
SIGNALS

Rockwell
Collins Amateur Radio Club

Monthly Newsletter of the

Volume 28 Issue 04

Web Site <http://www.collinsclubs.com/rcarc/>

January 2007

RCARC Membership Meeting

Thursday
25 January 2007
1730 in
Rockwell Collins
Cafeteria

Subject: Micro 908 Antenna Analyst
by George Heron N2APB and Joe
Everhart N2CX

Local Club News

W5ROK Membership Renewals!

If you have not renewed your membership and need an application form, please contact Joe Wolf, N5UIC, at 972.705.1388.

W5ROK Makes QST On page 100 of the January 2007 QST, W5ROK made the list under the "Midwest Region" near the top of the page.

W5ROK's Collins S-Line Back in Service A special thanks and tip of the hat to Bob Ashby, K5JHR, for setup and configuration of the club's S-Line radios. Bob received this request at a recent RCARC club meeting about "restoring old radios" and shortly completed this task. Enjoy using the club's S-Line next time you are at the club's station.

Club Meeting Talk-In Each month, we have a Talk-In on the club repeater before the membership meeting on the night of the meeting. The Talk-In is from 1700 to 1730 hours, just prior to the meeting.

Events and Public Service Opportunities

20-22 January 2007: ARRL January VHF Sweepstakes The object of this event is to work as many amateur stations in as many different 2 degrees x 1 degree grid squares as possible using authorized frequencies above 50 MHz. Foreign stations work W/VE amateurs only. The event begins 1900 UTC Saturday and ends 0400 UTC Monday (20-22 January 2007). More info at <http://www.arrl.org/contests/rules/2007/jan-vhf-ss.html>

17-18 February 2007: ARRL International DX Contest (CW)

The object of this event is for W/VE amateurs to work as many amateur stations in as many DXCC countries of the world as possible on 160, 80, 40, 20, 15, and 10 meter bands. Foreign amateurs (also including KH6, KL7, CY9, and CY0) are to work as many W/VE stations in as many of the 48 contiguous states and provinces as possible. The event is on the third full weekend in February (February 17-18, 2007). The contest period is 48 hours and starts at 0000 UTC Saturday; ends 2400 UTC Sunday. More info at <http://www.arrl.org/contests/rules/2007/intldx.html>

8-9 June 2007: Ham-Comm 2007

Make plans now to attend Ham-Com 2007, June 8-9, at the Plano Centre in Plano, TX. Online admission sales began January 1 on the redesigned web site, www.hamcom.org. The web site features a new format that enables users to quickly find what they need.

Here Is What's New For Ham-Com 2007:

- ALL parking is on-site and FREE! Up-to-date event information will be broadcast on 87.9 FM (via your car radio at the site).
- Registration is online (\$7.00) or at event door (\$10.00). No mail or FAX registrations, please!
- The tailgate market will be closer to the Plano Centre west entrance.
- There is a three (3) table limit for the indoor flea market. This will allow more people to offer items for sale.

Here Are Some Important Dates To Remember:

- January 1: Admission sales begin
- February 1: Flea Market registration begins
- February 15: Commercial exhibitor packets due!
- February 28: Registration and grand prize announcement
- March 1: Lone Star DX Association program announcement
- April 1: Program listing available online
- May 1: Ham-Com Flyer Event Edition online

Ham-Com 2007 will feature a full schedule of speakers, workshops and special-interest group meetings. We will continue to place more emphasis on youth education and club activities.

Please visit our web site at www.hamcom.org and get all of the details!

73

Lisa McClellan, K5LRM
Chairman, Ham-Com 2007

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VE SESSIONS

Dallas tests are held 4th Sat of each month at 10:00. 13350 Floyd Rd. (Old Credit Union) Contact Bob West, WA8YCD (972) 917-6362

Irving tests are held 3rd Sat. of each month at 09:00. 5th and Main St. Contact Bill Revis, KF5BL 252-8015

McKinney VE test sessions are held at the Heard Museum the first Sunday of the month. The address is 1 Nature Place, McKinney TX. The time of the testing is 14:30, ending no later than 16:45. *Note: no tests given on holiday weekends.*

Garland testing is held on the fourth Thursday of each month, excluding November, and begins at 1930 sharp. Location is Freeman Heights Baptist Church, 1120 N Garland Ave, Garland (between W Walnut and Buckingham Rd). Enter via the north driveway. A HUGE parking lot is located behind the church. Both the parking lot and the Fellowship Hall are located on the east side of the church building, with big signs by the entrance door. Contact Bill Reynolds, K8DNE, 972-475-3854.

Plano testing is on the third Saturday of each month, 1300 hrs at Williams High School, 1717 17th St. East Plano. Check Repeater 147.180+ for announcements.

Greenville testing is on the Saturday after 3rd Thursday, 1000 hrs at site TBA, contact N5KA, 903.364.5306. Sponsor is Sabine Valley ARA. Repeater 146.780(-) with 118.8 tone.

Wills Point Call Don W5QXK at 972-932-3595

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President's Message

As I am preparing this article, another RCARC administrative year is well underway. It is my hope that for each of our members and the members of their families that 2007 will be a good year. On the amateur radio front the last part of 2006 and now in 2007 we all have seen some major revisions. First the Omnibus bill that changed the layout of the spectrum and assignments of operating privileges to the various license levels. Then came the announcement of the intent to eliminate CW as a requirement to get an amateur license. Change was certainly in the fore front.

The election of an ARRL North Texas Section Manager (SM) is something that I hope all ARRL members will take the time to cast your vote in. Regardless of whom you vote for and who is ultimately elected, The SM is the first elected position in the ARRL organization. Review the material that you should have received and cast your vote for the person that you feel will best represent you and the amateur service in general.

In this edition you will find the minutes of the most recent eBoard meeting. Take the time to review them as there are several actions underway that will change the equipment complement of our station. First is the pending purchase of a replacement transceiver. Second is the disposition of the 30S-1. Third is the possible replacement of the computers that have been faithful but which are getting old and are not capable of running the new OS for instance. These three areas are in various stages of action but action is underway to address these areas and plans will be presented to the full membership when they are complete.

The eBoard welcomed its newest member at our 18 January meeting. Wayne Hughes has accepted the position of the Website Manager. If you have suggestions for the Website, contact Wayne and help him make the Website something that meet the needs of the RCARC.

Did you know that out of the current membership of about 37 that only 10 are active Rockwell Collins employees? We celebrate the support of those retirees that are so faithful in coming to the meetings

and providing input to the continued success of the RCARC. It is important that we also increase the number of active employees that are members. With the recent increase in the overall population here in Richardson, it would seem that now is a great time to reach out to the hams that are in that group. The eBoard will be working on this issue and the overall issue of how to increase activity at the RCARC station. Any suggestions that you have in that regard are certainly welcome and requested.

ARRL membership up for renewal or new application? See information elsewhere in this edition to get more information on how your membership application can be made through the club. Your club receives a commission for all renewals or new memberships that we process. And now it is time to say 73s til next year.

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Bill Swan,
K5MWC, President

Secretary's Report

There is no secretary's report since there was no meeting in December.

eBoard Meeting Minutes

Bill Swan, K5MWC, opened the meeting at 1735 on 18 January 2007, in the RCI Cafeteria. Present at the meeting were:

Dennis Cobb	WA8ZBT
Jim Gaston	KD5GYD
Wayne Hughes	WA0TGH
Bob Kirby	K3NT
Jim Skinner	WB0UNI
Bill Swan	K5MWC
Joe Wolf	N5UIC

The following business was conducted:

- 1) Meeting Overview
 - a) Bill Swan, K5MWC, briefly reviewed the agenda.
 - b) Wayne Hughes, WA0TGH, has joined the E-board as the Web Site Manager.
- 2) Replacement Transceiver
 - a) Bill Swan, K5MWC, reviewed the meeting minutes of the last meeting which dealt with the TS950 replacement.
 - b) Dennis Cobb, WA8ZBT, reported that the transceiver selection committee does not have a

recommendation at this time. The most likely candidates are:

- i) Yaesu FT-2000, price: approximately \$2,650.00
- ii) I-COM 756ProIII, price: approximately \$2,850.00

Both are high-end units suitable for contesting. The FT-2000 is reviewed in the February issue of QST.

- c) The selection process was discussed and the E-Board asked the transceiver selection committee to prepare a high level trade study/metric which can be presented at the next E-Board meeting.
- 3) Replacement Computer Status
 - a) Bill Swan, K5MWC, reviewed the status of the clubs aging computers.
 - b) Dennis Cobb, WA8ZBT, reported that no encouraging information has been received from the RCI IT staff in connection with obtaining old company PC's. Bill Swan will follow up with IT to determine whether it will be possible or not.
 - c) There was some discussion of whether the existing PCs would support the clubs needs into the future. Particularly whether or not the old PCs will support features of the new transceiver.
 - d) Bob Kirby, K3NT, will investigate what features would become available to us if we were to obtain newer PCs.
- 4) 30S-1 Discussion
 - a) Bill Swan, K5MWC, reviewed the status of the 30S-1 amplifier.
 - b) The E-Board decided to move forward and consider selling the 30S-1.
 - c) Jim Gaston, KD5GYD, and Jim Skinner, WB0UNI, will investigate the 30S-1 issue and determine if the unit works and what a reasonable selling price might be.
- 5) Other Business
 - a) Bill Swan, K5MWC, posed the question: What can we do to encourage more employee in-

volvement? Several possibilities were discussed. Some suggestions included: posters placed in the cafeteria, a new sign for the shack, and advertisements in the various company newsletters.

- b) Joe Wolf, N5UIC, reported that the club has approximately 40 members but only 10 are full time employees. Joe Wolf volunteered to investigate how the club might obtain a sign to help draw attention to the club's radio room.
- c) Wayne Hughes, WA0TGH, reported that he has been updating the club's web site and that meeting dates and officer information should be correct.

The meeting adjourned at 1840. The next general membership meeting will be on Thursday January 25th at 1730 in the RCI cafeteria.

W5ROK participates in First Straight Key UHF Contest

On December 30, 2006 W5ROK operated in the first annual Straight Key Morning put on by the North Texas Microwave Society. It was for all bands 222 MHz and above. W5ROK had 11 contacts on 432 MHz and 4 contacts on 1296 MHz. It was fun getting back on the old straight key.

W5ROK Participates in Joel KE5GYB's Science Fair Project

Joel, KE5GYB, a 10th grade student in Plano conducted an experiment for a science fair he had entered and needed the participation of area hams. This was the third trial of his experiment and so far he had obtained very useful information from many amateurs in North Texas. The experiment was conducted Saturday morning, January 13th at 8:30AM until about 9:00 AM CST on the N5IUF repeater on 146.82 (-600KHz offset) no PL required. W5ROK participated in Joel KE5GYB's experiment on Jan 6 and Jan 13, 2007 This was the last part of his project and he appreciated W5ROK's participation.

Classified Ads

Radio Repair, Kit Building, Antenna and Computer Help. Free Estimates; Contact Bob Kirby K3NT at k3nt@arrl.net

Highest Gain Discone Antenna Ever

By Michael Lake, KD8CIK

The Parabolic Discone is a way to achieve incredible omnidirectional gain with discone bandwidth. The driven element is a discone antenna at the focus of an extended parabolic reflector. The RF is focused upward by the parabola then deflected sideways by a 45 degree cone reflector. See the ray diagram to the right. In theory the gain is the square of a typical dish antenna, half the db value cone higher.

I came up with this idea because I like discone antennas but wanted more gain. Stacking discones into a vertical collinear array is certain to have directivity and bandwidth problems, which does not occur with this reflector arrangement.

An interesting option is to place the reflecting, cone higher like a periscope antenna.

Calculated omnidirectional gains over isotropic for ideal Parabolic Discone:

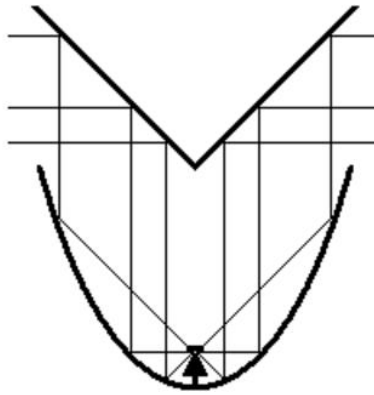
	18 inch	3 foot	6 foot	12 foot
440 MHz	.	5	8	11
900 MHz	5	8	11	14
1200 MHz	6	9	12	15
2.4 GHz	9	12	15	18
5.0 GHz	12	15	18	21
10 GHz	15	18	21	24

This table assumes 1db of illumination loss.

Building a 24 Inch Stressed Parabolic Discone

The pictured two foot wide parabolic discone was constructed out of 16 pieces of steel rod covered with aluminum window screening for the parabola. Galvanized sheet steel was used for the overhead cone reflector. The discone element at the focus is made out of wire, cut for a 1200 Mhz low frequency.

The parabolic section was built on the end of a pipe fitted with a piece of hardwood dowel inside. Using a drill bit slightly larger than the rods, 16 evenly spaced holes were drilled around the pipe one inch from the top. Pieces of rod 18 inches long are then stuck into the holes. The rod is 0.078 "music wire" from K&S Engineering, # 505 (bought at a toy/hobby store).



A central "mast" made from a fiberglass rod is stuck slightly off center into the wood fitted in the pipe. A short piece of PVC pipe is attached on the fiberglass rod using nylon wire ties, by putting the rod up through the ties and pipe. Fishing line is used to pull each of the steel rods into a parabolic shape by tightening and attaching the line to the piece of PVC pipe. After tightening all the rods a line was run along the outside edge. "Plastic Dip" was used at all the attachment points to keep them from slipping.

Aluminum window screening is attached by tightly weaving a thin copper wire between the screening and the rods. The necessary precision of the resulting parabolic section depends on the gain and highest frequency desired.

The overhead cone is cut from sheet metal by making a circle with an 18 inch radius as long as the intended distance from tip to edge. A notch is cut from the edge to the center then the metal pulled into a cone. It is best to practice on a scale model cut from a piece of paper first.

Equation to verify the parabolic shape:

$$y = x^2 / (4 * \text{focus distance}) \Rightarrow$$

$$y = x^2 / (4 * 3) \Rightarrow$$

$$y = x^2 / (12)$$

This results in (x, y) values of (1, .083), (2, .333), (3, .75), (4, 1.333), (5, 2.083),

(6, 3), (7, 4.083), (8, 5.333), (9, 6.75), (10, 8.333), (11, 10.083), and (12,12).

I have tested this antenna at 2.4 and 5.8 Ghz and verified over 6db of gain by checking how far the signal reached before being lost in noise.



Stacking Parabolic Discones

Collinear stacking may be an option instead of building larger parabolic discones. In theory you could achieve 3 db of gain by stacking two identical parabolic discones. I believe this should provide better results than stacking regular discones because the radiated waves are already "straighter" over a wider bandwidth.

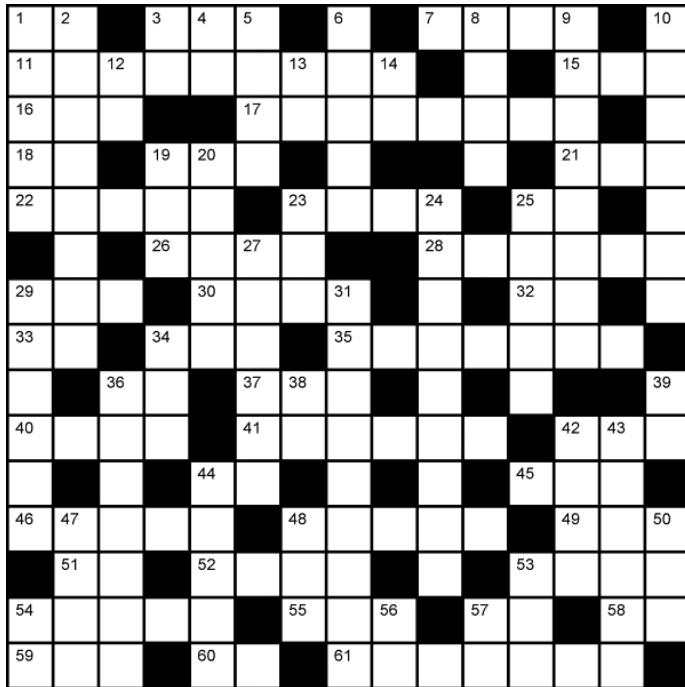
I have experimented with a set of one foot parabolic discones at 5.8 GHz and observed approximately. 1 db of gain. My limited results are likely due to loss and impedance issues in my test setup. I simply split the RF from one 50 ohm coax into two equal length 50 ohm coax using a BNC "T" splitter.

More experimentation with stacked parabolic discones may be worth the effort because of the space savings. A low loss way to drive the stacked antennas may make stacking useful.

For more details see my webpage at: <http://hamdomain.com/para-discone/>

(Reprinted courtesy eHam.net web site)

The Amateur Radio Crossword Puzzler



Across

- 1. Cousin to FM
- 3. Frequency range for 40 Across
- 7. Propagation off the ionosphere
- 11. Shape of mobile phone cells
- 15. Generates a sine wave (abbr)
- 16. The chairman of WRTC-2006
- 17. Phone without wires
- 18. Transistor package outline prefix
- 19. One step prior to VLSI (abbr)
- 21. Atom missing an electron
- 22. Path around an astronomical body
- 23. Add "hetero-" to mix frequencies
- 25. CW dash
- 26. Slang for fathers
- 28. Radio on the water
- 29. Between OCT and HEX
- 30. Drawings of landforms
- 32. Ham band monitoring station
- 33. CW prosign for "Stand by"
- 34. Wireless satellite navigation system
- 35. Where pilots communicate
- 36. Semiconductor junction
- 37. Another word for "shack"
- 40. Expert
- 41. Wavelength in meters of CB allocation
- 42. Agency with tower height rules
- 44. How a compass needle aligns itself
- 45. Sustained spark
- 46. One use of streaming video

plans

- 59. One of several layers
- 60. Wireless control of models
- 61. Obscure the meaning with a code

Down

- 1. Voltaics and cells
- 2. Where channel contents are stored
- 3. Prefix for hosts of WRTC-2010
- 4. Used in thermometers (chemical symbol)
- 5. Where elliptical dishes concentrate energy (plural)
- 6. A shared telephone line
- 8. An abrupt change in a graph or curve
- 9. What a navigation system provides
- 10. Receiver designed to monitor many channels
- 12. Series reactance (abbr)
- 13. Opposite of Normally Closed (abbr)
- 14. Load (abbr)
- 19. Poor operator
- 20. Need one to mail QSLs
- 23. Filtering by computation
- 24. Like a disaster
- 25. Wide bandwidth or beamwidth
- 27. Partner to dots
- 29. Mildly exasperated rural expletive (two words)
- 31. A bird in space
- 34. Animal for whom the free-source movement is named

- 48. Regular time signal
- 49. High-speed logic family using negative voltage
- 51. Across the Potomac from MD (postal code)
- 52. Popular wireless network standard
- 53. Organization that controls the standard for 52
- 54. Stash of goods or supplies
- 55. Organization that allocates prefixes
- 57. Feed line for microwaves (abbr)
- 58. Person that reviews building

- 36. Codes used on FRS and GMRS radios
- 38. Safety lab
- 39. Does not apply (abbr)
- 42. Available at no charge
- 43. To take or receive
- 44. More recent
- 47. Shape of the aurora from space
- 48. Person qualified to teach flying
- 50. Sheltered from the wind
- 53. International scientific cooperation in 1959
- 54. Prefix for landlocked South American country
- 56. Partner to "bal"
- 57. Prefix for types of 57 Across

Solution to this month's Puzzler



Rockwell-Collins

Amateur Radio Club

Mail Station 461-290

P.O. Box 833807

Richardson, TX 75083-3807

TO:



CLUB STATIONS

(972) 705-1349

W5ROK REPEATER

441.875 MHz +5 MHz Input

131.8 Hz PL - RX and TX

W5ROK-1 PACKET BBS ROK Node

145.01 MHz

MEETING

Thursday 25 January 2007

17:30

Rockwell Collins Cafeteria

**NEXT SIGNALS DEADLINE:
19 February 2007**