

CARS CARRIER

Charleston Amateur Radio Society

November 2014 Newsletter

CARS Web Site --- <http://www.wa4usn.org>

CARS meets the second Monday of each month at Ryan's Steak House on Highway 61.

Our next meeting will be held at 7:00 PM, Monday, Nov. 10, 2014



DUES FOR THE YEAR

**AUGUST 1, 2014 – JULY 31, 2015
ARE PAST DUE**

\$20.00/Year, \$10.00 for each additional member in the same household. Please make check payable to CARS. You may pay at the meeting or mail to membership chairman: **Bryce Myers, K4LXF, 2630 Dellwood Ave., North Charleston, SC 29405-6814**

EMERGENCY PREPAREDNESS

To All Hams, thanks for all of your efforts and support. Many events have needed communications support which is great practice for a real emergency.

Remember, hurricane season does not end until November 30. Keep a weather eye out. Anyone having the Weather Channel please check out their survival shows, might get some new ideas to save yourself in a disaster.

The November Charleston County ARES meeting will be at the Fire Station on Dorchester Road. The Low Country Firefighters Support Office has again this year requested a demonstration of ham radio at their "Open House" on November 15, 2014. Plan on attending, last year the hot dogs, cookies, and pastries were a real treat and hit.

Make sure you have the Charleston County Emergency Frequencies in your radios.

146.790 – Tone 123.0 during nets

146.760 – Tone 123.0

147.570 Simplex per SC Tactical Communications Plan

SEPT. FINANCIAL REPORT

Beginning Checking Balance - 9/1/14	\$5,069.70
Cash Receipts:	
Dues	370.00
Raffle Proceeds	40.00
Cash Disbursements:	
John Meyers – Sept. CARS Carrier	(33.20)
AT&T - September	(74.77)
Ending Checking Balance - 9/30/14	\$5,371.73

Charlotte, KJ4PLX

MINUTES of OCT. MEETING

Charleston Amateur Radio Society

Club Meeting at Ryan's Steak House on Hwy.61

Monday, October 13, 2014 at 7:00 PM

MINUTES:

The Charleston Amateur Radio Society Meeting was called to order by President Gregory Amirault, KI4TVA, at 7:00 PM on Monday, October 13, 2014 at Ryan's Steak House in Charleston, SC.

Introductions: There were 45 people present.

Secretary's Minutes: Warren, KK4EVI

The September 2014 meeting minutes were published in the October 2014 CARS Carrier. A motion was made to accept the minutes as published, the motion was seconded, and passed.

Treasurer's Report: Charlotte, KJ4PLX

The August 2014 Financial Report was published in the October 2014 newsletter and accepted as information.

Museum Ships: Ed, KQ4DC / David, KI4FSC / Tom, AJ4UQ

No report.

Field Day: Tom, AJ4UQ

No report.

Races: Doug, KU4OC

IOP connector Run had a few glitches but otherwise the run went well.

Cystic Fibrosis Bike Run – All had a good time

Hamfest Report: Greg, KI4TVA

Getting ticket booklets ready for mailing.

Coastal Carolina Fair: Linda, K4MPY

Sign up sheet being passed around.

Repeater Report: Bryce, K4LXF

146.94 repeater stuck in the transmitting mode. Had to unplug and restart, to get it working correctly again.

Membership: Bryce, K4LXF

Dues are past due for club membership.

Applications for regular membership:

First Reading: Darrel McKeown, KM4DRN
Timothy Belmonte, K1TSB

Second Reading: None

The new first reading members will be voted on at next meeting.

Emergency Prep: Rick, N8BKN, Charleston; John, W4HNK, Dorchester; Dennis, KG4RUL, Berkeley

Next ARES meeting is on October 18th at the Fire Station on Dorchester Rd, where the trailer is kept. The meeting will start at 09:00 AM.

The Annual Great Shakeout drill will be held on 10/16/2014.

Hurricane Gonzalo will be hitting Bermuda on Friday 10/17/2014.

Dorchester: No meeting this month

Nets: George, KI4UIW - Newcomers Net

Newcomers Net meets on Thursdays at 8:00 PM. If you are interested in trying to conduct a net, send George, KI4UIW, a note and he will get you the information.

ARES Net meets at Sunday 8:00 PM. Local area 5 meets from 8:00 - 8:20 PM then joins the statewide link up at 8:20 PM.

QCWA Net meets on Saturday at 9:30 AM. Chapter 89 is now in Charleston.

SKYWARN Net meets on Tuesdays at 9:00 PM on the linked repeater systems.

Lowcountry Digital Nets: meets Sundays at 8:30 PM and Wednesdays at 8:00 PM on **145.700** MHz running Contestia 32/1000.

TARC CW Training Net: meets every Tuesday at 7:30 on linked repeater systems.

SCHEART Net: meets every Thursday morning at 9:00 AM.

ARES HF Net: Meets on 1st and 3rd Monday at 6:00 PM on HF 3.990 MHz primary and 3.9935 MHz alternate. Looking for more HF Logins, to support HF web.

Newsletter/Website: John, WA4GPS

We've created a new handout Pamphlet, about the CARS club.

Education & VE Testing: Sheila, KT4YW

The next scheduled exam will be 09:00 AM on December 13, 2014 at the Trident Hospital.

A Technician training class will be held on November 1st and 2nd also at the Trident Hospital. A test will be given on Sunday November 2nd at 1:00 PM.

School Programs: Alene, KG4NKD - DuBose
Middle School Radio Club - K4DMS

No report.

Communications Trailer: Willie, WB4SOG

Will be working on something shortly.

Old Business:

Brian Fletcher, K6NWS – talked about the APRS tracking test. The test isn't over, they found a few problems with the local system. They plan to add a new APRS station.

Dennis (KV4WM) – Donated a box of new chargers, for the APRS batteries.

New Business:

Will the Yorktown be available for Boy Scout JOTA on October 18 and 19? Plans will be made if needed.

Announcements:

Drawing:

The drawing for a one year ARRL membership was won by Shelia, KT4YW.

There being no further business, a motion was made, seconded and passed to close the meeting. The meeting was adjourned at 7:40 PM.

Respectfully submitted by Warren, KK4EVI

ANTENNAS, TRANSMISSION LINES, AND SWR

As you probably already know, an unmatched transmission line is one in which the terminal impedance (usually the antenna) is different from the characteristic impedance of the line. A typical example might be a tri-band beam with an impedance in the neighborhood of 25 ohms fed by a 50 ohm coaxial cable. If there is no reactive component (which frequently there is) then calculation of the Standing Wave Ratio (SWR) is simply $50/25 = 2.0$. If the terminal impedance were 100 ohms, the SWR would be $100/50 = 2.0$ again. Since SWR is always

1.0 or greater, the calculation is always the larger impedance divided by the smaller. If there is inductive or capacitive reactance at the load, the lowest possible SWR will always be greater than 1.0, sometimes considerably so, and its calculation becomes considerably more complicated and we won't get into that. Suffice it to say that your SWR bridge or other indicator will give you a sufficiently accurate number.

If your SWR is over 2.0 it is advisable to get it down since most modern transceivers will reduce power output when the SWR is high. Getting the SWR down is the job of the Antenna Tuner which tunes, or more accurately, matches the antenna and transmission line to the output impedance of the transmitter. Note that everything starts with the very end of the antenna where the initial reflection takes place. In the case of a dipole, that is an unterminated wire which has a high impedance, approximately 4000 to 5000 ohms in most cases. It would be a lot higher were it not for the fact that there is capacitance between the wire from each leg of the dipole to ground and to the other leg. Since each leg is $\frac{1}{4}$ th wavelength, it acts as a quarter wave transformer. Consult your ARRL Antenna Book for a description of quarter wave transformers or Q-sections. The result of the transformer action is a feed point impedance of about 60 ohms for the average dipole, and if you get the dipole length just right, there will be little or no reactive component, so the SWR will be $60 / 50 = 1.2$.

At every point along the feed line where there is a change in impedance, there will be reflection. Visualize it as a series of mirrors, each with a small hole in it. When the entire system is matched by the antenna tuner, the mirror reflects all the light that hits it, and the hole passes light that has been reflected by the next most distant mirror. Consider the feed point of the dipole. The mirrors at the ends of the dipole reflect all the light that arrives. But some doesn't make it because it was lost from the antenna as radio signal, or heat due to resistance in the wire. The remainder passes through the hole in the next mirror headed back toward the transmitter. If the antenna tuner is properly adjusted, the light passing through the hole will be of exactly the same intensity as the light reflected from that mirror, so it will look like a complete mirror (no hole) to an observer. This will be true at every point of impedance change in the feeder

system. In other words, a properly adjusted antenna tuner will match every point of reflection (impedance change) in the entire system, no matter how many there are.

So all you have to do is adjust your antenna tuner for the lowest SWR and everything is great? Unfortunately not. Several years ago while at Handiham Camp near Bemidji Minnesota, I put up a 135 foot Zepp antenna fed with 300 ohm window line. Back in the shack I adjusted my MFJ antenna tuner for a perfect 1:1 SWR on 20 meters. The band was hot and signals were boiling in, but nobody was answering my calls. Turns out that I had neglected to connect the feed line to the end of the antenna. The insulated support rope was attached and the feed line was close enough to the antenna to provide capacitive coupling—enough for receiving, but not for transmitting. I was loading up an open parallel feed line and essentially all of my 100 watts was being dissipated as heat, some in the feed line, the rest in the antenna tuner.

I see occasional ads for antennas that tout an SWR of 2:1 or less from 1.8 MHz to 30 MHz using a random length wire. Actually, it is very easy to make such an antenna yourself. Just connect the end of your coax to a 50 ohm dummy load and connect a random wire to the center conductor of the coax. Radiation will be most effective if the wire is $\frac{1}{4}$ wavelength long, presenting about 50 ohms impedance to the system

after adding in the resistance of the poor (almost non-existent) ground system. The 50 ohm antenna in parallel with the 50 ohm dummy load yields an impedance of 25 ohms resulting in an SWR of 2:1. The only problem is 50% of your signal is wasted in the dummy load and nearly another 50% of what's left is lost in the ground system, so only about $\frac{1}{4}$ of your power is being radiated. But what the heck, you can make a lot of contacts using QRP.

Compact antennas for HF are frequently advertised. The performance of nearly all of these is grossly substandard. One exception is the MFJ 1788 Super Hi-Q Loop, a tuned loop which will perform well if it is suitably located (way up high where you would put your dipole). It has some disadvantages: very sharp tuning making QSY complicated, a narrow radiation pattern, and it's heavy. It is much simpler to get a significant length of wire high in the air. A good rule of thumb is at least $\frac{3}{8}$ th wavelength of wire at the lowest frequency you will be operating. The exact configuration is not critical. Dipole, inverted V, G5RV, all work well and can be tuned with your automatic antenna tuner.

Try building your own antenna system. It ain't that complicated. The ARRL Antenna Book can help with the details.

73, Doc

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