

IN-SERVICE

Summer

Volume 85

August 2003

A Visit to ARRL HQ

On a recent vacation I stopped by the ARRL Headquarters. I was given a VIP tour of the facility and offered the opportunity to operate W1AW.

We arrived in the late afternoon. I was concerned that tours would not be happening but when I presented myself at the reception desk the receptionist picked up a phone and said we need a tour. The tour was kind of like peeking into the office of any going concern. I was shown the research library, DXCC, the test facility, the development office, the QST editorial staff as well as where David Summers executive director worked.

The young lady was very knowledgeable and answered my questions with candor. It seems in her case it's a family affair with her parents also working for the League. The actual operating station is in a separate building and it was the one I've seen in QST numerous times. It had three operating positions equipped with what I describe as rice burners and across from them were the "Harris" amplifiers used for the code and bulleting transmissions from headquarters. I highly recommend making the effort to stop if you're in the Newington, CT area and check out what the national radio association has to offer. It made me proud to be a member. I'd sure like to see more HAMS associated with the league.

Gene Chadwick KØBKZ
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This issue cost over \$100 to print and mail.
Please make your annual contribution to
ASCRA Treasurer Chuck Palmer NØONN,
Box 73 Independence MO 64051

Another Enlightening Experience

Terry Redding W6LMJ

The last sound you want to hear during a thunderstorm is a loud crack of thunder with no time between flash-to-bang. The last thing you want to see is your attic bright white as viewed through the air conditioner vents above your head. The last smell you want to experience is that of burning wire throughout your house. Sadly, my poor mother-in-law had all these experiences Saturday morning when our home in West Palm Beach was struck by lightning.

My wife Barbara, W5HKY, called a few minutes later to advise that we had been hit by lightning. I was in my office 3/4 of a mile away when the strike occurred. I asked Barbara to describe the event and walk outside to see if there was any damage to the Quad, and Vertical on the 54 foot tower next to the house. The top two thirds of the of the 22 foot 2 meter/440 antenna was missing. On the side of the house, the phone wires were charred, as was the paint on the house.

I came home a few minutes later to assess the damage. On the tower the top 12 feet of the fiberglass vertical was missing. The remote antenna switch was no longer working, nor was the rotor. Oddly, the 40/80/160 meter wire antenna had also become disconnected from the side of the tower. In the house the small bedroom TV was out, as were all the phone lines. And, sadly the FT-767GX – which I have used since 1987 – no longer worked. After evaluation it looks like I will need a new radio, an FT-1000 Field or the IC-756PRO II.

Florida is often referred to as the lightning capital of the USA. On the average each square mile of Florida receives 17 direct lightning strikes per year.

Lightning should be thought of as a massive complex AC surge with a frequency of about 20 to 500 KHz., rather than DC. Lightning usually takes the form of several pulses that have a rise time of about 2 microseconds and a decay time of between 10 to 45 microseconds. The average current of 18,000 amps (which may be as high as tens of millions of volts) for the first stroke and half that for the second and third strokes. An average strike is three to four strokes. Because we are dealing with an AC waveform, DC resistance to ground is not nearly as important as the INDUCTANCE to ground (Crenshaw, 1998).

Any bend or coil in the ground system adds inductance. For this reason, any run to ground must be as straight and free of bends as possible. Gentle bends are preferred to right-angle bends. Since we are dealing with a complex AC wave form with rapidly changing frequency, the majority of the currents is carried near the "skin" of the conductor, so the more surface area, the better. Wide copper "straps" work better than thick round solid cables. Multi-stranded cables (the more strands the better, welding cable for example is preferred to AC Cable) work better than solid cables. The green wire AC ground in your house or apartment is USELESS as a ground for lightning protection. It has lots of bends, is coiled in places, and is usually quite long (or resistive), so this presents a huge inductance to the pulse.

Most damage to our homes and equipment is not caused by a direct strike but by huge "induced" voltages on conductors from a nearby strike. If you remember that only an AC waveform can cause induction, we then are dealing with the phenomena of EMP or Electro-Magnetic Pulse (Crenshaw, 1998).

My station design intentionally tries to provide no path for the lightning strike to the station inside the house, while providing a direct path to ground. This is accomplished in two ways. First, all wires and cables coming from the tower have

three six to eight inch loops, as close to the top of the tower as possible to provide inductive resistance to the lightning strike. The tower itself has a grounding strap from each leg to three separate eight foot grounding rods placed external to the concrete base of the tower. Each grounding rod is further tied to each other with straps in order to spread the current and decrease resistance. It is a mistake to embed the ground rods below the base of the tower before pouring the cement. Doing so may allow a lightning strike to literally blow the concrete base apart, as it tries to dissipate something in the neighborhood of 300,000,000 volts, drastically weakening the structure.

I further have antenna switches that isolate the signal path and shunt the shield to ground at several places in the path to the station from the antenna. This occurs within antenna switches and antenna tuners. Even with these precautions lightning can and often will wreck havoc should you be subject to a direct hit.

This is the second time I have sustained a lightning strike in West Palm Beach. It will cause me to rethink my protection strategy, and review the current technical information on this subject. I am considering removing the TV antenna from the tower, as well as the wireless 2.4 Ghz ethernet LAN I have between my home and my office. DSL, and DirecTV may be safer bets – and will reduce the signal paths into the tower to the house that lightning may follow.

My mother-in-law formerly worried mostly about hurricanes -- now lightning has moved up on her list of reasons why she doesn't like Florida.

Terry Redding – W6LMJ
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Reference:
Crenshaw, Gerry, WD4BIS, (1998). NHP #20: Lightning Protection

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We are pleased to see (Page 3) the calls of Mark Riley M5BOP in England and Denny Weldon HP3XUD in Panama both listed as check-ins to the 20M net this time. Mark has a new antenna and can now call in from home.

From Doug Shaw, ASCRA Secretary

WAØEMX, met Fred Naylor, VK3AQN, of Melbourne, Victoria, Australia, at the Community of Christ Auditorium in Independence, Missouri, Sunday afternoon, July 6th, to put the HQS Amateur Radion Station on the air for the weekly International 20 Meter Band ASCRA NET. Conditions were not very good because of diminishing sun spot numbers and atmospheric noise generated by summer thunderstorms throughout North America. Still, a number of stations were

contacted, including Mark Riley, M5BOP, in Suffolk, England and Michael Hahn, KGØXU, who was located at the Flint District Reunion near Lexington, Michigan, operating from his (auto)mobile unit. Others contacted were Ernie Miles, WB2UJL, net control station, in southeastern New York state, and locally, Gene Chadwick, KØBKZ, of Independence, Missouri. Other stations relayed but not heard directly were Andy Ferrara, WBØBS, of Pueblo, Colorado; Tom Thatcher, W2TFT, of Shawano, Wisconsin; and Hale Collins, W6RWH, of Lamon, Iowa.

KØOLB SK

Doug Shaw, WAØEMX, of Raytown, Missouri, is sad to report that his cousin and long time ASCRA member, Ellis Rauh, KØOLB, of Independence, Missouri, passed away in June 2003. Ellis, in addition to his Ham Radio avocation, was a retired railroader and steam powered model railroad enthusiast. He was 92.

73 Ellis, and R.I.P.

Doug Shaw WAØEMX
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* * * *

Tom Thatcher W2TFT advises that if you want information on a telephone number one easy way is to type the number into the Google search engine and presto the first listings are name and address of the person holding that number and a map link to show the location.

* * * *

A message of thanks was sent out to Seti volunteers. This one was received by the IN-SERVICE Editor:

Armed with the results of 1.4 million years of computer time, SETI@home <<mailto:SETI@home>> scientists recently traveled to the Arecibo radio observatory in Puerto Rico for a closer listen to our 155 top "candidates".

Thanks for participating in this history-making effort. According to our records, you have processed 3437 work units, the most recent on May 27, 2003.

Your contribution of computer time to SETI@home > is greatly appreciated.

From the Rocky Mountain Mission Center

Dave Cook - KCØMHT: Last year at this time, Colorado seemed to be engulfed with one wild fire after another. Our current wild fire count is about half of what it was last year and not as near the total amount of acreage! However, the current concern with the State Officials are now with flash floods, as the ground in the burn areas is almost as hard as concrete.

The Rocky Mountain Mission Center first conference has been scheduled October 25-26 at the YMCA of the Rockies near Estes Park, Co. Each congregation has been asked to set up a small booth. On behalf of the ASCRA HAMS within our Mission Center, I approached our Mission Center President, David Niï, about having an ASCRA booth at the conference. The request was approved. **So if there are suggestions on what information we can use in the booth, please let me know by e-mailing me at: Dave_Cook@juno.com**

With the concern of flash floods in our area, the Douglas County Sheriff Office requested our ARES District (#24), to take SKYWARN training. Within a few weeks of taking this training, Deckers, Co. (northern part of the Haymen Fire burn area) received about 5 inches of rain in one hour, washing out one of the county roads and isolating a Youth Camp. The Sheriff Office had placed members of our district along various routes to monitor the rising of the Platte River. I remember wishing I had taken better notes in my Junior High wood working class, as building an ARK seemed like a good thing as the water continued to rise. This event might have made the NEWS, but a sinkhole opened up on I-70 near Vail at the same time, caused by the same storm.

About 2 weeks later, heavy rain (3 inches per hour) drenched Perry Park, Co. (near the eastern boundary of the Haymen fire), again making the creeks rise and again, wishing I was a better craftsman in wood working as we monitored the events.

I participated in the 17th Annual Elephant Rock Bicycle event with over 600 participants. As a HAM newbie, I found the exercise very helpful, and was looking forward to working with a Net control in a non-life or death situation (unlike the Net control operations during the Haymen fire, we had to make sure the traffic was very accurate). Some of us were in remote locations and by ourselves (me in particular). A thunderstorm rolled through the area, and I for one had to shut down until the storm passed. When I came back on the air, the net was a-buzz with activity. Some riders were suffering from Hypothermia (the temperature prior to the storm was 85) and we needed the event managers to have the event buses (Douglas County School District Buses) pick them up. The bus drivers had cell phones, but they quickly saturated the network. So we signaled the buses and directed them back to the aid stations. One rider along my route was wet, angry, and his bicycle frame broke in half. But he was grateful that I had the event buses pick him up. A Sheriff Deputy stopped by my location and wanted me to alert the net of a 9 year old girl that had gotten separated

from her family during the "rain evacuation". Within 10 minutes, she was found.

Cell phones may be nice, but in a pinch, you can't beat a 2 meter rig and a repeater!

News from Andrew "Nick" Ferrara - WAØIBS: I was involved in only one of the several local events that the local ARES District 14 supports. It was an exercise with Peterson AFB, the City of Colorado Springs old airport and several of the local hospitals here. A simulated airplane crash was staged with numerous victims. Ham radio operators assisted in the communications and I was stationed in the emergency room along with another operator to pass along how many people would be transported to that particular hospital and the degree of their injuries.

20 Meter Net

Frequency 14.287 MHz 1530 Central Time Sunday
Net Control WB2UJL Ernie Miles

The following checkins were recorded since 4/15/03.

Sorry if I missed you.

Ernie Miles

WDØARL, Ed Gordon	WB3ILX, Ron West
NØBGG, Larry Oiler	K4CRS, Charlie Solomon
KØBKZ, Gene Chadwick	N4GXU, Chuck Palmer
NØDQU, Ken Renquist	M5BOP, Mark Riley
NØELM, Fred Troeh	N5ECP, Jeff Salmons
WAØEMX, Doug Shaw (Guest operator WØSHQ)	N5HEK, Dennis Bennett
	N5LCL, Dave Gates
	W5QPT, Ellis Thatcher
WØEXX, Darius Hofer	NJ6F, Rich Klotsche
WDØFEN, Robin Cross (Guest operator WØSHQ)	W6LMJ, Terry Redding
	W6RWH, Hale Collins
	N7DJK, Dave Kulikowski
WAØFGW, Randy Bronson	KA7VMA, Dell Wynes
WAØIBS, Andy Ferrar	KA7ZZZ, Roger Hyatt
WØLAV, Charles Shanks	WB8CTC, Joe Mc Cready
KCØLSE, Joe Andrews	N8LCD, Bob Moy
WØNNN, Norm Ralph	K8QA, Mike Oiler
NØNOG, Philip Jorgensen	W8QK, Muir Robinson
KØSEJ, Norm Jordan	KB9JLC, Ken Collard
WBØWU, Ed Morris	WB9JLD, Barney Bindler
KGØXU, Michael Hahn	K9YB, Steve Fagan
WB1GDG, Calvin Harris	WA9YWK, Keith Peterson
W2TFT, Tom Thatcher	
VK3AQN, Fred Naylor	
HP3XUD, Denny Weldon	

The IN-SERVICE needs a new editor. If you are interested contact Michael Hahn 1420 Woodbury St., Independence MO 64055-1952. Phone 816 252 4451. E-mail mhahn@CofChrist.org

AMATEUR RADIO WAS THERE

Bob Farnham KGØII

I, with many others, watched with horror as bits and pieces of the Space Shuttle Columbia showered down from the sky on Saturday, February 1, 2003. Even before I began to absorb the news analysis, the pictures on the TV screen told of something which had gone very wrong. As the hours went by, residents of the region around East Texas and Western Oklahoma were instructed to report debris to local authorities, and to keep a safe distance until officers could secure the area. Thousands of pieces of debris were subsequently reported. Because of the enormity of the debris field, local law authorities found personnel resources stretched to the limit, and many sites went unguarded.

In the midst of this, I had to wonder, where was amateur radio? There were no reports in the major news media that I saw or heard, but later reports confirmed that communications were stretched to the limit along with personnel. Could amateur radio have possibly provided some relief; even assisting to watch over debris fields which local authorities were unable to watch, and providing communications assistance at the same time?

This is exactly the type of thing for which we train and equip ourselves. First, to be available with our radios at a moment's notice

to provide communications services. And in this particular case, communications capability would also seem to provide the capability for a service of presence as well.

Finally, reports of amateur radio's contribution to the shuttle recovery effort began to come out. Indeed, the long-running relationship between ham radio and the Space Shuttle Columbia is a major theme of the April issue of CQ [magazine], starting with detailed reporting by Public Service Editor Bob Josuweit, WA3PZO, on the amateur radio response to the tragic loss of the orbiter in the skies over Texas on February first. Ham radio was part of the recovery effort from the start and it turned out to be essential as searchers combed the heavy pine forests of East Texas, looking for debris. Cell phones were useless out in the woods; police radio systems had trouble penetrating what's called the "pine curtain," and as always in a major disaster response, different emergency service organizations often couldn't talk directly with each other. Only one radio system worked reliably -- amateur radio -- so much so that according to Bob's report, FBI teams specifically requested amateur radio operators for their teams due to their excellent reliability and efficiency. At least 70 operators a day were needed every day for two weeks, until the U.S. Forest Service took over the search. It was the biggest long-term deployment of amateur radio emergency communications since the attacks of September 11th.

"It's especially fitting that ham radio played such a major role in the Columbia recovery effort, since Columbia itself had played a major role as the platform for putting ham radio into space nearly two decades ago. Joe Lynch, N6CL,

explores the special relationship that has grown up between amateur radio and the manned space program in his April "VHF-Plus" column.

"One unique aspect of the amateur radio involvement in the shuttle recovery search in East Texas was that hams and other interested people around the world could listen in -- the Nacogdoches Amateur Radio Club repeater, which carried most of the traffic, was linked to the Internet via Echolink, one of two major internet-linking protocols for ham repeaters. In fact, officials at the Federal Emergency Management Agency headquarters in Washington reportedly kept tabs on the search by listening to hams via Echolink. During less stressful times, Echolink and IRLP are helping bring life back to many repeaters that had been sitting dormant much of every day. John Wood, WV5J, tells us in his April CQ article how Echolink has reinvigorated his local repeater. John also offers tips on setting up an Echolink connection of your own." (quoted material from CQ Magazine online at

<http://www.cq-amateur-radio.com/April%202003%20Highlights.html>)

Veteran ABC Radio Networks commentator Paul Harvey [also] offered some kind words for Amateur Radio. The mention was the second item on "page four" of his March 19 Paul Harvey Noon News and Comment program.

The commentary's enigmatic and mysterious final sentence--typical of Harvey's habit of leaving his listeners hanging--referred to the fact that many Amateur Radio Emergency Service (ARES) and Radio Amateur Emergency Service (RACES) teams have ramped up their alert status as hostilities get under way in the Middle East.

The entire Wednesday noon broadcast is available on Paul Harvey's Web site <<http://www.paulharvey.com/>>. Click on the Wednesday noon link under "Listen Now."

Lamoni Repeater Improvements

The Lamoni Amateur Radio Association has recently begun two projects aimed at improving capability to communicate over wider areas. Both of these projects will enhance our ability to respond to local or regional emergencies.

The first project will connect the Lamoni WØSHQ 2-meter repeater to the Internet as part of the WIRES-II repeater linking system. The system consists of a remote base radio, an Internet-connected computer, and an interface between the radio and computer. To use the system, a radio operator in the Lamoni area will enter a sequence of six touch tones to connect the remote base radio to another repeater on the system, establishing two-way communication. Likewise, a radio operator anywhere else on the system will be able to key the six-digit touch one sequence for Lamoni to establish two-way communication. The list of stations currently part of this network may be found at <http://www.vxstd.com/en/wiresinfo-en/>

The six-digit touch tone sequence for WØSHQ Lamoni is

#1183D. As this is being written, the hardware and software installation is complete, and contacts have been made with stations in Arizona and Japan.

The second project will connect the Lamoni WØSHQ 2-meter repeater to the Iowa Communications Network as part of Iowa's participation in the new federal Department of Homeland Security. Again, using a series of touch tones from a portable radio, a repeater user will be able to connect the WØSHQ Lamoni repeater to other repeaters on the ICN network, and to the State of Iowa Emergency Management Division headquarters at Camp Dodge, near Des Moines, Iowa. Likewise, other connected repeater users or personnel at the Emergency Management Division headquarters will be able

to connect to WØSHQ. This system will utilize another repeater located at Lamoni. As of this writing, we have acquired the repeater from State of Iowa surplus, and we are awaiting the acquisition of a duplexer to get the repeater on the air. There are currently eight repeater sites operational on the ICN. The Emergency Management Division had originally planned for a connected repeater site in every county, but has revised that plan to provide for regional repeater sites. For example, Lamoni's WØSHQ repeater provides adequate coverage for several counties in south-central Iowa, as well as several counties in north-central Missouri.

While these two repeater linking projects will enhance the capability to provide wider area coverage from south-central Iowa and north-central Missouri, contacts have also been made to local law enforcement and disaster services personnel to let them know we are developing these capabilities. And the dust is being blown off old procedures that were developed to call the network of radio operators in the event of an actual emergency.

Our weekly 2-meter net serves as a reminder that we need to monitor our repeater, and the number of weekly checkins gives us some gauge of our ability to respond in the event of an emergency. Working in concert with local authorities, simulated emergency tests also provide an opportunity for training and testing of equipment and procedures so that the service we provide is effective and efficient.

The Columbia disaster provided yet another wake-up call that amateur radio can still be viable; even in the age of Internet. And with world tensions as they are, the capability for providing communications services both regionally and to remote locations may be even more important.

This issue of the IN-SERVICE cost over \$100 to print and mail.

**Please send your annual contribution to
ASCRA
Box 73, Independence MO 64051**

Wanted: a Volunteer to edit this newsletter.

The job includes:

- Collecting articles you want to print.
- Preparing the copy to be reproduced by copy machine or other method.
- Proofreading to assure most errors are caught.
- Printing address labels.
- Mailing about 300 copies to ASCRA members.
- Checking the returns for address changes.
- Maintaining the membership list.
- Preparing a digital copy for someone else to put on the ASCRA web site.

Equipment and software needed:

- Computer and good quality printer.
- Word processor such as Microsoft Word or Word Perfect.
- Microsoft Works database for membership list.

Other databases would work but they do need to be able to import the present files.

Questions? Feel free to ask me w6rwh@arrl.net

Apply to: **Michael Hahn 1420 Woodbury St., Independence MO 64055-1952. Phone 816 252 4451. E-mail mhahn@CofChrist.org**

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