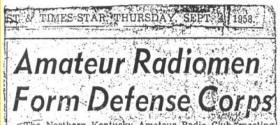
### Vol. 2009, #11 November 2009

### NKARC: The Early Days by Mark Volstad, AI4BJ



At last month's NKARC meeting, Harold Blocher, W4YWH, handed me a sheet of paper that contained some interesting information regarding the early days of the Northern Kentucky Amateur Radio Club. The sheet of paper consisted of ARRL stationery, bearing the call sign W4RHZ, the name Joe Rice, and his address in Covington. Below this was a clipping from the September 4, 1958 edition of the



The Northern Kentucky Amateur, Radio Chip, meeting at the Tri-County Civil Defense office at 30 E. Fifth street, Newport, has elected Vincent C. Webster as president.

*Cincinnati Post & Times-Star.* (I was not quite three months old on this date!) I was afraid that the article would not reproduce well in the Feedline, so here is a full transcription:

#### Amateur Radiomen Form Defense Corps

The Northern Kentucky Amateur Radio Club, meeting at the Tri-

#### Inside this issue:

Top of the Tower	3
October Meeting Minutes	5
1958 NKARC Membership	6
Weaver's Words	8

County Civil Defense office at 30 E. Fifth street, Newport, has elected Vincent C. Webster as president.

Mr. Webster, operator of Amateur Station W4VLC, said primary purpose of the Emergency Radio Corps will be to organize an effective Emergency Communications system.

The emergency system will be set up in accord with development of the Tri-County Civil Defense Authority and its plans for an area-wide Civil Defense program.

#### Continued on Page 5

#### **Upcoming Programs**

**Rod Villari**, KJ4IAM, will present a program on digital public radio service **scanning** at the **November 9** meeting of the Northern Kentucky Amateur Radio Club.

Robert Gulley, AK3Q, has organized a visit to the ARTIMIS control center in Cincinnati on November23. Details to follow.

#### **Dates to Remember:**

 $\begin{array}{l} \text{Nov 5} - \text{Dixie Heights VE Session} \\ \text{Nov 9} - \text{NKARC membership meeting} \\ \text{Nov 14,15} - \underline{\text{KY QSO Party}} \\ \text{Nov 23} - \text{Visit to ARTIMIS Control Center} \\ \text{Nov 28} - \underline{\text{NKARC special event station}} \\ \text{Dec 14} - \text{NKARC/KD7ARET Christmas Dinner} \end{array}$ 

# **NKARC Directory**

President: Dann Fox, KI4AVO <u>dfox03@fuse.net</u>

Director at Large: Don King, AJ4DK kingdl19406@msn.com Vice President: Robert Gulley, AK3Q <u>ak3q@arrl.net</u>

Feedline Editor: Mark Volstad, AI4BJ mvolstad@insightbb.com Club Trustee & Historian: Brian DeYoung, K4BRI <u>k4bri@arrl.net</u>

> Webmaster: Robert Kluck, N4IJS <u>n4ijs@k4co.org</u>

Net Manager: Robert Kluck, N4IJS <u>n4ijs@k4co.org</u>

**Repeaters (K4CO):** 147.255+ and 444.350+ Edgewood (PL 123.0), 147.375+ Walton, 146.895+ Highland Heights. The 147.255 repeater is a linked Echolink node, accessible via N4IJS-R.

NKARC Net: Tuesdays, 8:30 PM on the 147.255 repeater

**VE Testing:** Testing sessions are held <u>by appointment only</u> on the 2nd Monday of each month, prior to the NKARC membership meeting. Testing begins at 6:00 pm. To make an appointment, contact Lyle Hamilton at <u>ab8sh@arrl.net</u> or tel. 513-315-4032

NKARC Web Site: http://www.k4co.org

NKARC Membership Meetings: 2nd Monday of each month at 7:30 pm at the Hilltop Church of Christ, 5300 Taylor Mill Rd (Ky. 16), Taylor Mill, KY. Visitors are always welcome!

The Feedline is published monthly by and for the members of the Northern Kentucky Amateur Radio Club. It is distributed via direct email to current NKARC members. **If you are a member but are not receiving your copy, please notify the Feedline editor.** Permission is hereby granted to any non-profit amateur radio group to quote or reprint from this publication provided appropriate source credit is given. Submissions for the December Feedline must be received no later than December 4. Submissions, address or call changes and circulation problems may be sent to the Feedline editor:

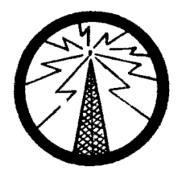
Mark Volstad, AI4BJ 6098 Tosha Dr., Burlington, KY 41005 Email: <u>mvolstad@insightbb.com</u> Tel: 859-689-4234

## **Top of the Tower**

#### Hello everyone!

The end of this year is turning out to be the year of firsts for the NKARC. At the beginning of October we had the Emergency Preparedness Fair, where we were able to meet the public. It was a good event; we were set up near local fire department representatives, the Red Cross, and other agencies and vendors with a wide range of information on emergency topics.

Then later in October we moved into the Halloween Haunt Sprint. It was the first contest that I ever took part in aside from Field Day (Tech you know). I was also impressed by the range I was able to achieve from simplex. I was able to talk to some fellows in Indiana and a lot of club members in Northern KY. I am glad we did it and hope we do it again next year! I am looking forward to seeing the results and someone will get the mystery award at the Christmas get-together. Thanks for putting it together, Robert!



On Saturday, November 28<sup>th</sup> from 10am to 6pm, we will be having the 50<sup>th</sup> anniversary special

event station at Dixie Heights High School on US 25 in Crestview Hills to commemorate the 50 years that the Northern Kentucky Amateur Radio Club has been in existence.

Last but not least something that we have been doing every year, the NKARC / KY7ET Christmas gettogether at the Golden Corral on 3L

Highway and Orphanage Road in Covington. It will be on December 14<sup>th</sup> at 6:30pm. This will replace our second Monday of the month meeting. I hope to see you there.

Below are some pictures from the Emergency Preparedness Fair.

73 Dann Fox KI4AVO



# **October Meeting Minutes**

MINUTES OF THE OCTOBER 12, 2009 MEETING OF THE NORTHERN KENTUCKY AMATEUR RADIO CLUB

Meeting called to order 7:32 p.m. by Dann Fox KI4AVO. Pledge of Allegiance and introductions followed.

No treasurer report. Treasurer Dann, KI4AVO presented a report last month.

Motion to accept minutes as published in feedline accepted. Tony AI4IP, made motion with Greg W4TSA giving second.

President Fox asked for volunteers to serve on a nominating committee. No one came forward. He then asked if any would serve as an officer. No one came forward. President Fox then indicated current club VP Robert AK3Q is unable to continue on as VP.

President Fox discussed having the annual Christmas party with our sister club KD7ARET and was directed to contact Brian W4SOU, Chairmen of KD7ARET to set up the date for the two organizations to party!

There being no further business, the business portion of the NKARC was brought to adjournment by a motion from Tony AI4IP and seconded by Lyle AB8SH.

The program for the evening was Show and Tell. Tony AI4IP started off the program by presenting three large boxes of old equipment donated by the estate of Ed Zibulka W8AWK. The condition of all equipment was questionable, but dials, meters, boxes, etc were suggested as reasons to take a piece of equipment home. Only one box remained at the end of the evening. Dave K8DWA was the following presenter. Dave presented a wide and varied assortment of vintage vacuum tubes (Western Electric VT2), crystal, microwave (Reflex Vitran), and the pièce de resistance – a 1500-watt dummy load (big light bulb).

Dann AI4AVO showed off a vintage military HT (VRT6). The VRT6 was used in the Korean and Vietnam wars. Brian K4BRI and Mark AI4BJ each presented multiple homemade items of professional looking equipment. Each drew large crowds of interest with their presentations. The evening presentations drifted into small groups of hams who dispersed with anticipation of the next month's meeting of NKARC.

Respectfully submitted, Tony White, AI4IP





### "Early Days", cont'd from Cover

All amateur radio operators in the area have been invited to attend the next meeting at 7:30 p.m. Tuesday at the Civil Defense office in Newport, when a program chairman will be appointed and selection of an Emergency Radio Corps Committee will be announced.

Regular meetings of the organization will be held at 7:30 p.m. the first and third Tuesdays of each month at the Civil Defense office.

Twenty-four amateurs from the Boone, Campbell and Kenton area and one from Pendleton county were present and joined the new club at its organization meeting. At that session, along with President Webster, officers elected include Joe N. Rice (W4RHZ), vice president; Roy Lambert (W4AHL), recording secretary; Charles Sweet (W4VLA), corresponding secretary, and James Adams (W4ZOU), treasurer.

Although the Northern Kentucky Amateur Radio Club was not formally incorporated until the following year (1959), this seems to be the earliest written record of a meeting of the club. If anybody has older records, I would be very interested in seeing them. It is my understanding that the club met informally for a number of years preceding this. Harold also handed me a 1958 membership roster containing 25 names. This list is reproduced on page 6 of this

month's Feedline. The only name that I recognize is Harold's — not surprising since I have only been a ham for 6 years. And of course, sadly, many of these individuals are now silent keys. It's interesting to note that almost all members lived north of today's I-275. I suppose that back in 1958, most of the land south of this was still cow pasture!



DATE	NCS	CHECKINS	TIME (MINS)	TRAFFIC
10/6/09	AJ4DK (Don)	9	28	0
10/13/09	AJ4DK (Mike)	13	46	0
10/20/09	N4IJS (Robert)	8	18	0
10/27/09	KG4SBG (Dennis)	9	28	0
TOTALS:		39	120	0

### **October NKARC Net Report**

### 1958 NORTHERN KENTUCKY AMATEUR RADIO CORPS

ROSTER

CALL	NAME	ADDRESS	CITY
WLZOU	Adams, Jim	230 Main Street	Newport
KUHZO	Aebi, Bill	17 Price Avenue	Erlanger
WLINE Q	Bidenhorn, Paul	5118 Taylor Hill	Covington
KLADH	Bishop, Horace	180 Sherman	Ft. Thomas
WLIWH	Blocher, Harold	62 Linet	Highland Hghts.
KLVEY	Cassell, Jeff	(No Address Listed)	
KLCD J	Clements		
KLUOK	Coleman, Ralph	134 Sergeant	Ft. Thomas
KLUTVW	Davies, Bill	14 Langview	Cold Springs
WLJEW	Grimes, Harlan	500 Rohman	Bromley
KLIKFO	Halpin, Joe	21 Fairfield	Ft. Thomas
WLVIV	Hanlon, Jim	134 Manor Lane	Ft. Thomas
WLTPZ	Horlinger, Jack	hl Hartweg	Ft. Thomas
WLJYS	House, Howard	420 Russell	Covington
K4CJS	Hussey, George	50 Pine Hill Drive	Creatview
WLBZY	Johnson, Ross	104 Rosemont	Ft. Thomas
KLHZL	Keen, Bill	1034 Orchard	Newport
KLIDH	Moore, Lawrence	1011 Shelby Street	Falmouth
WLRHZ	Rice, Joe	RR 4 - Box 448	Erlanger
WLIYH	Schaefer, Hugh	921 Columbia	Newport
WLKZF	Smeltzer, Len	Box 205 - RR 2	Ludlow
WLVLA	Sweet, Charles	19 Southview	Ft. Thomas
K1COO	Truitt, John	5561 Taylor Mill	Covington
KATZI	Williams, Bob	1873 Highwater Rd.	Ludlow
KLLSB	Williams, Evan	110 Brentwood	Ft. Thomas

# Weaver's Words

Jim Weaver, K8JE Great Lakes Division Director, ARRL E-mail: <u>k8je@arrl.org;</u> Tel.: 513-459-0142

#### FCC Clarifies Part 97.113 Regarding Drills

FCC Issued Public Notice DA 09-2259 on October 20 to resolve the confusion concerning 47CFR97.113 of its rules governing Amateur Radio. There are two aspects of this Public Notice as I see it. The first is that the wording of 47 CFR (Code of Federal Regulations) Part 97.113 says precisely what the FCC has said it says all along. In today's phraseology, "read my lips."

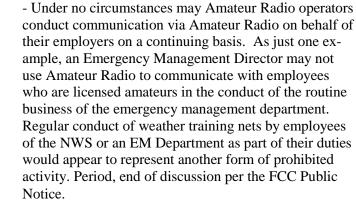
The second aspect of the Public Notice adds a new wrinkle to the issue. This is simply that FCC recognizes

there may be individual instances when it may be appropriate for employees with Amateur Radio licenses to use Amateur Radio to communicate on behalf of their employers during drills. The critical learning here is that these instances relate to government-sponsored drills and the use of employee ham operators is to be cleared on a case-by-case basis through a waiver process the Commission has instituted.

In other words, one does not decide a day or two before a drill that employee amateurs can be used or that the employer-employee relationship is OK to operate on a continuing basis.

Everything stated in "Words" last month as well as everything stated in the position statement we ARRL Directors issued about the commercialization of Amateur Radio applies today as much as it did 20 years ago. The only difference between what we discussed is FCC's addition of the waiver process for occasional government-sponsored drills.

The bottom line as this Director sees it is:



- Any use of Amateur Radio by an employer to communicate with employees occur during individual, government-sponsored drills and only then if prior waiver for this communication has been obtained in writing from

> the FCC. The drill may not be repeated without repeating the waiver process. In addition, the drill may not be a continuing operation. Again, period, end of discussion per the FCC Public Notice.

To beat a dead horse, FCC rules regarding this issue have not changed for many years. As proof of this, all one needs to do is to read the Public

#### Notice

http://hraunfoss.fcc.gov/edocs\_public/attachmatch/DA-09-2259A1.pdf and Part 97.113. Focusing on the current issue, Part 97.113 reads:

"(a) No amateur station shall transmit:

"(2) Communications for hire or for material compensation, direct or indirect, paid or promised;

"(3) Communications in which the station licensee or control operator has a pecuniary interest, including communications on behalf of an employer. Amateur operators may, however, notify other amateur operators of the availability for sale or trade of apparatus normally used in an amateur station, provided that such activity is not conducted on a regular basis;

"(5) Communications, on a regular basis, which could reasonably be furnished alternatively through other radio services."

Whether you or I agree with an FCC rule does not change the fact that it is the current rule with full, legal status. It applies regardless of any well-meaning rationalization anyone may try to use to justify ignoring it.

While I'm in the opinion-offering mood, let me suggest that the FCC has done everything it can do to get Amateur Radio and us out of a thorny, community relations, rock-and-hard-spot with served agencies. Giving copies of Part 97.113, the new FCC Public Notice and the ARRL Commercialization of Amateur Radio discussion should give any sincere manager at a served agency a clear understanding of what can and cannot be done using Amateur Radio. Add to this a discussion by a knowledgeable member of your ARES, club or other ham group on how you can fit in to emergency plans and the picture of how you can assist our communities should come into focus.

Instead of telling an agency, we do what you want, try saying, "Federal regulations do not permit us to do exactly what you have requested, but here is what we can do to help ... " Discussing the situation openly and honestly should then be useful.

Keep in mind that this discussion relates to drills. The FCC rules (47CFR97.403) still also state "No provision of these rules prevents the use by an amateur station of any means of radio communication at its disposal to provide essential communication needs in connection with the immediate safety of human life and immediate protection of property when normal communication systems are not available." Training for such an eventuality by employees of served agencies must be done following FCC rules, however.

FCC rules and regulations are published for anyone to study. Don't have a copy? You can go to http://www.arrl.org/catalog/?category=&words=fcc+\& SearchWords.x=13&SearchWords.y=8.

They are also posted on the web at http://www.arrl.org/FandES/field/regulations/news/part 97/.

Incidentally, "except as otherwise provided in these rules" in (2), above, refers to the ruling that allows operators of W1AW and certain other stations to be paid for transmitting material such as relevant news bulletins, propagation information, code practice on the ham bands to amateurs.

#### **Online Seminar Will Discuss Section 97.113**

As stated in a special announcement to Great Lakes Division members, ARRL General Counsel Chris Imlay, W3KD, will lead an online seminar about Section 97.113 of the FCC rules. Provided there is still room in the "webinar," any GLD member is invited to participate. The seminar will be by Internet with presentations on your computer screen and audio using VOIP or telephone.

The seminar is at 9 PM, Wednesday, October 28. To register:

https://www1.gotomeeting.com/register/326759760. You will be able to submit questions when you register.

#### **Publicity for Amateur Radio**

A recent poll on the ARRL web site asked visitors to it if they were familiar with the league's new training course, PR-101. The result was that only about 10% of those who took the poll said they knew anything about this course. This is an unfortunate statistic.

PR-101 is a series of lessons on CD that covers the how's, why's and what's of getting print or broadcast media coverage for services we hams provide to the public and for Amateur Radio activities.

Page 8



I've lost count of the number of times members have asked why ham public safety and public service events fail to receive coverage by the news media. PR-101 provides amateurs with the knowledge needed to get this coverage.

PR-101 was put together under the guidance of ARRL Media Relations Director Allen Pitts, W1AGP to provide us gals and guys in the field with the tools we need to promote hamming locally.

To be honest, hams indeed have a problem getting the press coverage our works deserve. We can sit back and complain about this problem or we can act to do something to correct it as have many of our fellow amateurs. If you, too, wish to become part of the solution, please contact Allen at <u>apitts@arrl.org</u> and ask what you can do to improve press coverage in your community. For information about PR-101, specifically, go to <u>http://www.arrl.org/news/stories/2009/05/15/10817/?nc =1</u>.

PR-101 is a must-read for club Public Information Officers (PIOs) and anyone else interested in getting good publicity for Amateur Radio. Your club doesn't have a PIO? It should. Nearly wherever there is an active PIO knowledgeable in how to obtain publicity, ham radio receives it.

#### ARRL to FCC: 'tain't so McGee

In a filing with the FCC, the IBEC corporation provided technical data showing that the general electrical noise floor in the US has risen considerably. The point of the submission was that any ambient noise added by BPL and similar systems was relatively negligible justifying radiation from BPL. ARRL recently filed comments that strongly rebut the IBEC argument.

Studies done by ARRL's Ed Hare, W1RFI, totally demonstrated the incompetence of the investigative approach used by IBEC. Using more sophisticated and accepted methodology, the ARRL study clearly supports the continued validity of data previously provided earlier by such organizations as the United Nations' International Telecommunications Union (ITU) and NATO.

#### **Region 3 IARU Conference ends**

Region 3 of the International Amateur Radio Union held its triennial conference in Christchurch, New Zealand October 12-16. Major actions taken by the delegates included affirming obtaining allocation of an amateur 500 kHz band during WRC-12. The conference also firmly stated its dedication to strengthening its protection of amateur frequencies against intruders by strengthening the Region 3 Intruder Watch.

Ten member national societies sent delegates. Three more were represented by proxy. ARRL represents amateurs in US territories and possessions in the Region III. These include American Samoa (KH8) and Guam (KH2).

The conference accepted the invitation of the Vietnam ARC to hold its 15th Triennial Conference in Ho Chi Minh City in 2012.

#### Hamfest Sponsors, You Own Part of the Agreement

ARRL is happy to sanction qualified hamfests as "ARRL Hamfests." The benefit to clubs and the hamfests they sponsor is free publicity in QST and on the ARRL web site. Free gift certificates usable to purchase ARRL publications are also given to use as prizes.

In return, hamfests that are sanctioned agree to a quid pro quo deal for ARRL. In return, ARRL hamfests agree to "... make space available for an ARRL display, and those ARRL hamfests which include formal speaking programs will schedule time for an ARRL meeting if so requested by the Director or another elected League official."

In my opinion, mutual courtesy between ARRL and the hamfest sponsors should include each one promoting

the appearance of an ARRL official at a sanctioned hamfest when this appearance is known sufficiently in advance. This is precisely the reason behind the Travel Schedule published at the end of each of these issues of Words.

I hope that hamfest committees that do not plan formal speaking programs will still make time available for an ARRL Forum provided that space is available for it and the time is requested. Additionally, sanctioned hamfests "shall make every effort to use the ARRL diamond ... on the front of all advertising and program materials."

Obviously, a sanctioned hamfest can promote itself as being an ARRL Hamfest. This is encouraged, in fact.

For the complete rules regarding sanctioning of hamfests and conventions, please see <u>http://www.arrl.org/FandES/field/hamfests/rules.html</u>.

#### Humanitarian Award: Nominations Wanted

The ARRL Humanitarian Award is given to individual or groups of amateurs that provide outstanding work in areas of international humanism and the furtherance of world peach. Nominations for this award are open through December 31.

Information on the award and submitting nominations for it are at

http://www.arrl.org/FandES/field/awards/humanitarian. html.

#### **Canadian Mobiles must become Hands Free**

According to an alert from the Radio Amateurs of Canada (the Canadian National organization), a new law in the Province of Ontario requires all two-way radios in nearly all vehicles on Canadian roadways to be hands free. The requirement applies to all commercial, CB and amateur equipment. The only exception to the rule is gear in emergency response vehicles. We can only assume at this time that the law applies to vehicles operated by visitors from the US as well as Canadian amateurs. The new law became effective October 26. Tickets for infractions will begin to be issued effective February 1.

#### **Great Lakes Division in Print**

Page 20 of the November 2009 QST was nearly taken over by Great Lakes Division clubs. The left column covers a needed antenna replacement at the Bluegrass Amateur Radio Service club station in Lexington, KY. In the lower right, there is a nice "art" photo of antennas and a hot-air balloon above Findlay Radio Club antennas in Findlay, OH.

A technical article by Mike Bryce, WB8VGE begins on p. 35. The North Lawrence, OH amateur wrote "A Universal Frequency Calibrator." Nice article.

In addition, John Davis, WA8YXM of Davison, MI and Kevin Taylor, KD8TAY, of Loudonville, OH each had a letter-to-the-editor published. Finally, Bill Jones, K8CU (ex-NS8T) of Westerville, OH and Arnie Hayward, NS8T of Coldwater, MI were featured in a Stray that involved their mutual interest in NS8T.

Did I miss anyone?

#### The 2010 Handbook -- Wow!

I received my copy of the 2010 Handbook today, October 19. All I can say is it is quite an improvement over an already-leading publication. It is billed as "The BIGGEST Handbook EVER!" I think this is selfevident!

It is a packed, 32 chapters plus a CD of the entire book, plus an Advertisers Index and useful ads, plus a topic index, plus a project index, plus much more. Having cut my ham radio teeth on the 1957 Handbook, I can assure you this isn't your grandfather's or even you father's (may not even your son's or daughter's) Handbook.

My copy is hardbound in a nice-looking blue with gold embossed type cover. Soft back covers are also available.

Did I say that many smaller countries of the world use the ARRL Handbook as their bible for radio communications and RF engineering? Well, they do and a look at the 2010 edition will immediately show you why. It is complete, practical and easy to understand.

For an introductory period the hard cover and the soft cover editions are \$49.95 plus shipping. After the introductory period, the hard cover edition will return to its regular \$59.95.

#### **Travel & Hamfest Schedule**

Beginning this month, all hamfests/swaps sanctioned by ARRL will be included in the monthly Travel and Hamfest Schedule. Typically, hamfests will be listed three months in advance. Events that will be attended by a Division representative will be noted. Division Legislative Action Chair John Meyers, NB4K and 8th Area QSL Bureau Manager Jay Slough, K4ZLE may join Vice Director Gary Johnston, KI4LA and me on selected visits.

Date.....Event.....Division Representative(s) 2009

7 Nov: Georgetown OH Hamfest, Grant ARC -- Gary

10-12 Nov: Newington, CT, A&F Meeting -- Jim 6 Dec: Mt. Clemens, MI, L'Anse Cruise ARC Swap

2010

8 Jan: Dayton, OH, Dayton ARA Meeting -- Jim 13-14 Jan: Newington, CT, A&F Meeting -- Jim 15-17 Jan: Newington, CT, ARRL Board Mtg. Garv & Jim 17 Jan: Hazel Park, MI, Hazel Park ARC Hamfest 17 Jan: Nelsonville, OH, Sunday Creek AR Fed. Hamfest 31 Jan: Strasburg, OH, TUSCO ARC Hamfest 14 Feb: Mansfield, OH, Hamfest, Inter-City ARC -- Jim 21 Feb: Livonia, MI, Swap n Shop 6 Mar: Cave City, KY, Mammoth Cave ARC Hamfest 14-16 May: Dayton Hamvention(r), Dayton ARA -- Gary, Jim 8 Jul: Youngstown, OH, MVARA Meeting --

### **Did You Know? WWV and WWVH**

#### From the ARRL Letter, October 22, 2009

Today, most amateurs know that radio stations WWV and WWVH broadcast time and frequency information 24 hours a day, seven days a week to millions of listeners worldwide. Administered by the National Institute of Standards and Technology (NIST), WWV is located in Fort Collins, Colorado, about 60 miles north of Denver; WWVH is located on the Island of Kauai, Hawaii on a 30 acre site near Kekaha at Kokole Point. Both stations broadcast information that includes time announcements, standard time intervals, standard frequencies, UT1 time corrections, a BCD time code, geophysical alerts, marine storm warnings and Global Positioning System (GPS) status reports. Most hams today think of WWV and WWVH as "time stations." According to QST Editor Steve Ford, WB8IMY, that's only half-true: they are really time and frequency stations. "The time signals that you hear are regulated by an atomic clock that uses the oscillations of Cesium atoms as its standard -- 9,162,361,770 oscillations equal 1 second," wrote Ford in the June 1994 issue of QST. Click here to discover this part of Amateur Radio history.

Return to: Northern Ky. Amateur Radio Club P.O. Box 1062 Covington, Ky. 41012 FIRST CLASS

#### ADDRESS SERVICE REQUESTED



NKARC Feedline November 2009 Volume 2009 Issue 11