



ROUNDTABLE

The Denver Radio Club Newsletter

August 2010

Since 1917

PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

Hello DRC Members,

I hope you are all having a great summer and all your plans for summer activities are coming together. The audio problem on our Hudson 147.330 repeater has been fixed. Thanks to Orlen, WW0LF, for doing the troubleshooting and repair. Give the system a try, especially if you are in the mountains. Please let us know how it worked for you.

Please keep in mind our new meeting place at the El Jebel Shrine Center. We are having a scheduling problem because Wednesdays are the busiest day for the facility. The board is looking at changing our meeting night to Thursday. It may become necessary to make this change to enable us to continue using this great facility.

I would like to welcome and thank new DRC members Leann Stelzer, KD0LZA, and Karen Brandt, who is about to take her tech test. Please check in on the nets, come to the meetings and activities and remain an active member.

Our July program presented by Paul, WA2YZT, at the CBS Channel 4 transmitter site was a huge success. The only problem was hearing Paul describe the workings of the transmitter site because of the noise level. Next time we do something like that we will try to have a portable PA system. Seeing a working broadcast transmitter site like the Lookout Mountain facility is a rare opportunity. We thank Paul for the excellent program.

After last week's walk through of the CBS4 transmitter site you have seen what is involved in getting the high definition digital TV signal to your house. But, now that it's there what's involved in being able to see and hear it? This is a complicated issue if you are not receiving the TV signal off the air with those "rabbit ears," but using a cable or satellite box. It gets more difficult if you put an AV (audio/Video) receiver in the middle. Now, add a Blu-Ray DVD player and we're really getting sophisticated. If you have already done this, or, have started looking into it, you probably have heard the term "HDMI" cable. Well, what is an HDMI cable and why do they cost so darn much? And, is there a difference between the one's they sell for \$100 and those that cost \$10? This month's presentation by Bryan KBØA is going to answer those questions and quite a bit more. If you want to learn about those High Definition cables you will not want to miss this meeting.

See you all at the meeting August 18th at the El Jebel Shrine Center which is one block west of the intersection of W. 50th Ave. and Tennyson St. (second level in the East Room). And remember to check our website, www.w0tx.org, for lots of important information about the DRC. The Elmer Session and Tech Meeting start at 6:30 pm followed by the Regular Meeting and Program at 7:30 pm.

Gerry, W0GV
President

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W0TX

<http://www.w0tx.org>

JULY MEETING - WHAT'D I MISS

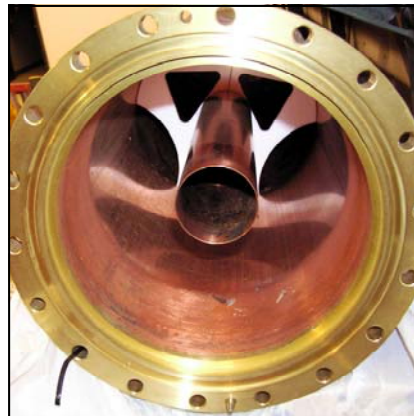
By Bill – W6OAV

WOW...did we have a great tour this month! Paul Deeth, WA2YZT, who is the Transmitter Supervisor for CBS-4 here in Denver, hosted a tour at the new CBS-4 transmitter site up on Lookout Mountain just west of town. The photo below shows Paul starting one of the two 1.5 megawatt generators.



This article highlights just few of the many "WOW" things we saw and learned. The building is 10,000 square feet on two floors. The tower is 700' high with a 17 dB gain antenna on top at about 800' high. The Channel 4 transmitter puts out 40,000 watts. The ERP from the antenna is one megawatt. Backup power is supplied by UPS and two 1.5 megawatt generators. Onsite diesel storage contains 20,000 gallons of fuel.

Photo below shows the copper transmission lines (coaxes) going down through the tunnel from the transmitter building to the base of the tower. The transmission lines range from 3" in diameter to 7" in diameter and are filled with an inert gas, nitrogen. Above right shows a cross-section of one of the transmission lines.



At right is a 20 KW dummy load for the 3" transmission line with a manual patch panel to the right of it.



The photo below shows a blue remote controlled switch for the 10" transmission lines. Note the small knobs on the transmission line elbows. Those provide for the necessary tuning of the transmission lines. Paul told us it took a year to install and tune all the transmission lines.



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To show you how good a job was done in tuning the transmission lines and antennas, the CBS4 transmitter puts out 40,000 Watts, but the reflected power was only 89 Watts. Now, that's an SWR of less than 1.1:1!



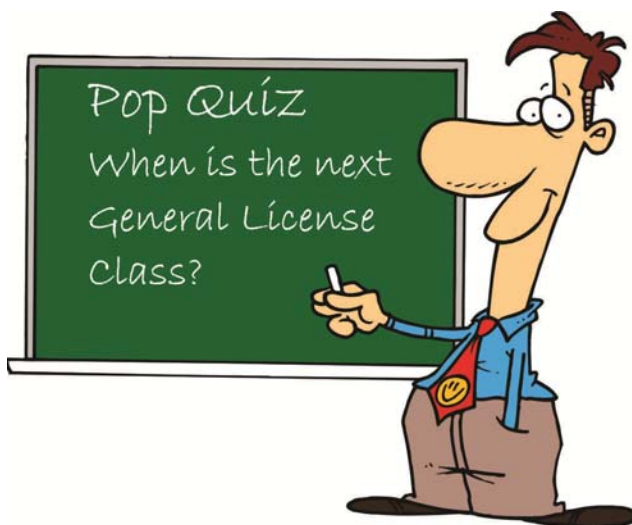
This photo shows the black band pass filters used to isolate the various TV channels. Unlike the "old" analog TV days, the digital transmissions can be on adjacent channels.

The photos give you just a hint of all the fascinating "WOW" things we saw. The tour gave us a great appreciation of what is behind our TV pictures.

Thanks Paul for a great evening.

TECHNICAL COMMITTEE REPORT

No Report this month due to the modified meeting schedule.



GENERAL CLASS LICENSE CLASS

BY BILL – WA3H

El Jebel Shrine RADOPS is sponsoring a General License class starting in September. Classes will begin on Friday, 10 September from 1830-2130 in the East Room (where the DRC now meets). Classes are expected to last between 6-8 weeks, depending on student backgrounds and willingness to prepare for class at home. That means the last class session would likely be on 29 October which would normally be the exam session.

The primary instructor will be Bill Hickey, WA3H, we will use the Gordon West license manual as a textbook reference. Bill has 14 new copies of the manual available at a discount (\$18 each) these are on a first-come, first-served basis. You may also buy the book at HRO, order direct from Gordon West or the ARRL if you wish. If you want one of the discounted manuals from Bill or just have some questions about the class, please contact him at wa3h@hotmail.com.

While "walk-in" students are welcome, Bill would appreciate advance notice from prospective students so he can properly prepare the room for the number that will be attending.

Generally speaking, the OASIS dining room at the Shrine will be available on Friday evenings for dinner before class. However, there may be the occasional date when the dining room is unavailable and those dates will be announced beforehand.

AN HF MOBILE SHOOTOUT

By Bill – W6OAV

HF "Mobile Shootouts" are very popular activities with some ham clubs. What is a "Mobile Shootout"? It is an activity where mobiles take turns parking at a designated location on a test range which can be a park or field clear of obstacles such as trees, power lines, etc. A calibrated transmitter is then connected to each mobile antenna. A calibrated receive station, located at the far end of the test range, measures the strength of the signal from the mobile.

The signal strength down range is controlled by factors that make up the total mobile system. The total mobile system includes the antenna itself, the vehicle, the location on the vehicle, the quality of grounding, etc. The strength of the signals measured down range is the result of all these factors. Therefore, the same make of mobile antennas often give different measurements.

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“Mobile Shootouts” are meant to be a fun activity, not a definitive comparison of the performance of antenna makes and models. There are many variables that “Mobile Shootouts” cannot take into account, such as field strengths at other radiation angles (measurements on the test range are at zero degrees), quality of the total mobile system as mentioned above, etc.

For the past eight years the 3905 Century Club has conducted HF “Mobile Shootouts”. This article shows the results of their 2010 “Mobile Shootout” which was conducted at 7.178 MHz Their past “Mobile Shootout” results are available on their website: <http://www.3905ccn.com>.

The “Mobile Shootout” rules, as quoted from the club’s website, are: “Remember, unless special categories are announced, the Mobile Shootout is for street-legal mobile setups, so the highest point of the antenna must be no higher above ground than what is legally allowed on public roads and highways—no more than 13.5 feet high at the highest point and no more than 8 feet wide, including any capacity hat. If you can build a roadworthy, 8-foot diameter capacity hat, you can enter it. Besides we’d all like to see that one. We will measure! The antenna system as a whole must be roadworthy. You must be able to drive in and out with the antenna installed and must be able to operate at highway speeds”.

The results of the 2010 “Mobile Shootout” are shown here. Special thanks go to the 3905 Century Club for giving us permission to publish this information.

Test Order	Call	Antenna	Vehicle	Mount	Score	dBm Down From the High Score
1	K4WIT	Atas 120	2004 Durango	Driver’s side mid-hatch	140	6.19
2	KC4YBO	Tarheel 200A w/6’ Whip	1999 Town & Country Minivan	Trailer Hitch	465 <i>3rd Place</i>	0.97
3	WB1I	Scorpion SA-6160	Honda Accord	Mid Roof	503 <i>2nd Place</i>	0.63
4	KZ3AB	Tarheel 400A	2003 Chevy Tahoe	Driver’s side bumper on a high bracket	270	3.34
5	N3WD	Little Tarheel	2002 Pontiac Bonneville	Mag mount on trunk lid	203	4.57
6	NØAXZ	Little Tarheel	2003 Chevy Silverado	Driver’s side bed rail behind cab	77	8.78
7	KB3PU	Tarheel 200A	2003 Honda Accord XL	Trailer Hitch	434	1.27
8	KCØMS	Hamstick	2009 Honda Accord LX	Diamond K400-3/8C Trunk/Hatchback Mount mid trunk lid	327	2.5
9	N7JY	DK3 Screwdriver	1983 Chevy Suburban	Driver’s side bumper	380	1.85
10	W8NET	Hustler	2007 Ford F-150	Trailer Hitch	34	12.33
11	KD4POJ	Hi-Q 5/160 w/Large Eggbeater Cap Hat	Full Size Pickup	Center Bed rail behind cab	283	3.13
12	KI4WCQ	Hamstick	2006 GMC Sierra	Driver’s Side Rear Bed Rail	358	2.11
13	VE4HQ	Hustler	2006 Pontiac Montana	Trailer Hitch	172	5.29
14	W5IL	Hamstick	2010 Ford Explorer	Mid Roof on Mag Mount	169	5.37
15	KS9WI	Hamstick w/Hamstick Radial	2008 Buick	Elevated Trailer Hitch	458	1.04
16	KA8AXY	Predator	2001 Ford F-250	Trailer Hitch	364	2.04
17	WTØA	DK3 w/24” Cap Hat	Full Size Pickup	Passenger Side Rear Bed Rail	430	1.31
18	AJ4IM	Hamstick	2005 Ford F-150	Driver’s Side Rear Bed	303	2.83
19	KØWJ	Scorpion SA-680 w/ 3’ Cap Hat	2008 Chevy Silverado	Mid Bed	582 <i>1st Place</i>	0

Tarheel Antennas

Test Order	Call	Antenna	Vehicle	Mount	Score	dBm Down from KC4YBO
2	KC4YBO	Tarheel 200A w/6’ Whip	1999 Town & Country Minivan	Trailer Hitch	465 <i>3rd Place</i>	0
7	KB3PU	Tarheel 200A	2003 Honda Accord XL	Trailer Hitch	434	0.3
4	KZ3AB	Tarheel 400A	2003 Chevy Tahoe	Driver’s side bumper on a high bracket	270	2.36
5	N3WD	Little Tarheel	2002 Pontiac Bonneville	Mag mount on trunk lid	203	3.6
6	NØAXZ	Little Tarheel	2003 Chevy Silverado	Driver’s side bed rail behind cab	77	7.81

Hamstick Antennas

Test Order	Call	Antenna	Vehicle	Mount	Score	dBm Down from KS9WI
15	KS9WI	Hamstick w/Hamstick Radial	2008 Buick	Elevated Trailer Hitch	458	0
12	KI4WCQ	Hamstick	2006 GMC Sierra	Driver’s Side Rear Bed Rail	358	1.07
8	KCØMS	Hamstick	2009 Honda Accord LX	Diamond K400-3/8C Trunk/Hatchback Mount mid trunk lid	327	1.46
18	AJ4IM	Hamstick	2005 Ford F-150	Driver’s Side Rear Bed	303	1.79
14	W5IL	Hamstick	2010 Ford Explorer	Mid Roof on Mag Mount	169	4.33

All Other Motorized Screwdriver Types

Test Order	Call	Antenna	Vehicle	Mount	Score	dBm Down from KØWJ
19	KØWJ	Scorpion SA-680 w/ 3’ Cap Hat	2008 Chevy Silverado	Mid Bed	582 <i>1st Place</i>	0
3	WB1I	Scorpion SA-6160	Honda Accord	Mid Roof	503 <i>2nd Place</i>	0.63
17	WTØA	DK3 w/24” Cap Hat	Full Size Pickup	Passenger Side Rear Bed Rail	430	1.31
9	N7JY	DK3 Screwdriver	1983 Chevy Suburban	Driver’s side bumper	380	1.85
16	KA8AXY	Predator	2001 Ford F-250	Trailer Hitch	364	2.04
11	KD4POJ	Hi-Q 5/160 w/Large Eggbeater Cap Hat	Full Size Pickup	Center Bed rail behind cab	283	3.13
1	K4WIT	Atas 120	2004 Durango	Driver’s side mid-hatch	140	6.19

REMEMBER WHEN?

By Bill – W6OAV

Old timers, like me, remember when logging was quite the project, especially if one was mobile. Up to 1963 the FCC required hams to log every transmission...stations called, CQ's, test transmissions, contacts made, etc. The following information had to be entered into the log for each contact: The beginning and ending times of the contact, the other station's call sign, the band, the transmitter power and the emission type. For stations called, CQ's, and test transmissions, the same information had to be entered into the log except for the ending time of the transmission.

For mobile operation, this could be quite a chore if one made several contacts during a trip. Today, texting is a driving safety issue. Back then, mobile operators logging between contacts while driving was a safety issue! To make matters even worse for mobile operation, if a mobile was to be operating away from his home area for more than 48 hours, the mobile operator was required to send a trip itinerary to the FCC listing the dates of the various locations to be visited and the bands to be used.

In 1963, the FCC revised the mobile logging requirements. Mobile stations no longer had to note the time of establishing contacts and the time of signing off with each contact. Instead, the mobile operator, at the first convenient time after an interval of mobile operation, could enter the time he started to operate, the ending time of the operating interval and the calls of the stations worked during the interval.

All of this changed in 1972 when the FCC removed logging requirements.

HELIOPHYSICS

We live in the extended atmosphere of an active star. While sunlight enables and sustains life, the Sun's variability produces streams of high energy particles and radiation that can harm life or alter its evolution.

Under the protective shield of a magnetic field and atmosphere, the Earth is an island in the Universe where life has developed and flourished. The origins and fate of life on Earth are intimately connected to the way the Earth responds to the Sun's variations.

Understanding the Sun, Heliosphere, and Planetary Environments as a single connected system is the goal of the Science Mission Directorate's Heliophysics Research Program. In addition to solar processes, our domain of study includes the interaction of solar plasma and radiation with Earth, the other planets, and the Galaxy. By analyzing the connections between the Sun, solar wind, planetary space environments, and our place in the Galaxy, we are uncovering the fundamental physical processes that occur throughout the Universe. Understanding the connections between the Sun and its planets will allow us to predict the impacts of solar variability on humans, technological systems, and even the presence of life itself.

We have already discovered ways to peer into the internal workings of the Sun and understand how the Earth's magnetosphere responds to solar activity. Our challenge now is to explore the full system of complex interactions that characterize the relationship of the Sun with the solar system. Understanding these connections is especially critical as we contemplate our destiny in the third millennium. Heliophysics is needed to facilitate the accelerated expansion of human experience beyond the confines of our Earthly home. Recent advances in technology allow us, for the first time, to realistically contemplate voyages beyond the solar system.



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There are three primary objectives that define the multi-decadal studies needed:

- To understand the changing flow of energy and matter throughout the Sun, Heliosphere, and Planetary Environments.
- To explore the fundamental physical processes of space plasma systems.
- To define the origins and societal impacts of variability in the Earth-Sun System.

A combination of interrelated elements is used to achieve these objectives. They include complementary missions of various sizes; timely development of enabling and enhancing technologies; and acquisition of knowledge through research, analysis, theory, and modeling.

Excerpted From NASA Science | Heliophysics



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HANDS-ONLY CPR

FROM THE AMERICAN HEART ASSOCIATION

CPR— A lifesaving action.

When an adult has a sudden cardiac arrest, his or her survival depends greatly on immediately getting CPR from someone nearby. Unfortunately, less than 1/3 of those people who experience a cardiac arrest at home, work or in a public location get that help. Most bystanders are worried that they might do something wrong or make things worse. That's why the AHA has simplified things.

Don't be afraid.

Your actions can only help.

It's not normal to see an adult suddenly collapse, but if you do, call 911 and push hard and fast (*at a rate of 100 beats per minute*) in the center of the chest. Don't be afraid. Your actions can only help. Take a minute and look around this site and invite your friends! Increasing the number of people who know about Hands-Only™ CPR will increase the chance that someone can help when an adult suddenly collapses, and more lives can be saved. Read more at <http://handsonlycpr.org/>



[Check out this video](#) to see Hands-Only CPR in action.

Search for "Hands-Only CPR" in the Market on your iPhone or your Android phone.



The BIG ONE is HERE!



The Denver Radio Club Hamfest Jefferson County Fair Grounds





When: Sunday August 22

8:30am to 2pm

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

Food Fun

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

AUGUST 2009							<i>DRC Net Sunday 8:30pm Local</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2  Last Quarter	3	4 <i>Learning Net</i> 7pm	5	6	7 <i>ARRL UHF Contest</i> Begins 1800U	
8 <i>ARRL UHF Contest</i> Ends 1800U	9  New Moon	10	11 <i>Learning Net</i> 7pm	12	13	14	
15 <i>Rookie Roundup</i> 1800U to 2359U	16  First Quarter	17	18 <i>DRC Meeting</i> Elmer 6:30pm General 7:30pm	19	20	21 <i>1GHz & Up Contest</i> 6am to Midnight Sunday, August 22	
22 <i>The Big One!</i> <i>DRC Hamfest</i> 8:30am - 2pm	23	24  Full Moon	25 <i>Learning Net</i> 7pm	26	27	28	
29	30						

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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 August. **Editor**