



PUBLIC SERVICE

EMERGENCY COMMUNICATION

Readiness ■ Response ■ Resilience

When the *Big One* Hits, South Carolina Will Be Ready!

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At 7:42 AM on December 16, 2008, the epicenter of a small earthquake shook Summerville, South Carolina, reminding citizens in the Charleston area of the worst of its many vulnerabilities. For a brief moment in time, dishes clattered, hanging lights swayed back and forth and the unmistakable rumble of the ground shake reminded residents across the coastal areas that Charleston was the sight of the largest earthquake east of the Mississippi in 1886.

The event was a startling wake up call for those who grew up here and those who recently moved to the Holy City. It served to give notice to all who live and visit that, without warning, a major earthquake could happen at any given moment. The small 3.6 magnitude earthquake unnerved many and caused others to take pause to review family preparedness plans. For the local Amateur Radio community, this earthquake served as a real-time emergency communications drill. Within one minute of the event, Amateur Radio Emergency Service® (ARES®) members were on full alert and active. Repeaters were systematically inventoried for redundant and additional channel capacity readiness. Rehearsed networks were on standby and ready for work. Fortunately, it was not the Big One but just a reminder to all.

South Carolina hospitals have been the driving force boosting the Amateur Radio operators' capabilities across the state to be ready to respond to events of similar magnitude. A project conceived in 2004 by Brian Fletcher, K6NWS, and John Welton, N4SJW, both nurses at the Medical University of South Carolina, resulted in funding for a statewide Amateur Radio 2 meter and 70 cm repeater system with some unusual partnerships. The Medical University of South Carolina was the first site implemented in a project to

provide hospitals with Amateur Radio communications. Amateur Radio would provide redundant channel capacity during emergency events such as during hurricane evacuations and earthquakes. The goal of the project was to link hospitals together in a network to pass traffic about incoming patients, outgoing evacuations and coordination between facili-

ties sending and receiving patient populations when other primary communication systems fail or become overcrowded.

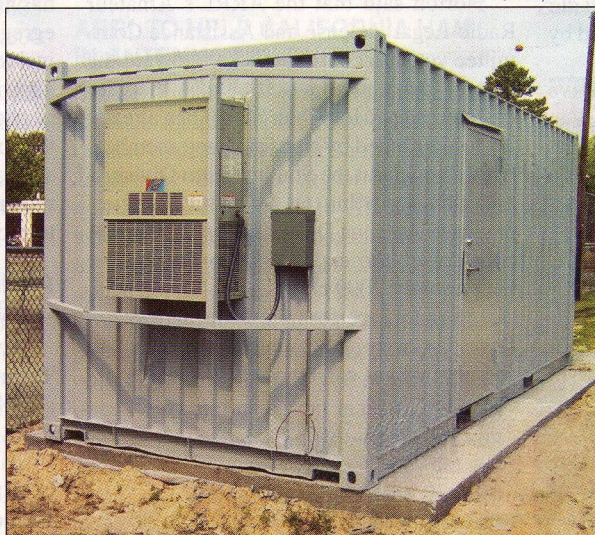
An Essential Part of the Project

Part of the pilot project was to engineer and develop a system of Amateur Radio repeaters at or near each hospital to allow the use of handheld transceivers for flexible two-way Amateur Radio voice and digital text communications. Funding for the project was offered by the collaborative efforts of hospitals in the Charleston, South Carolina, area through the Healthcare Preparedness Program (formerly HRSA) grants. The Pilot Project Chief Engineer, Bryce Myers, K4LXF, and Chief Architecture designer, Mike Wells, WA4HVP, developed an Amateur Radio system that demonstrated interoperable communication that cut across political and geographic boundaries and broke down systematic barriers of coordination between hospital and public safety agencies.

The project further demonstrated the ability for flexibility through the use of frequency-agile steering of repeater control links. These provide flexible linking to any or all of the Amateur Radio repeaters in the area by breaking the system

down into as many networks as necessary for the communication requirements of the event. As an added benefit to the Amateur Radio community, the partnership with hospitals provides emergency power for all of the repeaters through the required emergency generator equipment and first-back-online utility services.

The project has since evolved and now serves as a model that has been established across the entire state of South Carolina and other areas of the country. Partnerships have been developed with the University of South Carolina Center for Public Health Preparedness, under the Direction of Dr Jane Richter, KJ4ABC, which leads the training and assessment component of the project. Other



One of 18 containers pre-positioned across the Charleston area. Each container houses medical supplies and communications equipment to be used during a major catastrophic event, such as an earthquake.

Resources

The SC HEART (South Carolina Healthcare Emergency Amateur Radio Team) system streams live audio from the system at www.scheart.us, Medical University of South Carolina (www.musc.edu), University of South Carolina Center for Public Health Preparedness (www.sph.sc.edu/acphp/scheart/index.htm), SC Department of Health and Environmental Control (DHEC) (www.scdhec.gov/administration/ophp), SC ETV Commission (www.scetv.org).

partnerships formed along the way include the South Carolina Department of Health and Environmental Control Emergency Preparedness Office, the South Carolina Hospital Association, South Carolina Hospitals and the South Carolina Educational Television Commission (SCETV). These entities have provided the needed foundation, infrastructure and architecture for a statewide communication safety net for hospitals and other emergency response and recovery agencies. The SCETV effort is led by John Crockett, KC4YI, and his capable team. The combined efforts of South Carolina hams and the various state and local agencies led to the formation of the South Carolina Healthcare Emergency Amateur Radio Team (SC HEART) system, which now covers all 46 counties and has trained nearly 1200 new ham radio operators since its inception.

Emergency Relief in a Box

A similar project is now underway that may serve as another model for other areas of the country. Hospitals in the Charleston area recently joined forces to procure a grant aimed specifically at earthquakes. The goal of the project is to pre-position emergency medical equipment in 18 operational areas that were defined in a 2005 earthquake study conducted by the South Carolina Emergency Management Division (see photo). Because Charleston is located in the coastal area, many roadways are elevated by bridges that might collapse or be closed during a magnitude 7.4 earthquake similar to that of 1886. This would effectively render the Charleston area into 18 land "islands" that would cut off emergency response, aid and hospitals from large populations. While pre-positioning of emergency equipment is not a new concept in emergency management, what is unique about this project is the inclusion of Amateur Radio equipment and operators that would support the emergency response and recovery effort in the early phases of the operation rather than as a system of last resort.

The project includes the pre-positioning of a multiband HF+ radio with antennas and mast poles to allow for redundancy to the

SC HEART repeater system. Earthquakes can cause a loss of both commercial and amateur repeaters and towers. In that case, simplex, HF and repeater operations can still be maintained with the SC HEART system repeaters that are located out of the immediate earthquake zone. To further this effort, commercial VHF radios will also be placed in the toolbox of the Amateur Radio operators so that communication to public safety agencies and coordination of air evacuation and air support through simplex channels can be established with governmental response agencies. In a subsequent future project, the plan calls for Amateur Radio operators in the various land islands to be trained to establish and maintain low power 800 MHz repeaters, satellite links and Wi-Fi networks that can assist public safety response agencies and support message traffic in and out of the area.

Citizens, CERTs and Amateur Radio

A huge effort is now underway in the Low Country to prepare its citizens for earthquake and all-hazards response and for recovery through the establishment of Community Emergency Response Teams (CERT) recognized by the Department of Homeland Security. ARES and other Amateur Radio operators will soon be assigned to CERTs in their neighborhoods. Their purpose will be to establish and provide emergency communication services on both established emergency communication channels and Amateur Radio channels.

These efforts, in collaboration and partnerships, are strengthening relationships with our communities and Amateur Radio operators that (through our hobby) bring a skill set that can be offered in good faith service back to our community and neighborhoods. Through this collaborative effort, we will all stand ready to help our neighbors who will one day recognize the services that we provide. We can all feel more prepared knowing that the Amateur Radio operators who live in our communities are ready and capable of providing a much needed service when the *Big One* hits!

EMCOMMENTARY

Doing the Right Thing

This month's article on Earthquake preparedness and the hospital system in South Carolina brings focus to a relationship in which Amateur Radio can play a significant role. Medical facilities have a need to be able to communicate in disasters. This communications need is twofold: having the ability to pass information to and from the local governmental-public safety structure and maintaining a capability to talk to operations and facilities of the medical facility itself. The first example is one in which medical facilities play a critical role in the emergency management structure of the community. The capability to deal with the medical needs caused by a disaster is an integral part of the preparedness and response characteristics of the community. Amateur Radio naturally falls within this scope of supporting emergency management operations.

The second example is one that becomes a business continuity issue. Maintaining communications that enable a medical facility to continue conducting their business is not one that Amateur Radio can support. This is outside our regulatory provisions as set forth in Part 97. While we may be seen as the cost effective and easy-to-access method to furnish communications, we are not the solution in this example. Just because we have the technical capability to do a particular task doesn't mean we have the legal ability to do it.

We are seeing the integration of Amateur Radio and the medical community more and more every day. Amateur Radio operators are lending their communications expertise and developing extensive capabilities at hospitals and other medical facilities all across this country. This is a good use of the mission capable resources we as hams bring to the larger emergency management community. We need to remain focused on the appropriate role we play in this situation. Our role is not to enable businesses to remain in operation. Our role is to serve the public during disasters — and by providing communications to meet the needs the emergency creates, we do our job, and do it well.

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