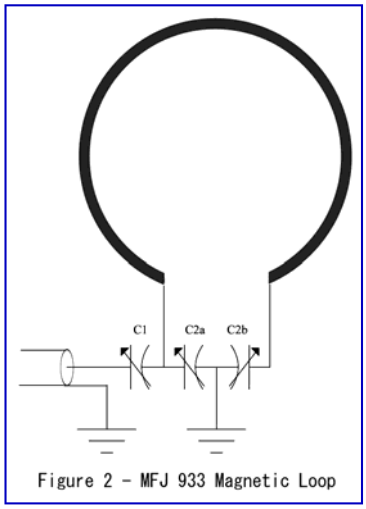

Figure 2 – MFJ 933 Magnetic Loop

One day I mentioned to Mark, W0QL, that I'd love to compare the MFJ-933 loop with an AEA loop, the latter being a typical loop as shown in Figure 1. Mark kindly loaned me his MFJ-933 for testing. I built the 20 meter version per MJF's specifications using a square #10 wire loop. Mark and I then compared the two loops.

I should mention that the comparison was not very scientific but I think valid. The following describes the tests.

Mark, who lives on a hill 12 miles from me with no hills blocking our path, used a Icom 756 Pro signal strength meter calibrated to read in dB units and a 20 meter ground mounted vertical. The vertical's polarization matched that of the test loops.


Figure 3 – AEA Magnetic Loop

The idea of the test was to place one loop at a time in the same exact location in my yard and at the same height above ground. (*See photos.*) This would insure that the influence of the surrounding environment would be the same for each loop. The loops were tuned in place to the test frequency (20 meters) using an antenna analyzer. At resonance, both loops had an SWR of 1:1.2. As a secondary check, I brought the transmitter power up until the ALC just started to come up on each loop. At this point, the transmitter power output was identical for both loops, verifying the analyzer's readings.

I transmitted 80 watts insuring that the transmitter ALC was at zero and thus not limiting the transmitter output. Mark measured the field strength of each loop at his station. After comparing the two loops, we redid the tests to make sure the results were repeatable and they were.


Figure 4 – MFJ 933 Loop

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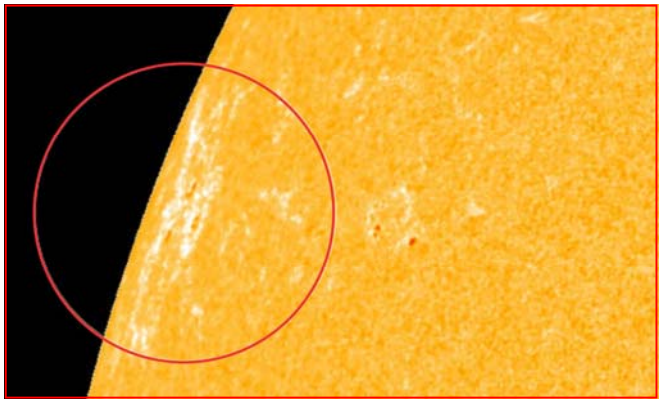
On ground wave, the MFJ-933 loop was 6dB below that of the AEA loop. This agrees with two loop calculator programs: G4FGQ's "rjeloop.exe" and KI6GD's "Magnetic Loop Antenna Calculator". According to these programs, the efficiency of the MFJ-933 loop could be improved about 2 dB by making the conductor circular and by about 3 dB by using quarter inch soft copper for the loop. This physical configuration would pretty much match the performance of the AEA loop.

The test results indicate that if an MFJ-933 loop is properly designed (large copper conductors, circular radiator, minimum but well soldered connections), an inexpensive well performing loop will result. Even if the MFJ-933 loop is built per MFJ's specifications the owner would still enjoy many good contacts with an easy to build magnetic loop antenna.

WHO'S AFRAID OF AN OLD SUNSPOT?

Sunspot AR1429, the source of many strong flares and geomagnetic storms earlier this month, has returned, but it's no longer the behemoth it once was. After a two week transit around the backside of the sun, AR1429 has substantially decayed. All that's left is a few small dark cores scattered among some bright magnetic froth.



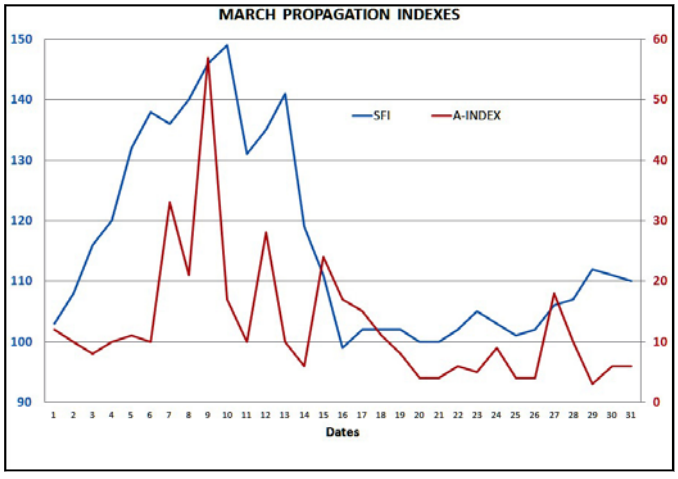
PAST & FUTURE PROPAGATION CONDITIONS

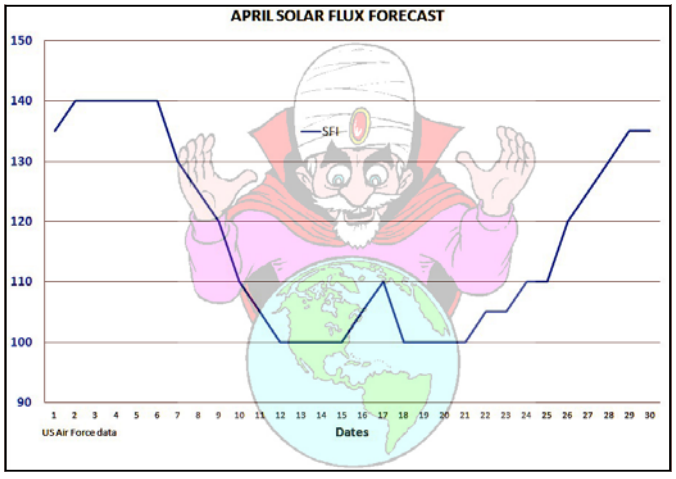
By Bill – W6OAV

This article provides two charts: the propagation conditions for last month and a forecast of next month'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 month. The SFI peak allows the rough forecasting of the reoccurrence of SFI peak in the next month. 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 reoccur 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.





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.

April 7 – Longmont ARC, LarcFest
Boulder County Fairgrounds, Longmont, CO
June 2 – MARC Tailgate Party
Lions Club Pavilion at Confluence, Park Delta, CO
June 23-24 – ARRL Field Day
More information later.
July 14 – PPRAA Megafest
Lewis Palmer High School, Monument, CO
August 19 – DRC HAMfest
More information later.

APRIL 2012

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 	2	3	4 *Learning Net* 7:30pm	5	6 Full Moon	7 *LARCFest*
8 *Easter Sunday* 	9	10	11 *Learning Net* 7:30pm	12	13 Last Quarter	14
15 *Rookie Roundup (SS* *Starts 1800U* *Ends 2359U* 	16	17	18 *DRC Meeting* Elmer 6:30pm General 7:30pm	19	20	21 New Moon
22	23	24	25 *Learning Net* 7:30pm	26	27 	28
29 First Quarter	30					

Check www.ARRL.org for Contests and Rules!

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DRC Repeaters

BAND	Freq / Shift / PL Tone	Additional Information
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	447.825mHz (-) 100Hz PL	**Saint Anthony's**
70cm	448.625mHz (-) 100Hz PL	**Linked to the 2m - 145.490mHz machine.**
70cm	449.350mHz (-) 100Hz PL	**Wide area coverage with Echolink Node # 4140.**

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 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**