



# Western Tidewater Radio Association

## "HAMTOWN WAVE"

Volume 3, Issue 5

May 2008

PO Box 323 Smithfield, VA 23431-0323 <http://www.wt4ra.org>



### M-O-T-H-E-R

"M" is for the million things she gave me,  
"O" means only that she's growing old,  
"T" is for the tears she shed to save me,  
"H" is for her heart of purest gold;  
"E" is for her eyes, with love-light shining,  
"R" means right, and right she'll always be,  
Put them all together, they spell "MOTHER,"  
A word that means the world to me.

Howard Johnson

### NEXT CLUB MEETING MAY 12, 2008

**The May meeting will be a Field Day planning meeting at Cowling's restaurant.  
(See Article Below)**

### Officers and Committee Reports

#### Vice President (w4pro)

#### HOW BEAM ANTENNAS WORK

A beam antenna works by focusing most of the transmitted energy in one direction. It is similar to how a flashlight works, except that the wavelength of visual light is so short compared to the length of radio waves that a simple reflecting surface can effectively focus all of the light (radiation) in one direction. It does not make or amplify the power; it just concentrates it in one direction at the expense of other directions.

Unlike the flashlight example, a beam antenna can only partially eliminate radiation toward the back and sides. The most important characteristics of beam antennas are the “gain”, the ratio of its radiated power to that from a reference antenna, and its front to back ratio. A simple dipole is often used as a reference from which to judge the gain, which ranges from roughly two- to-one for a two-element beam up to a hundred-to-one for one with many elements. The front-to-back ratio is also related to the number of elements and ranges widely up to one-thousand-to-one. A beam antenna may be optimized for one or the other by choice of element length and spacing.

The elements of a beam are long, thin conductors, usually wires or aluminum tubing. Element diameters are small to minimize wind load. Elements are nominally a half-wave in length, but vary a few percent from that to optimize performance and to achieve a low standing-wave-ratio. Their length determines whether it is a director or a reflector.

The gain and the front-to-back ratio are usually expressed in decibels (db). More on decibels in a future article. For now, I’ll just give a few examples so you can interpret the specifications listed in product brochures. A power gain of three decibels is equivalent to doubling the power. Ten decibels is equivalent to a ten-to-one ratio, twenty decibels for a one-hundred-to-one ratio, and 30 decibels for a one-thousand to one ratio. Decibel scales are based on logarithms, which have the advantage of expressing large and small ratios without resorting to fractions or very long strings of zeroes.

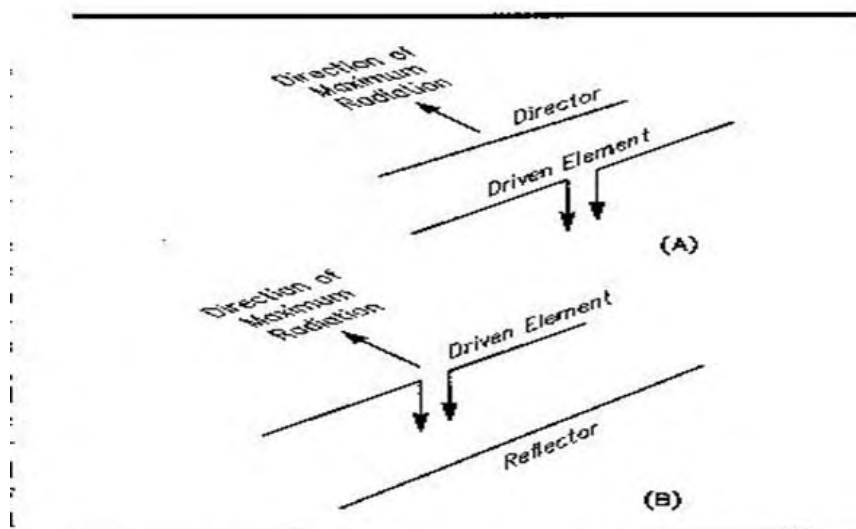


Fig 1—Two-element Yagi systems using a single parasitic element. At A the parasitic element acts as a director, and at B as a reflector. The arrows show the direction in which maximum radiation takes place.

Drawing from ARRL Antenna Handbook

Getting back to the flashlight example, the reflector behind the light bulb can be many-many wavelengths across at the frequency of visible light and still be small enough to fit in the barrel of a flashlight. But on twenty-meters, our best DX band, a reflector only one wavelength long would be how big? DUH! That would be a wavelength across or about sixty-six feet. So beam antennas made for HF radio bands are a compromise between

performance and physical size and weight. The most popular design uses three elements, a driven element, a reflector and a director.

As with the flashlight beam, the beam forming elements of an antenna are not electrically connected to anything. They are merely placed in the field of the radiator. The original design was patented by Yagi and Uda and was originally called the Yagi-Uda Array, now known as a Yagi. The elements are usually about a half-wave in length. Here's how it works.

By placing conductors (elements) near the driven element (the one connected to your transmitter via the coaxial cable), some of the energy leaving the antenna is intercepted by those conductors. The conductors are called parasitic elements because they are just capturing some of the energy from that wave as it passes by on the way to outer space. The parasitic elements have no direct connection to the coaxial cable and do not receive any energy from the transmitter. The good news is that the energy is not lost. It is re-transmitted almost immediately and in all directions. Some of it is received by the driven element and is combined with the original wave. By this time, the original wave and the reflected wave are not working together (not in phase). The time interval we are talking about here is a part of a micro-second. There are two reasons for the delay. One is the time just mentioned that it takes for the parasitic element to capture the energy and to reflect it. The other time delay is the time it takes for the wave to travel from the driven element to the parasitic element and back to the driven element again. Here's where the nitty-gritty of antenna design comes in. The time delay from when the energy is received and when it is re-transmitted depends on the length of the conductor. The time it takes for the energy to get to the parasitic element and back again depends on how far away it is. By adjusting the element lengths and the inter-element spacing of the elements, they can act as either reflectors or as directors. Think of the parasitic elements as tuned circuits that act as either inductors or capacitors depending on their lengths and, in turn, on whether they are resonant above or below the frequency in use.

In the case of a reflector, its radiation, by the time it gets back to the driven element, is 180 degrees out of phase and tends to cancel the original radiation. That cancellation is responsible for most of the antennas front-to-back ratio. .

In the case of a director, the delay is greater because of the wider spacing, so the total phase shift is a full cycle, partly due to the different element length. Therefore, it is in phase and adds to the original wave. The cancellation or reinforcement is not nearly complete since only a portion of the direct wave impinges on the parasitic elements. Even so, the effect is sufficient to result in a front-to-back ratio of up to one-thousand to one or better for a multi-element array. That is the specification for one particular six-element beam.

A typical twenty-meter design uses three elements: A driven element, a reflector and a director, all supported by an aluminum tube, the boom, usually between a quarter to a half wavelength long. The reflector is about ten feet from the driven element and is approximately five percent longer than the driven element. Spacing for the director is larger, about fifteen feet and is about five-percent shorter.

Such a twenty-meter beam would have a gain over a dipole antenna of about six decibels, or equivalent to doubling the power two times, making a 100 watt signal sound like 400 watts. The same power advantage is realized in receiving, bringing weak signals up out of the noise level by the same amount.

A beam designed for one band is called a monobander. Multiband beams typically use loading coils (traps) to cover several bands. Beams for bands lower than twenty-meters are not common. Their long boom and element lengths make them expensive to build. Their high wind loads demand larger rotators and sturdier towers.

I have described only the most popular type of beam antenna. Other designs can feed energy to all elements (a driven array) and/or can use enclosed loops for the elements (cubical quads). Most beams employ horizontal polarization (elements parallel to the earth's surface).

As the ten and fifteen meter bands reemerge during the coming sunspot cycle, you had better have a beam. A beam opens up a whole new world to those who have been using wire antennas.

Good DX,



### **Treasurer's Report (by Dick Harrell - W4RBH):**

Main Account Balance as of 4/20/2008	\$ 1632.17
Remaining budgeted expenses for 2008	\$ 739.74
Recent expenses:	
Incorporation Fee	\$ 25.00
VE Program Account Balance as of 4/20/2008	\$ 153.03

**Membership Report (by W4RBH):** Currently there are fifty members on roll.

**Membership by type:** Regular – 35; Family – 14; Life – 1

**Membership by license class:** Technician – 16; Technician Plus – 2; General – 9; Advanced – 5; Extra – 17; Not Licensed – 1

**Repeater Report (by W4RBH):** The WT4RA repeater (147.195+), remote base, and packet node system continues to function normally. Members are encouraged to check-in to the weekly net sessions each Thursday at 7:30 PM.

An updated listing of repeater codes was e-mailed to WTRA members on April 2, 2008.

I've never said much about the repeater's WACOM Model WP-643 duplexer and I guess that is a good thing. Duplexers can be a real source of trouble if not tuned just right for the specific receive and transmit frequencies of the associated repeater. Our duplexer was factory tuned and is working perfectly. It just quietly sits in the corner by the repeater and does its job.

The only way for a repeater to be able to receive and transmit on the same antenna at the same time is to use a duplexer to separate receive and transmit signals. With only 600 kHz frequency spacing between receive and transmit signals the duplexer must be tuned just right. For comparison, most commercial VHF repeaters use 5MHz frequency separation.



A picture of the duplexer is shown on the right. The unit consists of six resonate cavities, and weighs 62 pounds.

Each section of the duplexer consists of two 8" OD bandpass-reject cavities and one 8" OD bandpass cavity interconnected with RG-214/U double shielded cables. The bandpass cavity in the receiver section provides an additional margin of protection to the receiver from front-end overload and from intermodulation interference problems. The bandpass cavity in the transmitter section provides additional attenuation of transmitter sideband noise and offers further protection from generation of transmitter produced intermodulation interference.

Here is the factory test data for our duplexer.

Transmit frequency: 147.195 MHz

Receive Frequency: 147.795 MHz

Insertion Loss (TX to Ant) 2.18 db

Insertion Loss (RX to Ant) 2.14 db

Isolation (at TX Freq) 104 db

Isolation (at RX Freq) 107 db

The repeater antenna connects to the “T” connector in the front of the duplexer and the separate receive and transmit cables are connect to the rear of the duplexer as shown in the above picture. The cables that connect the duplexer to the receiver and transmitter are each also double shielded and their electrical length is a multiple of a one-half wavelength.

I’m still looking to hear from WTRA members that have signal reports for the repeater beyond the normal 35 to 45 mile radius. Send your reports to [w4rbh@wt4ra.org](mailto:w4rbh@wt4ra.org) and I will include them in the newsletter.

### WTRA E-mail List and E-mail Reflector Instructions (By W4RBH):

It’s been a while since I’ve sent this info out, so even though there have not been any changes since last summer, here is a summary of the club e-mail features.

To send an e-mail to all current WTRA members, address the e-mail to the following: [wt4ra@w4vx.org](mailto:wt4ra@w4vx.org) .

You must be a member of the WTRA to originate an e-mail to the club list.

To reply to an e-mail you receive from the club list you should use the “Forward” button on your e-mail program unless you want your response to go to the entire club. If your intent is to reply to the entire club, then the “Reply” button will do this. It is strongly requested that all responses directed to just one member be sent via the “Forward” function.

Please do not use this service to send jokes or other e-mails not related to ham radio or WTRA activities to club members.

Instructions are included on club related e-mails to opt out of this service if you wish.

If you use e-mail filters to block unwanted e-mail, be sure to set your filters to receive mail from [wt4ra-bounces@w4vx.org](mailto:wt4ra-bounces@w4vx.org) (this is the address that will appear on e-mail sent from the club mailing list).

I will periodically send e-mails to the entire club without using the WTRA mailing list to verify that all “normal” e-mail addresses are working. If the e-mail address you provided should bounce I will contact you requesting that a new e-mail address be provided. Accordingly, if you change e-mail addresses please send me an e-mail at [w4rbh@wt4ra.org](mailto:w4rbh@wt4ra.org) providing your new address. I

will arrange to have the club mailing list (hosted by W4VX) and e-mail reflector updated.

The club e-mail list cannot accept address ending in "arrl.org" as this reflector does not seem to forward e-mails if they contain more than one "arrl.org" address.

To e-mail a specific member of the WTRA via the club e-mail reflector, address the e-mail as follows:

[members callsign@wt4ra.org](mailto:<members callsign>@wt4ra.org) .

**Really Serious Ham:** Check out the following URL for a view of NE7X's ham shack. It is worth the time to look: [http://www.ne7x.com/New\\_Shack\\_2008.htm](http://www.ne7x.com/New_Shack_2008.htm) .



## **Field Day 2008 Planning is Underway!**

Ladies and Gentlemen,

Field Day 2008 is fast approaching. From the ARRL Field Day rules, the object of Field Day is: "To work as many stations as possible... and in doing so to learn to operate in abnormal situations in less than optimal conditions. A premium is placed on developing skills to meet the challenges of emergency preparedness as well as to acquaint the general public with the capabilities of Amateur Radio."

Some work is done, we have a few people that have offered equipment, but there is still much to do. We want to plan a picnic for Saturday afternoon and we need people to bring food. Mostly we need to know when people are available to operate the stations. No one yet has been able to commit to the overnight operations. I need to know who wants to participate and how they are able to contribute. Depending on the people who volunteer, we can decide on the actual hours that the WTRA Field Day site will be on the air.

Given the emergency services and public relations goals, I have also begun to make some plans with local and state Emergency Service personnel. I thought we could turn this into a community Hurricane Preparedness event. It looks like Field Day 2008 could be an interesting and productive day for Emergency Preparedness in Isle of Wight County. Below, are the plans and proposed demonstrations that are already in the works.

**Date: June 28-29, 2008**

**Time: 1800 UTC Saturday and ending at 2100 UTC Sunday (Saturday 2pm - Sunday 7pm EDT)**

**Location: Boykin Tavern on the Isle of Wight County Courthouse complex.**

**DEMONSTRATIONS:**

**Governmental Disaster Planning with GIS Data - Virginia local governments rely heavily on GIS data to plan for emergencies. The Virginia Geographic Information Network (VGIN) provides aerial imagery,**



**road and other data to local 911 dispatch centers and Emergency Services Departments. Lyle Hornbaker, a representative of VGIN will be on-site**

**Saturday with a demonstration of how this data is used for disaster planning and during emergency operations.**

**Personal Emergency Preparedness - Disasters happen anytime and anywhere. Since 1980, Jack Chase, also known as Chef Noah, has been providing information on Family Preparedness and Provident Living.**



**Chef Noah will be onsite Saturday to discuss Hurricane Preparations and assembling a Family Disaster Supplies Kit, also known as a 72 hour kit.**

**PRELIMINARY PLANS:**

**Community Preparedness - In addition, negotiations are in process to have several county and state emergency services representatives on-hand to raise the public awareness of hurricane preparedness and government emergency.**

**I have developed a registration page on the Internet so that you can let me know when you are available. No pressure; I just need to plan some sort of operations schedule based on the people that want to participate. If you want to join the WTRA activities on Field Day, either by operating the stations, helping to setup/teardown or helping with the picnic, go to [http://www.surveymonkey.com/s.aspx?sm=ATUmZT45wLj7ysAHNAtzrg\\_3d\\_3d](http://www.surveymonkey.com/s.aspx?sm=ATUmZT45wLj7ysAHNAtzrg_3d_3d) and let me know what you can do. I would ask that those of you who already sent me an email also sign up on this page. That way I will have all the information in one place.**

**Thanks for your support of WTRA and our Field Day operations!**

**Lyle - KI4WKT  
2008 Field Day Coordinator**

## Items for Sale

### **SWR METER** – **New Item**

SWR Meter – Radio Shack Model 21-533 – 3-30 mhz, 1000 Watts - \$20.00 757-692-4835

### **HF TRANSCEIVER**

Yaesu FT1000 MP Mark V with the heavy duty power supply. This is the 200 watt version. It comes with all the original equipment that came with it from the factory; hand mike, manual, schematics, Yagi QSL and all the original packing and boxes.

I am asking \$1850.00. This unit has had very little use. It may be seen and examined at my home.

Jim Jackson (KD4FN)

### **CUSHCRAFT R7000 ANTENNA**

The all new R7000 is a 10 through 40 meter, no ground radial antenna that is expandable to include 80 meters. It has a power rating of 1500 watts. Asking price is \$200 (new price was \$400).

Contact Ted Martin at 357-9852.



## Life in a century of change

(Used by permission from The Daily Press)

Jarvis Hearn Sr.'s life has echoed America's journey: from rural roots to an age of high technology.

**By STEPHEN H. COWLES** 247-4538 April 18, 2008

Jarvis Hearn Sr. of Isle of Wight County celebrated his 100th birthday last month — a milestone that's included the pride of seeing the work of his hands on the cover of Life magazine, and the disappointment of similar efforts being sunk at Pearl Harbor.

Hearn and his family recently reflected on his life while celebrating his birthday on March 19. His roots were humble, a young man from Smithfield working on the family farm. The farming life wasn't always welcome, however. One day while shoveling hay

with his uncle, a black snake that had curled around the pitchfork came off and started wrapping itself around Jarvis' legs. That scared him enough to quit and convinced him that farming was not for him.

Hearn later became a welder at the Newport News shipyard. The career change was inspired by seeing a man who was sitting down with what appeared to be a bucket on his head.

"Dad figured that was for him," said his son, Jarvis Hearn Jr., laughing.

When Jarvis Jr. was 5 years old in 1936, the family was living in Montana. They had settled there so his dad could work on the Fort Peck Dam. That was the same year the project was pictured on the cover of the first Life Magazine (Nov. 23, 1936).

Hearn's earlier work also included helping build the USS Arizona, which was later destroyed during the Japanese attack on Pearl Harbor, Dec. 7, 1941. Hearn also was involved in a modification at the Portsmouth shipyard that ultimately stabilized battleships so their guns would have greater firing ranges. "Dad was always open to finding a better place to live or for more money, and we spent a year at the Charleston, S.C., shipyard," said Jarvis Jr.

When the family eventually returned to Virginia, Hearn learned to fly at an airfield off Pembroke Avenue in Newport News. The new interest grew to where he wanted to buy some planes, so Hearn sought out William Piper, the first president of Piper Aircraft Corporation, and got him out of church one Sunday evening to discuss business. Later, the Hearn family went to Panama and established a flying school. The senior Hearn's license number was 26; that's how few people were qualified to fly in that country then.

Jarvis Jr. learned to fly, and so did his younger brother, Ronnie, and mother, Frances Hines Hearn, a native of Rescue.

Although flying actually "scared him to death," Ronnie (who died about 17 years ago) went on to become an inboard hydroplane racer, and even held a few records. Mom ultimately "realized it was not her thing," Jarvis Hearn Jr. said.

Of all the students that Hearn taught, he said one of the worst was Agnes Wilcox Campbell, a reporter for a Panamanian newspaper. She was in New York and learned about Hearn's planes and his trip to Panama. She wanted to cover the story of the journey and claimed she could fly a plane.

"She couldn't fly worth a flip," Jarvis Jr. said.

**After meeting in Newport News, the Hearn and company all left together. Campbell rode with an airman from Langley to Columbia, S.C., then with a different person to Brownsville, Texas. There, Hearn spent a few days trying to teach her to take off and land. Confident that she was ready, he told her to take off first and circle until the rest of them were airborne.**

**She took off and kept going.**

**There were no radios or beacons, so Hearn had to chase down her plane and signal for her to land. He asked what happened and Campbell replied that she started eating an apple and wasn't paying attention. She got it right the next time.**

**In 1949, Hearn discovered amateur radio, which became "an all-consuming passion then and now," said the son.**

**People who wanted to become ham radio operators at that time had to know Morse code, as well as take an exam.**

**"But dad was chomping at the bit to get started," said Jarvis Hearn Jr.**

**They had to take the ferry to Norfolk to take the code test, but neither passed it, Jarvis Jr. said. "I said to him, 'I wonder if we can catch the same ferry back? He didn't think that was funny at the time, but of course laughed about it years later."**

**After a time working in California, Hearn eventually established Hearn and Jacox Ironworks in Hampton. It made railings, fire escapes and other ironworks. At one time he worked for a company in Ireland, teaching people how to build steel barges.**

**Hearn put down the welding tools and fully retired in 1968. He eventually stopped flying, but his interest in ham radio led him to be involved in phone patching to Antarctica. Through his assistance, people stationed at the South Pole could talk to family and friends on the telephone stateside.**

**One time it took him three different tries to convince a woman how she could talk to her son who was stationed at the pole.**

**Hearn's age hasn't slowed his passion for ham radio, and at 100, he still makes time each day for his familiar hobby.**

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## HAM HYSTERIA

An old Ham was driving out in the country on a very narrow road with his antennas flapping in the wind and they were flopping onto the other lane when he passed a YL that he came close to hitting.

She stuck her head out the window and yelled "Pig!"

He stuck his head out the window and yelled "Witch!"

Then as he rounded the bend he crashed into a pig head on.

If men would only listen!

A Ham and his friends were at Field Day just starting to set things up. One of the hams notices a long funeral procession on the road next to the field. He stops, takes off his cap, closes his eyes, and bows down in prayer. His friend says, "Wow, that is the most thoughtful and touching thing I have ever seen. You truly are a kind man." The man then replies, "Yeah, well we were married 35 years."

Mini (w7pro)



## Antenna Party at Quail Roost Road, April 19<sup>th</sup>.



KG4BKI and Charlie WB4PVT ponder the

next move on the Franklin 444.825 repeater antenna. This is the view from atop the water tower in the Hunterdale section of Franklin.

The address of the water tower in the Hunterdale section of Franklin is 713 Quail Roost Road. So; "Quail Roost Site", Quail Roost 440, Quail Roost 2M, and etc. The mission of our Antenna Party was to reinstall the antennas for the 440 repeater and Remote Base radios following the repainting of the water tower. The tower looks great; it's now, white with the City of Franklin logo on the tank.

Part of the repainting project involved adding a circular handrail at the top of the tower. Access to the antennas is just a long ladder climb to the top of the tower and you are standing inside an iron handrail. The Quail Roost antennas may not be the highest around, but the service access is outstanding!

I would like to thank the tower crew:

- Charlie Stokes WB4PVT
- Liz Clarence KD4OCG

The ground support crew was:

- Dewey Corbin W4DCJ
- Ralph Riddick KG4PBA
- Dick Harrell W4RBH
- Chris Hanslits W4VX
- Bruce Edwards KG4QAQ

The Quail Roost 440 (444.825+ (131.8)) was returned to service with two of the Remote Base (RB) radios back in service. One of the antennas for the RB system was determined to have a problem in the connection to the feed line and it was taken down for repairs. The prime mission for this repeater – a link to the Williamsburg 146.76 repeater (and the VAEOC) is back in service. This provides a link from the Franklin EOC to the Virginia EOC with an HT from inside the Franklin Police building!

In the future for this site, there is a 2M repeater in the works that is based on the equipment previously used by the Franklin Fire Department. The 2M repeater is coordinated at 147.270 (131.8). It will be tied in with the current RB system on the 440 repeater. We see a VDEN (Virginia Digital Emergency Network) packet node and perhaps a BBS on this site. And, an APRS digi appears to be in the works too.

The Franklin Police Department owns all the equipment at the Quail Roost site. The call sign on the repeaters is WT4FP (Franklin Police). The Franklin Amateur Radio Club (FARC) is providing volunteer support.

Fred Weaver KG4BKI  
EC, City of Franklin



## To Find Your Soil's Electric Conductivity

- 1) Go to: <http://websoilsurvey.nrcs.usda.gov/app>
- 2) Click on the big green button, "Start WSS".
- 3) Follow step 1 of "Three Basic Steps" on the first page.  
Typing your address under "Quick Navigation" is the easiest method. Remember to spell out street, circle...  
When using the + and - zoom feature, click on + or -. Then place the cursor at the point you wish to be the center of your next map and click.
- 4) Click on "view".
- 5) Click AOI tab which is just above the map and outline (draw a box around) your Fresnel Zone.
- 6) Follow the second step "View/Explore" by clicking the "Soil Map" tab.
- 7) Click the "Soil Data Explorer" tab.
- 8) Click the "Soil Properties and Qualities" box which is just above the map.
- 9) Click the "Soil Chemical Properties" box.
- 10) Click the "Electrical Conductivity" box.
- 11) Toward the bottom of the page, locate "Top Depth" and enter 1. For the bottom depth enter 144 for 14 Mhz, 360 for 1.8 Mhz.
- 12) Click inches.
- 13) Click "View Rating".
- 14) In the table, read in the column "Rating (millimhos per centimeter)".
- 15) Use the millimhos/centimeter number as mS/m. Thus, 17 millimhos becomes 17 mS/m. This is the electrical conductivity of your Fresnel Zone.
- 16) This page is printable from your screen to your printer.

*Provided by Joe Roth (WC4R)*



**Joe Roth (WC4R) has provided us with the following puzzle.**

The Amateur Radio Crossword Puzzler

*Reprinted with permission, ARRLWeb*

Please email [w4rrh@wt4ra.org](mailto:w4rrh@wt4ra.org) if you want the puzzle to continue. Last month **no** **one** requested the results. If we do not get requests, this will be the last puzzle.

1	2	3		4	5	6	7		8	9	10	11	12	13
14				15					16					
17				18					19					
20			21		22				23		24			
25				26					27	28				
		29					30					31	32	33
34	35						36					37		
38							39				40			
41							42				43			
44				45						46				
			47						48				49	50
51	52	53					54	55				56		
57							58		59			60		61
62									63				64	
65									66					67

### Across

1. Cluster cmd
4. Tribander part
8. \*10MHz, with 30-down
14. Grammy category
15. Sushi fish (some may generate RF noise)
16. Especially comfortable place for a DXpedition, say
17. Words of understanding
18. Radiation from a "cloud burner"
19. EP city
20. Early radio construction material
22. Part of IARU (abbr.)
24. 5Z
25. Contender, e.g., for ARRL director
27. Copies
29. 160m luminary Perry
30. Polar explorer, early radio user
31. Early radio noise maker
34. WAS item
36. Charge opposite?
37. Spectrum Defense \_\_\_\_\_
38. With 40-across, a hint to solving the clues indicated with a \*
39. Paddle
40. See 38-across
41. Sky hooks, briefly
42. Some HV paths
43. Young's accounting partner
44. Relative of cap. and ind.
45. Bumpkin
46. Wire, from 44-across, say
47. Simple
48. Conclusion

51. Monastery head
54. RF effect
56. Fly high
57. Flying high
59. Used to stabilize a crystal
61. Owed
62. VHF antenna measurers?
63. 59-across product
64. Before, in verse
65. \*7MHz, with 30-down
66. Some service hams
67. Band condition influencer

### Down

1. \*21MHz, with 50-down
2. Internet cry?
3. What's needed after barefoot tower climbing?
4. Doubled, it's a "net"
5. "Recent Equipment"
6. 50's Collins
7. "Hey ... over here!"
8. Crumb
9. Stank
10. Blown resistor remnants
11. Norse goddess of fate
12. \*3.5MHz, with 30-down
13. I-land island peak
21. Mimeographs
23. E, F and others
26. \_\_\_-do-well
28. Prefix with -selector
30. \*
31. Microwave parts
32. Some gates
33. W6 summer time
34. Kind of tissue
35. Nearly always 9
36. Electromagnetic, and others
37. Coulombs per volt
40. "It's \_\_\_ real!"
42. Ether
45. Prefix with -geneous
46. Amplifier type
47. Place to stay at the Hamvention, possibly
48. Libya
49. C2
50. \*See 1-down
51. Ethereal
52. \*5.4MHz, with 30-down

53. Kind of joint  
55. One V per mA

58. UA 73  
60. Tfc. org.



# Chesterfield County

## 2008 Mobile Command & Communications Vehicle Rally

**Wednesday, May 21, 2008**



Chesterfield County Fair Grounds  
10300 Courthouse Road  
8:00 a.m. to 4:00 p.m.

### What you'll see and hear:

- Local, State and Federal Mobile command and communications vehicles from central and eastern Virginia.
- Presentations on the capabilities of the vehicles and equipment on display.
- Vendor displays on the latest interoperability technology.
- All the vehicles will be open for tours and questions.

### Who should attend:

- Police, Fire & EMS field commanders and supervisors
- Emergency Managers
- Emergency Communications Center operators or supervisors
- Radio equipment service technicians & installers
- Users of mobile command & communications vehicles, people who may request the equipment for mutual aid, or those who may be thinking about purchasing a vehicle.
- Anyone with an interest in mobile command/communications vehicles and equipment.

**Last years rally was a complete success! This year, our focus will be on the use of the ACU1000 and Satellite technology in mobile applications.**

**Don't delay, register today !!!**

For individual and vehicle registration, contact:  
**Curt Nellis—Deputy EM Coordinator**  
**(804) 796-7068**  
[nellisc@chesterfield.gov](mailto:nellis@chesterfield.gov)

10031 Iron Bridge Road  
P.O. Box 40  
Chesterfield, VA 23832-0040





## Emails Received

Another nice job on the newsletter, Ron.  
Thanks.

Jim Wise (w4pro)



## A special thanks to the following for providing information for this newsletter:

Jim Wise  
Dick Harrell  
Jarvis Hearn, Jr.  
Mini (Linda Wise)  
Fred Weaver  
Joe Roth  
Lyle Hornbaker

Please submit items you would like to be in the WTRA Newsletter to [w4rrh@wt4ra.net](mailto:w4rrh@wt4ra.net) no later than the 20<sup>th</sup> of the month. WHEN YOU SEND ANYTHING, PLEASE SEND IT TO [w4rrh@wt4ra.org](mailto:w4rrh@wt4ra.org) DO NOT SEND IT TO [wt4ra@wtr4ra.org](mailto:wt4ra@wtr4ra.org) OR USE THE REFLECTOR AS THAT MAKES IT AVAILABLE TO CLUB MEMBERS BEFORE w4rrh USES IT. Thanks.

## **NEXT CLUB MEETING MAY 12, 2008**

**The May meeting will be a Field Day planning meeting at Cowling's restaurant.**