



# The Spectrum

Issue 4

April 2008

## Words from the President

I'm pleased to announce that Club membership is presently 71 plus one membership application pending. Unfortunately we had several members that didn't renew for 2008, but that happens every year as work assignments take some of our folks away from the area and Father Time takes his toll.

Please do your part to be a BOOSTER of the club. Have you heard or met a ham who has recently moved into the area, just become licensed for the first time, or an "old timer" who wants to get more out of the hobby? Do you know someone who might be considering taking up ham radio as a hobby? Be a LOW PRESSURE salesman – introduce them to our website, invite them to our nets, invite them to Shack Day and Club meetings. Mention our licensing classes and our Volunteer Examiner test sessions. Mention the advantages of our clubhouse and operating positions available for use to club members. It is up to them to decide if they want to join our club, but let them know what we have to offer.

Our current General license class has six participants, and I think we will get several new club members from that program.

Thanks to all who got the club ready for the Virginia QSO Party contest. The contest has just

closed, and we all need to get our logs ready for submission. Be sure to note on your log that you are a member of CARS and you want your total score applied to CARS' score as well as to yourself. I'm very happy to say that two "newbies" got their feet wet in contesting at the shack. I was gratified to see it was a positive experience for both of them.

If you haven't already done so, please contact us through the Club's email account, [W4CAR@yahoo.com](mailto:W4CAR@yahoo.com) if you can volunteer some of your time to help with our only fund raiser, Springfest on April 6 and our Public Service events Tour de Cure and Swamp Stomp both on April 19.

You may have heard Al, WA4RGG (maybe soon to be KE4ABC) on the .82 repeater, looking for a contact. Please take a little time and chat with him. Al has been stuck in his bed in a nursing home for over seven months with no definite date known for going home. Al really appreciates contact with the "outside world" that the repeater provides, and says in many ways it is his "lifeline". Let's give him the contacts that we would hope to get if we were in his position.

Thanks and 73,  
Paul K4PRB

## Links of Interest

[Virginia Beach Amateur Radio Club](#)

[Portsmouth Amateur Radio Club](#)

[Home - KG4ZXK.COM - IRLP and much more!](#)

[South Hampton Roads Sky warn Net](#)

[ARRLWeb: New US Amateur Bands Chart](#)

[ARRLWeb: FCC ULS Modifies Customer Support Hotline Hours](#)

[QRP Amateur Radio Club International - Home](#)

[QRZ Ham Radio](#)

INSIDE THIS ISSUE	
2	Upcoming Events / Local Nets/ Bus. Meeting/ Springfest Volunteers Needed
3	Working the VA QSO Party From Afloat
4	A 160 METER WEEKEND at RADIO RIDGE
5	10 Tips for the PSK31 Digital Mode
7	CARS BOD Meeting Minutes/ Club Meeting Minutes
9	2008 Springfest Flyer

## Upcoming Events

### Board Meeting

Wednesday, Mar. 26th at TBD

### CARS Public Bus. Meeting

Monday, April 5<sup>th</sup> at 7:30 PM  
116 Reservation Rd.  
Chesapeake, VA 23322

### Shack Day

Saturday, Apr 19th at 10:00 to ??

### Chesapeake Springfest

Sunday April 6<sup>th</sup>, 2008

### Tour De Cure & Dismal Swamp Stomp

April 19<sup>th</sup>

### Bronco Club 2008

Pig-Pickin' – Tailgating  
SUNDAY, JUNE 8, 2008

## SPRINGFEST VOLUNTEERS NEEDED

Please volunteer to help make our only fund raising event successful. We need volunteers for Springfest. Currently we do not have enough people to make it happen.

We need a minimum of twelve people to set up tables for Springfest Saturday afternoon April 5 starting at 2:00 pm and help vendors move into the hall.

We need a minimum of twelve people to clean up the Moose Lodge and reset their tables Sunday afternoon starting around 2:00 pm.

We need parking directors for two shifts to manage parking from 8:30 am – 1:00 pm, so that nobody has to be outside for the whole event.

Please volunteer by contacting Keith at [KG4ZXK@arrl.net](mailto:KG4ZXK@arrl.net) or call Paul at 484-6047.

Thank you, this is what keeps the club running.

## LOCAL NETS

<b>SKYWARN NET</b> Wednesday 2000 Hours.	146.820 MHz
<b>CARS 2M Net</b> Sundays 2000 Hours	146.820 MHz
<b>CARS 10 Meter Net</b> 2000 hours on Mondays CARS doesn't meet	28.400 MHz
<b>Hampton Roads Public Service Net</b> Mon-Sat 2100 hours	146.970 MHz
<b>VBARC 10 Meter Net</b> 2000 hours on Thursdays VBARC doesn't meet	28.400 MHz
<b>Portsmouth "RagChew" Net</b> Monday & Wednesday 1930 hours	146.850 MHz
<b>Southeastern Virginia Traffic Net</b> Sun, Tues, Thurs @ 2000 hours	146.850 MHz
<b>Portsmouth Amateur Radio Emergency Services Net</b> Fridays 2000 hours	146.850 MHz
<b>Tidewater Radio Association WT4RA net</b> Thursday 1930 hours (code drill follows net)	147.195 MHz



## Working the VA QSO Party from Afloat

KI4RXC, KG4ZKG, and K5VIP participated in the VA QSO Party from Terry's 27 foot sloop while sailing around Chesapeake Bay. We made 117 contacts mostly on 40 meters in the contest on Saturday. Our score was slightly more than 5000 points, and we were probably the only maritime mobile station in the contest.

The antenna was 32 foot wire from the top of the mast to the rear railing with a ground wire hanging down into the sea water. It's truly amazing how well a simple vertical antenna works when it's mounted over sea water which is nearly a perfect ground plane.

Barry, K5VIP



## A 160 METER WEEKEND at RADIO RIDGE

### *The CQ 160 Meter SSB CONTEST*

Barry W3AFH and I had a great 160-meter contest weekend at the Radio Ridge. It was the CQ 160 SSB contest. Only time will tell how well we placed in the contest. Speculation is we might have placed in the upper percentages state side with 48 states, 22 countries, about 55 sections and over 940 contacts, for over 173,000 points.

The 160-meter antenna effort really paid off; however, the system showed a couple of shortcomings that could be tweaked. While the Beverage receive antenna system worked to specifications, they are not nearly directive enough to eliminate the amount of QRM generated by the powerful east coast stations. Improvements would be a major redesign and expensive. Each Beverage would have to be extended several hundred feet, and two new 700 foot Beverage trails would have to be cut through and a modification to the Beverage Control system. We could have easily have worked another 150 -300 weaker stations with an improved Beverage receiving system. The good news is that in non-contest times, most of the time, the Beverage system works great even in fair conditions.

*Note: Beverage antennas are low noise - low to the ground directional receiving antennas normally used to receive on low frequencies like 160 meters. You can read about Beverage antennas in the ON4UN, the ARRL antenna, and general handbooks. They are very long; the three at the Ridge are 500 feet each. They actually have a 60-degree (+/- 30 degree) receiving angle. The three Beverages at the Ridge are reversible and cover 360 degrees in six steps on the home-brew Beverage controller. To simply give an idea into the workings of these antennas think of the Beverage system like a rotating beam antenna with front to back to side ratios to achieve forward gain or to null out stations that you don't want to hear. As in a beam antenna the more elements that you have the more forward gain is achieved and the more you can null out interfering stations from the side and the back. So the beverage does a better job the longer it is, just like adding more elements to a beam. In the case of the Beverage antennas at the Ridge you could compare them to a 2 -3 element beam as they have about a 25 dB front to back and a 20 dB front to side ratio.*

I will attempt to get some pictures of the Beverage antenna system for a future Spectrum.

The vertical antenna was used exclusively for transmitting, even with it's short comings we were able to hold a frequency as long as we wanted to.

*Note: We also learnt a lot visually through Barry's lap top computer and in real time operating about the Gray Line, a RF phenomenon giving excellent DX paths at a point between sunrise and darkness. At this point answering our CQs were many DX stations, Hawaii and Alaska. Of particular interest was VP6DX a DX Expedition on Ducie Island off of the South West Coast of South America. You can read about the GRAY Line in the ARRL and ON4UN handbooks.*

2008 Goals at the Ridge is to obtain DXCC on 160, and WAS SSB on 160 meters. So SD and WY are needed at this point for WAS SSB. About 60 countries have been worked. Last year WAS on 160 CW was achieved and the Certificate is in hand.

Another needed addition at the Ridge is a computer to activate a DX cluster, so that DX stations can be spotted. With a computer into a DX cluster, we may have pulled out a lot more DX.

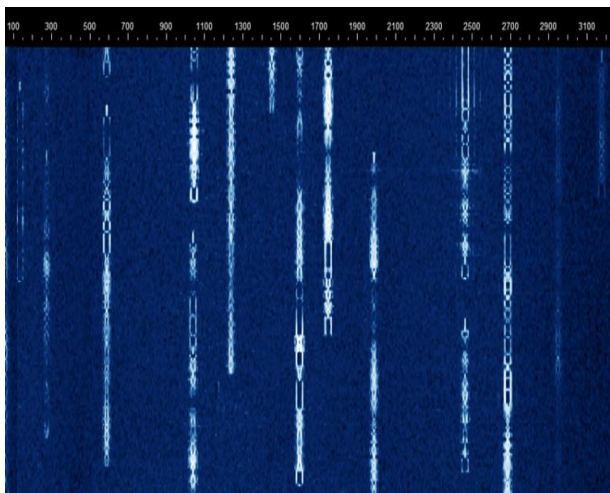
Well like every hobby, there is always another gadget or improvement to do a little more. One thing for sure 160 meters is an entirely new learning experience and challenge to me, as it will be to you if you decide to operate the "TOP BAND".

73 God Bless Rich WA4BUE

## 10 Tips for the PSK31 Digital Mode

By Frank Ravenswood, K2NCC

[evokefrank@gmail.com](mailto:evokefrank@gmail.com)



*There's more to going over the waterfall than just having a good barrel.*

An example of a Waterfall display. [photo by Frank Ravenswood, K2NCC]

- Use the center of your *waterfall* (see definitions of italicized terms below) display. Testing will show that your transmit (TX) and receive (RX) will be strongest there. Don't blindly use a 1000 Hz tone or strictly follow the VFO "set it and forget it" concept. You can easily lose 20% or more of your power on each edge of your *passband*. Passband centering of the signal will give the best results of both RX and TX.
- There's no need to have the waterfall streaking bright red. Set your rig's volume to a low level (less than 25% of maximum) and adjust your waterfall and *sound card* levels for good contrast. Do not *overdrive* your sound card! Get the background noise and the transmit trace well defined and separate. Keep in mind that how your waterfall looks does not impact decoding, but it is harder to work it if you can't see it.
- Use UPPER CASE characters sparingly. Lower case text in PSK31 *varicode* transmits fewer bits of data. You'll increase transmit speed and improve the likelihood of proper decoding on the other end by using lower case text as much as possible. (For example, the difference between a lowercase "e" (11) and an uppercase "E" (1110111) is three times more bits.)
- Enable your RF attenuation and increase the volume. This can help keep a strong signal from wiping out the weaker ones. Attenuation will probably be around 20 dB, but by dropping the noise level, the signal readability may improve. AGC (Automatic Gain Control) does nothing for a weak signal; it only levels the louder ones.
- Use your digital mode's software, or a program like *Spectrogram*, to see what your noise level is with the radio off. This will give you an idea of how "clean" your sound card is. Typically, onboard (built-in) sound hardware (as found in most "mainstream" computers like Dell or HP) does not have a signal-to-noise ratio as good as an inexpensive (less than \$50) separate sound card. When purchasing a sound card, look for one with a signal-to-noise ratio over 100 dBA. [A-weighted [decibels](#); a scale of sound "loudness" used in acoustics that simulates the response of human hearing. — Ed.] [Many onboard sound interfaces, while not optimum for high fidelity stereo sound, perform well for many amateur applications. For a technical review of various sound cards see J. Taylor, K1RFD, "Computer Sound Cards for Amateur Radio," QST, May 2007, pp 63 — 70. — Ed.]
- Consider dual monitors (most modern video cards have two jacks). This allows you to have the waterfall or spectrum display on one screen and your logger, text window, etc on the other. It makes a huge difference in speed and ease-of-use when you don't have to swap between screens or use smaller windows for your contact.

- When transmitting, keep your *ALC* reading as close to zero as possible. This will help keep your signal clean and your *IMD* at an acceptable level (-20 dB or better is ideal). Your power output will drop, but there's no need to overload the transmit level. PSK31 uses an 80% duty cycle. Even with a full duty cycle rig, it still needs to dissipate heat! Besides, 20 W more makes little difference. Output of around 50 W is enough to work the world, and your fellow operators will appreciate the courtesy. Also be sure your voice processor is *not* enabled when using digital modes.
- Ask for an RSQ (readability, strength, quality) report. When in a contact, send just a tone and ask for your *IMD* and a report on how your trace looks. This will give you a better idea of what adjustments may be needed.
- There are hundreds of digital modes. To get started or to learn more about the most common ones, refer to the list of digital mode references at the end of this article.

### **Bonus Tip:**

- Try 30 meters PSK31. It's a robust band, offering the best of 20 meters and 40 meters. Only digital modes and CW are permitted and contesting is not allowed. Be sure to operate within your privileges. PSK31 can typically be found around 10.140 MHz.

### **Definitions of Terms:**

**AGC (automatic gain control):** The ability to reduce signal strength on-the-fly, giving you more level audio reception on stronger stations.

**ALC (automatic level control):** A voltage adjustment or reading, indicating your transmit signal levels. ALC is designed to control voice and carrier signal levels, not digital modes. Typically for digital modes, if the ALC meter moves, then the microphone gain is too high.

**Signal-to-noise ratio (S/N):** A comparison of the signal levels to the relative noise level. Ideally, a perfect signal would have no noise, but realistically, you'll want an S/N ratio well within the tolerances of the mode you're using. PSK31 tolerates about a 10 dB S/N ratio.

**dB:** a logarithmic unit of relative measurement that expresses the ratio of two levels.

**Digital mode:** Any method for conveying digital information using radio signals. Much like a computer modem, a digital feed is converted to analog, sent across a transmission medium, then reconverted back to a readable signal at the receiving station.

**Duty cycle:** The total time during a transmission period that the transmitter is delivering power to the antenna. When your radio is transmitting, there's an on/off process that takes place. Transmitting at a 100% duty cycle indicates that you are using 100% of your radio's power, 100% of the time. Better radios will allow this, while others will eventually fail under the pressure of such a load.

**IMD (intermodulation distortion):** The ratio, in dB, used to determine the quality of your transmission. Unwanted modulation products or signals will reduce *IMD* levels. More power does not mean better copy!

**Overdrive:** Turning the volume of your radio up so high that you risk damage to the sound card, or cause signal "splatter." Similar to maintaining your *ALC* levels.

**Passband:** The range of frequencies that your transceiver can receive when on a single frequency; typically around 3000 Hz wide.

**PSK (Phase Shift Keying):** A form of modulation that shifts the phase of the transmit signal in order to carry more information. **PSK31** is a digital mode, created in the 1990s by Peter Martinez, G3PLX, which has a 31.25 Hz bandwidth on your waterfall display.

**RF (radio frequency) attenuation:** A suppression of signals received. You'll often see a noise level reduction, with a minor sacrifice to the desired signal reception. Check your radio's manual on how to adjust it.

**RSQ (Readability, Strength, Quality):** Much like the familiar "RST" reports, using a 599-type reporting scheme. Instead of "Tone" (Morse code), use "Quality." 95%+ readable, with a very strong waterfall trace and a clean (no splatter) signal would warrant a 599 report.

**Sound card:** A piece of hardware in your computer that acts as an analog-to-digital or digital-to-analog converter of audio frequency signals. A microphone input is often included.

**VFO (variable frequency oscillator):** An oscillator whose frequency is controlled by varying the value of either the capacitance or inductance of its tuned circuit. In analog transceivers the main tuning dial is used to adjust the VFO's tuned circuit capacitance or inductance and thereby the transceiver's operating frequency.

**Varicode:** A streamlined coding system that uses letter codes that are shorter than those of the ASCII or Baudot coding systems

**Waterfall:** A visual display of radio signals (and other sounds) found on the tuned frequency.

**For More Information:**

S. Ford, WB8IMY, [The ARRL HF Digital Handbook](#), 4th edition. Available from your local ARRL dealer, or from the ARRL bookstore: [www.arrl.org/shop](http://www.arrl.org/shop)

R. Prosch, DF3LZ, [Technical Handbook for Radio Monitoring I](#)

S. Brown, HB9DRV, [Digital Master 780: Spectrogram](#) and other software

## **CARS BOD MEETING MINUTES 2 / 27 / 08**

Meeting called to order at 7:30 pm.

Attendees: Paul K4PRB    Gavin KD7JGB    Marshall AI4CM    Barry K5VIP  
                  Bill WF4R        Bob AC5ST

Marshall AI4CM read the minutes of the previous BOD meeting and they were taken under advisement.

Barry K5VIP provided the Treasurer's Report.

Sean W5CDR gave the Communications Officer's report, including the fact that the City is again changing shelter designations. He provided the new list of shelters.

**COMMITTEE REPORTS:**

PS/EC, Repeater, and Springfest committee reports were given.

**OLD BUSINESS:**

Sean W5CDR moved that the BOD authorize purchase of the Earl Selover, W4LPF, plaque at a cost not to exceed \$60.00. Seconded and approved.

PS/EC – Paul K4PRB requested Sean W5CDR to provide definite schedules for:

Turn over of WFOS radio to Richard Siff

Shelter radio reprogramming and redistribution

Shelter surveys & tests including EOC

EOC drill

Also, manning plan for Tour De Cure and Swamp Stomp is needed by March 26.

General License class is scheduled for March 11 – April 3.

Keith reported that the logging computer has been readied for the Virginia QSO Party contest.

#### NEW BUSINESS:

Gavin moved to recommend the club approve membership applications for Suzanne Snowden, KJ4AVM, and Phil Henline, KI4ZAC.

Sean W5CDR said the reinstallation of the two downed wire dipoles would be planned March 1, and they would be in place in time to support the Virginia QSO Party contest.

Keith moved to allow Barry K5VIP to use the shack on April 5 and 6 for a meeting of the regional QCWA (under Barry's supervision). Seconded and approved.

Barry suggested that the club have a presentation on WINLINK in the near future and explore including WINLINK in our tools for Public Service.

Meeting adjourned at 9:15 pm.

### **CARS CLUB MEETING MINUTES                      3 / 3 / 08**

Meeting called to order at 7:30 pm.

Attendance: 40 members and guests.

This was a diner meeting so the order of business was abbreviated. The diner meeting was held at the Silver Diner, as Kristy's Kitchen refused to honor our agreement to hold it there four days before the scheduled meeting, and the Silver Diner was willing to accommodate us on short notice.

During introductions, Vince Williams KG4CCR and Chuck Thomas KF4GST were recognized.

#### ANNOUNCEMENTS:

- Shack Day and the Virginia QSO Party contest will be Saturday, March 15.
- The General license class will be March 11 – April 3.
- The next VE session will be April 6 at Springfest.
- Dewey W4DCJ has donated three ferrite cores designed for Bevrige antenna matching transformers to the club. They will be available for members who need them. Bob Zogg N4RAZ brought a stack of HRO catalogs from NVA to be placed in the shack for any member who wants one.
- Sean W5CDR requested volunteers for Tour De Cure and Swamp Stomp to sign up.
- Keith KG4ZK requested volunteers for Springfest Set Up / Parking / Clean Up to come forward.

#### NEW BUSINESS:

Keith KG4ZK moved to approve the membership applications of Suzanne Snowden KJ4AVM and Phil Henline, WA9KFB (previously KI4ZAC).

Meeting adjourned at 8:05 pm.

Sunday, April 6, 2008

# Chesapeake Amateur Radio Service SpringFest 2008



Amateur Radio and Electronic Swapmeet/FleaMarket

Moose Lodge #898 (Same location as last year)

1400 N. George Washington Hwy, Chesapeake, VA23323

I-64 exit 296 North, approximately 2miles north on N. George Washington Hwy (US-17)

Approximately 7500 square feet of air conditioned space

Admission includes one table.

Talk-In Freq: 146.820 PL=162.2

\$5 Advance or at the door admission donation: \$6. 00

Additional Table: \$6.00 each

If you would like to load-in the evening before, please contact SpringFest Committee directly.

Tailgate setup 7:00 AM; general admission: 9:00 AM. earlybird.drawing: 9:15 AM

For more information please visit our web site at: <http://w4car.org>  
or contact Keith Ainsley at (757) 613-7059 e-mail: [w4car@yahoo.com](mailto:w4car@yahoo.com)

Mail the following information with your ticket request to:

C.A.R.S., PO Box 6867, Chesapeake, VA 23323-0867

Name: \_\_\_\_\_ Tel:( ) \_\_\_\_\_ Fax:( ) \_\_\_\_\_

Business Name/Call Sign: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ ST: \_\_\_\_\_ ZIP: \_\_\_\_\_

\_\_\_\_\_ Advance Tickets @ \$5.00 each

S.A.S.E. REQUIRED - MAKE CHECK or MONEY ORDER PAYABLE TO: C.A.R.S. TOTAL : \$ \_\_\_\_\_

## Spectrum

Monthly newsletter of the Chesapeake  
Amateur Radio Service (CARS)

Post Office Box 6867  
Chesapeake, VA 23323-6867

<http://www.w4car.org>

Email: [w4car@arrl.net](mailto:w4car@arrl.net)

**Newsletter Editor:** Gavin Wright-KD7GJB

**Webmaster:** Sean Gorman - W5CDR

### CARS : Repeaters

146.820 (PL 162.2) MHz  
146.610 MHz (PL 100.0)  
444.000 (PL 100.0)MHz

**W4CAR Trustee:** Bill Runyon WF4R

### CARS OFFICERS & CHAIRPERSONS

**President:** Paul Buckwalter K4PRB

**Vice President:** Gavin Wright KD7GJB

**Secretary:** Marshall Denny AI4CM

**Treasurer:** Barry Priddy K5VIP

#### **Communications Officer**

Sean Gorman W5CDR

#### **Past President:**

Keith Ainsley KG4ZXK

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

Jim Hardee WB4UVH

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

Bill Runyon WF4R