

# SOLID COPY™



## Winter 2003/2004

The Bulletin of the  
Richmond Amateur Telecommunications Society  
P. O. Box 14828 - Richmond, Virginia 23221



## Call Out the Hounds!

By Mike Gabbert, K4AUR

Let's go fox hunting! Well, not this week or this winter, but how about this spring and summer when the weather gets warmer? Sound good? Okay, but if we go, we'll have to get ready, and we have a lot to do.

What is fox hunting, you ask, and what does it have to do with radio? Don't worry—no cute, furry forest creatures get hurt.

Fox hunting or bunny hunting or T-hunting is a sport based on radio direction finding. It is an exercise in honing skills which can have real and dramatic results when it is needed to be put into serious use.

For instance (and this is not necessarily so far fetched), what would we

do if someone began jamming the 146.880 machine. What if they constantly used foul language and kept doing so each time you tried to access the repeater. I'm not talking about a RATS member or even an amateur radio operator—just someone with a radio and too much time on their hands and just a dash of malice. If we acquire these skills, we would have the tools to locate such a jammer and the ability to turn *someone* into the proper authorities.

### GO, RILEY, GO!

Don't misunderstand me. I would never advocate that we confront any such person ourselves. But we would be able to locate the source of this type of malicious interference and report it to the ARRL Official Observer for action.

And these are the same principles used to find downed aircraft, by homing in on their so-called black box beacons.

### WHAT'S INVOLVED

There are two types of contests. One is time based. Find the fox (or foxes) in the least amount of time. Distance is the other criterion.

Be the one to find the fox while at the same time putting least amount of miles on your vehicle. This means taking greater care in determining the direction of the hidden transmitter, which we call the fox.

See Fox Hunting on Page 2

### R.A.T.S. ANNUAL CHRISTMAS DINNER

This year's dinner will be Friday, December 19, 2003, at 6:30 PM. Just as last year, the dinner will be at the Sandston Presbyterian Church, one block north of the post office at 13 North Confederate Avenue.

The menu will include turkey or chicken and possibly ham. Also on the list will be potatoes, and two other vegetable dishes and dessert accompanied by tea, coffee and sodas.

Thanks to Marie Long, K4KML, for handling the catering arrangements and Arlo Amstutz, WA4RLO, for securing the location of the dinner.

Late membership renewals will be accepted without the additional \$5 application fee if paid at this dinner event.

See the back page for RSVP information. The 19<sup>th</sup> is almost upon us so respond as soon as you can.

This dinner will be on the same date and in place of our regular meeting. Please note the special location.

### FROSTFEST 2004

The *FrostFest* Committee hopes this newsletter finds you well and prosperous as we enter the Holiday Season. And once again, we need your support and spirit to make the upcoming *FrostFest* the best ever.

On February 22, 2004, we open the Showplace doors to the many hams who still enjoy the old fashioned RATS *FrostFest* and we want this to continue for many years to come, but we need YOU!

See *FrostFest* on Page 3

## MESSAGE FROM THE PRESIDENT

By Jerry Williams, KJ4IT

The current membership year in RATS got off to a really breezy start with the arrival of Hurricane Isabel. Many members learned the meaning of emergency preparedness when their homes and stations were forced off the air by power outages. Some had planned ahead or had generators which they used to maintain a minimal standard of living not to mention keeping their stations on the air. Many of you are thinking about how to prevent this from happening again in the future.

Amateur Radio is considered to be the last resort When All Else Fails. Many RATS members were involved in the emergency proceedings surrounding Isabel both from public shelters, setting up equipment at the Virginia Department of Emergency Management not to mention the fact that that the W4RAT repeater was a backup for ARES during this emergency and a number of members were involved in emergency nets.

Some members have asked how they can get involved in emergency service. One way is to log on to the [www.arrl.org](http://www.arrl.org) and find out how you can enroll in on-line emergency communications courses. The fee is nominal, around \$49. Currently the course fees are being reimbursed to participants successfully completing the course by application to the Department of Homeland Security and the United Technologies Corp.

### UPCOMING EVENTS

**Christmas Dinner:** By the time you read this, it will be December and that means it is time for the annuals RATS Christmas Dinner Meeting. This will be open to current paid up members and their immediate households. Vice President Marie Long is making the arrangements for this gathering. Twenty members expressed an interest in this at the November meeting and the Board would like to see more members attend. Further information will follow and more than likely those wishing to attend will have to call and make 'reservations' so an

estimate can be made on the quantity of food needed.

**FrostFest:** Although the *FrostFest* is not until February 22, 2004, planning is already underway by the *FrostFest* Chairman Jim Clark, N3JJF and his Assistant Chairman Pat Wilson, W4PW. *FrostFest* depends on the support of the general membership to carryout tasks related to *FrostFest* Operations. I am told that it is becoming increasingly harder to get members to assist with this important event, with fewer and fewer RATS members participating. I can assure you that the Board of Directors is giving careful attention to the Fest not only in attendance but also in working participation of the General Membership as to whether or not it is feasible both from a financial point but a staffing point to continue with this event. To those of you who come out year after year, and believe me I know who you are, thank you for your support. For those of you who have not yet assisted in the *FrostFest*, now is the time to come forward and volunteer – don't wait for a call. Make this the first thing on your Christmas To-do List.

### THANK YOU

I would like to thank club member Steven Winner, KB4WWN for his talk on digital video at the October meeting. It was very informative both from a home application/consumer standpoint to the fact that I saw and heard at least three things discussed that are questions on Amateur License Exams. Thanks Steven!

I would also like to thank Keith Deringer, WA4KD who is the ARRL Emergency Coordinator (EC) for the City of Richmond. He gave a very informative and timely talk on Emergency Communications in the wake of Hurricane Isabel. Ham volunteers are needed to come forward to help in time of need i.e. YOU need to make the call and sign up. Volunteers are needed at not only VDEM, but with the Salvation Army, the American Red Cross and other agencies. Please contact Keith at [wa4kd@arrl.net](mailto:wa4kd@arrl.net) or Keith Deringer, WA4KD, 6502 Kensington Ave, Richmond, VA 23226.

This is all for now, so Merry Christmas & 73,

Jerry, KJ4IT

## FOX HUNTING . . .

*Continued from Page 1*

Then follow your maps diligently by knowing where the one-way streets, dead-ends and road construction and other obstacles are and avoiding them.

When distance is used, even though someone else may find the fox more quickly than you did, if you did it in shortest distance driven, you win.

We all probably have a two meter handie-talkie. This is all the radio we really need. This radio must have the ability to display signal strength. Most modern radios have a bar graph on their LCD display which will serve perfectly.

Next we need a directional antenna. That little rubber ducky just will not do. This is where our work over the winter comes in. We'll discuss this more in the next issue of *Solid Copy*.

We take a bearing on the fox at the beginning of the hunt and throughout the hunt. We don't merely take a bearing, then drive a few miles and take another—we could drive right past it between readings.

This means we compete in teams, a driver, a navigator and the DF'er. The really good hunters like to work alone, but for us beginners, we'll stick to the team approach and stay safe while on the streets. Our first hunt ought to be based on shortest distance wins rather than time. That way we won't be pressured by time and risk having the hunt distract us from the more important task of driving.

### TACTICS

You could take a directional bearing at one point, move to another location and take another. Then, plotting the directions from each location on a map, move to where the two plots intersect.

There are other schemes to locating the fox. If you are a sailor, the terms "bow and beam" and "doubling the angle on the bow" might be familiar.

For the latter, that means taking the angle of the line from you to the fox to the line of your direction of travel. Taking note of the mileage on your odometer when you begin this process, you continue along your direction of travel. When the angle to the fox is double the initial reading, turn in the direction of the fox. The distance should be the same as already traveled. This is based on the geometry of an isosceles triangle—the two sides (not the base) are equal in length.

With errors in plotting the directions and being constrained by the city streets, i.e., unable to go precisely the required direction, it is not likely you will be at the fox the first time you go through this procedure. Just repeat the process.

Just as there different strategies in finding the fox, there are different ways to determine the direction to the fox. You can use the antenna to find the direction of where the fox is, i.e., the direction of strongest reception, or find the null—the direction opposite to that of the fox and, by deduction, the fox's direction.

As you approach the fox, the signal will become too great for the S-meter on your radio to be discriminating enough to give you a direction. Every direction you point the antenna in will have the S-meter pegged, or maxed out.

What can you do then? You have to find a way to reduce the signal strength. This can be done by putting the radio and antenna up close to your chest and shielding the radio from the signal. When the signal is the weakest, it will be coming from directly behind you.

You can also tune the radio slightly off frequency. It will be less intelligible, but it will make your S-meter effective again. Another alternative is a unit called an attenuator which you put between antenna and the radio. This can be another home brew project for us—in addition to the beam we build, either a Yagi or loop or a quad. Any of these choices are easy and inexpensive to build.

This all sounds pretty straight forward and simple. But it ain't necessarily so. You have to contend with

geography and buildings and trees which can block signals or reflect them—sending you chasing wild geese rather than foxes.

Next time we examine our hounds, *Quad, Loop and Yagi*. If you don't want to wait until February to start building your antennas, get the "bible" of amateur radio RDF, *Transmitter Hunting—Radio Direction Finding Simplified* by Joseph D Moell, KØOV and Thomas N. Curlee, WB6UZZ published by McGraw-Hill's TAB Books 323 pages, © 1987.

### REPEATER QRM AND REAL WORLD DF'ING

By Parke Slater, N4KFT, Technical  
Committee

Late afternoon on December 8, 2003, the 146.880 repeater was plagued by QRM. The "buzz" accompanied audio during repeater use, to the extent that it was rendered useless. It also brought up the repeater on its own (repeatedly!), causing it to time-out

The Technical Committee went to work. It was determined that the controller was not at fault. (When you are a piece of electronic gear 20+ years old you become suspect!) Sure enough, it was a transmitted signal. But where was it coming from? When you have an antenna at 482 ft. AGL, with a coverage area that extends from the Blue Ridge Mountains to tidewater, locating a transmitter can be a formidable task.

As luck would have it, as the TC was leaving the repeater a momentary break in the squelch gave the only clue that was necessary. The transmitter was DF'ed to a home within half a mile of the repeater.

Knocking on the door of an unsuspecting non-ham, the investigation turned into more of an interrogation. The nature of the transmitted audio, coupled with the fact that it had a center frequency of 146.255, pointed more to the presence of an incidental radiator than intentional QRM.

When asked if new equipment had been turned on that day, the answer was "No." But when the follow-up question, "Did anyone plug in a new device this afternoon around 4:00 p.m.?" was posed, the response was different.

The culprit? . . . A Radio Shack VHF/FM/TV indoor amplifier, transmitting a signal over 50 KHz in width. Interestingly enough, the device was not a FCC Part 15 device, meaning it had not met approved standards for RFI. Perhaps that explains why you cannot find that particular item in the Radio Shack catalog?

**FROSTFEST . . .**

*Continued from Page 1*

We need you to volunteer to help with the many things that are a part of a successful campaign to bring funds into the club so that we can continue to enjoy the low membership rates and great repeater we all use.

*FrostFest* is the major and sometimes only fundraiser for the club, so it's important that you be willing to do what you can during the event to help make it a success.

The *FrostFest* Committee will be making phone calls in January 2004, asking for your time. Please don't let this opportunity pass without giving serious consideration to working at least one shift on Sunday, February 22.

We almost always have more than enough help on the setup day of Saturday the 21st, but we really need your help Sunday and, keep in mind, that you get FREE admission, a FREE meal AND a chance to win a GREAT door prize for volunteering and this year, for each shift for which you volunteer and work, you will get one chance EACH. So if you volunteer to work two shifts, you get two chances to win. [Limit 5 entries...jc]

Be listening for the phone to ring and give a positive answer when you're asked to volunteer for the 2004 Richmond *FrostFest*. [Or logon [www.frostfest.com](http://www.frostfest.com) and click on "Volunteers"]

Sincerely,  
Pat Wilson, W4PW  
For the *FrostFest* Committee

### VE EXAMS

Exam schedules for licensing or upgrading for 2004 have not been announced yet.

**CQ, CQ, SEEK YOU!  
AT THE NEXT  
RATS MEETING**

R.A.T.S. meets monthly the third Friday of the month at 7:30 PM at the West End Volunteer Rescue Squad building at 1802 Chantilly Street, Richmond.

From Broad Street, Chantilly is the first block east of Staples Mill Road. The WEVRS building is ½ block south of Broad on Chantilly.

**R.A.T.S.**

**Annual Christmas Dinner RSVP**

Please respond, if you plan on attending the Dinner. You can use the R.A.T.S. post office box shown below, but must do so immediately. Send this coupon with your name followed by a numeral indicating the number from your immediate household who will attend.

Member Name: \_\_\_\_\_ Number Attending: \_\_\_\_\_

You may also email with your name followed by a numeral indicating the number from your immediate household who are attending in the subject line only. Email to:

[ratsxmas@comcast.net](mailto:ratsxmas@comcast.net)

The RSVP is not absolutely necessary, but will give planners an idea of how much needs to be purchased and prepared.

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Voice Mail System: (804) 790-0077, mailbox 7287

Internet E-mail Address: [rats@rats.net](mailto:rats@rats.net) RATS Web Site: <http://www.rats.net>

*Frostfest* Contact: Jim Clark, N3JJF (804) 271-1998 or email to: [volunteers@frostfest.com](mailto:volunteers@frostfest.com)

Editor, *Solid Copy*, Mike Gabbert, K4AUR, [k4aur@comcast.net](mailto:k4aur@comcast.net)

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Jerry Williams, KJ4IT, President	<a href="mailto:kj4it@rats.net">kj4it@rats.net</a>
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The board may also be contacted, as a whole, at [board@rats.net](mailto:board@rats.net). Please feel free to contact any of us regarding RATS business, information, and ideas.

**R.A.T.S., Inc.  
P. O. Box 14828  
Richmond, Virginia 23221**

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