ROUND TABLE

The Denver Radio Club Newsletter

April 2008 Since 1917

PRESIDENT'S MESSAGE

By Gerry Villhauer-W0GV

Greetings DRC Members,

March is a month that I don't want to repeat very soon, as far as DRC is concerned. As most of you know we had to take our 145.490 and 448.625 repeaters off the air fairly suddenly. Actually we had known for over a year that we would have to move the repeaters to a different location within the building and possibly relocate the antennas on the tower. We just did not know when this would actually happen. It happened with only 3 days notice and developed far beyond where we expected. Due to a large amount of commercial equipment being added to the site, it appears that we will have to permanently relocate to another site. This is not an easy task, especially when it is unexpected. We are trying to locate a site that will give the coverage that we need and that we can afford. The plan is to place the repeaters at Centennial Mountain, at lease temporarily. We can only estimate the coverage that this site will give and we believe it will be good for most of our members. The exception will be close in along the foothills. The 145.490 may be up and working by the time you read this with the 448.625 to follow. We have some other possible sites that we will continue to investigate. Please check-in to the Sunday night nets for updates as things develop.

I would like to welcome new DRC members Tim Brown, NO9O, James Montgomery, KB0LRF and William Greene, W0GVT. Thank you for choosing the Denver Radio Club as <u>your</u> club. Please come to the meetings and activities and be an active member.

Thanks to Virgil Leenerts, W0INK, for the very informative program on switching power supplies. I received several comments that his program really "cleared up" the mystery of switching power supplies. Great Job Virgil!

Have you ever heard of Smith Charts? If you have, do you understand anything about them? The April program will be given by Bryan Steinberg (who has a new vanity call) KB0A (ex-KC0CUA). Bryan is a DRC board member, technical committee member, chairman of our annual Hamfest and has a background in electronics and information technology. Bryan will be explaining the use of Smith Charts. You maybe surprised what they have in common to things we use in ham radio, like SWR meters for example. Come learn how to apply this valuable and interesting tool.

See you all at the meeting April 16th at the St. Joseph's Episcopal Church, 11202 West Jewell Ave., Lakewood. That is about two blocks West of Kipling on South 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

INSIDE THE ROUND TABLE

MARCH MEETING - WHAT'D I MISS

by Bill - W6OAV

This month's meeting had a great turn out as usual. After introductions were completed, the following members brought up the subjects shown below:

- K0SSE presented an overview of the upcoming DRC/Salvation Army "Pre-Field Day" and Field Day exercise.
- KB0PVD discussed an upcoming group exercise. The purpose of the exercise will be to setup and test communications between the Salvation Army garage and the Pennsylvania ham station. Tests will be done on the business band, VHF and HF.
- KB0PVD discussed the Salvation Army's role for the support of the upcoming Democratic National Convention.
- K0TOR talked about the upcoming Lakewood siren tests to be held on April 9th.
- W0GV gave an update on their attempt to put 145.49 on line on Centennial Mountain and the problems that prevented success.

Afterwards, Virgil, W0INK, gave a presentation covering linear and switching power supply regulators. He demonstrated how switching power supplies function using a large board containing the schematic with active LEDs. A lot of good questions followed.

ELMER SESSION

by Rob - AJ0C

Mike (K0NGA) was our guest Elmer at the March meeting. Mike presented a short program on "Cross Band Repeating" followed by a live demonstration.

Following Mike's presentation a Q&A session was conducted. Oscar (K0SSE) will be the guest Elmer for the April meeting. Oscar will provide an Amateur Radio Field Day orientation.

Until the next Elmer meeting remember you can talk to our Elmers weekly on the DRC Learning Net. Presently the Learning Net is using the 147.330+ (100.0) repeater while the 145.490 machine is out-of-service.

TECHNICAL COMMITTEE REPORT

by Bill - W6OAV

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

145.49 REPEATER RELOCATION

The 145.49 repeater had to be removed from Green Mountain due to lack of space with the expansion of the commercial facilities. The repeater is to be installed at a new site:

- One evening last week, W0GV, N1ETV and KE0SJ took the 145.49 repeater up to Centennial Mountain. The plan was to install the repeater using the existing coax and antenna. Unfortunately the coax turned out to be defective. Also, the controller had to be reprogrammed which ate up most of their evening time.

DRC/SALVATION ARMY "PRE–FIELD DAY" EXERCISE

Watch for an article in the next issue for "Pre-Field Day" exercise details.

- K0SSE updated the committee on the work he has done to plan and coordinate the "Pre-Field Day" exercise.

147.33 REPEATER PROJECT

The project is to install a second 147.33 repeater at Hudson with a different PL:

- The transmit crystal will not pull to frequency. WA9TVH will send it back to International Crystal. N0YIX will program the spare S-Com controller. Once these two issues are completed, a work party will be scheduled to take the crystal, controller and duplexer to Hudson for installation.

220 REPEATER

The repeater is down for an upgrade with an ID'er:

- KB0A hopes to have the repeater wired in the next several weeks.

(Continued on page 3)

(Continued from page 2)

VHF/HF PACKET GATEWAY

The gateway has been upgraded to a better radio and TNC. However, there has been an issue with the TNC defaulting to factory settings:

- KB0A had to re-program the TNC several times after it defaulted to factory settings. The defaults appear to be caused by intense HF energy getting into the TNC. The HF antenna is about 6' from the TNC. The HF has been disabled and the TNC hasn't defaulted since.
- The committee discussed putting a Ham Stick dipole up on the tower. This would eliminate the intense HF field at the TNC. Also, with the dipole being horizontal with the end pointed toward the power line, the power line noise should be attenuated.

RADIALS DEMYSTIFIED – PART 1

By Bill - W6OAV

INTRODUCTION

Vertical quarter wave antennas, and shorter loaded vertical antennas, are very popular. They have a low take off angle and are relatively invisible to the neighbors. Verticals are very efficient if they are properly constructed

The vertical element is half of an antenna (an electrical 1/4 wave length). The vertical's ground plane is the other half of the antenna. The two together produce a self resonant electrical ½ wave length antenna. For a vertical antenna to work efficiently, particular attention must be given to its ground plane. If the ground plane is not efficient, then the whole antenna system will not be efficient.

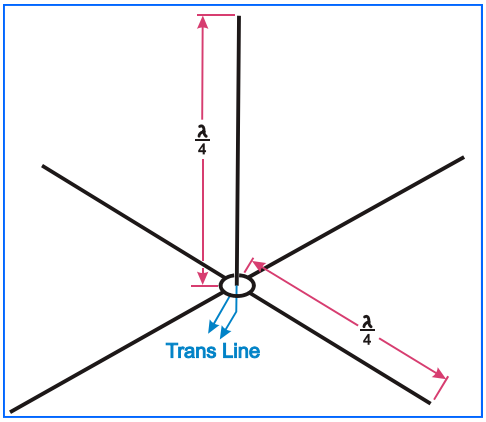
This article consists of three parts. Part 1 will cover verticals elevated above the ground, a fairly simple subject. Part 2 will cover ground mounted verticals, a much more complicated subject. Part 3 will cover the pros and cons of elevated verses ground mounted verticals. Part 3 will also cover verticals that do not require a ground plane.

This article will attempt to answer the following questions:

- When must radials be resonant?
- When cannot radials be resonant?
- How many radials are best?
- What are the effects of radial wire size and length?
- When are radials not required?
- The pros and cons of elevated verticals verses ground mounted verticals.

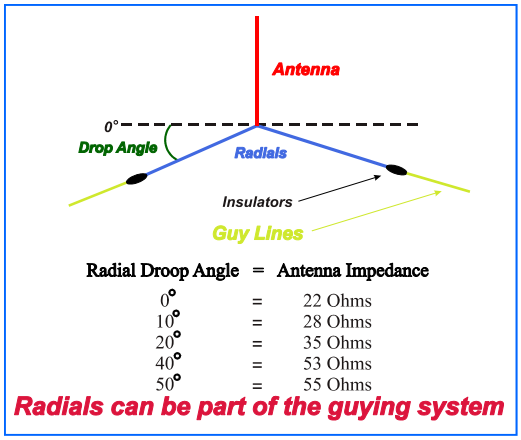
ELEVATED VERTICAL ANTENNAS

Radials on vertical antennas elevated above the ground (see Figure 1) provide the ground plane for the vertical element. Since the vertical element is an electrical ¼ wave length, the radials must also be an electrical ¼ wavelength. The combination of the two creates a self resonant ½ electrical wavelength antenna. Multi-band verticals must have electrical ¼ wave length radials for each band of interest.



Two radials per band of interest are sufficient. However, the pattern will be skewed a bit towards the direction of the radials. Four radials will provide a more circular pattern, a very slight gain in efficiency and better decoupling of the antenna and coax. Using more than four radials will not improve efficiency.

When the radials are parallel to the ground, the impedance at the feed point will be about 30 ohms. Angling the radials to 45 degrees towards the ground will raise the feed point impedance to close to 50 ohms. Besides giving a better match to the feed line, the angle allows the radials to be part of the guying system if required.



Relative to efficiency, the wire gauge of the radials is not important. At amateur power levels, the RF wire loss is very minimal. Insulation on the radials will have no effect on the efficiency but will protect them from the weather.

Continued Next Month, Part 2 – Ground Mounted Verticals.

AMATEUR RADIO IN THE NEWS

Wings Over The Rockies Air and Space Museum is Denver's first Aerospace Museum, and designated by the Colorado State Legislature as the Official Air and Space Museum of the State of Colorado. With 165,000 square feet under one roof in a 1930's-era Air Force hangar on the former Lowry Air Force Base, the museum also serves the Denver Metro community as its third largest event venue. The Museum is Denver's newest historical and educational facility, and is dedicated to education, science, mathematics, technology, the rich history of flight in the Rocky Mountain region, and to teach the younger generation about the science of aviation and space travel. With 30 aircraft and special exhibits including Amateur Radio, there is something of interest in the Museum for everyone.

Amateur Radio will have a prominent place in the museum with working stations located in the Avionics Room as well as the full-sized manned Space Station module exhibit. Development and construction are ongoing. The Avionics and Radios Exhibit is a wonderful

collection of beautifully restored examples of period radio, telephone and avionics technology from spark-gap to satellites.

The most recent addition in the room is a working Amateur Radio station, *(photo above)* with 2-meter and HF transceivers installed in a former FAA Air Traffic Control console.

Current efforts are underway to install working Amateur Radio satellite equipment in the mockup of a space station crew module. Thanks to welcome donations from generous Hams, we already have the cross-polarized antennas and directional (azimuth/elevation) rotators. Coax and control cable have just recently been pulled and, with lots of help and a warm day, the antennas will go up within the next few weeks.

It is hoped that the Space Station's satellite radio system will be operational by mid-May. At that time the Museum will take possession of their very own moon rock to add to their permanent exhibit collection. To celebrate the event the Museum is planning a series of special events, with several astronauts and former astronauts in attendance to kick-off the festivities. It would be great for Amateur Radio to be ready to have a role in these activities.

K0WAR (Wings Amateur Radio) is the call sign for Amateur Radio activities at the Museum. It is good at QRZ.COM where you will find a link to http://wings.rmhcn.org with pictures of some of our work and exhibits. From there you can also follow a link to the page where you can subscribe to a listserv/e-mail reflector to be kept informed of our schedules and activities (or offer your comments and suggestions to the group). Ready to volunteer or contribute? The project still needs help and certain pieces of equipment. You can get more information by contacting Scott, KB6CC, at kb6cc@arrl.net or (303) 459-4060.

LAKEWOOD SIREN TEST SET FOR APRIL

By Jim - K0TOR

The Lakewood Police Department will be conducting a test of their 24 emergency siren sites on Wednesday, April 9th at 11:00 a.m. Each year the DRC supports the City of Lakewood Police Department by providing Hams at each siren site to verify proper operation and clarity of the verbal announcement during the test. We are asked to inspect the siren and solar panel for damage or need for maintenance i.e., loose hardware, bird droppings or cracks on the solar panel protective glass, missing siren horns, etc.

We ask that each volunteer ham monitor be at your assigned siren location by 10:30 a.m. and check in with net control on the 147.330 MHz. repeater. Once the test is complete net control will contact those hams who must return to work first, for their report and then proceed down through the siren numerical sequence to receive each report. This year we will be using the 147.330 MHz repeater and we are not sure if we will experience dead spots for some siren locations. If you are unable to access the repeater from your site, try to have someone relay for you, use your mobile unit, increase your RF power output or find a location where you can access the repeater. Oscar Hall, K0SSE and Jim Beall, K0TOR will be contacting those who participated last year and as needed, additional members to support this test. If you did not participate last year and would like to participate this year you can call either Oscar or Jim. The Denver Radio Club and the City of Lakewood Police Department appreciates your support in this test.

The City of Lakewood Police Department has provided Pizza for siren test volunteers after the test. The Pizza is provided at the Lakewood Public Safety Center at 445 South Allison Parkway. We have not confirmed Pizza at this time but assume it will be provided. We will verify this as we contact you by telephone.

DENVER RADIO AMATEUR RADIO CLUB

The DRC & ARRL are a TEAM!

Now is the time Join The TEAM!

ARRL

Up Coming Events

April Presentation

Topic

Speedometers, thermometers, SWR meters and Smith charts. Wonder what these four things have in common? Or, even what a Smith chart is. Bryan Steinberg, KB0A, will be our presenter at the April meeting to answer those questions. He will build on our knowledge of some measurement tools that we currently use to explain the basis for Smith charts and how to read them. The presentation is based on an article by Dan Maguire, AC6LA, which Bryan has enhanced for his presentation. This should be an enlightening discussion which will clarify and simplify your ability to use this value tool.

Meet The Presenter

Bryan has been licensed for over 10 years, and a DRC Board Member for over five years. Additionally, he's been the Hamfest Chairman since 2003. His background is in electronics and information technology. He is currently an Enterprise Architect where he defines the target application blueprints for worldwide IT systems. You may more readily recognize him by his previous call, KC0CUA, his current vanity call, KB0A, was granted in mid-March.

SATERN Group

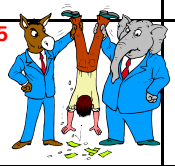
For our member who participate in the SATERN Em-Comm Group, Mike Gelski would like to have members and other interested parties use the 448.975 (pl 123) as a repeater for the members to "hang out" and get to know each other. It will also be used for "talk-in" for group activities. Additionally, it will be used to coordinate group activities.

Just a reminder the SATERN Group meets from 10 AM - 2 PM, on the fourth Saturday of each month. Watch this column for some exciting news in the next issue of the RT.

Field Day 2008 Is Just Around The Corner!!!

April 2008

DRC Net Sunday 8:30pm Local

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

Check www.ARRL.org for More Contests

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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	Temporarily OFF The Air
2m	147.330mHz (-) 100Hz PL	Members Auto-Patch
1.25m	224.380mHz (-) 100Hz PL	Temporarily OFF The Air -- For Controller Upgrade
70cm	448.625mHz (-) 100Hz PL	Temporarily OFF The Air
70cm	449.350mHz (-) 100Hz PL	Wide area coverage with Echolink Node # 4140.

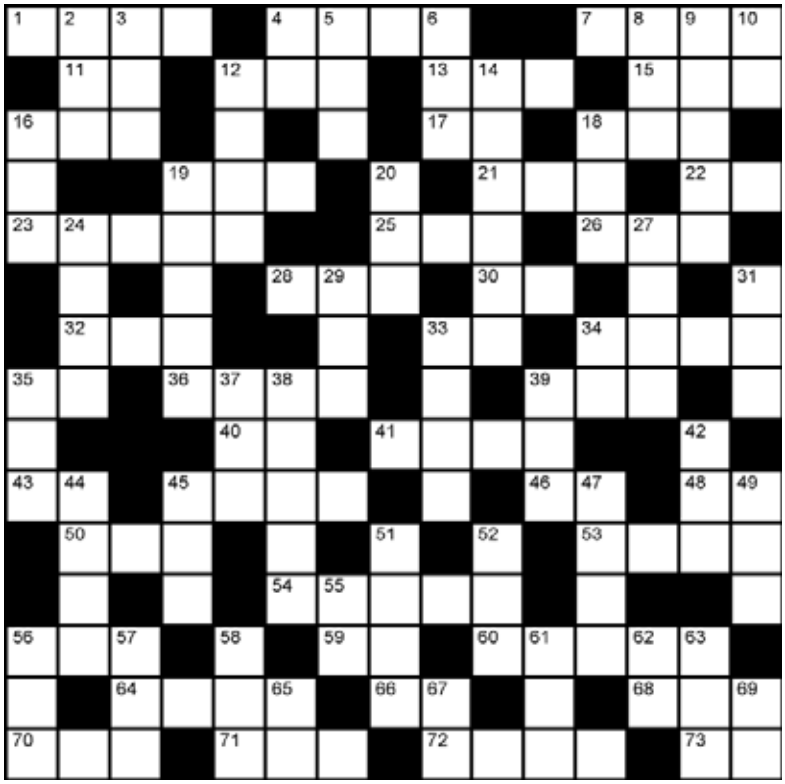
Editor's Note

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. **Editor**

Puzzle Page

Jargon-laden as only technical endeavors can be, electronics has a collection of acronyms and abbreviations all its own. I use them frequently to fill in a puzzle, but now the worm turns! Consider the clues connote cleverly compacted collection of combined characters condensing complexities to contracted conundrums...commence!

NOTE: Answer key for this puzzle is located on page 5.



Across

1. Contains the pattern used to create integrated circuits
4. Urgent task or delivery **7.** Bidirectional trigger diode
11. Most electronics runs off this type of current
12. Type of microprocessor package with many pins in a grid
13. A one-junction transistor
15. Device that measures reflections in transmission lines
16. Output is true if neither input is true
17. Company that invented the integrated circuit
18. Something that doesn't work
19. Memory that can only be read
21. ARRL's service of electronics and radio information
22. Prefix for RF connectors
23. Random-access memory that retains its information with the power off
25. Tiny transistor package
26. 2N3906 is this type
28. Common type of display
30. CW abbreviation for AND
32. Quiet amplifier
33. CW abbreviation for number
34. Garish name acquisition techniques
35. Way to slice a quartz crystal
36. Product tag powered by RF energy
39. Diode that gives off light
40. For example
41. Microwave semiconductor material
43. CW abbreviation for good night
45. Most electronics is built on these
46. Chip
48. Prefix of transistor package number
50. Absorbs voltage transients
53. Liquify
54. Thyristor used to control ac current
56. Relay made of semiconductors
59. Another name for the emitter follower
60. Emits coherent light
64. Amateur file format
66. Equalize
68. Three most common component designators
70. Measure of power
71. Diode used to switch RF
72. If this was lost we'd have remorse
73. Volume control label

Down

2. Hubbub or fuss
3. Unidirectional thyristor
4. Most conductive metal
5. Bird that is squirted
6. Most circuits have an out and an in
8. Body that coordinates telecomm rules
9. When the information is incomplete or contradictory it doesn't do this (two words)
10. Last tube in a TV
12. Non-volatile memory that can be written to once only
14. Random variation in clock signal timing
16. 2N3904 is this type
18. Handles signals digitally
19. Finds range and azimuth of objects
20. Damaging discharge
24. Unit of potential
27. False if both inputs are true
29. Image detector
31. Microphone switch
33. SKYWARN agency
34. Cousin to Si
35. Wire size
37. Info added to data to allow errors to be fixed
38. Bipolar junction transistor that has a insulated gate instead of a base
39. Putting lots of gates in a single integrated circuit
42. 7400 logic family
44. Logic family with N-channel transistors