



ROUNDTABLE

The Denver Radio Club Newsletter

June 2008

Since 1917

PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

Greetings DRC Members,

I am sure you all aware of the Tornado Disaster at Windsor, Colorado. And if you have been listening to our repeaters you also know that the DRC has been heavily involved with the Salvation Army operation. My understanding is that one life was lost, over 100 people received varied degrees of injuries and over 100 homes and business were damaged and some totally destroyed. Windsor sits in a valley or bowl, blocked to the South and West by a 200+ foot wall of dirt. This gave us some challenges getting out to the mountain top repeaters. Reliable communications were established thanks to the engineering ability of our first responding members. There are many DRC members to thank and the list grows daily. The biggest thanks should go to Oscar Hall, K0SSE our Emergency Coordinator. Oscar has been doing a stellar job of net control and recruiting volunteers; every day from early morning until late evening since day one. I would like to thank all members that volunteered. I will try to get a list of names and calls in the next issues of the Round Table after the operation is complete. **Oscar needs volunteers daily.** This could go on for a couple more weeks, we are not sure. PLEASE consider volunteering for a shift. It is not hard work, gives you a good feeling and is very interesting. Call Oscar, K0SSE, at 303-375-0627 to volunteer.

I would like to welcome new DRC members John D. MacArthur, WG00, and Marshall Spiller, KF0UV. Thank you for choosing the Denver Radio Club as your club. Please come to the meetings and activities and be an active member.

Thanks to Gordon Hardman, W0RUN, from Alpha Power, for last months program on HF amplifiers and power tubes. Gordon invited us to tour their factory in Boulder. Maybe we can arrange this for a future event? I am sure it would be very informative.

Our June program promises to be very interesting and will be presented by Darrell Connelly, WK0C. Darrell worked as

a geophysicist for 18 years then formed his own company, Infopipe, in 1994. He has only been licensed since 2007, but has really jumped in with both feet. Darrell's program is titled A Stealth Magloop/Vertical Antenna System for 20m Packet. He will present the design and construction steps he took to produce a stealth antenna system that combines the best aspects of a vertical antenna (better transmit) and a magloop antenna (quieter receive). He'll show you the software programs to design a magloop as well as how he used EZNEC software to model the Vertical Antenna.

See you all at the meeting June 18th at the St. Joseph's Episcopal Church, 11202 West Jewell Ave., Lakewood. That is about two blocks West of Kipling on West Jewell. And remember to check our website, w0tx.org, for lots of important information about the DRC. The Elmer Session and Tech Meeting start at 6:30 p.m. followed by the Regular Meeting and Program at 7:30 p.m.

73
Gerry, W0GV

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MAY MEETING - WHAT'D I MISS

BY BILL - W6OAV

This month's meeting had a great turnout. 44 people were in attendance. The meeting began with introductions. Gordon Hardman, W0RUN, gave a great presentation.



He covered the history of vacuum tubes and the advantages/disadvantages of tube and solid state amplifiers. Gordon then discussed the architecture and features of the Alpha 9500 and Alpha 8410 linear amplifiers, the Alpha 2100 dummy load and the Alpha 4500 watt meter. He wrapped his presentation with a discussion of the upcoming Alphanet, a low power short range RF sensor network for remote measuring test equipment. W0GV then wrapped up the meeting by discussing the upcoming Pre-Field Day exercise and the issues that occurred with attempting to install the 145.49/448.625 systems at Centennial Cone. As usual the meeting ended with door prizes to the lucky ticket holders.

TECHNICAL COMMITTEE REPORT

BY BILL - W6OAV

The report gives an over view of the items discussed at the May Technical Committee meeting. Most of the meeting was spent discussing the upcoming Pre-Field Day exercise.

DRC/Salvation Army Pre-Field Day Exercise

Goal: Prepare for and participate in the Field Day exercise at the Hudson site.

- KOSSE went over the very comprehensive pre-field day exercise plan that he had developed. The plan included:
 1. Goals and objectives.
 2. Schedule of events.
 3. DRC and Saturn equipment commitments.
 4. Items recommended for procurement.
- The committee, with a very few minor modifications, accepted the exercise plan.

Failed Salvation Army Ham Station Power Supply

Goal: Repair the main 12 volt Astron power supply.

- N1ETV has repaired the power supply. It is ready for re-installation at the Salvation Army station.
- Isolation diodes may still be required.

Voter system

- W0GV made a motion that the technical committee meet soon, either some evening or weekend morning, at his wife's office to develop definite plans for building a voter system.
- W6OAV will coordinate setting up a meeting.

HAPPENINGS AT STATION 4

BY BILL - W6OAV

There was a lot of activity during May at the Station 4 site. At the beginning of the month KB0A re-installed the 220 MHz repeater in which he had earlier integrated a controller and tone board. He is now working on a new multi-bay 220 MHz antenna.

Then in mid May a work party:

- Assembled and installed a new 20 meter antenna for the HF/VHF packet gateway. The antenna is made up of two Hamsticks fastened to a special tower mount. The mount was donated by W9UW (a frequent visitor to Denver from Wisconsin Rapids). WA9TVH drilled and configured the mount with a built in balun. Signal reports have been very good.
- Tuned up the 220 MHz antennas and duplexer.

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The photo below shows WG0N and K0HTX installing the antenna.



Thanks to the following hams that participated in the work party: N1ETV, N3PQ, W0GV, WA9TVH, W6OAV, K0HTX, W0GN, N4ATA, WK0C and KB0A. If I missed anyone, I apologize.

SOUNDCARD PACKET

BRANT - W0BKZ

Visit just about any ham shack and along with a variety of radios, you are bound to find a computer. Why not use this powerful processing tool to eliminate the need for a costly piece of hardware and open yourself up to the world of digital communication.

Let's begin with the basics. In order for your radio and computer to communicate, you will need to connect them through the computer's soundcard. In a nutshell, the audio out of the radio connects to the audio in at the soundcard and the audio out of the soundcard connects to the audio in at the radio. Add in a way to trigger the PTT of the radio and you are halfway there. (Many newer radios provide a "mini-din" plug for just this purpose- check your manual.)

If you are knowledgeable about isolation transformers and pots, you can build your own interface for about \$10. I am not that handy, so I bought a "Rascal" from Buxcomm for less than \$40. There are several other commercially available interfaces that work just as well. Some require a serial port for triggering the PTT, others can use a USB connection.

Now that you have connected your radio and computer you should hear audio from the radio through your

speakers. You are halfway there! Let's add in the software.

The heart of soundcard packet is a computer program known as AGWPE or AGW Packet Engine. This program takes the place of a piece of hardware known as a TNC. There is a great website, listed at the end of this article, which will lead you step by step through the software installation. Follow the steps listed along the left side of the home page and you will be decoding packets in no time.

The final piece of software needed is a way to view the packets in text form. I use WinPack 6.80. It is a simple program that will provide everything needed to join the world of packet. The creator of the program has passed away but the software is still available and widely used. (If needed, a registration number may be obtained to eliminate a pop-up reminder every time you open the program.)

Now that your radio is interfaced with your computer soundcard, your AGW Packet Engine installed and WinPack ready, you can join the world of packet radio. There are many amateur radio operators and local clubs which operate packet stations in the Denver metro area. The DRC operates a packet station on 145.050 Mhz. Give it a try and watch the world grow a little smaller.

Notes-

Interface- www.buxcomm.com

AGWPE- www.kc2rlm.info/soundcardpacket

WinPack- www.gb7fcr.plus.com

NEED AN ANTENNA ANALYZER?

Need a HF/VHF antenna analyzer to tune your antenna? The club has an MFJ-249B analyzer that is available for club member use. If you need to use the analyzer, contact W6OAV per the information in the club roster.



FROM THE EDITOR

Do you like what you see in the club newsletter? If so, the next time you see one of the contributors please take a moment to say thanks for the great job they do, providing the great articles you read each month. Without them there wouldn't be much in these pages. *Thanks for helping me make the newsletter great!*

RADIALS DEMYSTIFIED – PART 3

BY BILL - W6OAV

Part 1 of this article discussed elevated 1/4 wave length resonant verticals. Part 2 discussed ground mounted 1/4 wave length resonant verticals. Part 3 discusses the pros and cons of ground mounted verticals verses elevated verticals. It also discusses why certain verticals do not require radials or a ground plane.

GROUND MOUNTED VS ELEVATED VERTICALS

The charts below are self explanatory. They provide the pros and cons of ground mounted verticals verses elevated verticals.

GROUND MOUNTED VERTICALS

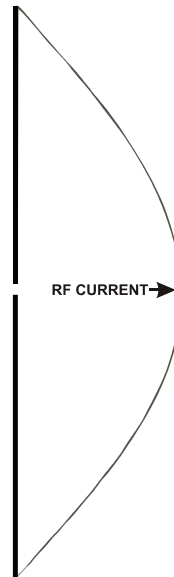
PRO
Radials can be any length and work on all bands
Easy to mount and access
Low visibility
CON
Takes 120 radials to closely match an elevated ground plane with 4 radials
Surrounding structures reduce the radiated signal and distort the radiated pattern.
Limited ground wave coverage

ELEVATED VERTICALS

PRO
95% efficient with 4 radials
Above surrounding structures so radiated signal not reduced nor is pattern distorted
Better ground wave coverage
A metal roof makes a great ground plane
CON
Requires between 2 to 4 radials per band
Hard to mount and access
Radials must be tuned for each band
Must be mounted high enough so that people will not contact the radials

“RADIAL-LESS” VERTICALS

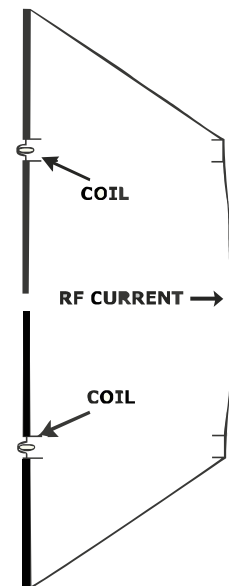
Parts 1 and 2 of this article discussed why 1/4 wave length resonant verticals, and shorter loaded 1/4 wave length resonant verticals, require radials or a ground plane. Why is it then that certain verticals do not require radials or a ground plane? The answer is that these “radial-less” verticals are self resonant 1/2 wave length antennas. They are either a physical 1/2 wave length antenna or a form of shorten loaded antenna which is 1/2 wave length resonant.



Full Half Wave Vertical

Figure 1

The total 1/2 wave length RF current resides on the vertical. See Figures 1 and 2. If you wish to compare the RF current distribution of these antennas to a 1/4 wave length resonant antenna, refer to the figure on Page 3 of the May issue of the Roundtable”.



Shortened Loaded Half Wave Vertical

Figure 2

Half-wave length verticals are more efficient than a well designed 1/4 wave length resonant ground mounted. Why is this? There are several reasons:

1. Unlike the 1/4 vertical, there is no RF current flowing in the lossy ground around the base of the antenna. Therefore, one needs not to worry about using radials to decrease the RF current loss of the ground.
2. The maximum radiation occurs above ground at the mid-point of the 1/2 wave length resonant vertical. This allows much of the RF to “clear” surrounding

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structures. The opposite is true of $\frac{1}{4}$ wave length ground mounted verticals. Maximum radiation from a $\frac{1}{4}$ vertical occurs at ground level.

3. A $\frac{1}{2}$ wave length vertical has a lower angle of radiation compared to a $\frac{1}{4}$ wave length vertical.

RADIALS AND LONG WIRE ANTENNAS

The rules are:

- A long wire which is a self resonant $\frac{1}{2}$ wave length, or a multiple thereof, does not require radials or a ground plane. The reason is the same as that for $\frac{1}{2}$ wavelength resonant verticals. All the $\frac{1}{2}$ wave length RF current is contained within the antenna.
- A long wire which is not a self resonant $\frac{1}{2}$ wave length, or multiple thereof, does require a ground plane or radials. The reason is the same as that for $\frac{1}{4}$ wave length resonant verticals. The radials or a ground plane are required to provide for a total $\frac{1}{2}$ wave length resonance or multiples thereof.

I hope this article has answered any questions that you may have had concerning radials. If you have any more questions, either email or call me on the DRC VHF/UHF repeaters.

RELIEF EFFORT - WINDSOR

If you've been under a rock for the last two weeks or so you haven't heard, an EF2-EF3 tornado tore through the small town of Windsor Colorado in the morning on May 22nd. Soon after this terrifying event the relief effort began. Salvation Army's SATERN group mustered for an all out effort to provide communications and feed the displaced citizens as well as the multitude of volunteers.

Here is what Mike Gelski of the Salvation Army had to say about the relief effort in Windsor.

The Salvation Army continues to serve hot meals in Windsor Colorado after an EF2-EF3 tornado hit the community hard on Thursday, May 22nd.

One person for was killed when the tornado cut a 35 mile path through Weld County and was on the ground for 45 minutes. 200 power poles and 4 power substations were in the tornado's path.

One mobile kitchen is setup at the Windsor Middle School and is serving responders, US Army and Air Force, National Guard, and other workers. Another kitchen is located in one of the hardest hit neighborhoods. We are also preparing other food that is being transported by us and the American Red Cross to a special needs population of 140 senior citizens who

have been without power since the tornado.

The Southern Baptists have a kitchen setup that is supporting the American Red Cross ERV's.

Today our Emotional Spiritual Care team worked the hard hit neighborhood while passing out food and beverages. One woman who had major damage to her home had a group of 80 people assisting her with cleanup. About lunch time she realized that she needed to provide food for them. She came to a canteen and asked if there was anyway that we could help out and of course we did. Tonight at dinner she shared with me, with tears running down her face, that although she had lost almost everything she felt blessed because of the food.

The Colorado Wing of the Civil Air Patrol is handling our logistics with seniors and cadets from 6 am - 10 pm daily.

Members of the Denver Radio Club and local SATERN members are supporting our communications needs. A radio tower and a mobile commercial UHF repeater and handheld radios have been setup in Windsor. We are also utilizing 70 cm ham radio for communications back to Denver. The volume of communications traffic makes cell phones ineffective. Not only is SATERN handling some radio traffic but they are keeping radios charged and ready for use by our team on the ground. We have been operating on generator power from the beginning.

The initial response to the tornado was from the Captain's Sproule from the Greeley Corps. Two Denver kitchens were dispatched. Envoy Gerald Koch was at the EOC for a couple of days and tomorrow he will be overseeing casework services for the families. Captain's Halverson from Fort Collins Corps have been involved in the coordination of food donations. On Thursday PM I assumed the role of Incident Commander and I am blessed with and incredible team.

On Sunday casework services will begin, under the Supervision of Envoy Gerald Koch, Salvation Army vouchers will be written for the residents when the American Red Cross opens there Service Center.

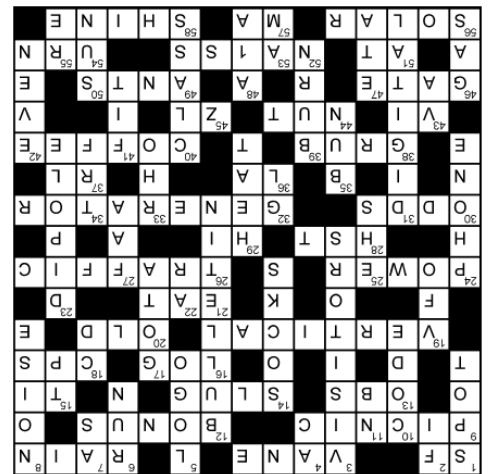
We have served over 3,900 meals since the tornado hit. (Editors Note: As of 2pm on May 28th the meal count is over 9,000 meals served. WOW!) Our volunteers are doing an outstanding job and working long hours. The county health department came through today and after inspecting our 2nd kitchen told me that they thought our people should teach a class on how to run a mobile food operation to commercial vendors.

*Mike Gelski
Metro Denver Coordinator
Emergency Disaster Services/Special Events
KB0PVD USA Western Territory SATERN Coordinator*

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The following Pictures were taken in the Windsor area by Dave - WG0N.



JUNE 2008							<i>DRC NET SUNDAY 8:30PM LOCAL</i>
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
1	2	3 ● New Moon	4 <i>Learning Net</i> 7pm	5	6	7	
8	9	10 ◐ First Quarter	11 <i>Learning Net</i> 7pm	12	13	14 <i>ARRL VHF QSO Party</i> Starts 1800U Flag Day	
15 Father's Day	16 <i>ARRL VHF QSO Party</i> Ends 0300U	17	18 <i>DRC Meeting</i> Elmer 6:30pm General 7:30pm ○ Full Moon	19	20	21	
22	23	24	25 <i>Learning Net</i> 7pm	26	27 ◑ Last Quarter	28 <i>RIDE THE WAVES</i> 08 <i>ARRL FIELD DAY</i>	
29 <i>RIDE THE WAVES</i> 08 <i>ARRL FIELD DAY</i>	30						

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	Temporarily Off the air.
6m	53.090mHz (-1mHz)	
Packet	145.05mHz<>14.105mHz	
2m	145.490mHz (-) 100Hz PL	
2m	147.330mHz (-) 100Hz PL	Members Auto-Patch
1.25m	224.380mHz (-) 100Hz PL	
70cm	448.625mHz (-) 100Hz PL	Temporarily Off the air.
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 DRC_RT@comcast.net. Submission deadline is the 25th of the Month. **Editor**

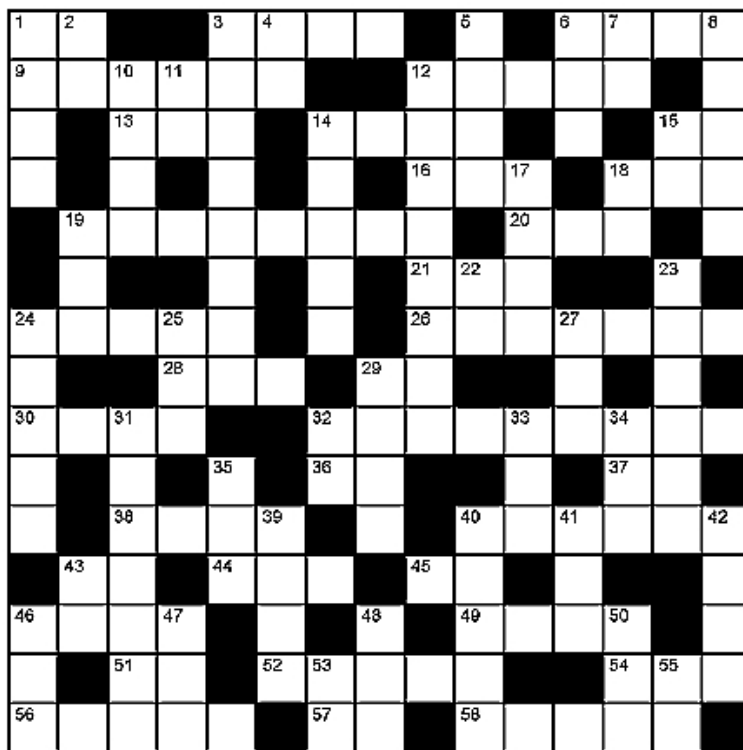
Puzzle Page

CQ FIELD DAY

Here's to something that nearly all hams have in common at some point during their ham careers. Of course, it's Field Day! Maybe you need something to keep you occupied while you wait your turn at the mike or key? Maybe you got into that poison ivy and have the itch to try your hand at a puzzle? At any rate, here's a collection with an emphasis on our favorite operating event.

By H. Ward Silver, N0AX

NOTE: Solution for this puzzle is located on page 6.



Across

1. Rarest California section
3. Shows which way the wind blows
6. Vitamin R
9. Eating outdoors
12. Extra points for special accomplishments
13. Station that sends bulletins (abbr)
14. Wattmeter element
15. First company to produce integrated circuits (abbr)
16. Records Field Day QSOs
18. Old abbreviation for frequency
19. Antenna perpendicular to ground
20. The clothes you wear to Field Day
21. What operators do when they're hungry
24. Required to run radios
26. Messages sent by radio
28. Orbiting eye in space (abbr)
29. Telegrapher's laugh
30. Murphy defies these
32. Turns fuel to electricity
36. Delta Division section
37. Complementary to an R-C circuit
38. Slang for food
40. Fuels the operators
43. Multiply these two to get power (symbols)
44. Ham radio enthusiast or threaded fastener
45. Prefix of the Kiwis
46. Swinging opening to a field
49. Crumb carriers
51. Impedance matching device (abbr)
52. Made a surprise appearance on Field Day 2003 (call)
54. Brews 40 Across
56. Energy from above
57. Unit of current (abbr)
58. Opposite of 6 Across

Down

1. Solar feature that improves propagation
2. Fee, ..., Fo, Fum
3. Interested non-hams on site
4. Cyclical electricity (abbr)
5. Symbol associated with a company or organization
6. Pull the cord to make the engine ...
7. Stand by (prosign)
8. Unwanted sound
10. Morse's transmissions
11. Maritime province (abbr)
12. Receive this for bonus points
14. Bring a dry pair of these
15. The most important paper product to bring
17. Station for new hams
18. Non-volatile data storage media
19. Changes the radio's frequency (abbr)
22. End of Message (prosign)
23. Simplest wire antenna
24. SSB, AM, and FM voice transmissions
25. Type of guy cable (abbr)
27. Agency that regulates aviation
29. Makes you hot
31. PSK and RTTY are good examples
32. Good Luck (abbr)
33. Greek letter that makes a boat go
34. Early receiver with an adjustable-frequency input stage (abbr)
35. Holds the dog
39. Too much of 50 Down gives you this
40. Category of operation
41. A hole and screw must be the right size to ...
42. Equivalent scores
43. Reactive power (abbr)
46. Fuels the engine
47. When I guess that I'll show up (abbr)
48. Emission designator for CW
50. Ol' Sol
53. When to wake up
55. Reply (abbr)