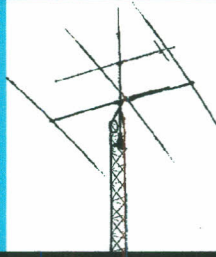


The AARC Beacon



*Amateur Radio News For
Charlottesville and
Albemarle County,
Virginia*

Volume 2002, No. 8

August 2002

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Meeting Notice - PICNIC !!!

The next regular AARC meeting will be the **Annual AARC Picnic**. It will be held on **August 13 at 6:00 PM at Shelter 1 at McIntire Park**. The club will provide meat, soft drinks and utensils. Attendees are asked to bring a side dish, dessert, chips or the like. We have some great culinary geniuses in AARC, so it should be delicious!

See you there!!

VEC Exam Session Results

The AARC VEC Team conducted an FCC license test session on Saturday, July 20. This session was conducted following the AARC Ham Radio class for Youth given by AARC members. Nine candidates sat for their exams. Ten elements were given and five of these were passed. One candidate even aced the General class written exam with no wrong answers! As a result, we now have two new young Technician class licensees, who are eagerly awaiting the arrival of their licenses! As of the July 27 FCC update they are Matthew Postak, KG4ULD and Christopher Postak, KG4ULE. Congratulations!!!

The President Speaks

Bob, K4DU

It is August once again. AARC Summer Picnic time! It's that time when we gather with our friends and families and really chew the fat. Speaking of families, I've decided to use this space to bring you up to date on the further adventures of my oldest son Shawn, KD4WXY. You may call this presidential prerogative. Shawn has joined the Coast Guard and by the time you read this he will have completed basic training in Cape May and graduated with honors. Shawn's first duty assignment will be as a yeoman on the Eagle. The Eagle is a three-masted tall sailing ship based at the Coast Guard Academy.

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As you read this the Eagle should be proceeding from Norfolk to Boston. Shortly after he boards they will set sail for Halifax, Nova Scotia. Perhaps he will get a glimpse of The Bluenose. The Coast Guard has a website on the Eagle complete with photographs from the previous day and the upcoming sailing schedule. The ship is a sailing classroom and one of only five active tall ships in the world today. What fun I could have with a rig and a long wire on board! Ah well, his adventure, not mine.

The time has come to think about the work that needs to be done on your antenna system before the cold weather sets in. Yes, Virginia, it will get cold again. If you plan the work now and assemble the supplies you need you'll be ready to go once the thermometer drops back to reasonable.

See you at the picnic!

73, Bob, K4DU

Veep Peeps

Josh, KG4NGV

No VP column available at press time

Thunderstorm Detection and Forecasting: Farming, Static, Baseball and Whistlers

Joe Giovanelli, W2PVY and Bill Arnold, KD4TOR

Let's begin with Joe's story...

Men and women have always been interested in thunderstorms -- probably from the beginning of time. Benjamin Franklin was such a man. He wrote of his experiments and experiences related to this natural phenomenon in his diary.

Over time people throughout the world have formed "weather bureaus" whose function is to predict weather of all kinds. Many specialized instruments have been developed along the way to make such predictions more accurate. Further, these bureaus continually strive to improve their ability to make reliable long-range forecasts.

Many people have dabbled with these predictions on an "amateur" or occasional basis. People with joint diseases have been weather forecasters probably for centuries. It is amazing how many of these forecasts prove to be correct -- although sometimes contrary to the forecasts of established bureaus.

Bill and I are such amateurs, but we have specialized in the detection and prediction of thunderstorms. Each of us starts

with more or less the same facts, which we both learned during childhood, but we use those facts in somewhat different ways.

When I was a young boy -- living on my grandfather's farm during summers -- one of my hobbies was to use his old TRF radio to pick up broadcast DX. I found that on some nights this was not possible because of what I found out was "static" (QRN).

I found, too, that radio listening during certain days was impossible, and that this was caused by this same kind of interference. With observation I found that the static crashes were the result of lightning strikes. The louder the static was, the closer the storm.

I began to wonder if this information could be in some way used to forecast a coming storm. I'll skip lots of steps along the way, but I discovered a crude measurement of static. I noticed that I heard the static at the low end of the broadcast band. I would listen to a BC station and compare its signal to that of the static crashes. I had to change to stronger and stronger stations as the storm grew closer to my receiving site. I found that once the static was stronger than the strongest local signal that the storm was nearly upon us.

Over a few summers I learned that, just because I detected static, that was not a guarantee that a storm would strike us. I found that it was necessary to make several observations, perhaps a half hour apart in order to determine if the storm was getting closer. I discovered that sometimes the static level would remain the same for a long time and then it would begin to decrease. I learned that meant that the storm was near us, but was not coming toward us. It came to some reasonably close proximity but was on a path which would bypass us.

My grandparents were first skeptical about my forecasts, but they found that I was right far more than I was wrong. They called it "freaky!"

My favorite forecast, which really shook them up, was when I predicted a storm five days in advance. When I think about it now, I think this one was more good luck than good management.

I was listening to a station in Chicago, a thousand miles to the west. Along with this, I heard some weak QRN. I naively thought that this static was also coming from Chicago. (It could have come from any direction--but it as at least probable that it did originate west of my location. The Chicago weather forecasts were for heavy thunderstorms resulting from a cold front approaching. I heard that such fronts move from west to east. Trying to figure the probable speed of the front, I told my grandparents that we'd have a bad storm in five days! We did!

Over many years and in different locations the methods I described worked quite well. It was only recently that I was

able to be more scientific because my present transceiver permits me to obtain an audible readout of signal strength.

What this means is that it provides a method for determining the strength of a static crash with some accuracy. Of course, the signal strength you receive will depend upon your transceiver and the antenna with which it is associated.

I tune to a point on the BC band about 500 kHz. If the QRN reaches S9 then I know that the storm is perhaps 100 miles away. Of course, my system does not permit me to know the direction of the storm and its speed of approach.

In most instances, by the time signal strength reaches 30 dB over 9, I may begin to hear faint thunder. At 40 dB it is likely that it is beginning to rain. I usually don't make further measurements because I disconnect my antenna as a safety precaution.

As I pointed out, I've learned that a storm will miss us if it takes too long for signals to build up.

There are storms which are often referred to as "popcorn" storms. These can develop almost overhead. What this means is that there is little time between first noticing QRN and the time it builds to a point where the storm is imminent. This provides me with an idea of what kind of storm it is.

Another useful item to note is the number of static crashes per minute or perhaps even per second. If there comes a time in which the end of one crash merges with the start of the next, we have a severe storm with cloud tops between fifty and sixty thousand feet. Such storms are capable of producing hail and even tornadic activity. I have predicted such storms before the Sterling weather office calls for warnings.

I offer all of this as something of interest. My accuracy rate is pretty high, well over 50 per cent. I do miss, however.

I'll let Bill take over from here...

Like Joe, I have been fascinated with static discharges since I was a toddler. My first real experiences with lightning and thunder occurred at our summer home on Snake Pond on Cape Cod.

A particularly violent thunderstorm was in progress on a warm, sticky summer evening at the pond. There were amazing flashes, bangs, high winds and heavy rain, more than this two-year old had ever seen. To make the experience exciting rather than frightening, my mother sat with me so I could watch the storm. The first thing she told me was that thunder was the sound of people in heaven bowling. A few weeks before, a man named Riley, who, with his family, rented a place on the pond from my Grandmother Arnold, had died. He had been nice to me, and although I didn't understand what had really happened, I knew he was in heaven.

During that storm, I saw lightning hit a tree several hundred feet away. There were several brilliant flashes of lightning and nearly simultaneous thunderclaps. Almost immediately I looked at my mother and said, "Boy, God and Mr. Riley are really knocking them down tonight."

About three years later, I spent the entire summer on Cape Cod with my Grandmother Arnold. She was a die-hard Boston Red Sox fan. Anytime there was a game she stayed glued to the radio. I couldn't listen to anything else.

At times I wondered why my grandmother had just a regular radio rather than one of those nifty transoceanic jobs that the Riley's owned. They could easily hear stations in Europe while my grandmother had trouble hearing the games being broadcast from Boston.

"There's a long fly ball to left-center field. It's going, going" Then came the crash and boom of nearby lightning and thunder. The static totally wiped out the sound of the announcer. My grandmother was furious! Why had the lightning come at such an inopportune time? Did Ted Williams hit a homer? Did he fly out? I wondered why I had seen sparks coming from the telephone when I heard the static, but my grandmother didn't seem to care. Apparently it was a common happening although it was new to me.

I was more interested in the sparks on the wire and the static on the radio than I was in the game. Why was the static so loud? Why did the static seem to be less intense on the radio when I didn't hear thunder following the static crash on the radio? Why could I usually hear the announcer over the static when I didn't hear thunder? My cousin, Dick Craig, then a research meteorologist at Harvard, explained to me that it all had to do with how far away the storm was.

Over time, I found that the radio static created by lightning was louder at the low end of the AM band (530 kHz) than at the high end. That became the basis for the system I still use to monitor lightning strikes. It is extremely crude, but it takes no special equipment. All it involves is listening for static crashes around 530 kHz on any AM radio and then switching to about 1600 kHz and doing the same thing. If I hear anything on 530 kHz, but NOT on 1600 kHz, I assume that there are strikes occurring within 150 miles. If I hear static crashes on both frequencies, the strikes are perhaps 40 miles away. I've been doing this for years and it works.

I have also used television to determine the type of lightning discharge. I learned that method from an article that was published in "Mechanics Illustrated" when I was a teenager. The author of the article lived in the mid-west and used the method on a regular basis. Obviously, the TV receiver must be connected to an antenna rather than to cable.

To set it up, do the following.

- 1) On channel 2:
 - a) Set maximal contrast.

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b) Set brilliance to the point where you see only the slightest display - only a few blips at most.

2) Tune channel 13 and make no other changes.

During thunderstorms you can differentiate the type of strike by watching the screen.

1) Horizontal black bands alternating with white bands: cloud to ground strikes.

2) Screen flashes white for brief periods: cloud to cloud strikes.

3) Screen persistently white: Tornado.

Since Joe and I have written this article to describe methods of detection of radio frequency signals originating from lightning, it wouldn't be complete without mentioning **whistlers**.

My grandmother once told me that occasionally she would hear strange whistling sounds on her telephone. When she wasn't listening to baseball games or knitting, she liked to talk on the telephone. She heard the sounds primarily during the winter and speculated that they occurred because the wires were cold. I, too, heard some of the eerie whistling sounds and for years I've wondered what made the noise. I'm still not certain, but I'd like to think that the sounds were "whistlers" being generated by distant lightning.

Lightning produces electromagnetic energy over a wide range of frequencies, the most powerful of which are around 5 kHz. Some of this energy is ducted along magnetic lines of force to a point on the opposite side of the earth before being reflected back to the site of origin. The energy produces strange whistling sounds, persisting for a second or so, usually with a descending tone. They can be detected with a very low frequency (VLF) receiver or possibly with an audio amplifier connected to a long wire. Thus, a telephone may detect these signals, so maybe that is what I heard. Since the higher frequency sounds travel faster than the lower, the sound produced has a progressively decreasing tone.

Most whistlers originate on the side of the earth opposite to where they are detected. In theory then, whistlers heard in Virginia should come from Australia. Occasionally, one may hear a whistler generated by a nearby lightning stroke. In that case, the first sound is the crash of the stroke, followed shortly afterward by the whistler, which has returned to its point of origin after rebounding off the opposite hemisphere.

Stephen McGreevy, of the University of Iowa, has spent nearly a decade recording whistlers and other naturally occurring radio signals. His web site located at the URL <http://www-pw.physics.uiowa.edu/mcgreevy> contains many audio files of these sounds. Of particular interest to me is **<vlf1.zip>** which has five superb "wav" files of whistlers.

Thus, the childhood musings of two amateur radio operators has led to this discussion of our fascination with some

powerful natural phenomena. We both hope that we have stimulated your interest in what we feel are intriguing aspects of naturally occurring radio waves, their propagation and their detection.

Errata - Field Day 2002 Article

Bob, K4UVT

In the Field Day 2002 article in the July issue of the Beacon, credit was inadvertently omitted to Mike, N4HRO for the photos he provided. I extend my apologies to Mike and thank him for providing us these photos for publication in that article.

More PDF Notes

Bob, K4UVT

This note presents more tips on reading the Beacon in the PDF format. These tips will help you to navigate your way through the Beacon more easily.

Using Bookmarks. When you first open the Beacon with Adobe Acrobat Reader, you will see a set of gray tabs on the left-hand side of the document. The top tab is labeled **Bookmarks**. Click on this tab and note that you now see a set of bookmarks on the left, with a slight resizing of the document. These bookmarks correspond to the article headings for each article in this issue. If you click on a given bookmark, you will be taken to the page on which this article first appears. By using this feature, you can go directly to the page containing the article you wish to read without having to scroll your way down to get to the desired article.

If you click on the Bookmark tab again, the menu will collapse so that you see only the document with the bookmarks hidden. You can toggle between both views by clicking on this tab.

Using Thumbnails. The tab below the Bookmarks tab is the Thumbnail tab. The thumbnails are miniature reproductions of each page in the document. Clicking on a given thumbnail will take you directly to that page of the document.

Document Size. You may also resize the document to any size you wish to improve readability. This can be accomplished either via the **View** options on the top menu or by adjusting the percentage box on the top Toolbar.

Next month I'll talk more about how the Toolbar works. But in the meantime, play with the Toolbar options and the different menu options. It's easy to use, so you'll quickly see how things work. This will help make your experience in

reading the Beacon PDF more enjoyable by taking advantage of the powerful options that Acrobat Reader provides you.

Club Business

AARC Board Minutes July 2, 2002

Members present: Ralph-K4CFE; Marty-AG4DN; Steve-KF4ZGD; Steve-KD4HBX; Pete W4PRT. Members Absent: Bob-K4DU; Josh-KG4NGV; Will-KJ4XZ; John-KX4P.

Bob, K4DU had earlier in the day notified Marty, AG4DN that a business meeting had been called for this evening in Northern Virginia and he would attempt to make the meeting by 7:30 P.M. There was also a possibility that he would be delayed and would not attend the Board meeting.

Bob indicated two items for discussion -- meeting programs for the balance of the year, and the club picnic on 13 August.

Marty acted as chair for the meeting.

Ralph presented the club income statement FY 2001 and FYTD June 30, 2002 and is included in these minutes.

The discussion now turned to the picnic. Ralph confirmed that the club had Shelter 1 reserved for the 13th of August at McIntire Park and the fee had been paid.

Steve, KD4HBX was selected to coordinate the effort. Pete and Marty volunteered to assist. Pete proposed that the club pay for food, soft drink, utensils, etc., for the picnic (not to exceed \$200). The Board voted to approve the motion.

The discussion turned to future programs for general club meetings. Subjects for consideration included reallocation of the 60 meter band, Civil Air Patrol, radio astronomy, etc.

It was decided not to carry the discussion any further without Bob being present.

A motion was made to adjourn and approved at 8:15 P.M.

Submitted by Marty AG4DN, Secy.

Regular Meeting June 11, 2002

Bob K4DU opened the meeting at 7:30 P.M.

After introduction of the membership present, Bob Harwood W4/G8GJM, a visitor from the United Kingdom, made a presentation on amateur radio in his part of the world. He covered such items as the development of the call sign structure and its geographic meaning within the U.K., types of license issued, requirements for each grade of license, privileges associated with classes, as well as cost for the individual amateur. Other items of interest covered were the recognition of the 50th year coronation of Queen Elizabeth II by the amateur radio community by adding the letter "Q" to the prefix of the individual call, the preservation and

restoration of the original Marconi radio station along with a set of slides showing original and reproductions of equipment used at the station. The membership received the presentation enthusiastically and Bob's efforts were greatly appreciated.

Pete W4PRT as Chair of the Field Day Committee commented on the support he received for the effort. Pete thanked all those who participated and presented certificates of appreciation and recognition from the AARC for their work. Pete indicated he would accept the responsibility for the Field Day effort next year.

Ralph K4CFE made a financial report for the month ending 30 June. There were no comments. (See Board Minutes for 2 July 2002 for copy.)

Minutes of the Board and General Club meetings for June 2002 were approved.

The issue of the 911 controller and its transfer was raised by Rick KO4WQ. Dave K4DND and Bob K4DU also participated in the discussion. Elmer's KF4UCI time availability apparently is the factor that has kept the job from completion.

The current Tech class for youth groups was noted by Bob. The classes start this week with nine students. It was noted that the classes were going very well. An exam will be held on 20 July 9:00 AM for these students and anyone else desiring to upgrade. There will also be a class held at the Albemarle High School in the fall. The purpose is to arouse interest in Amateur Radio by high school students. Bob noted the effort of our youth members and particularly Steve KF4ZGD. Bob noted that the club had submitted Steve for the 2002 ARNewsline Young Ham of the Year Award. (A copy of the submission is filed in the AARC Records.)

Hein N4FWA reminded the club that the NARO will be getting a new director. The arrangement to hold club meetings in their building was worked out between Hein and the outgoing director. This may impact on the club's continued use of the facility.

Joe W2PVY demonstrated how a radio could be built from surplus "junk" found on his work bench. Joe was motivated by his desire to build a radio from components as was required in the past.

There being no further business the meeting adjourned at 9:00 P.M.

Submitted by Marty Mait, AG4DN, Secy.



VIRGINIA BEACH HAMFEST



And Electronics Flea Market
SEPTEMBER 28 & 29, 2002

ARRL Roanoke Division Convention

NEW LOCATION AND DATE CHANGE

PEMBROKE MALL

RT 264 EAST – EXIT 17 B NORTH
GO 4 STOP LIGHTS – TURN RIGHT IN FRONT OF SEARS AUTO CENTER
FIRST LARGE BUILDING ON RIGHT AFTER SEARS

SHOW SATURDAY 9:00 AM TO 5:00 PM

SHOW SUNDAY 9:00 AM TO 3:30 PM

DEALER LOAD – IN FRIDAY 12:00 NOON TO 9:00 PM

DEALER LOAD – IN SATURDAY 6:00 AM TO 9:00 AM

DEALERS

Lewis Steingold, W4BLO
1008 Crabbers Cove Lane
Virginia Beach, VA 23452
FAX (757) 486-0757

**E-MAIL INQUIRIES TO
HAMFEST@EXIS.NET**

TICKETS

Lynn Lilla, W9DJQ
848 Stacey Place
Virginia Beach, VA 23464

Please visit our Web Page at WWW.VAHAMFEST.COM

For more Virginia Beach Hamfest Information

Name _____ Telephone _____ Fax _____

Business Name/Call Sign _____

Street Address _____

City _____ State _____ Zip _____

EVERYONE MUST HAVE A TICKET

----- TICKETS \$5.00 EACH (CHILDREN UNDER 12 FREE WHEN ACCOMPANIED BY PAYING ADULT)-----

----- TABLES \$30.00 EACH (WHILE THEY LAST!)-----

S.A.S.E. Required - Make Checks & Money Orders Payable to " TRCI "

TOTAL -----

AARC Classified Ads

All items must be related to amateur radio and must be surplus to the owners operation (i.e. no dealers or for profit). Price may be listed if desired. **Note:** Check also the WA4TFZ/AARC web page at <http://www.people.virginia.edu/~ejd4e/aarc/>. Please note that all small letters must be used for this address. New Ads August be placed directly to the Editor: 804 990-2659 or via E-mail to the Editor at k4uyt@yahoo.com Please **let K4RKA know when items can be deleted from this file. Updated 4/5/2002.**

5/30/02 FOR SALE: by AARC	The AARC offers for sale the following: Heath audio generator, model AG-0A, works fine \$25. Data Precision 5740 frequency counter, works to 100 MHz, \$25. Autek QF-1 short wave interference filter \$10. Contact Ron, K4RKA, on .925 or at 434 973-3640
6/27/02 WANTED: Kenwood TH21BT HT	Ernie, W2EIU, is looking for an old Kenwood model TH21BT 2mHT. Call him at 434 985 4180
5/02/02 WANTED: 17-inch cabinet	Carter, WD4AYS, is looking for a 17 inch deep cabinet for a SP600 or R390. He is also looking for EH Scott radios SLR or SLRM. Call 434 979 7383.
5/09/02 WANTED: 2M Handheld	Richard, K8EV, is looking for a 2 Meter handheld with at least 5 watts output. Please call him at 434 973 3723
5/02/02 FOR SALE: Yaesu NC76B Charger	Ben, KG4QVP has a wall charger NC/76b for Yaesu aircraft band portable radios vx210/400/800. If you can make use of this charger, call Ben at 434 975 3593
5/23/02 FOR SALE: Cushcraft 10M Beam	Dave, K4DND has a good deal for someone needing a Cushcraft 3-element 10 meter beam. Call 973-5866.

FCC Database Updates

New Calls

KG4ULD	Matthew Postak - TECHNICIAN
KG4ULE	Christopher Postak - TECHNICIAN

Upgrades

None Reported

VE Session Schedule - 2002

August 10 Dayton	Time: 9:00 AM (Walk-ins allowed) Contact: Gerald E. Nauman (540)434-0859 Email: KN4FM@ARRL.NET Location: Woodmen Of The World Bldg. State Route 42 Dayton, VA 22821 (Talk-In Freq 145.130)
(ARRL VEC) VARA & MARA	

Area Hamfests

August 4 Berryville	Sponsor: Shenandoah ARC Location: Timonium Fairgrounds, York Road off I-695 and I-83. Tailgating starts at 6:00 AM, buildings open at 8:00 AM Info: Jane Barb, KD4IET, 2549 Senseny Road, Berryville, VA 22611. Phone: 540-955-1745 or via Email: ibarb@visuallink.com or on web at http://www.Vvalley.com/svarc/hamfest
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Birthdays This Month

August 4	KA4MCA	Don
August 6	KD4NRE	Al
August 7	W6UZ	John
August 12	K1EE	Ed
August 15	KD4WXY	Shawn
August 16	KE4OID	Jessie
August 16	K8HC	Harold
August 17	K4DND	Dave
August 26	W0ANN	Ann
August 28	WD4CEN	Jerry

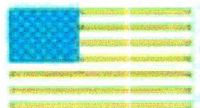
Albemarle Amateur Radio Club
P.O. Box 6833
Charlottesville, VA 22906

<http://www.people.virginia.edu/~ejd4e/aarc/index.htm>



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THE AARC BEACON
Vol 2002 No. 8
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ISSUE DEADLINE - 23rd of each month

Contact Information
Daniel R. (Bob) Dorsey, Jr. K4UVT
PO Box 530
Ruckersville, VA 22968-0530
(434) 990-2659
K4uvt@yahoo.com

***** Next Club Meeting *****

August 13 - 7:30 PM

UVA - NRAO

CLUB MEETINGS and NETS

REGULAR Meeting: Second Tuesday of each month at 7:30 PM

BOARD & TECHNICAL Meetings: First Tuesday of each month at 7:30 PM

Meetings are held at the National Radio Astronomy Observatory (NRAO) building on Edgemont Road (UVA)

LUNCHEON: Wednesdays -- Area hams gather at the **Wood Grill Buffet** on Rte 29 North from 11 AM – 1 PM

Monday Night Information Net – Each Monday at 7:00 PM

YL Net: First Monday of each month at 8:30 PM

Northern Piedmont Emergency Net / Swap Net / Technical Session: Each Thursday at 8:00 PM

All Nets are held on the 146.760 repeater

AREA REPEATERS

WA4TFZ

INPUT/OUTPUT

Tone Access (If needed)

146.160/146.760	151.4 Hz
146.325/146.925	88.5 Hz (if enabled)
223.160/224.760	No Tone
449.250/444.250	151.4 Hz (If enabled)
145.030	MACHO Node
145.030	CHO Packet Bulletin Board

Other Area Repeaters

145.410 (-) 100 Hz Tone (if enabled) -- **AF4CY (Madison)**
 442.075 (+) 151.4 Hz Tone -- **KF4UCI**

AARC CALENDAR OF EVENTS

DATE	EVENT
August 13	Club Picnic
September 10	Regular Club Meeting
October 8	Regular Club Meeting
November 12	Regular Club Meeting
December 10	Regular Club Meeting

AARC - PUBLIC SERVICE SCHEDULE

DATE	EVENT
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Please sign up at meetings when the SIGN UP CLIPBOARD is passed around. You can also send an email to Greg (N4PGS) indicating your interest in working particular events.