

THE ZARC CARRIER



The Newsletter of the Zanesville Amateur Radio Club

How Amateurs Accomplish the Impossible During Disasters

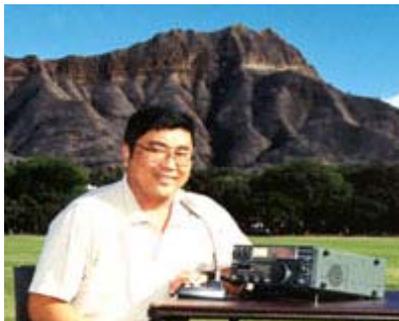
by Ron Hashiro, AH6RH

The media is full of summary reports of how amateur radio operators responding to disasters seem to overcome insurmountable obstacles and accomplish their mission of getting the message through to the destination. Ever wondered why an amateur radio operator has a better chance of getting through when "high technology" radio systems fail?

The answer is very simple. TEAMWORK! As a resource within the community, amateur radio operators are bonded by a brotherhood (sisterhood?) that is simple as the beginning of time...we look out for one another and extend a helping hand in times of dire need.

During a disaster, dozens of amateurs will scan the bands looking for signs of a signal from the handful of hams trapped at the affected scene. When such a signal is found, every resource from outside the affected area will be brought to bear on the signal to establish reliable contact. High-powered amplifiers, directional antennas, sensitive receivers and cross-band radios are just a few of the techniques that hams use to establish and build that reliable contact, conserving precious emergency power for the hams stuck at the disaster scene.

All of this outside teamwork and your station is less than ideal conditions, it is more than possible that you may be holding the weakest link and as the vital station performing your end of an



work can be thwarted if than par. Good communication is as strong as the one operating under less than ideal conditions, it is more than possible that you may be holding the weakest link and as the vital station performing your end of an

1) Make sure you have connector adapters to build

Even something as inexpensive and unexciting as a j-pole made from 300 ohm TV feeder ladder line will blow away the lame duck performance from any rubber ducky antenna. A ribbon J-pole rolls up nicely into a sandwich bag to put in your backpack, yet can be taped up against a glass window for maximum VHF or UHF performance.

2) Take the time to arrange for emergency power. Marine, wheelchair or RV batteries are favorites for powering 12 volt transceivers but are common enough to be low in cost compared to other emergency power systems.

3) Stock up on alkaline batteries. As hurricane season approaches, be stocked up on alkalines, especially AA and D cells. They are surprisingly cheap at the large discounters such as Sam's Club or Costco. Try to standardize the battery appliances in your home to use either of these two types to get the most for your money.

4) Get an SWR meter or an antenna analyzer. It's hard to transmit full power into an antenna if it isn't a good match. It's best to find out and correct it before you go on the air than to risk damaging your RF finals.

5) Practice your message passing and NCS skills. It's been shown time and time again that a new

spare antennas, coax and or rebuild your station.

work can be thwarted if than par. Good communication is as strong as the one operating under less than ideal conditions, it is more than possible that you may be holding the weakest link and as the vital station performing your end of an

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How Ham Radio Works

A teen in Florida makes friends over the airwaves with a ham in Germany. An aircraft engineer in Washington participates in an annual contest and exchanges **call signs** with **hams** in 100 countries during a single weekend. In North Carolina, volunteers pass health and welfare messages in the aftermath of a hurricane.

This mix of fun, public service, friendship and convenience is the main feature of **amateur radio**. The true origin of the term "ham" seems to have been lost, but there are several theories. It may simply be a shortcut way of saying the first syllable of **amateur** radio, or it may have originally been used as an insult. Hams start out in amateur radio for many reasons, but they all have in common a basic knowledge of radio technology, regulations and operating principles.

Ham radio can be very portable and affordable. In this article, we will look at **ham radio** and show you how to get started in this wireless world!

Why would I get into ham radio?

Ham radio is for anyone who likes to communicate with others via **wireless** technology. It is also for anyone who enjoys experimentation. Licensed amateur radio operators communicate with each other in nearby places, across the country, around the world or even with astronauts in outer space!

Amateur radio is a worldwide group of people who communicate with each other over a wide frequency spectrum using many different types of wireless transmitting modes.

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THE ZARC CARRIER

The Zarc Carrier is the newsletter of the Zanesville Amateur Radio Club, located in Zanesville, Muskingum County, Ohio and is published January, March, May, July, September, and November.

Send in your items of ham related interest, such as swap n shop ads, new hams in the area, birthdays, anniversaries, silent keys, ham fests, special events, and original written articles. Deadline is the first of the month before the month to be published. Enclose a SASE if your material is to be returned to you.

Any material in *The Zarc Carrier* may be reprinted as long as you give credit to the newsletter, the original author, and the original publication, if given.

Sample copies are available upon request and a SASE. If your club receives a complementary copy of *The Zarc Carrier*, we would appreciate a copy of yours in exchange.

ZARC MEMBERSHIP

The Zanesville Amateur Radio Club is an incorporated not-for-profit association. Membership is open to anyone interested in the purposes of the organization and who agrees to abide by the by-laws and other rules and regulations that may, from time to time, be established by ZARC.

ZARC Membership Application

Date New Membership Renewal

Name Call Sign

Address

City, St, Zip

Phone ARRL Member - Yes No

Prorates apply to new memberships only. Jan-Mar Apr-Jun Jul-Sep Oct-Dec

- Full (*Licensed Amateur*) ... 20.00 ... 15.00 ... 10.00 ... 5.00
- Family (*Of Full member—Licensed Amateurs—1st person, then \$5.00 for balance of family*) ... 10.00 ... 7.50 ... 5.00 ... 2.50
- Junior (*Licensed Amateur, 16 yrs. old or younger, still in school, not in same household as Family member*) ... 6.00 ... 4.50 ... 3.00 ... 1.50
- Associate (*Un-Licensed*) ... 10.00 ... 7.50 ... 5.00 ... 2.50

If Family Membership, Name and Call Sign of Full Member:

.....

E-Mail Address

Share E-Mail Address With: Members Only Anyone No One

Send ZARC CARRIER by: E-Mail (Adobe) USPS

Make check or money order out to ZARC and mail to:

Don Wahl, WA8BOV, ZARC Treasurer, P. O. Box 8203, Zanesville, Ohio 43701-8203



ZARC Net Control Stations

The Zanesville Amateur Radio Club 2 meter net meets every Wednesday night at 9 PM on 146.610 PL 74.4. The PL and time out are off during the net. All licensed Amateur Radio operators are welcome to check in.

July 2008

2nd Mary Grandstaff, KB8ZXH
 9th Open
 16th Open
 23rd Danny Grandstaff, KB8RIM
 30th Open

August 2008

6th Mary Grandstaff, KB8ZXH
 13th Open
 20th Danny Grandstaff, KB8RIM
 27th Open

Any ZARC club member is welcome to take an *Open* week as net control. Let me know that you are interested and I will see that you get a copy of the ZARC Net Preamble and assign you a Wednesday. Danny Grandstaff, KB8RIM, zcw8zzv@prodigy.net or 740-453-0400.

The Armstrong Radio Repeater System

	<i>Licking County</i>	<i>Muskingum County</i>	<i>Guernsey County</i>	<i>Perry County</i>
VHF	146.835	147.075	147.000	146.820
UHF	443.925	442.250	444.375	none
PL	91.5	91.5	91.5	100.0

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 Hebron, Oh 43025
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How many licensed ham radio operators are there?

Today, there are approximately **675,000** amateur radio operators in the United States, and more than **2.5 million** around the world.

Area 2 Meter Nets

Sunday

147.045 Coshocton 9 PM

Monday

146.730 New Philadelphia 8 PM
 147.030 Lancaster 9 PM
 145.230 Coshocton 9 PM

Tuesday

146.760 Columbus 7:30 PM
 146.850 Cambridge 8 PM & 8:15 PM
 146.670 Millersburg 9 PM
 146.880 Newark 9 PM

Wednesday

147.345 Logan 8:30 PM
 146.610 Zanesville 9 PM
 147.210 Wooster 9 PM

Saturday

* New Lexington 8 PM
 * © Multi-County Coalition 9 PM
 * The Armstrong Radio Repeater System
 © Alternate Frequency 146.610

Other Area Nets

Daily

147.240, PL 179.9 Columbus 7 PM

Wednesday s

1st - 8:30 PM 146.460
 2nd - 8:30 PM 52.540 Simplex
 3rd - 8:30 PM 28.390 SSB
 4th - 8:30 PM 24.980 SSB
 5th - 8:30 PM Wildcard
 (Any of the above)

Thursday

ZARC Six Meter Net 9 PM
 51.135 FM Simplex

Friday

Johnny Applesced 9 PM
 28.450 USB

Multi-County Coalition N C S

First Sat. - Licking County
 Second Sat. - Guernsey County
 Third Sat. - Muskingum County
 Fourth Sat. - Open
 Odd Fifth Sat. - Coshocton County



ZARC Meeting Place

From Rt. 40 at Pleasant Grove Rd. go north (Rt.93) on Pleasant Grove Rd. 1.1 mile, turn left on Adamsville Rd. and go about 0.3 mile. You will see a building on the right with multi antennas. Stop here. Coming from Underwood St. go north on Hall Ave. from the traffic light about 2.5 miles and the building is on the left.

Accomplish the Impossible *From page 1*

operator will often need about five net sessions to feel comfortable as a radio operator handling messages. There's a certain rhythm to handling messages or being an NCS. Like learning to ride a bike or play a musical instrument, it's one of these skills that can only be mastered by participation and interaction.

Take advantage of the EARC nightly net to practice running a net as an NCS. It's better to be proficient before an emergency than to pressure out and grow weary as the emergency unfolds. Don't worry about sounding less than 100% when you get started. We've all got started at some time and each one of us didn't sound polished on Day One. So don't sweat this detail. Give the Net manager a call and sign up.

6) If you've been hemming and hawing about buying a fifty watt VHF or dual-band mobile, here's a good reason. Much of the local communications work during an emergency will be done via simplex work. To be effective from the disaster scene, a mobile with fifty watts will perform much better on simplex overcoming the terrain than a walkie that puts out one to five watts. Here's the perfect excuse (er...reason) to convince your spouse that you really need to bring out the credit card. After all, you are being proactive about the safety and well-being of your family and your neighborhood, of course...

As you can see, it doesn't take much to tip the odds in your favor. Take an assessment of your situation, make a checklist and promise yourself that by the end of the month you'll have these simple things underway. With five NCS sessions under your belt and a few items tucked away you'll feel much better the next time you hear the civil defense sirens sound that you can accomplish "the impossible" rather than be struck with fear and frustration.

Don't delay. Start today!

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(Emergency Amateur Radio Club) Wireless Dispatch

How Ham Radio Works *From page 1*

Often, younger hams get a chance to meet other hams of various ages and professions. The **frequent networking** often helps teens when they are making career or education choices and wish to get some advice (from professionals in many technical fields) that maybe mom, dad or the guidance counselor may not be able to give.

Frequencies and Transmitting Modes

Hams use a variety of frequencies for communications. Non-hams can "listen in" via their own receivers or radio scanners. Hams are able to use many frequency bands across the radio spectrum -- these frequencies are allocated by the FCC for amateur use. Hams may operate from just above the AM broadcast band to the microwave region, in the gigahertz range. Many ham bands are found in the frequency range that goes from above the AM radio band (1.6 MHz) to just above the citizens band (27 MHz). During daylight, 15 to 27 MHz is a good band for long-distance communications. At night, the band from 1.6 to 15 MHz is good for long-distance communications. These bands are often referred to historically as **short-wave** bands (as in "short-wave radio"). Unlike frequencies used by FM radio stations and TV stations, which are line-of-sight and therefore limited to 40 or 50 miles, short-waves "bounce" off the **ionosphere** from the transmitter to the receiver's antenna. The higher the frequency is, the "shorter" the wavelength is.

Some ham radio operators use the very reliable **Morse code**, while others use **voice**. Morse code signals (beeps) often get through when voice transmissions cannot. There are also very many **digital modes** as well, and hams use radio modems to communicate in various networks.

Ham Radio Activities

Although a ham radio does broadcast in all directions, hams generally do not use their radios in a broadcast kind of way as a disk jockey would at a radio station. In normal AM or FM radio, one disk jockey transmits and thousands of people listen. Hams, on the other hand, conduct **two-way conversations**, often with another ham or with a group of hams in an informal **roundtable**. The roundtable of hams may be in the same town, county, state, country or continent or may consist of a mix of countries, depending on the frequency and the time of the day. Hams also participate in networks, often called **nets**, at predetermined times and frequencies to ex-

change third-party messages. In the case of disasters, hams exchange health and welfare information with other hams. Some hams use radioteletype, (RTTY) with computer screens replacing the noisy teletype machines of the past



Computer-assisted radioteletype

Many hams get their start on VHF FM, using battery-operated hand-held transceivers set to transmit on one frequency and receive on another frequency. They use **FM repeaters**, set up and supported by local radio clubs. These repeaters borrow antenna space from TV-station-tower owners on top of mountains and high buildings to receive and re-broadcast signals to extend the range.



When deadly floods struck central and southern Texas in mid-October 1998, amateur radio operators from four states volunteered their time. Susan Manor, NF0T, is shown helping with communications at the New Braunfels Red Cross office.

The FM repeater receives one signal at a time and simultaneously rebroadcasts it on another frequency using many more watts of power than available from a small hand-held radio. This extends the range of the hand-held radio from a few miles to tens or hundreds of miles! The whole country has these repeaters! (Listen to one with a radio scanner to learn a lot about ham radio.) When a ham is traveling, he or she can find a repeater to use (great for tips on local restaurants), and carry on a nice, static-free, FM-radio-quality conversation via a radio that fits in the shirt pocket or purse. **Linked repeaters** allow fun wireless communications across an entire state with a hand-held

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ARES E-Letter for June 20, 2008

Rick Palm, K1CE, Editor



The View from Flagler County Many readers responded with comments and questions in re the new Red Cross policy discussed in the last issue. Here is the further statement of ARRL HQ's Chief Operating Officer Harold Kramer, WJ1B: "While we believe that the Red Cross is implementing some changes that will address some of the concerns expressed to them by ARRL, at this point, it is work in process. There are many questions yet to be answered, but we believe that the Red Cross is progressing in good faith to complete the changes to their policy and their background check consent form, which was the primary concern expressed to the Red Cross by ARRL. There will be more clarifications and information in the near future. Please keep an eye on the ARRL Web site for updates as we know them. We are very much aware of your concerns and have conveyed them to the Red Cross. We expect the Red Cross to address these and other concerns on subject of their background check policy in the near future." -- Harold Kramer, WJ1B, Chief Operating Officer.

Midwest Floods The Indiana Department of Homeland Security (IDHS) activated ARES members for tornado and flooding emergencies earlier this month. SEC Tony Langer, W9AL, said ops worked in EOCs and shelters, bagged sand, and aided in rescue efforts. Tornadoes visited 11 Indiana counties. As water inundated the region, President Bush declared 29 counties in central Indiana a major disaster area. Four people died. On June 8, IDHS called for more hams: "The flood waters have impacted several counties here in Indiana severely. Ham radio operators have been operating continuously since activated and are growing weary. Some counties do not have a vast amount of active hams to relieve these tired operators." Specific areas needing amateur assistance were overnight relief operators at the Bartholomew County EOC, as well as the EOC and three shelters in Columbus County. Marion County EC Mike Palmer, N9FEB, called out his ARES members: "People might think, 'Why not just use telephones or cell phones?' Well, many phones are not working down there at this time. With the high waters, electric transformers are out all over; even those servicing cell towers are out. Even with today's technology, we find ourselves looking at ham radio to assist. If you can spare a few hours or an entire evening, please consider helping." In Wisconsin, five counties had called operators for duty ranging from backup communications to damage assessment. One county called on ARES members to provide patrols of flooded areas. Wisconsin SEC Bill Niemuth, KB9ENO, had 90 ARES members responding: "In Columbia County, ARES members provided dam monitoring communication, giving critical information to public safety officials about two dams that were nearly compromised." Richland County ARES members provided a variety of services, including answering information calls in the County's EOC and providing specialized communications for disaster assessment by hover craft and airplane. These communications were in addition to providing traditional ham radio communication links between the EOC and evacuation shelters. On June 12, more rain caused the state and more counties to request aid from area operators. Winnebago County ARES members provided damage assessment in the county and in the City of Oshkosh, while hams in Fond du Lac helped with shelter communications. ARES teams in Marquette and Outagamie provided back-up communications and flooding reports to their respective EOCs. -- excerpted from the ARRL Letter [An inquiry to Iowa ARES leadership is pending in re the colossal tragedy of flooding events there and elsewhere - ed.]

2008 Alabama and Mississippi Hurricane Conference Emergency management personnel from Alabama and Mississippi assembled in late May for a three day hurricane conference in Mobile, Alabama. The visitor list was an impressive one that included Alabama Governor Bob Riley, Alabama and Mississippi State EMA Directors, Director of the National Hurricane Center, and many FEMA Directors and personnel. The conference brought exhibitors, vendors, presentations, meetings and breakout sessions that included a broad range of emergency management, hurricane disaster and lessons-learned related topics. These conferences are a "must attend" event for Section Managers and Section Emergency Coordinators that are serious about providing emergency and disaster public service operations. Meeting many of the emergency management personnel, building relationships and discussing preparedness, must be done before the next disaster. Alabama Section Manager Jay Isbell, KA4KUN, ASM Penny Isbell, KA4KUM, Baldwin County (Alabama) EC Patty Link, K14JEO and ARRL Southeastern Division Director Greg Sarratt, W4OZK, hosted an ARRL booth and attended the conference. Logged were nearly 30 Amateur Radio operators from the 460 conference attendees that stopped by the ARRL booth. While at the booth, the Emergency Management visitors repeatedly expressed their appreciation and respect for what Amateur Radio operators do. -- Greg Sarratt, W4OZK, ARRL Southeastern Division Director.

Amateur Radio Session Held at National Hurricane Conference [Ron Mettler, WB4GHU, represented the ARRL Northern Florida Section at the National Hurricane Conference, April 1, in Orlando, Florida. Here is his report of the Amateur Radio Session there. -- ed.] The Amateur Radio portion of the conference was divided into three presentations and was moderated by Dennis Dura, K2DCD, Manager of Emergency Preparedness & Response, ARRL and Chair of the National Hurricane Conference Amateur Radio Committee.

The first session was given by the National Hurricane Center's Amateur Radio station WX4NHC organization, John McHugh, K4AG and Julio Ripoll, WD4R. In this segment, the many roles of Amateur Radio were illustrated by charts, audio clips, and video clips. Amateur Radio was praised for its historical role of assistance through the years in tracking hurricanes. The paths of access to the NHC were given: "<wx4nhc@wx4nhc.org>;, the Hurricane Watch Net (14.325 MHz), the VoIP Hurricane Net, and the Citizen Weather Observer Program (CWOP). Both the NHC and the Coast Guard are considering implementing WinLink as well. Another source of access to the NHC is through APRS. They appreciate this mode because gathering the data is automatic. In the past, NOAA initiated a program to provide weather stations to various amateur stations throughout the Caribbean, but the funding for that program was lost before the project was completed. For those amateurs interested in using APRS, the system that was used in this program is the Peet Brothers Model U2100. In addition to the Hurricane Watch Net on 14.325 MHz, the NHC also gleans information from the Maritime Service Net on 14.300 MHz, and the Waterway Net on 7268 kHz. One final way to get a report to the NHC is via an in-line reporting form on <<http://www.wx4nhc.org/>>.

The second segment of the program was devoted to VoIP and EchoLink activity and presented by Rob Macedo, KD1CY. Using these methods provides an interoperability among government and non-government agencies to provide weather data to the NHC. There is a VoIP node on 7203 kHz, with an IRLP of 9219. A weekly net meets at 0000Z on Sunday (2000 Saturday night Eastern time) during hurricane season, and a monthly net at the same time on the first Sunday of the month during the hurricane off-season. The NHC is excited about using this mode to gather data, and amateurs are strongly encouraged to support it by checking into the VoIP Net.

The third portion of the program was

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**ZARC 2008
FIELD DAY
GALLERY**



MORE NEXT ISSUE



How Ham Radio Works *From page 4*

radio.

Repeaters use common transmit and receive frequency pairs. The frequency pairs in use are informally assigned by groups of hams so that any frequency pair in use is far enough from another repeater so as not to cause unwanted interference.

Amateur radio satellites are a cutting-edge use of technology in amateur radio. Radio amateurs use their hand-held radios to communicate through an amateur radio satellite when the satellite is overhead. A current British satellite has a receiver (uplink) at 145.975 MHz and simultaneously rebroadcasts (downlink) at 435.070 MHz for one station at a time, as a repeater.

Natural disasters like hurricanes or tornadoes disrupt normal telephone and cell phone systems. Ham radio operators pitch in to help with emergency communications, and you will often hear about them on news reports.

On **Space Shuttle** missions, each member of the crew usually has an amateur radio operator's license. During breaks, astronauts hold their 1- to 5-watt VHF FM hand-held radios up to the shuttle window and chat with other hams for a few minutes, often at schools while the shuttle is in an orbit overhead! **VHF transmissions** have a limit to line-of-sight communications and normally do not travel over the horizon, so a conversation is limited to the time when the shuttle is overhead. The space station MIR used 145.985 MHz for similar conversations. Future ham radio efforts in space will focus on the use of amateur radio within the International Space Station (ARISS) project.

License Requirements

You need an easy-to-earn license to transmit on an amateur radio frequency. License tests cover electronics theory and amateur radio rules and regulations. Study guides are readily available. There is no age restriction. Each country has its own licensing arrangements. Many countries share many of the same frequency bands with hams in the United States. Each license class allows operation in certain bands, using certain modes. The higher the class of license, the more allowable frequency bands that are available for use.

Recently, the FCC relaxed the Morse code requirements portion of the rules to make it easier to get an amateur radio operator's license. The FCC's new licensing plan means you will be able to become a ham by passing a single 35-question written examination. License study guides are readily available for the written test.

<http://electronics.howstuffworks.com/ham-radio4.htm>

howstuffworks

ARES *From page 5*

dedicated to the roles that amateurs play during hurricanes. This session was presented by Dennis Dura, K2DCD and Rob Macedo, KD1CY. We are being looked to for weather reporting, damage assessment, monitoring of critical resources and infrastructures, communication augmentation, and communication infrastructure replacements. In addition, intelligence gathering through the SKYWARN program training is another expectation. The NHC shares such information with other agencies, once it is verified. ARES and RACES intelligence gathering includes shelter communications and mass care communications, and this information is also shared across multiple levels of agencies. MARS members who are also SKYWARN trained can share information with DOD and other federal entities. Even FEMA uses such information to determine appropriate responses. The role of the amateur is changing. The new motto is "Before it fails, Amateur Radio gives situational assessment." We are no longer just communicators. We are being looked to for intelligence gathering, providing real-time assessment of conditions where we are. In summary, if hams are actively performing all of these functions, we will have the situational awareness to know that something will fail, so we can be there when it does fail. The future of Amateur Radio in disasters is changing dramatically, and our role is expanding in a new direction. It becomes an issue of personal responsibility for each of us to stay abreast of our training and technology in order to perform our role to its maximum. -- Ron Mettler, WB4GHU, Sanford, Florida

New E-Mail Software There is new software entitled JNOS for passing e-mail messages over Amateur Radio during emergencies: <<http://ronhashiro.htohananet.com/am-radio/packet/jnos.html>> Readers can download the program, and try it as noted in the documentation. Configuration is simple: it takes only ten to fifteen minutes editing in your call sign, password,

and log-on banners to get started. The beauty of JNOS is the sending and receiving of e-mail messages over the Internet as well as Amateur Radio seamlessly. It can print incoming e-mail messages on a printer unattended, one message to a sheet, just like a fax machine. JNOS will also take advantage of the ICOM ID-1 in digital data mode, and I'm in the process of testing and documenting that configuration. At some point, I'd like to implement this at Hawaii State CD and Oahu DEM, when a sufficient critical mass has been implemented. -- Ron Hashiro, AH6RH, Honolulu, Hawaii State Civil Defense RACES.

Finally, if you hold a course to prepare newcomers for the Technician exam, consider adding a session two weeks after the test, and have everyone bring his new handheld. The owner's manuals are obviously not an adequate resource. In one community along the Oregon coast, 18 new Technicians had gotten licenses and equipment specifically to be ready for an emergency. Just weeks later, their county was virtually cut off for two days by a storm-related break in a fiber-optic cable, and not one of them could figure out how to get a piece of traffic to the outside world. This is not only a sad waste of human resources and expensive gear, but has to be demoralizing to anyone who tried his best to be prepared. None of this has anything to do with CW proficiency, or knowing your Hartley from your Colpitts. This is simply, "No Ham Left Behind." -- Paul W. Plack, AE4KR, Murray, Utah .

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A young operator enjoys making friends over the radio during Kid's Day. Kid's Day is an annual event that encourages young people to get on the air, perhaps with a family member or a neighbor who is a licensed amateur radio operator.

Little Tarheel Mobile Antenna

By Terry Redding , W6LMJ

A few of us within ASCRA have a passion for operating HF mobile. Michael, KGØXU quickly comes to mind, and so does David, N5LCL. For those of us interested in mobile HF operations the antenna is always an issue.

I have used a Hustler mobile antenna, as well as Yasue, Ham Sticks, and more recently Comet antennas. One thing true about all of them is that tuning is critical. Some provide more bandwidth, others less. Most work well on 10 Meters, but are less efficient on lower bands, and as you move from the resonant point on each band, they become increasingly less efficient.

On 80 meters you are lucky if the usable bandwidth is 2.5 Khz either side of the resonant point. On 40 meters the usable bandwidth doubles. It doubles again on 20 meters, and it is possible to work nearly 200 Khz, but with less efficiency as you move from the resonant point. The mobile antennas are never very efficient even at resonance, about half as good as a dipole. So, if moving just a short distance in frequency reduces the efficiency further, the change can have a dramatic effect on one's ability to make and maintain contacts.

In the past, if you wanted to maintain efficiency, you had to stop the car to change antennas, or retune the antenna for the new frequency. Only a few antennas, like the Comet, permitted operating on more than one band. But changing frequency away from the resonant point continued to be a problem.

The Little Tarheel II mounted on my PT Cruiser solves those problems. The picture shows the Little Tarheel II mounted on a ball mount on the rear quarter panel above the gas filler. To mount the antenna took drilling a sizable hole through the body of the vehicle and a smaller hole for the power and control. A control line passes through the small hole and is routed to a control switch that allows the operator to change the frequency of the antenna. The Little Tarheel II covers 40 through 6 meters. It works well. Numerous reports attest to that fact and it can handle up the 500 watts — which means my lunch allowance is being hoarded in order to pay for one of these in a few months.

I do miss the instant band change associated with the small Comet HF antenna. But I don't miss the other antennas with their requirements to stop the car to effect a band change.

From the August 2004 IN-SERVICE a publication of the Association of Church Saints Radio Amateurs.



Terry's car with the Little Tarheel II Antenna



Terry's Antenna mount

From Serious To Silly

By Letitia L. Star

America was in the midst of World War II and our national security was at stake. We needed rubber or something like it to help in the war effort. So the government asked American manufacturers to come up with a synthetic rubber-like compound for various military uses.

James Wright, and engineer from General Electric, set out on the assigned mission. He created a gooey substance that he thought was just what the country ordered. "He got so excited that he threw some on the floor and it bounced back," says Susan Tucker, company spokesperson. But alas, the gooey concoction didn't meet the rubber-substitute criteria. GE, looking for some way to use the material, sent it to engineers around the world, but they could find no good use for the "goo."

Enter Peter Hodgson, who in 1949 had a rather unconventional idea. Why not encase the "goo" in plastic eggs, call it "Silly Putty" and sell it as a toy?

The rest is history. To date, Crayola has sold more than 300 million Silly Putty eggs, weighing 4,500 tons. Approximately 20,000 eggs are produced daily in 16 varieties.

DID YOU KNOW ?

To celebrate Silly Putty's 50th anniversary, the company held a contest soliciting ideas for "The Top 50 Silliest Uses." The grand-prize winner suggested throwing Silly Putty at stock market listings and investing in those stocks that lifted off the newsprint.

From GEICO DIRECT, Spring 2008

HAM RADIO WORD SEARCH

S S Y N O R T I R E M A A C B E L S C P B I S
 T O W E R T M Z I P P O C D B J R S T K D X T
 P B N R D U A L B A N D I O R A C S O N A V C
 X D N W Y Y Y T U U W E I G H T Z Z V X P J V
 R I R E I F I T C E R S V U M O T O R O L A T
 E E Z O M M U C S E L F S U P P O R T I N G S
 P F O T T E M A S L R W C A L L S I G N Z S X
 E H K N P M A P U O R L F O X H U N T T T S Q
 A Z C E J E E A S P G I N P O L E O I N C L R
 T B O M R R B C Y I C M L S I U O W T E X V O
 E P T I E G G I A D U O Q N P M Q B R V K I T
 R X S R W E W T R V F H E O I E F E C E M K S
 O I I E T N I O R N V V O I C H V I O L O B I
 Z X U P V C U R A U A S C T B I K J N A Y E S
 W I V X J I D I F W X K T A E D R I T I O T N
 Q P T E V E N E T M I K N C A S J P E C R I A
 B G R O L S R R W L E T S I V R S O S E K L R
 B O A O E M O X O A E N I N M J U C T P T L T
 X S L G T H B W J N A S J U O Y I E J S M E X
 C H C M S A A H N R I T Q M C C T A T D P T R
 Z X A D S T T A T U S G H M I V V M Y A O A J
 G R Z W T Y Z O Z H P P O O H O J F B K M S J
 O X D S P P M X R G O G A C Q M W V T I V A G

amateur

emergencies

repeater

ameritron

experiment

rotator

antenna

foxhunt

satellite

arrays

ginpole

selfsupporting

beam

icom

shortwave

callsign

kilowatts

specialevent

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transistor

dipole

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weightzzv

dualband

rectifier

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