



# The Spectrum

Issue 9

September 2004

## Words From The President.

Ruth Bigio, KB4LIF

It seems CARS is deeply in debt to many of its members who put in a great deal of time, effort and money to making this organization and its HamShacks one of which to be very proud. Since its inception many years ago, people have stepped forward to do whatever needed to be done. From putting up towers, running coax, checking out repeaters, etc., there are numerous things to keep an amateur radio organization running the way it should. There are so many people to thank for keeping this club on its feet and doing an outstanding job – that I would fill up an entire newsletter by writing down everyone’s name. And I am afraid that if I were to try to do just that – inevitably I would accidentally leave someone’s name out.

However – I do want each of you to know that I am very proud of Chesapeake Amateur Radio Service and its members. It has an excellent reputation within the City of Chesapeake for assisting them during times of emergencies. The National Weather Service has also indicated its continued awareness of our Skywarn net on Friday nights and our Skywarn Spotter program that has alerted them on more than one occasion recently of inclement weather. Our efforts have not gone unnoticed by the City; they have seen what amateur radio can do in an emergency and has helped us acquire a new ham shack for the club to use because we have been there to support them as needed.

Your continued support of our varied Special Events – from

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The 2003-2004 Chesapeake Amateur Radio Service Club year runs from November to October. The annual meeting is the first Monday in October in which the election is held to select the Board of Directors for the coming year. The 03-04 Year started in a tumultuous fashion following the effects of "Hurricane Isabel" on the local community and the club's equipment and activities. The 03-04 Budget and the club's Goals & Objectives became confused because of this event.

The September meeting is when the club must establish a nominating committee to find members interested in the leadership of the organization. But, more important at this meeting the membership MUST determine what is the MISSION of the Club! Clear objectives and goals must be established to reach the desired interest of the membership.

The club has the largest membership seen in a number of years, the club has resources and opportunities to reach realistic goals to be one of the best clubs in Tidewater. So now is the time to say what you want from your club and who you think can guide the group to reach those wants.

So, September 13th, that's the Monday after the Labor Day Holiday is a must go to meeting ! Plan on being there, to direct the future of the club.

73's, Sonny, K4WYS

**NAME THE NEW SHACK  
CONTEST. VOTE TO BE  
HELD SEPT 13<sup>th</sup>**

## Upcoming Events

### CARS Meeting

7:00 pm Monday, Sept 13<sup>th</sup>

**Craig Moeller from Channel 13 news  
guest speaker about severe weather and  
technology.**

### CARS Shack Day

To be announced. Saturday after meeting is  
VA Beach Hamfest weekend.

### TECH LICENSE CLASSES

Tuesdays and Thursdays

Beginning 9/28/04 7:00 – 9:00 pm

Exam to be held October 23, 2004  
8:30 am

### U.S.S. Wisconsin Club Meeting

September 11<sup>th</sup> membership meeting  
C & M Cafeteria Independence Blvd

### Virginia Beach Hamfest

Sept 18<sup>th</sup> & 19<sup>th</sup>  
Virginia Wesleyan Campus

**Ham Shack #2 is still in need of  
folks to help with the remodeling  
efforts. Please contact the board  
and get more information on what  
assistance is needed.**

**BOARD OF DIRECTORS  
ELECTIONS TO BE HELD IN  
OCTOBER.**

## Emergency Communications

Keep it short, keep it short, and keep it short... This should be said over and over along with the more ubiquitous phrase "keep it simple". No matter how tight the bandwidth, only so many signals can be sent in the range of frequencies, we amateurs are allowed to use. One of the observations that came out of Hurricane Charley was the breaking into the emergency nets with "emergent requests" for locating relatives and friends. This is obviously not an emergency of the life or limb kind. In fact, health and welfare messages are usually sent days after the disaster have taken place. If you take home one message from this article, it should be: "Listen to the Net Control Station (NCS) and keep it short".

The Chesapeake Emergency Operations Center (EOC) has 2 Kenwood TM V7A's, which can monitor 4 frequencies simultaneously. One is set for the 146.760 MHz, which is the repeater link with Richmond through Williamsburg, one is the 146.820 MHz for Chesapeake, and the other two can be set up for packet or to communicate with Portsmouth or Virginia Beach or with a VOiP node. We have one channel for the entire city of Chesapeake. In fact each city has one primary channel. During Hurricane Charley, I tried to pass a message to Virginia Beach that there was a funnel cloud spotted heading their way, but I had some delay breaking into the chatter going on the 146.970 MHz frequency. During an emergency, don't be put off if the NCS is terse. You never know who needs to break in with a real emergency.

To communicate beyond the region, I already mentioned that we could do this through the 146.760 repeater. If the local Internet infrastructure is intact, Voice Over Internet Protocols can be used. IRLP requires DSL or cable modem access. EchoLink runs better on broadband connections but can be setup to run over twisted pair telephone lines. (*Editor's note: IRLP can also run over normal telephone lines.*) However there is a delay with each transmission as the server connections are made. VOiP is not an efficient way to communicate, although it can be more reliable than HF phone. Thanks to Keith, KG4ZXX, we have an IRLP node and he runs a net on Sundays at 8:00 p.m. Ideally we would also have a local EchoLink node as a redundancy. When using IRLP or EchoLink, keep your transmissions short.

HF is another means for regional communication, however, during storms, the propagation can be extremely poor. Although we have HF capability at the EOC, in most situations, it is easier to use an HF relay station. We have a number of operators in the City of Chesapeake with fine HF stations with excellent antennas and amplifiers that can do a much better job than an emergency wire antenna outside the EOC. Plus the additional operator reduces the work the NCS station has to do.

Packet allows for the communication of text files and a bulletin board can function as an e-mail server. E-mail is probably the most efficient means of communicating information. Files can be transmitted containing substantial amounts of information. Internet

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Thanks to everyone who has entered a suggestion for a name to give to HamShack #2. We had a lot of very interesting entries and found it hard to narrow the list down but your board of directors rose to the challenge and have done just that.

The list has been brought down to 9 entries to vote on. The person who submitted the winning name will receive 3 Max & Erma certificates and I hear the food is really good.

**The Finalists for Ham Shack #2**

**The CARS Shack**

**The W4CAR Shack**

**The Shack**

**Shack No. 2**

**The Operating Room**

**The QRM Room**

**The Fire Station**

**The Marconi Room**

So be prepared to pick the name you think is the best and let the best person win those certificates!!!!

ARRL Kids' Day to Monitor-Merrimac Day, Hurricane Expo to HamShack Days and Fox Hunts are just some of what make our Club unique. CARS is definitely different from the other area amateur radio clubs because we have such a varied membership group that supports numerous activities. Our distinctive characteristics within our membership help make us what we are today. The fact that we have two HamShacks – one in conjunction with the Chesapeake Center for Science and Technology and the other at the old Fire Station Number 5 on Reservation Drive by the Locks in Great Bridge – both of these buildings add to our special qualities. After all – where else can one learn over at the WFOS radio studio classrooms by the original HamShack or watch the ships go up and down the Locks while one operates the HF radios at the HamShack2?

CARS has a just a little more to go through in order to finish fixing up HamShack2 on the inside and putting up the radios in the operating rooms. However, we are getting there. People have been very generous with their time, money, labor, materials, and spirit in a major effort to get this accomplished. We will get it done. After all, amateur radio is a hobby and we all have families and other lives away from the club. Too bad we don't have a genie in a bottle and can wish it done in one day or weekend. But until then – we will take it one day at a time – and know that we have the best club, the best members, and of course, the best hobby too. And I forgot to mention – the best friends that I have ever known!

**Hurricane Charley**

August 14, 2004, Hurricane Charley had already crossed Florida with category IV winds and significant destruction. All forecasts predicted tropical storm force winds for the Hampton Roads area, but Hurricane Charley had already fooled forecasters once and the forecasted track was eerily reminiscent of Hurricane Isabel. So Pete, KG4VGH and Ruth KB4LIF opened the EOC radio station at 0900. Fortunately, the hurricane made landfall further down the coast and was rapidly loosing force. Through the afternoon and evening, Ruth and I continued to monitor the radios and check into the 146.760 repeater in Williamsburg. A total of 23 hams were available for station assignments. Lee, KI4CAV in addition to Ruth and Pete was at the EOC performing both Amateur Radio and Community Emergency Response Team duties. No shelters had to be opened and the 146.820 repeater became a SKYWARN Net until it was returned back to general amateur radio use at 8:30 p.m. Several funnel clouds were reported but no tornadoes were confirmed to have touched down.

The following operators checked in. KG4PWC, KB4LIF, KI4CAV, WA4BUE, WA4JRC, KB1BBS, KS4NO, KF4EPI, KG4WOJ, KI4EIN, KI4EUM, WB3IEC, K4WYS, KG4VGH, KV4GR, KI4DNN, KG4ZIM, KF4QPR, WC4MCD, KG4ZXX, KA0YEB, K4PRR, and WA4SQL. Thanks to everyone.

73 Leo KG4PWC

**LOCAL NETS**

|   |             |
|---|-------------|
| <b>SKYWARN NET</b><br>Fridays 1900 hours.   | 146.820 MHz |
| <b>Old Dominion IRLP Net</b><br>Sundays 2000 hours<br>State-wide net using IRLP to link repeaters | 146.700 MHz |
| <b>CARS 10 Meter Net</b><br>2000 hours on Mondays CARS doesn't meet                               | 28.400 MHz  |
| <b>Hampton Roads Public Service Net</b><br>Mon-Sat 2100 hours                                     | 146.970 MHz |
| <b>VBARC 10 Meter Net</b><br>2000 hours on Thursdays VBARC doesn't meet                           | 28.400 MHz  |
| <b>Portsmouth "PARC" Net</b><br>Monday & Wednesday 2000 hours                                     | 146.850 Mhz |
| <b>Southeastern Virginia Traffic Net</b><br>Sun, Tues, Thurs @ 2000 hours                         | 146.850 MHz |
| <b>Portsmouth Amateur Radio Emergency Services Net</b><br>Fridays 2000 hours                      | 146.850 MHz |



## ARRL NEWS BULLETINS

### ARISS PUTS ISS PHASE 2 EQUIPMENT TO USE AS FM "EASYSAT"

The Amateur Radio on the International Space Station (ARISS) program this week put one of the two ham stations aboard the ISS to use as a U/V (Mode

B) FM repeater (437.80 MHz up and 145.80 MHz down). The new Phase 2 ISS ham gear-- primarily used for packet operation and tests and briefly by Expedition 9 Commander Gennady Padalka, RN3DT, during Field Day 2004--was pressed into service for several days as a low-Earth-orbiting FM "EasySat." The crossband repeater experiment, announced August 28, was shut down with the other ARISS gear September 2 in preparation for a September 3 space walk. The Amateur Radio equipment aboard the ISS will be powered back up no sooner than 1700 UTC on September 4, said ISS Ham Radio Project Engineer Ken Ransom, N5VHC.

"Mike Fincke [KE5AIT] reported hearing stations actively using the repeater over North America, the southern portion of South America, South Africa, Europe, Australia and Japan," Ransom said. He got lucky on the ISS repeater September 2, snagging a QSO with V31KD in Belize City, Belize (EK57).

The Phase 2 gear was scheduled to return to RS0ISS packet operation following the space walk, but the repeater experiment could be back for a "repeat" performance. ARISS International Team Chairman Frank Bauer, KA3HDO, said the crossband repeater test provided an opportunity to further experiment with the ISS Amateur Radio system.

Last December, ISS Expedition 8 Commander Mike Foale, KB5UAC, set up a new Kenwood TM-D700 Phase 2 dual band transceiver in the ISS Zvezda Service Module--the crew's living quarters. With the help of the ARISS Japan team, Kenwood donated the TM-D700

transceivers to ARISS and made specific hardware and firmware modifications--including limiting its power output to a maximum of 25 W--to prepare it for flight. Plans call for using the Phase 2 station at 10 W output during ARISS school group QSOs, starting with the arrival of the Expedition 10 crew this fall.

### REPEATER COORDINATOR OKAYS MANDATORY REPEATER TONE POLICY

The Southeast Repeater Association (SERA) Board of Directors has approved an "all tone, all the time" policy for the repeaters SERA coordinates. SERA provides voluntary frequency coordination for amateur repeaters in Georgia, South Carolina, North Carolina, Kentucky, Tennessee, Mississippi and parts of Virginia and West Virginia. The Board okayed a motion to amend its coordination policy and guidelines to require CTCSS or DCS receive and transmit tones on all new FM voice repeaters. Existing voice repeaters will have until July 1, 2006, to comply. The SERA Repeater Journal reported the move in its August issue. Repeater Journal Editor Gary Pearce, KN4AQ, said a need to relieve interference complaints led to the Board's decision.

"The point is to stop the ongoing complaints and skirmishes between co-channel neighbors running carrier-access repeaters," Pearce explained. "The vote was unanimous, but SERA recognizes that tone isn't universally popular nor is it a cure-all. And it causes new problems, particularly for travelers."

Find more news on these and other articles at <http://www.arrl.org>

## HURRICANES – HOW THEY FORM

There are no other storms like hurricanes on earth. Views of hurricanes from satellites located thousands of miles above earth show how unique these powerful, tightly coiled weather systems are.

### What is a hurricane?

**A hurricane is a type of tropical cyclone – the general term for all circulating weather systems (counterclockwise, in the Northern Hemisphere) over tropical waters. Tropical cyclones are classified as follows:**

**Tropical depression** – An organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph (33 knots) or less.

**Tropical storm** – An organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 to 73 mph (34 – 63 knots).

**Hurricanes** – An intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. In the Western Pacific hurricanes are called “typhoons,” and similar storms in the Indian Ocean are called “cyclones.”

Hurricanes are products of the tropical ocean and atmosphere. Powered by heat from the sea, they are steered by the easterly trade winds and the temperate westerlies as well as by their own ferocious energy. Around their core, winds grow with great velocity, generating violent seas. Moving ashore, they sweep the ocean inward while spawning tornadoes and producing torrential rains and floods. Each year on average, ten tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Many of these remain over the ocean. However, about five hurricanes strike the United States coastline every 3 years. Of these five, two will be major hurricanes (category 3 or greater on the Saffir-Simpson Hurricane Scale).

Saffir-Simpson Hurricane Scale

| Scale | Sustained Winds | Sustained Damage | Examples         |
|-------|-----------------|------------------|------------------|
| 1     | 74 – 95         | Minimal          | Florence LA 1988 |
| 2     | 96 –110         | Moderate         | Bob RI 1991      |
| 3     | 111-130         | Extensive        | Emily NC 1993    |
| 4     | 131-155         | Extreme          | Andrew FL 1992   |
| 5     | >155            | Catastrophic     | Camille 1969     |

### Storm Structure and Danger

The center, or eye, of a hurricane is relatively calm. The most violent activity takes place in the area immediately around the eye, called the eyewall. At the top of the eyewall (about 50,000 feet) , most of the air is propelled outward, increasing the air’s upward motion. Some of the air, however, moves inward and sinks into the eye, creating a cloud-free area.

Storm surge is a large dome of water often 50 to 100 miles wide that sweeps across the coastline near where a hurricane makes landfall. The surge of high water topped by waves is devastating. The stronger the hurricane and the shallower the offshore water, the higher the surge will be. Along the immediate coast, storm surge is the greatest threat to life and property. If the storm surge arrives at the same time as the high tide, the water height will be even greater. The storm tide is the combination of the storm surge and the normal astronomical tide.

Other factors that kill people each year during a hurricane are winds, heavy rains, floods, and tornadoes.

Our thanks to the American Red Cross for their “Hurricanes – a Preparedness Guide” revised March 1966

e-mail is widely used and linking with the Internet e-mail provides the best communication means within and outside of the region with served agencies. Currently in use in a few areas are WinLink2000 for HF and Telpac for VHF/UHF. Existing packet stations can be converted to Telpac. Sailing and RV communities use WinLink2000 regularly. The requirement for WinLink2000 is a PACTOR II/III modem, which currently costs about \$700. Telpac can be setup using a packet station and broadband Internet connection. Packet and Pactor technology, by design are error-checking protocols.

One of the recent lessons learned is the lack of DB9 ports on modern computers. USB ports have replaced most serial ports. Until TNC's are redesigned for USB connections, adapters will need to be carried with your laptop computer. Plans for a more robust local digital network are in the works.

It is interesting to note that cell phone companies have mobile cell towers with uplinks to satellites, which were brought into the Florida disaster area within a few days. Certainly in a worst-case scenario, a mobile repeater with satellite Internet link would be desirable. No matter what, all links can be overwhelmed, just as the phone system during times of emergency. It is important, as the station operator that you filter out what is Emergent and Urgent from the Routine and Health and Welfare traffic. Our best resource is still you the station operator. As long as you remain active and maintain your equipment, you will always be an asset. Taking the ARRL Emcomm courses or learning how to pass NTS message traffic is a plus. In an emergency, listen to the NCS and keep the message short.

73  
Leo  
KG4PWC - Emergency Coordinator

### **Installation of mobile rigs**

One of the enjoyable aspects of Amateur Radio is communicating from your vehicle. First it can be a means of communicating an emergency. Second it can relieve the boredom when spending long periods in the vehicle. For those interested in providing radio support for special events, it is often a must have. Although you can use a HT in the car, the RF exposure can be higher than with a mobile rig with a properly mounted external antenna.

A good mobile rig should allow you to program: CTCSS or tone frequencies, repeater offsets and commonly used repeater frequencies. A good 2-meter rig is a great way to start. At the other end are rigs that offer multi-band and crossband repeating capabilities. The latter allows one to use your HT to access your mobile rig on one band and retransmit using the full power and better antenna of your mobile rig on a different band. This greatly extends the range of your HT. If you do use crossband repeating, there needs to be a control operator for the mobile rig nearby. One of the pitfalls of the very complex radio with wider

range receiver is the vulnerability to intermodulation and receiver overload by signals from cell towers, commercial broadcast stations and other sources of RF. One major convenience of the modern rig is the multi-function microphone, which allows one to access all the functions of the radio from the microphone.

Remember that with greater than 50 watts feeding into an antenna on VHF, you are required by the FCC to do some form of analysis of what is the safe exposure level for both controlled and uncontrolled environments. Therefore if you buy one of those 65-watt radios, you will need to be very careful where you place the antenna, to avoid excessive RF exposure. Even assuming some cable loss, your antenna may be putting out possibly unsafe levels RF. Most cables with commercial antennas are about 15 feet long and are equivalent to RG8X. If you assume about 3-4 db loss per 100 ft for the 2 meter band, these cables would incur about a 10% -15% loss. The 65 watts would be reduced to 55 watts at the antenna feed point. If you have mounted the antenna on the trunk and are using a gain antenna such as a 5/8 wavelength whip, some of the RF coming through the windshield may be at a dangerous level. The additional 15 watts over 50 watts represents a little over 1 db of gain. It takes about 6 db of gain to increase your signal strength 1 s unit. So the additional 15 watts does not gain you much but may be a safety hazard.

Once you have gotten a transceiver, you need to assess your requirements for an antenna. One major consideration is how high the antenna should be. If, you are like me with the need to park in a parking garage, your antenna will need to be short enough that you are not hitting any low lying beams. The ideal location is on the roof of your vehicle. A metal roof gives the best ground plane, a 360 degree unobstructed path and the best shielding to the occupants of the vehicle. If your vehicle is fiberglass and you are using a common mobile whip antenna, you will have to create a ground plane by inserting some form of metal (mesh, sheet metal, aluminum foil, etc) underneath the antenna. Since most mobile vhf/uhf FM transmissions use vertical polarization, any dipole, circular or halo antenna will need to be mounted in the vertical plane.

Where to mount the radio is only limited by the imagination, time and money of the operator. The cleanest installation has the display console mounted at dashboard level with the transceiver hidden under a seat or in the trunk. People have modified their dashboard, mounted displays in front of the middle console, mounted the radio in place of the ashtray, etc.

*Continued next page*

What is very important is how the dc power reaches the radio. Most cigarette lighters are not designed to handle greater than 10 amps of current and in some cases may be much lower. You should check the rating of the fuse to the lighter. Vehicles with electrical outlets for electronic devices usually have higher ratings and there may be some form of shielding on these lines. However, most cigarette adapters are maximally rated for 15 amps or less. This is usually acceptable for 50-watt rigs, however, if you are planning on installing a 100-watt HF rig, 15 amps will not be enough. It is best to install leads directly from the battery, through any of the grommets in the floorboard to inside the vehicle. Both the positive and negative leads should be fused at the battery.

Car batteries are not designed to be used like deep cycle batteries. A car headlight typically draws 10-15 amps and parking lights 3-5 amps and interior lights 1-2 amps. Therefore the average mobile transceiver, when transmitting draws current comparable to your headlights and on receive, draws about the same as the interior lights. But car batteries do not like being fully discharged!

Attaching the power leads to the battery helps shield the radio from alternator/engine noise. To further isolate the radio, it helps to place an inline noise filter. Most FM VHF/UHF rigs are less susceptible to RF noise than HF transceivers. If you are using a HF/VHF/UHF radio, you will need to check to see if your car has all metal components (engine, alternator, transmission, exhaust and chassis) bonded together with some form of grounding strap. Electrical fuel pumps can be difficult to shield for HF operation. Even though you may not hear the noise, you could be transmitting it. Ask someone to listen to your signal. If you operate in an area with strong signals creating receiver overload or intermodulation distortion, you may benefit from intermod filters placed in the antenna feed line.

Lastly, remember driving requires your primary attention. Do not use headsets while driving and if you must make major adjustments, park on the side of the road.

This is just a brief introduction to mobile Amateur Radio. There is plenty of information on the Internet (e.g. <http://www.arrl.org/tis/info/HF-Mobile.html>).

73  
Leo  
KG4PWC

## Wanted SkyWarn Coordinator for Hampton Roads

The SKYWARN Coordinator position was created to: Train the hams to run the nets, schedule additional SKYWARN classes for the South Hampton Roads area (not just the cities of Virginia Beach, Chesapeake, Norfolk and Portsmouth), and schedule the net Control Operators for their particular shifts. Utilizing public relations media to advertise SkyWarn with the amateur radio population is another aspect of the position. Due to a few people having the position in the past, and several new classes there have been new hams that have been trained as spotters and they would like to be placed on the schedule as Net Control Operators. We also have people who need to be taken off the list of Net Control Operators because of health or other reasons. Training is imperative for spotters or other hams who may wish to check into the Nets, who often do not know that a Watch or a Warning has been issued and that a Net is currently in progress, but do not know the protocol involved. These are all cases that a SkyWarn Coordinator would be involved in solving and assisting the entire Hampton Roads area.

Anyone interested in this position should contact KB4LIF, Ruth at [Ruthis23505@yahoo.com](mailto:Ruthis23505@yahoo.com). Anyone who is a licensed amateur radio operator may apply for the position. SkyWarn training is a plus but is not necessary at this time as SkyWarn training can be given at the National Weather Service Offices in Wakefield, VA or another SkyWarn Spotter Training Site.



Icom 2720H Install in Keith, KG4ZXX's, vehicle.

## The Spectrum

Monthly newsletter of the Chesapeake  
Amateur Radio Service (CARS)

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### **Webmaster:**

Leo Kusuda – KG4PWC

### **CARS Repeaters:**

146.610 MHz

146.820 MHz

444.000 MHz

### **W4CAR Trustee:**

Bill Runyon      WF4R

## **CARS OFFICERS & CHAIRPERSONS**

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**Vice President:**              Bill Runyon      WF4R

**Secretary:**                      James Gwaltney      KA4EDI

**Treasurer:**

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### **COM Coordinator:**

#### **Public Service Coordinator:**

Leo Kusuda                      KG4PWC

#### **Repeater Committee Chairman:**

Barry Goldblatt              W3AFH

#### **Spring Fest Coordinator:**

Leo Kusuda                      KG4PWC

#### **Technical Committee:**

Bill Runyon                      WF4R