ARRL SPECIAL SERVICE CLUB

DELARA NEWS

Delaware Amateur Radio Association, Inc. **Vol. 24 No. 12** **December 2005**

DELARA meetings are always held on the third Wednesday of the month at the Tri-Twp. Fire Dept. meeting room, beginning at 7:30 P.M. unless otherwise noted.

ALL DELARA members are encouraged to check into the Monday evening Delaware County Net which meets every Monday at 8:00 P.M. on the W8SMK 145.17 repeater. Please join us! NCS call: K8ES

2005 DELARA Officers:

President: Vern Kollas, KC8YOH, 22 Weltergon Dr., Delaware, OH 43015
Vice President: Don Miller, KB8SIA, 2400 Hills-Miller Rd, Delaware, OH 43015
Secretary/Treasurer: Tim Trombley, K8TAT, 5900 US 42 South, Ostrander, OH 43061
Newsletter submissions to: Ken Bird, W8SMK, w8smk@verizon.net
DELARA web site: www.angelfire.com/tx5/delara

NO DECEMBER MEETING!

As usual, we will not have a December DELARA meeting so that our members can enjoy the Holidays with their families and friends.

See you in January.

THE PRES SEZ: by Vern Kollas, KC8YOH

Good afternoon and Happy Holidays to everyone!!! I hope that everyone had a GREAT Thanksgiving. It is hard to believe that it is almost the middle of December. Time just seems to march on faster every year.

First off, as everyone knows, we had our club officer elections at the last meeting. The results for those who were not able to attend are as follows….

President: Vern Kollas, KC8YOH
Vice President: Tim Trombley, K8TAT
Secretary/Treasurer: Terry Webb, N0TW

Congratulations to those elected!! I would also like to say thanks to everyone for giving me the opportunity to represent the club for another year!! I am slowly getting the hang of the various club operations and hope that with everyone's help, we will have another GREAT year!!

We had some very good discussion at the last meeting regarding some of the various club activities and things we would all like to see changed. The biggest topic was regarding club membership. There were many good ideas presented of some ways we can all work on increasing club membership. Please be thinking about this over the next month or so. I would like to see about getting a committee assembled to start implementing some of these ideas as well as collecting some other ideas as well.

One of the other topics of discussion was regarding the website. I have been about to do a few updates as well as some more planning for other additions to the site. I am also planning on getting a page up with all the Net Control operators in the next few days. I have also done some research into moving the site to a new host. Ian, KD7SYD, informed us of a site that he uses for his web hosting needs and I feel they can fill our needs as well. They offer many features such as email with virus scanning and spam management, database services if we would like to set up a forum, password protection for sensitive club info such as rosters, and MUCH more storage space. The prices vary from $65 to $125 per year. There have been a few

suggestions to get donations from members to fund the project. I think this would be a wonderful resource not only for the club to communicate, but to also provide information to the public and others interested in finding a ham "home". The features offered are without pop-ups and other web annoyances, so this will provide a much more friendly environment for us as well as any visitors. I would like to vote on this at the next meeting so we can move forward with this if approved, or to see what other options we would have if not approved.

Don't forget about the upcoming DELARA Holiday Party. Please look for details later in this newsletter.

That is all I have for this edition of the newsletter. I hope to see all of you at the Holiday Party. May you and your families have a safe and wonderful Christmas. 73!

E.C. NEWS: by Don Miller, KB8SIA

To top off this final column for the year 2005, I want to thank **Ken, W8SMK** for another great year of being "Editor" for the best little newsletter in the "ham" radio world.

The Delaware A.R.E.S. enrollment is now up to thirty four (34) members. Let us welcome to the group **Don Arnold, KD8BHF** a product of the February Ham class that I failed to mention earlier; **Steve Howell, AB8JC** a new Delaware resident from Franklin County and **Alex Ryan , KD8CKV** a graduate from the recent Ham class. Glad to have you all on board. All of you have been assigned to a group on our Delaware County A.R.E.S. Calling Tree which has been updated as of November 30, 2005. Copies for your manual will be distributed at the next A.R.E.S. and subsequent meetings. All members please be sure to pick up your copy.

As I write this article I am reminded that today is the last day of the Hurricane Season with Hurricane Epsilon stirring up the water in the Atlantic Ocean. It sure was a rough year with all the hurricanes that blossomed. Many ARES / RACES members did register to go to the devastated area but few where chosen. As the destroyed "ham" stations began to get back on the air the need for outside help began to dwindle except in extremely bad areas. According to press releases the "ham" community really put forth the effort that had not been needed before. My thanks to those from this area that did participate in the disaster. Thanks for doing such a great job.

The Christmas Parade was a success considering the problems encountered at the staging area. All comments received will be carried to the Delaware Street Committee and reviewed for next year's event. The following deserve the credit and thanks for making it get off to a great start: Terry, **NØTW**; Gary, **K8EHB;** Sandy, **N8YS**; Ken, **W8SMK**; Joe, **K8MP**; Walter, **KC8CNT**; Arch, **KC8RHZ**; Don, **KD8BHF**; Don, **W8HHK**; Linda, **N8FES**; Joe, **N8DRZ** and honorable mention, **Amanda Mackey.**

Did you ever wonder who really participated in the recent hurricane events around the country? In the February 2006 issue of QST the Amateurs that participated in the Wilma, Rita and Katrina Hurricanes will be honored. Look at the list. You will be surprised with the number of local hams that did participate. To have been eligible you would have had to complete the ARRL Hurricane Relief Volunteer Service Report. Our hats are off to those that did participate.

In the last few weeks the TV media has given some information on preparedness kits of different kinds. In our ARES manual we have a fairly good assembly of information on what one should have on board for different lengths of the emergency event. If you are interested in having a copy let me know and I'll e-mail a copy of the information to you.

Remember the next ARES meeting will be February 14, 2006 at the regular time and place. By the time you receive this newsletter the tour of the Franklin County EMA will have been over with. I certainly hope all that attended enjoyed the tour.

To rap up this column for the year 2005 from the ARRL letter comes these two (2) pieces of information that you might want to pursue.

* ARRL Certification and Continuing Education course registration: Registration remains open through Sunday, December 25, for these ARRL Certification and Continuing Education (CCE). Program on-line courses: Amateur Radio Emergency Communications Level 1 (EC-001) Antenna Design and Construction (EC-009), Technician Licensing (EC-010), Radio Frequency Interference (EC-006), Digital Electronics (EC-013) and Analog Electronics (EC-012). Classes begin Friday, January 6. To learn more, visit Course Listing page http://www.arrl.org/cce/courses.html or contact the CCE Department <cce@arrl.org>.

* ARRL Web site offers Winlink 2000 page: The ARRL now has a Web page http://www.arrl.org/tis/info/winlink.html devoted to

Winlink 2000<http://www.winlink.org>, the software and hardware system that links Amateur Radio to the Internet and allows sending and receiving e-mail messages via Amateur Radio. The League's new Winlink 2000 resource page contains general information about Winlink 2000, including articles, reprints, links and other useful information. A worldwide radio digital messaging system, Winlink 2000 also offers position reporting, weather bulletins and graphics, and emergency communication capabilities. It's already being used extensively by radio amateurs in the sailing and cruising communities as well as by recreational vehicle travelers, missionaries, scientists and explorers. The ARRL Board of Directors in 2004 encouraged the deployment within the Amateur Radio Emergency Service ARES of email via Amateur Radio "as exemplified by Winlink 2000" to meet the needs of served agencies and others involved in providing disaster communications. Amateur Radio volunteers responding to help in the wake of Hurricane Katrina utilized Winlink 2000 with great success.

Before you know it the Holiday will be upon us. Everyone have a joyous Holiday Season and may the new year of 2006 bring you much prosperity and good health.

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JOE'S PLACE: by Joe Papworth, K8MP

Howdy, from Joe's Place…

I mentioned to some of my on-the-air pals that I was considering construction of an inverted-L antenna for 160 meters. The inverted-L is a good compromise for a full- sized ¼ wave vertical. But like the ground-mounted vertical, it requires an excellent ground system for peak performance.

I received several pieces of good advice about the "L", and one of the guys even sent me this article which he had written for his club's newsletter. It discusses in general terms how to put together a nice ground system for whatever ground mounted vertical (or inverted-L) you might want to put up.

"Ink" (his on-the-air name) was kind, and left out the worst of the math and concentrated on the practical info you and I need to get the job done.

This month, *Part 1* explains the reasons why a good ground system is required for your vertical and also suggests what materials you might need for the installation. Ink's only request when he granted permission to reprint his article, was that we, the readers, be willing to provide feedback and recommendations back to him.

"Written a couple of years ago for our club paper. Hope you find something useful. Maybe it can be improved on. It is sorta directed at multiband vertical users, so some parts should be ignnored for full size verticals or Ls and Tees." ***"INK", N4OO***

It has been said that vertical antennas radiate equally poorly in all directions. That may be true in many amateur applications, but with a properly installed radial system, you should attain efficiencies of 80-90 pct (an efficiency of 50 pct equates to a 3 db loss, or half power).

Efficiency is defined as Rrad (radiation resistance) divided by Rrad plus R loss. Rrad is the theoretical feed resistance of a vertical antenna, around 36 ohms for a quarter-wavelength of wire. It is lower for tubing or tower sections. Calculations are complex, but the range is as low as 20 ohms for a quarter wavelength of large tower sections (especially if tapered) to about 32 ohms for smaller diameter tubing. AM broadcast engineers learned this a long time ago, but the ham antenna texts sort of ignore it.

R loss is mainly the loss in the grounding system plus losses contributed by traps or loading coils, but can also include shunt capacitance across a base insulator. Generally, the biggest part of R loss is the ground system. A look at The ARRL Antenna Book (chapter 3, table 1) and in ON4UN's LOW BAND DXING, chapter 9, table 9-1 will show what the trade-offs are for various lengths and quantities of radial wires.

Let's look at a typical multi-band vertical. It is 24 ft tall and contains 3 or 4 traps. The manufacturer says that the feeding impedance is around 35 to 50 ohms on all the bands. The truth of the matter is that the real Rrad on the lowest band (40M in this case) is 24/33.5 = approximately 65 degrees: A 65 degree antenna with no other losses should look like about 15 ohms, maybe a little less. So if we measure 50 ohms at the feed point, we have up to 35 ohms of loss in the system. Some of this is trap coil loss, but the largest proportion is probably due to ground losses.

It appears that the manufacturer depends on ground losses of at least 10 ohms and probably more, to yield a low SWR. Low SWR makes the user happy, but 50 pct or more of your power is generating nothing but heat. User happiness is very important but does not add any strength at the receiving end. Using the above numbers, our antenna shows an efficiency between 30 and 43 percent. That equates to a loss between about 4

and 5.5 db. If raising your power output from 100 Watts to 400 Watts makes you 6 db louder (very noticeable), then some time invested in improving the ground system could net you 4 to almost 6 db or a total of 9-10 db of improvement including the 400W amplifier.

What can we do to establish an efficient ground system? A look at The ARRL Antenna Book (chapter 3, table 1) and in ON4UN's LOW BAND DXING, chapter 9, table 9-1 will show what it takes to get our efficiency up above 50 pct. OK, what is the next move? We need to decide how many radials we are going to lay and how long they need to be.

Optimum, according to N7CL, would be to have approximately 1/4 wavelength radials (exact length is not critical) spaced evenly about the base of the antenna so that the ends are no further than .015 wavelength apart. On 40 meters, that would be 2.1 ft at the ends. The circumference of that circle would be about 220 ft. That means about 104 radials, which should bring the ground loss to about 7 ohms. If you wish to compromise slightly, perhaps an estimated 0.5 db of additional ground loss, then half that number (52) could be used for a ground loss of around 8 ohms. To bring the loss to near zero, one would need 104 radials each about 56 ft long (.4 wavelength).

It would appear that (in this case) 45-55 radials would result in a ground loss of 10 ohms or less. You don't have that much space? OK, just lay radials where you can and try to keep the wires proportionally spaced. I have laid radials for my own antennas and have helped a number of others with their systems. Over time, I have developed a procedure which is not the last word, but could serve as a starting point for those that wish to install their first system or improve on an existing system.

Materials:
Radial wire: There is no point in using large wire unless you expect heavy vehicle or animal traffic. I use #22, 20 and 18 AWG wire that I buy at flea markets or industrial surplus houses. Junk yards are also a good place to look. Aluminum or plated steel wire will work for a year or more, but will disappear sooner or later depending on moisture and soil pH. There are also problems with making reliable, low loss connections.
Stakes (4): I use metal tent stakes. Lines will be attached to them for use as measuring devices.
Line or string: I use Nylon line of about 200# breaking strength. It is not critical.
Aluminum or steel rod: I use a 2 ft section of 3/32 aluminum rod with a small hole drilled at one end to accomodate the radial wire. The other end is rounded. This tool is used to "sew" wire under grass and roots. Note: If laying wires in brush or other debris, a longer rod may be better. A 3 ft section might work better than the 2 ft length.
Hooks: For holding wire to the ground. Make from any scrap wire available that is sturdy enough to be pressed into the ground. I use scrap solid antenna wire, old coat hangers and #17 steel fence wire. Cut the pieces 7-8" long and bend a 1" hook on one end.
Copper tubing and inter-connection wire: To combine all of the radials at the antenna, I use 1/2" copper water pipe (comes in 10 ft pieces) cut in 4 equal pieces. Pound the pieces in a square about the base of the antenna. Hook a peripheral buss wire to the tubing with bolts and then solder those connections. Silver solder would be best if available. I use #10 AWG bare wire for the peripheral wire. That also gives 4 parallel ground rods for a lightning ground. There are many other combinations and alternatives such as a square or circle made from copper tubing or a plate with bolts. Remember electrolysis if using dissimilar materials. I like soldered connections, but cover those connections with paint or liquid tape when finished.

Next month, in *Part 2* of this article, Ink discusses the actual how-to of laying the radials, including the art of “sewing” them through grass, roots, and other obstacles.

In the mean time, I’d like to wish one and all a wonderful Christmas and New Year’s Holiday.

I hope to see you all at the DELARA party, but if not, then for sure at… *Joe’s Place.*

NØ Tenna Wizzard: by Terry Webb, NØTW

RECYCLE THAT GEAR

I can’t recall the first time that I heard the ham expression – homebrew – but it has had a long-term pleasant impact on my ham career. My column this month is directed toward those hams who are able to satisfy their station’s equipment needs by recycling some used/surplus gear, or even building some gear from scratch.

I guess homebrew antennas fall into this category – and you all know how I dearly love to construct all sorts of antennas! But most hams are often faced with the reality of wanting to try something new in their hobby only to face extremely high commercial prices for a particular piece of needed equipment. As an example, the ATV group is very adept at finding and

adapting surplus equipment to aid them in equipping their stations. It may very well be an old satellite receiver or used test gear. But half the fun in solving an "equipment need" problem is acquiring it for as low a price as you can. And this sometimes includes trips to the dumpster. It is amazing to hear some of the "stuff" that hams have rescued from the trash bin.

What prompted me to write on this subject this month was a need that I had for my shack and my reluctance to fork out the cash to buy the commercial product to fill this need. My shack – as well as most hamshacks these days – has lots of little gadgets that require small amounts of +12 volts. I have CW filters, PSK31 Interface Units, morse keyboard keyers, digital contest voice recorders, and even my 2m/440 base station that all require this voltage. I have "wall-wart" transformers all over the place. I decided this is not satisfactory for my station, especially since I have a very robust +12volt regulated power supply. All that I lacked was a way to distribute this power to all the gadgets.

While looking at the commercial products that accomplish this function, I realized that the same basic task is accomplished in the personal automobile/truck via the fuse panel. My neighbor is a "car tinkerer" and is always building a new race car or working on cars. When I asked if he had an old fuse panel he replied that indeed he did. Perfect, I now have a nice fused +12volt distribution panel for the shack and it cost the magic sum of $0.00. A ham's dream is answered once again!

So, next time you have a need for your hamshack, put on the thinking cap and see if you can come up with an easy way to fill that need. Sometimes, it is as simple as making your need known to other hams and presto – they just happen to have what you need in their junkbox – and who cares if that item just happens to have been rescued from the trash bin? 6 meters may very well be the "Magic Band". But filling an equipment need for very little "scratch" comes pretty darn close to "Magic" for me.

2005 has been a tough year on many of us as we have had to say goodbye to several of our ham friends. It warms my heart to see the kindness that our club members have shown to the family members of our ham friends that have passed on. I thank you all for your support of our club, community, and to our ham families. I hope to see all of you at the Christmas Party on January 7th! Until then….

CU on the Bands.

2005 Holiday Party!!!!!!!!

Don't forget the Holiday Party on January 7th at W8CQT (Jim and Carol Anne's) QTH, 350 N. Old State Rd.

Please bring a covered dish or dessert to share. The club will furnish the "Ham", buns, and soft drinks. You need to also bring your table service.

We start to meet at 5 pm and eat at 6 pm. Ask anyone on the repeater for directions or give any of the club members a landline.

Hope to see you there!!!

As we reflect on 2005, Best Wishes for the Holidays To you & your families.

Hope 2006 is bigger & better for you all!

The Bird Family ers.