



October 2003



General News

From Brett, KG4KLR:

As the Amateur Radio Emergency Service Emergency Coordinator for Wakulla County, I am putting on a fox hunt this Saturday, October 4th to train amateur radio operators in the skill of finding a radio beacon. Any and all hams and their family members are welcome. We will be meeting at McDonald's on Hwy. 319 in Crawfordville at 8:30am Saturday. We will be randomly broken up into groups, placing

the less experienced in this skill with someone that has done a fox hunt previously. All you need is an HT that covers the 2 meter spectrum and a simple directional antenna.

From: JEP, KU4NE

Hi ALL Ships and Shore stations, I wanted to give all the participants in the Museum Ships event a heads up on a new event.

I know this is short no-

tice but it would be nice if some other Museum Ships and shore stations could be on the air during this event so we could have a QSO with you.

The event is open to all amateurs also. The event is on October 11th and it is the USS Constitution "Turnaround Cruise Event."

The USS Constitution is the United States oldest commissioned war-ship. It was launched

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Special Points of Interest:

- Your articles wanted for the newsletter.
- New Club President's first "President's QSO" column

To Use A Balun Or Not?

By Carlton Wells, AG4UT

When should you use a balun? Since a dipole antenna typically presents 50 to 75 ohms input impedance, it is often connected directly to a 50-ohm coax. On the other end of the coax, a transmitter with a 50-ohm output impedance is connected. Add a re-

ceiver to the setup and you have a Ham station. Right? Well, it works. Many Ham operators can attest to satisfactory performance of this setup. But, there is always room for improvement. Let's introduce the balun.

A balun converts a "balanced" circuit to an

"unbalanced" circuit. A dipole antenna, 450-ohm ladder line, and 300ohm twinlead are examples of balanced circuits. RG-58, RG-59, RG-8, RG-6 or other coax types are examples of unbalanced circuits. Current flowing in a dipole are equal, but opposite phase per leg. Current flowing in a coax

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Meeting Minutes — September 4, 2003

Meeting called to order by the president at 7:00 PM

27 people in attendance. 1 guest was introduced: Stephanie Gauzens (W4DTJ), who upgraded to General Class at the Tuesday VE testing session.

Treasurer's Report by Carlton Wells: \$497.76 in Checking, \$2884.83 in Savings, \$500 was transferred from Checking to Savings, \$14.50 was received and deposited into the Checking Account, KC4TOC was paid \$155.88 for items bought for the club and van, Joan Heupel said that the expenses for hotdogs a few months ago was a donation to the club and did not request payment (may have been from the cookout).

Committee Reports:

Bylaws Revision: Carl Hayes will try and have a report next month.

Testing: Alan said that we had several new Technician licenses and 1 upgrade to General Class. Phil said that the License Class at the Red Cross was doing well and that the majority of the students were progressing on the Morse Code and will be ready for the Test Session on October 1st 2003, at the Red Cross. Several local hams have helped with the class by presenting sections of the material. John Reynolds has been doing the code practice

each week (usually at least 1 hour of the 3 hours). Phil announced-There will be a VE testing session on October 1st 2003 at the Red Cross Chapter House off Office Plaza (south of Tallahassee Ford)...there will be a review session from 6-6:45 PM and the Exam will start at 7:00 PM. All levels of exams will be available and the session is open to anyone wanting to upgrade or get their first license. The cost is \$12.00 and applicants need to have a copy of their license, photo id and CSCE (is issued from an earlier session). For more information contact Alan or Phil.

Old Business: There was a question as to what the club was going to do with the antenna mast that was donated. One member was interested in purchasing it if the club wanted to sell it. Kent (KC4TOC) requested that the club wait and see if he could locate a trailer to mount the antenna mast; he wanted to add it to the emergency equipment the club would have available. A motion was made.. and passed by a majority vote (1 nay vote) to give KC4TOC 90 days to find a trailer or it would be made available for purchase.

General Discussion:

Steve (AD4E) said that a local ham was getting out

of amateur radio and had some equipment he wanted to sell. Steve would try and get more information. Give him a call if you are interested. There was a discussion on several bicycle rides coming up this fall. Steve said that the local group has not given him any details. David Davis (WA4WES) said that the Red Cross wanted to make available photo ID's for anyone working in emergency situations. They would be issued by the Red Cross and should be acceptable by other volunteer groups and law enforcement showing that you are a registered volunteer. Chris Floyd would come to a club meeting or the club could meet at the Red Cross and have the ID produced at the meeting.

A motion was made to have the next meeting (October) at the Red Cross Chapter House ..motion passed. We will meet at the Red Cross in October.

Program: CDMA-Code Division Multiple Access and it's possible application to Amateur Radio by Shaun Hancock, AF400

Meeting ended at 8:45 PM



**Don't forget to
attend our
club meetings!
Your
involvement is
important!**

General News

(Continued from page 1)
and christened on October 21, 1797 and is still berthed at the Boston Navy Yard.

It will get underway at 9 AM in the morning Boston time. The USS Cassin Young will also get underway and sail with the Constitution. AS they pass the Castle Island Fort the fort cannons will fire a salute and the USS Constitution will answer with her cannons. After passing Castle Island the ships will meet the USS Chaffee DDG90 who will accompany them back to the pier.

We will have amateur radio stations on these ships. Our operation will be on 20 meters, 40 meters, and 2 meter FM. Possibly 18 mhz.

N1B will be the call sign of the station set up on the pier of the Boston Navy Yard. N1S is the call sign of the USS Constitution. WW2DD is the call sign of the USS Cassin Young. The USS Chaffee will use the call sign of two of its crew KS4E, and KF6MLK. The QSL manager for these stations is myself, W1QWT.

This is a first and maybe a one time event. My printer is really going to be busy. I am still in the midst of doing Museum Ship certificates but I will be getting help.

FREE TRIP TO VP5!

Kyle, WA4PGM, informs OPDX that "This is the final notice for those young ops interested in a FREE trip to VP5 during the CQWW CW Contest. Response has been disappointing so far with very few entries, go to <http://www.vp5x.com>



**Please submit
your articles and
announcements to
the newsletter
editor by the 15th
of the month...info
on back.**

To Use A Balun Or Not?

(Continued from page 1)
 is on the center conductor. The shield is grounded. Any current flowing on the shield results in potential TVI, can distort beam antenna patterns, or can cause the tower to re-radiate some of the signal. So, doing nothing by simply connecting the coax directly to a dipole works – just know the potential risks. While this simple connection may serve its purpose in a portable “jump” kit, a more permanent base installation deserves more consideration. BALUN to the rescue!

There are two types of baluns.

Transformer or voltage – Bifilar and trifilar are two examples.

Choke or current – Toroidal, loops of coax, ferrite bead, steel wool (yes, steel wool), and bazooka are some examples.

Transformer baluns convert an RF voltage from one circuit impedance to an RF voltage of another circuit impedance. Significant errors in measuring antenna impedance can occur as well measurements of SWR. These type baluns operate from 7 to 30 MHz. However, it works best for the frequency in which the antenna is designed. As the frequency varies from the design frequency of the antenna, errors begin.

Core saturation can limit the amount of power transformer baluns are capable of. While air-core transformers avoid saturation problems over ferrite-core transformers, the size of the balun increases. Transformer baluns have antenna applications – just know the application. I found this design in a book on quad antennas, pp. 65-67 (I forgot to note title and edition.).

A U-shaped, electrical $\frac{1}{2}$ -wave length of coax creates another balun that forms a 4:1 voltage transformer. Hence, it is frequency sensitive. The shields of both ends of this $\frac{1}{2}$ -wave length of coax are connected to the shield of the coaxial transmission line. One end of the $\frac{1}{2}$ -wave length coax center conductor is connected to the center conductor of the coaxial transmission line for one half of the balanced line. The other end of the $\frac{1}{2}$ -wave length coax center conductor is for the other half of the balanced line. This type balun is found on page 16-7 of The ARRL 1986 Handbook.

Choke baluns prevent RF current from entering down the coaxial shield. This forces the current to remain on the corresponding leg of a dipole antenna. Hence, current flowing in a dipole remain equal, but opposite phase per leg. Furthermore, potential TVI, distortion of

beam antenna patterns, or tower reradiation of some of the signal is avoided.

Toroidal choke baluns do not have the power limitations of transformer baluns, because the current remains in the antenna – not down the coaxial shield to induce current into the core material. Its frequency range is 14 to 30 MHz and can be operated up to full legal power. Operation below 14 MHz would require more coax coiled through the toroid than can be inserted through it. This design was also found in the same book on quad antennas, pp. 65-67.

Loops of coax with a 6 to 8 inch diameter form a choke balun. Its frequency range is 14 to 30 MHz and can be operated a full legal power. Operation below 14 MHz would require too much coiled up coax would be required, making it impractical (i.e., 20 feet of coax coiled on a 5-inch diameter ABS pipe). This design is for my 10m/15m/20m base antenna.

Ferrite beads slipped over a coax forms another type of choke balun. Its frequency range is 1.8 to 30 MHz for a balun using fifty Type 73 beads and is less than twelve inches long, including connectors on 50-ohm coax. For 30 to 250 MHz, use twenty-five

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Thanks To All
 Who Have
 Submitted
 Articles!

To Use A Balun Or Not?

Type 43 beads. Above 200 MHz, use Type 64 beads (quantity of beads unknown). This balun can be operated up to full legal power and is a compact, wide-band choke balun when compared to the looped coaxial choke balun above. This design can be found in "Reflections II Transmission Lines and Antennas," 2nd Edition, pp. 21-6 and 7.

Steel wool is a cheap and crude choke balun material similar to using ferrite beads. However, this balun requires eighteen or twenty-four inches of 1½ inch PVC pipe with 000 or 0000 steel wool stuffed in it and the coax run through the center. This design can be found at

<http://www.johncath.force9.co.uk/balun%201.htm> and on pages 40-6 & 7 of The ARRL 1986 Handbook.

A bazooka balun uses a sleeve over the coax. The sleeve is cut at an electrical, ¼ wave of the operating frequency. Hence it is frequency sensitive. Connecting the sleeve parallel and adjacent to the coax creates a variation of this balun. These type baluns are found on page 16-7 of The ARRL 1986 Handbook.

All baluns are not created equal. Each type and design has its applications. You decide which is appropriate for your setup. A jump kit for emergency, quick deployment may jus-

tify not using a balun. Space or weight limitations may justify use of one type over another that may be more appropriate type. Otherwise, choose your balun wisely. If you consider a W2DU ferrite-bead choke balun, make sure it uses ferrite beads. If Unadilla makes it, it may be a ferrite core, transformer-type voltage balun.

My next balun is being made with steel wool integrated inside the PVC support pipe of a NVIS antenna that breaks down into 36 inch sections for portability. Look for this in a future article.



Be Sure To
Check Out
The
K4TLH.NET
Forums

Ham Radios Came To Rescue In Blackout

Associated Press

HARTFORD, Conn.— When technology failed on a massive scale... Some old-fashioned broadcasting stepped into the breach as ham radio operators took to the airways to reach emergency workers.

For millions of people in the Northeast and Midwest, the Aug. 14 outage took access to e-mail and the Internet with it. Landline and cellular telephones were jammed by a crush of calls.

But the ham radio, which came into being in the World War I era, connected firefighters and police departments, Red Cross workers and other emergency personnel during the most extensive blackout in the Northeast since 1977.

Ham Operators are not dependent on a server or cell tower, and with battery backups can operate when other grids can't.

"When everything else fails,

ham radio is still there," said Allen Pitts, a ham operator in New Britain. "You can't knock out that system."

The Radios are operated by a network of volunteers organized by the Newington-based American Radio Relay League.

Ham Radio's importance won renewed recognition after the Sept. 11, 2001, attacks. ARRL won a federal Homeland Security grant of nearly \$182,000 (U.S.) to train amateur radio operators in emergency operations to help during terrorist attacks.

"It's incredible the differences you're seeing, the large cadre of people who know what they're doing," Mr. Pitts said. "It's making a major difference."

Tom Carrubba, a coordinator for ARRL in New York City's five boroughs and two counties on Long Island, said volunteers went to work immediately after power went down Thursday afternoon.

"In five minutes guys were on the air with the Red Cross and Office of Emergency Management," he said.

During other disasters, such as severe weather, ARRL volunteers and coordinators activate telephone trees, Mr. Carrubba said. On Thursday, they instead hit their assigned frequency or staffed an emergency operations center.

In the New York-Long Island region, with a population of nearly 10 million, about 100 ham operators handled the situation, Mr. Carrubba said. Some volunteers headed to a Red Cross headquarters or shelter, fire department, or hospital, he said. One hospital was temporarily out of power and ARRL volunteers provided communications to ambulances until the electricity was restored. Mr. Carrubba estimated that operators handled 800 to 1,000 communications from Thursday afternoon until early Friday.

ARRL "Logbook of the World" Goes Live

The long-awaited QSL-cardless ARRL awards and contact credit system "Logbook of the World" (LoTW) officially opened for business this week.

Within its first five days of operation, the system-- which is open to all--already had attracted more than 1000 requests for a digital certificate, the essential pass key to LoTW.

"Although Logbook of the World is a tremendous resource for hams chasing DXCC, VHF/UHF Century Club (VUCC), Worked All States (WAS) and other awards, we hope it will appeal to hams who are not currently active in

these awards programs," said ARRL Chief Operating Officer Mark Wilson, K1RO. "The proliferation of logging software has stimulated activity and interest in contesting, and submitting log data and verifying award credits online is a logical next step."

Data integrity has been a watchword of the LoTW since the project's conception, and that starts with a digital certificate. Obtaining a digital certificate involves a combination of on-line filing and good old-fashioned snail mail. The first step is to visit the ARRL Logbook of the World Web page <<http://www.arrl.org/lotw>>, download the LoTW software and request a digital certificate that ties the participant's identity to a digital key.

"We will need to verify you are who you say you are," ARRL Membership Services Manager Wayne Mills, N7NG, explains. "The security of the entire system depends heavily on the method used for verifying the user's identity." This first step is called authentication. Everyone who plans to use LoTW first must obtain a digital certificate. There are no exceptions. For US amateurs, this process relies on your mailing address in the FCC database, which must be current.

For non-US amateurs, authentication will rely on other documentation, primarily a copy of the participant's Amateur Radio license and another official identifying document. Mail these copies to ARRL, Logbook of the World Administrator, 225 Main St, Newington, CT

06111 USA.

Assuming everything goes smoothly, US licensees requesting a digital certificate soon will receive a postcard in the mail that contains a password. "The first batch of postcards has been mailed, and some people have uploaded their passwords," Wilson said. "Those will be checked, and the first batch of digital certificates should be e-mailed to users September 22."

Users then should go to the LoTW Web site and enter the password to complete the processing of their certificate request. Once the password has been entered, the digital certificate will be e-mailed within a working day or two. Non-US stations will receive their digital certificates via e-mail once their documentation has been received at ARRL Headquarters and authenticated.

Participants will use their digital certificates to "sign" and upload either Amateur Data Interchange Format (ADIF) or Cabrillo-formatted files. Participants also may use their primary digital certificates to obtain additional certificates necessary to submit log data and obtain award credit for contacts made under formerly held call signs.

At the heart of the Logbook of the World concept will be a huge repository of log data provided by operators--from individual DXers and contesters to major DXpeditions--and maintained by ARRL. Mills says the system will benefit big and little guns alike by providing quick QSO

credit for ARRL-sponsored awards, especially DXCC.

Obtaining a digital certificate and uploading log data are free of charge. There will be a per-QSO charge for each contact credit used, but Mills expects it will be much less than the typical costs involved with exchanging paper QSL cards. When you use an LoTW confirmation for an award credit, the fee will be added to your account and shown in the user's record. The user will be able to pay for these charges online using a credit card.

Mills' article, "Introducing Logbook of the World," appears in the October issue of QST. LoTW news and announcements will be posted to the Logbook of the World Web site <<http://www.arrl.org/lotw>>.

Wilson commended ARRL Web and Software Development Department Manager Jon Bloom, KE3Z, and the other contributors to the project "for their dedication and hard work that made Logbook a reality."

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AMATEUR RADIO
AROUND THE
WORLD

We're on the Web!
<http://www.k4tlh.org>



<http://groups.yahoo.com/group/tars>

Your Officers

President:

Brian Dunworth, AI4AI

Vice-President:

Shaun Hancock, AF400

Treasurer:

Carlton W. Wells, AG4UT

Secretary:

John Love, NZ4QJ

Upcoming Events

TARS Meetings:

Every first Thursday of the month at 7:00 p. m. EDT.

Friday Lunch: Every Friday, 11:30 a. m. EDT at Golden Corral on North Monroe St.

Saturday Breakfasts:

Every Saturday, 8:00 a. m. EDT at Golden Corral on N Monroe St.

Capital District ARES

Net: Every Sunday, 8:00 p. m. Eastern on the AE4S repeater (146.655).

North Florida ARES

Net: Every morning, except Sunday on 3950 KHz at 9:00 a. m. Eastern.

North Florida Phone

Net: Every evening, on 3950 KHz at 2330 UTC.

Editorial Policy

Submitted material received by the editor from dues-paying members in good standing, on or before the 15th of the month will appear in the following month's newsletter as space permits. Articles published in *The Printed Circuit* are not representative of the views or opinions of the whole organization, and such views and opinions are of the individual author(s). Currently, the editor is Ryan Harris, KC4FSU (KC4FSU@Comcast.net) and is published by David Heupel, WE4RA