



ROUNDTABLE



PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

Hello DRC Members,

I hope you are all having a great summer. The time is sure flying for me, so much to do and so little time.

Field Day was a great success. The wind gave us a little problem on Saturday when it caught one of our Salvation Army tents and took it flying. That was the only near disaster for the event. We should have the points results in next months Round Table. A special thanks to Oscar, K0SSE, for all his planning which made FD a success. It takes a lot of work to put all the pieces together, please thank him next time you see him. Also thanks to all who participated.

The Friday clean up crew did a great job as did our tower climbers. The bands could have been a lot better but we had fun and learned a lot...that is the whole idea. The food was great! Thanks to Paul for the BBQ and The Salvation Army crew for the food and drink they provided. I will tell you,

if you were there and went away hungry, it was your fault.

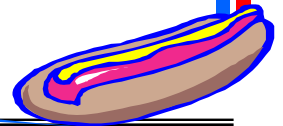
I would like to welcome and thank new DRC member Charles Smith, W0CIV. Please check in on the nets, come to the meetings and activities and remain an active member.

I have heard lots of good comments on last month's program, presented by Bill Hester, N0LAJ, on the Ubuntu operating system. It is good to know there are other systems out there if you choose not to be married to Microsoft.

Our first meeting at El Jebel Shrine Center went very well. Thanks to Bryan, KB0A, for taking charge while I was out of town. We will continue to meet at El Jebel starting again in August. Why not in July you ask? Our program for July will be on Lookout Mountain at the CBS Channel 4 transmitter site, thanks to Paul, WA2YZT, who is their chief transmitter engineer. **PLEASE read the note on page 7 in this issue about parking and car pooling.** There is no need for me to duplicate all that...PLEASE read it and if you have questions contact me or Bryan, KB0A. This is an opportunity of a life time...Please Don't Miss It!

See you all on Lookout Mountain, July 21st.
No Elmer session for this month.

Gerry, W0GV
President



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JUNE MEETING - WHAT'D I MISS

By Bill – W6OAV

Fifty eight folks attended this month's meeting! The meeting took place at our new meeting location. Everyone at the meeting was pleased with the new location... lots of room, air conditioned, comfy chairs and nice clean bathrooms.

Bryan, KB0A, began the meeting with attendee introductions. After the introductions, Bryan announced that the DRC hamfest tables are going fast and, if anyone wants to reserve one, they should do so ASAP. He also mentioned that some folks have had problems opening the latest Roundtable. He suggested that the issue seems to be that the problem is caused by outdated Adobe readers. We will keep tabs on this issue.



The meeting was turned over to Bill, N0LAJ. He gave a talk using OpenOffice.org-Presentation (a free software application similar to Microsoft Power Point) on the history and benefits of the free Ubuntu Operating System for personal computers and server computers. He then gave a live demonstration of Ubuntu, showing the various applications, configuration utilities, and system utilities available. Then KD0JJP, Travis, followed Bill's presentation with a demonstration showing some of the online tutorials that are available for the new and experienced Ubuntu users.

The meeting concluded with several lucky attendees winning door prizes.

TECHNICAL COMMITTEE REPORT

By Bill – W6OAV

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

Voter System

Goal: Design and build the voter site and a remote site for the 147.33 voter system.

- WW0LF is building the first remote station.

Voter System

Goal: Determine link frequencies and coordinate with CCARC as needed.

- KB0A has received the ok to use link frequencies in the 438 to 439.5 mHz range. Eight frequencies spaced about 75 kHz will be needed to Station 4 and one link frequency will be needed to the Hudson site.

Temporary Salvation Army Location:

Goal: Determine feasibility for installing VHF/UHF systems and an HF NVIS antenna.

- Volunteers met on a Skype conference call and developed an action plan. The first phase will be to meet at the TSA location on July 7th to inspect the roof and design the antenna and antenna feed system.

Field Day

Goal: Start laying the ground work for the 2010 Field Day.

- K0SSE went over the final action plan with the committee.

147.33 - Hudson RF issue

Goal: When windy, hear crackle on transmitted audio.

- WW0LF will check out the antenna system during Field Day.

145.49/448.625 Upgrade

Goal: Upgrade the repeater system.

- The tech committee developed the following plan:
 1. Replace the S-Comm controller with a 7330 controller.
 2. Replace the UHF Syntor with new Kenwood repeater.

Packet Gateway

Goal: Provide remote access to packet gateway via modem on Landline.

- The tech committee agreed that this project is feasible. W9UW and W6OAV will work on it.

Celebrate Your
Independence

USING THIN GAUGE WIRE FOR STEALTH ANTENNAS

By Bill – W6OAV

I ran an article in the July 2009 “Roundtable” describing the stealth, and basically invisible, Inverted L antenna that we installed at KC2CAG’s house. The antenna was constructed of 30 gauge copper wire. Since then, I’ve received several emails asking if an antenna made of such small gauge wire could survive the weather and what would be the RF loss. This article will attempt to answer those questions.



Can such a small gauge wire survive the weather?

KC2CAG and I installed his Inverted L at the end of April 2009. The antenna has successfully weathered snow storms, ice storms, rain storms and wind storms. If you look closely you can see the drooping snow covered antenna.

Can such a small gauge wire handle 100 watts?

In order to answer this question, one must examine several wire specifications. Wire specifications commonly include the following two parameters:

Maximum Current – The maximum continuous current that the wire can carry without heating beyond a safe limit when enclosed in a non-cooled environment, such as when in a conduit or covered by insulation. The rating is very conservative.

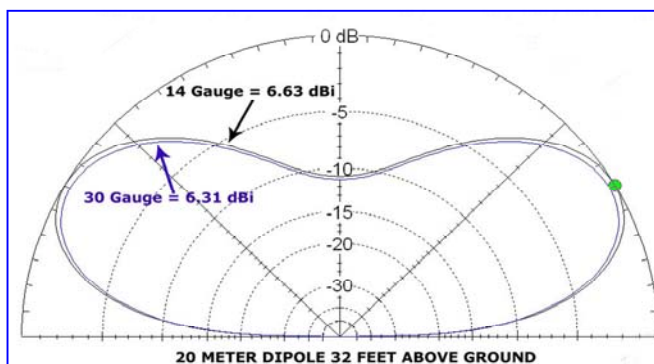
Fuse Current – The maximum current that the wire can carry before it melts or blows like a fuse.

Most commercial ham antennas use 14 gauge wire and are rated for 2000 watts SSB and 1000 watts CW. Examples are the Mosley TD-2, the B+W AC110 and the Van Gorden Dipoles. The chart below shows the Maximum Current and Fuse Current ratings for 14 gauge commercial antennas and for our 30 gauge antenna. The last column shows the amount of RF current when 2000 watts is applied to a 14 gauge antenna and when 100 watts is applied to a 30 gauge antenna.

Wire Gauge	Max Current Enclosed (amp)	Fuse Current (amp)	SSB Watts vs. Amps
14	5.87	14.6	2000 w = 6.3a
30	0.86	10.2	100 w = 1.3a

Note that the actual currents in the last column exceed the Maximum Current rating. There are two reasons for this. The first reason is that SSB and CW RF power is not continuous (has a low duty cycle). The second reason is that the wire, being outside, is “cooled” allowing a greater Maximum Current rating. So, like its “14 gauge big brother”, 100 watts into 30 gauge wire exceeds the Maximum Current rating but not by much. Also, the current is well below the Fuse Current.

How will using 30 gauge wire effect my radiated power as compared to using the more common 14 gauge wire?



The plot above compares the Elevation patterns of a 20 meter dipole made of 30 gauge wire and a 20 meter dipole made of 14 gauge wire. The field strength of the 30 gauge dipole is 0.32 dB below that of the 14 gauge dipole. This amount of power loss will not be noticeable on anyone’s S Meter!

What are my experiences with 30 gauge wire antennas?

When I traveled in my work, and knew that I would have evenings or weekends to operate, I would pack my Kenwood TS-130, a tuner and lots of 30 gauge wire. I would setup my HF station in hotels, motels or company schools. I worked the world with this arrangement. When I first started using 30 gauge wire antennas, I wasn’t sure of how much RF loss I was experiencing. I would feel the high current portion of the antenna after a long contact to see if it was hot. There was no heat indicating that there was not much loss in the thin gauge wire.

(Continued on page 4)

(Continued from page 3)

30 gauge "magnet wire" is available at many places, such as Radio Shack and Digi-key.

The 30 gauge wire makes it very easy to install an invisible Inverted Vee, an Inverted L, a random long wire or even a dipole if three supports are available for the latter antenna.

Reference:
Handbook of Electronic Tables and Formulas for American Wire Gauge.

WHAT'S NEW — IN THE WORLD OF ANTENNAS

Before we look at what's new let's take a step back in time to the Viet Nam conflict to identify a problem. One of the biggest problems for a unit leader and the RTO - *Radio Telephone Operator* was the antenna sticking above his head several feet. The Viet Cong would watch for the antenna and could spot a unit on patrol and gauge their movement. Not only that but the person near the RTO was usually the unit leader and he was the target, take out the leader and the unit falls apart. Take out the RTO and they have no contact for support. That was the tactic and in many cases it worked. Often times the unit leader would opt to carry the radio thus reducing the initial threat. Enter TVAS, which could be the ultimate answer... Although there are other systems this one is different.



TVAS – Tactical Vest Antenna System

The Tactical Vest Antenna System (TVAS) is a concealable antenna designed for military applications. The radiating elements slide smoothly over the SAPI plates (*Small Arms Protection Inserts*) inside the plate carrier, (*body armor*) consequently placing the antenna out of enemy's sight, and out of the radio operator's way. The antenna system consists of two antenna inserts, two interconnecting cables, and a cable for radio connection. The TVAS also contains a quick release mechanism which allows the operator to disconnect the system in emergency situations.

With 50ohm Impedance the antenna operates on a frequency range of 30-512Mhz at 7 watts maximum power. One of the big questions is that of harmful radiation, well the designers thought of that too. The TVAS is designed to operate and produce non-ionizing radiation, which is non-mutagenic. Furthermore, the Tactical Handheld Radios such as those currently used by the military are designed for and have an output power of 5 watts, with the given offset afforded by the armor plating and the dielectric properties of the armor plates, the Specific Absorption Rate (SAR) will be nominal to the user.

Official testing of the antenna's performance has not yet been conducted, as the antenna is still in development. However, initial field testing and simulations show great promise.



EVER WONDERED? THE SUNSPOT NUMBER

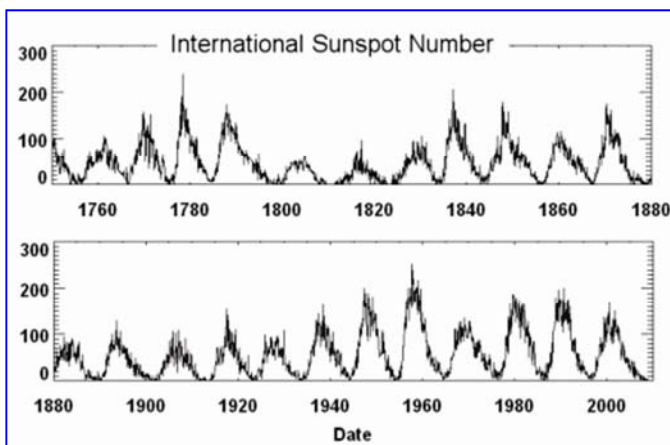
Scientists track solar cycles by counting sunspots -- cool planet-sized areas on the Sun where intense magnetic loops poke through the star's visible surface.

Counting sunspots is not as straightforward as it sounds. Suppose you looked at the Sun through a pair of (properly filtered) low power binoculars -- you might be able to see two or three large spots. An observer peering through a high-powered telescope might see 10 or 20. A powerful space-based observatory could see even more -- say, 50 to 100. Which is the correct sunspot number?

There are two official sunspot numbers in common use. The first, the daily "Boulder Sunspot Number," is computed by the NOAA Space Environment Center using a formula devised by Rudolph Wolf in 1848:

$$R=k(10g+s).$$

Where **R** is the sunspot number; **g** is the number of sunspot groups on the solar disk; **s** is the total number of individual spots in all the groups; and **k** is a variable scaling factor (usually <1) that accounts for observing conditions and the type of telescope (binoculars, space telescopes, etc.). Scientists combine data from lots of observatories -- each with its own **k** factor -- to arrive at a daily value.



Above: International sunspot numbers from 1745 to the present.

The Boulder number (reported daily on SpaceWeather.com) is usually about 25% higher than the second official index, the "International Sunspot Number," published daily by the Solar Influences Data Center in Belgium. Both the Boulder and the

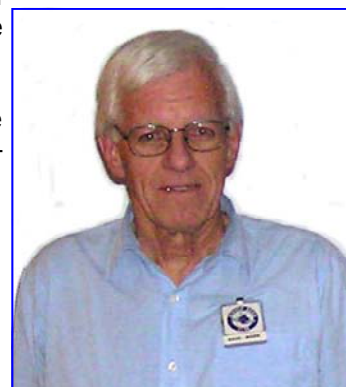
International numbers are calculated from the same basic formula, but they incorporate data from different observatories.

As a rule of thumb, if you divide either of the official sunspot numbers by 15, you'll get the approximate number of individual sunspots visible on the solar disk if you look at the Sun by projecting its image on a paper plate with a small telescope.

Reference: Spaceweather.com

VOLUNTEER DAVID BAYSINGER HONORED

As a long-time talent volunteer for pledge events and Auction, **David Baysinger's** face and voice are very familiar to Rocky Mountain PBSviewers. David's voice is also a familiar one at the Denver Museum of Nature and Science where millions of visitors throughout his 40 year career there have enjoyed his photographs, videos and voiceovers. The museum's Leadership Circle Advisory Council recently awarded David its 2009 Special Recognition Award. Congratulations, David, on this very special honor.



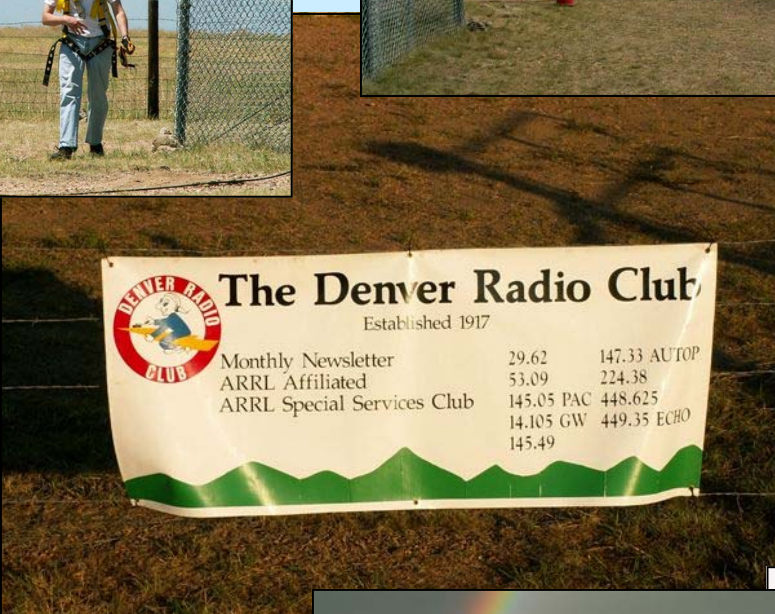
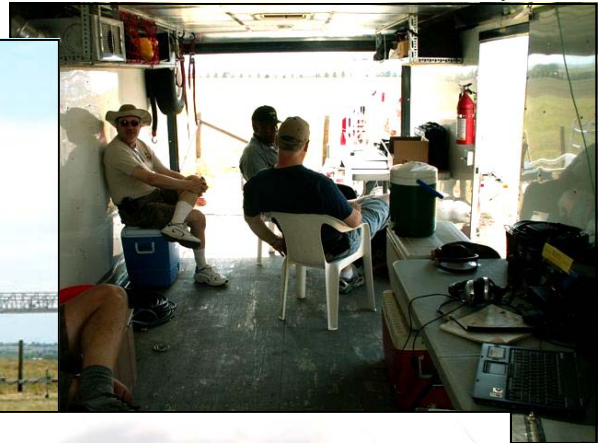
Courtesy of Volunteer Vision, Rocky Mountain PBS' newsletter for volunteers

**JULY MEETING INFORMATION
SPECIAL LOCATION
>>> SEE PAGE 7 <<<**

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Photos by Bob - KC0CZ

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CLUB JULY MEETING - SPECIAL LOCATION

by Bryan – KB0A

Our July meeting will be presented by Paul Deeth, WA2YZT, who is an engineer for CBS-4 here in Denver. Paul will be hosting the meeting at the new CBS-4 transmitter/Lake Cedar Group antenna site up on Lookout Mountain just West of town. The tower is at 21119 Cedar Lake Rd. Golden 80401. **There is very limited parking available at the transmitter site so we must car pool as much as possible.** Two good locations to use as car pool meeting sites are the RTD Park and Ride locations at the I-70 exits for Morrison (Exit 259) and Lookout Mountain (Exit 256). Paul also operates a very popular repeater system from this location. You can find more information on Paul at his website <http://www.wa2yzt.com>. Due to the special circumstances involving the use of this location we will not have an Elmer meeting this month and will be starting the general meeting at 7 PM. For our August meeting we will return to our new site, the El Jebel Shrine in Northwest Denver. Please join us on the weekly Sunday night net and watch the club website, <http://www.w0tx.org>, for additional meeting details and information.

REMEMBER WHEN?

By Bill – W6OAV

Many old timers, like me, remember seeing ads like the one shown here. This ad shows a surplus Motorola police radio which became popular among hams for conversion to 6 meters. Back in the late 50s most hams had to either homebrew gear or modify commercial/military gear to get on HF /VHF mobile.

Operating HF or VHF mobile was a challenge. To start with, in those days car systems were 6 volts. This required heavy cables and solid connections to carry the heavy current required to run a 50 to 100 watt tube transmitter and a companion tube radio. Those “fire bottles” drew heavy current, especially the filaments!

Then, some type of device was required to convert the 6 volts up to anywhere from 300 volts to 900 volts for the tubes. The most popular device was the dynamotor. So, what is a dynamotor? It is a DC motor driving a DC generator, with the armature coils all wound on the same armature. The military used dynamotors to step up 24 volt DC in aircraft to 250 to 800 volts DC for aircraft tube type receivers and transmitters. Ground equipment also used dynamotors for the same purpose in military vehicles. A Carter dynamotor is visible in the lower picture in the ad. It is the rectangle unit on the right side of the transmitter.

Many old timers will remember depressing the mike PTT and hearing the dynamotor whine increase as it came up to speed. If you were driving at night, your headlight would go dim and then brighten up as the dynamotor came up to speed. One certainly did not spend much time hamming while sitting with the engine off!! Those 6 volt batteries didn't last long in that mode!

GO MOBILE
FOR
\$29⁵⁰



Motorola mobile transmitter, Model WET30-V, including Carter 6 volt Dynamotor, 600 volts at 170 mills. Frequency range 35 to 45 Mc. These units are used, but are in excellent operating condition. Complete circuit diagrams furnished.



For all amateur and industrial requirements, write or call.
We carry all brands in stock.





The BIG one is coming!



The Denver Radio Club Hamfest
Jefferson County Fair Grounds

When: Sunday August 22 - 8:30am to 2pm

*For more information!
contact Bryan-KBOA
Or visit www.w0tx.org
Volunteers Needed
drcfest@w0tx.org*

Food Fun

*Lots of vendors with everything you need
Computers ~ Radios ~ Antennas
Parts + pieces
You name it and you'll see it here!!!*

JULY 2009							<i>DRC Net Sunday 8:30pm Local</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2	3	
4  Last Quarter	5	6	7 <i>Learning Net</i> 7pm	8	9	10 <i>IARU</i> HF World Champ. Starts 1200U	
11 <i>IARU</i> HF World Champ. Ends 1200U New Moon	12	13	14 <i>Learning Net</i> 7pm	15	16	17	
18 First Quarter	19	20	21 <i>DRC Meeting</i> <i>NO Elmer Meeting</i> General 7pm See Note Pg. 7	22	23	24	
25  Parent's Day	26 Full Moon	27	28 <i>Learning Net</i> 7pm	29	30	31	

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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@comcast.net. Submission deadline is the 25th of the July. **Editor**