by Rich Arland, K7SZ, richard.arland@verizon.net

It's More Than Ham Radio Volunteers!

The face of emergency communications (EmComm) is rapidly changing. The time honored position of the ham radio operator as a traffic handler in times of disaster is rapidly coming to a close. How do I know this? The weekend of October 22-23, 2005, my wife, Tricia, KB3MCT, and I attended the 2nd Annual EmComm Conference at Shimokin Dam, PA, sponsored by the Snyder County RACES/ARES and the Northumberland County ARES groups.

Chris Snyder, NG3F, ARRL Eastern Pennsylvania Section Emergency Coordinator/Snyder County ARES Emergency Coordinator/RACES Officer, and his group put on a tremendous collection of informational forums that spanned the entire weekend. If you live and work in Eastern Pennsylvania and have an interest in emergency communications, this is the place you needed to be. At that conference we came face to face with the future of amateur radio involvement in EmComm, and it is a shocker!

For many years hams have been at the forefront of disaster relief communications furnishing on the spot, real-time tactical communications for disaster response personnel. In addition, during the aftermath, hams traditionally bore the brunt of health and welfare traffic alerting the families and friends of disaster victims as to their status. This picture is changing as we speak. Amateur Radio involvement in EmComm is about to take a dramatic turn and if we do not respond quickly and accept our new roles as system administrators as opposed to radio operators, we will be left in the dust as professional disaster mitigators find new ways to communicate without the ham radio community!

It's Not April 1, Folks!

No, I am not kidding. What I saw and experienced at the EmComm conference in October was sobering and has me wondering whether or not the Amateur Radio community can actually make the changes needed to keep up with the needs of our served agencies. It seems that in today's EmComm world, everyone on the disaster site has a walkie-talkie. What often happens, especially in the case of an act of terrorism, is that a federal agency—the FBI or ATF, for example—comes into an area with their own portable trunked radio system; they set it up, and proceed to communicate just fine without restoring to using the ham radio volunteers. These state-of-the-art radio systems are quite advanced, providing great local area coverage, and are secure, so agents on the ground can talk freely without the fear of being overheard by the local news media and scanner enthusiasts. Add to this the fact that most county and state Emergency Management Agency (EMA) groups, along with the state police also have their own portable radio systems, many times they are trunked with portable repeaters, and you get a rough idea of how we hams fit into the picture when it comes to tactical communications: we don't!

Hams are a stubborn lot and we are so married to our 2 Meter handie-talkies and the National Traffic System (NTS) that we very well may go the way of the dinosaur in the not too distant future. If and when this happens, Amateur Radio will be doomed. It has been our one saving grace that in the past we can respond to emergencies and provide communications under a variety of conditions, using various modes and our unlimited frequencies. Now, however, the new EmComm plan calls for hams to set up systems that will allow professional disaster mitigation personnel to communicate in a real-time manner with their higher headquarters and their field units without having to undergo a learning curve using proven methods like fax and e-mail.

While initially packet radio (remember the '80s?) was touted to be the "savior" of ham radio in disaster communications, it quickly became clear that packet had a rather steep learning curve and it took a ham radio operator manning a terminal to transmit and receive messages via packet. This was not a good situation, since it added one more layer of protocol to the task of managing communications. Granted, it did provide a modicum of "job security" for the hams, but in reality you could not take the average secretary in an EOC, set that person down at a packet terminal, and expect them to handle traffic without a lot of training. (Packet is a unique digital system offering 100 percent reliable error-free traffic. When you understand how packet works and the various commands necessary to transmit and receive messages, it is a passable EmComm system, even at 1200 baud). However, the average office worker has neither an idea of the packet commands, the unique language encountered when using packet radio nor protocols of traffic handling using NTS message format.

E-mail And The Internet—OK Up To A Point

The ONE thing that almost everyone in a management position CAN and DOES use is e-mail. E-mail has replaced the office memo, "snail mail" and, in many cases the fax machine. E-mail depends upon an Internet connection. Without access to the Internet, all generated e-mail stays within an extremely localized area, limited by the network that the computers are hooked to. If the network has Internet access, all is well, but what happens in the middle of a disaster when the local Dial Central Office (DCO) with its T-1 and T-3 high-speed pipes along with the cell sites all go down? No Internet, that's what.

We Can Do It!

It now becomes the task of the EmComm personnel to supply Internet connectivity where there is none. An insurmountable task, you say? Not hardly. Enter WinLink, the next generation in emergency communications support.

WinLink is the new standard that meets current Department of Homeland Security (DHS) and EMA standards. In other words, our served agencies have "raised the bar" when it comes to what they want and need for emergency communications.

Reprinted with permission from Popular Communications, February 2006 issue

WinLink can provide end-to-end, user-to-user e-mail with or without Internet connectivity (ISP) via V/UHF radio links.

If you have been involved with EmComm planning you have undoubtedly heard the term, "the last mile." This is the area that is actively affected by the disaster. Nobody knows exactly how big "the last mile" really is until the disaster actually occurs. However, it encompasses the area that has no "normal" communications channels and is essentially cut off from the rest of the world. "The last mile" is where we, the EmComm volunteers have our work cut out for us to furnish the type of communications that our served agencies need to implement the disaster plan and start the recovery process. Today's disaster professionals are requiring more than simple point-to-point tactical and long-haul radio communications.

In the last couple of years the Federal Communications Commission (FCC) has been pushing the American Radio Relay League (ARRL) to move forward and promote digital modes as opposed to the traditional ham radio menu of FM/CW/Packet/SSB HF communications. They have been coaching the ham radio community to adopt Software-Defined Radios (SDRs) that can be adapted, on the fly with updated software/firmware as needed, to meet specific user requirements. In short, everyone is waiting for the hams to make it into the 21st century. Unfortunately, most of us are still clinging to our time honored traditions of FM voice traffic nets using the antiquated NTS message format to provide our customers with communications during emergencies. The time is rapidly approaching when this will be a thing of the past and should the hams not rise to the occasion and get on board with newer digital technology, we will be relegated to the list of "also rans" in the disaster communications race.

About now you may be asking yourself, why the sudden shift in direction when it comes to the needs of the served agencies? First of all it has not been a sudden shift at all. The handwriting has been on the wall for several years. Secondly, the professional world revolves around the Internet and e-mail. That's how business is conducted in today's world. Everyone from the CEO to the janitor knows about and uses e-mail. Huge messages can be passed with ease using e-mail and attachments. Try passing a five page report using the ARRL NTS message format! I think you'll get the picture pretty quickly.

Our Thinking Needs To Be Retuned

We, the Amateur Radio community, need to be proactive and get on board with digital modes and digital radio systems in order to be players in today's EmComm world. It's just that simple. As emergency communicators we have to give our clients what they need to do their jobs. If we don't then they will find another way to do business and we won't be in the game any longer.

Let's talk more about WinLink. WinLink provides Internet access to affected disaster areas by routing e-mail traffic (using e-mail programs like Outlook Express) from the deployed disaster mitigation personnel to an ISP outside the area using V/UHF radio systems. The on-site interface consists of a V/UHF FM radio, some form of digital modem and a terminal or computer. As the e-mail is generated on this terminal it is fired off on a radio link to a participating station mode called a PMBO (participating mailbox office), that maintains a constant Internet connection. Should the PMBO that you are using suffer loss of the ISP connection, it can utilize another V/UHF radio link or an HF radio link to find another PMBO that has Internet connectivity. At the disaster site end of this system, the terminal can also be connected to a Wi-Fi LAN (802.11b or g) to provide a multitude of Internet capable terminals for various players in the affected area. In other words, the Radio Amateur furnishes the on-site equipment to connect to a PMBO and possibly a Wi-Fi router to interconnect local users at the disaster site, and he/she manages the system, but does not have an active message handling role in the disaster communications. In turn, the users of the WinLink system have a "business as usual" day sending and receiving e-mail just like they were connected to an on-site ISP. Life is good.

I can hear some of you now, groaning and moaning about handling traffic, "shadowing" key personnel, etc. The way things are going, those days are almost gone. As I stated before, many of the responding agencies have their own tactical comm systems that are not only deployable but they are secure. This is something we cannot provide by licensing requirements—no codes or ciphers.

I invite your comments and suggestions on this fast-changing scene. You can always write to me at *Popular Communications*, ATTN: "Homeland Security", 25 Newbridge Road, Hicksville, NY 11801 or my e-mail address, richard.arland@verizon.net.

Flight 93

One of the most fascinating forums that we attended during the recent conference was an overview of the United Airlines Flight 93 crash in Somerset County near Snecksville, PA in the western part of the state. Richard Lohr, N3VFG, the county EMA coordinator, was the presenter of this forum and it was a real eye-opener.

Flt 93 was a transcontinental flight, which meant that it was carrying a full fuel load (around 8000 pounds of jet fuel) and a full flight crew. The terrorists waited until after breakfast had been served and the serving carts were secured out of the way to make their move. This happened over the skies of western Pennsylvania. When the aircraft impacted the ground it was flying inverted and augured in at over 500 MPH! The impact crater was huge and contained no recognizable debris. Crash recovery crews had to dig down 50 feet to recover airframe wreckage and body parts. When an aircraft hits the ground that fast, carrying that much fuel, nothing survives the impact.

Rich Lohr did indicate that the only piece of personal property they found at the crash site immediately after the incident was the Holy Bible, allegedly opened to the 23rd Psalm!

In the four years since the terrorist act, the remains of all persons on board Flt 93 have been identified, including the terrorists. This alone says something about the professionalism and thoroughness of the forensic staff assigned to the task of finding the remains and identifying them.

Initial response by the local EMA group had the site contained and communications was being provided by EmComm volunteers. Within a couple of hours of the crash, the FBI came on scene and immediately quarantined the site, cordoned it off and placed their mobile trunked, secure radio system on the air. They dismissed the ham radio operators along with the majority of the EMA staff, sighting that this was a terrorist act and therefore a crime scene.

The FBI handled the investigation of the crash site and when they left, they indicated to the EMA folks that they (the

FBI) had recovered 95 percent of the debris and left the other 5 percent for them. In reality these figures were reversed! The EMA recovery workers had weeks of digging and sifting wreckage ahead of them. During this time the Red Cross and the Salvation Army were on scene 24/7 to provide food, and a rest area for recovery workers. The gruesome work of recovering the body parts of the 44 passengers, crew, and hijackers onboard Flt 93 took three weeks.

Rich Lohr's crew set up their Command Post in an old mining building. A mobile CP came from Fayette County EMA along with the Pennsylvania State Police mobile CP arrived on scene. Motorola provided a self-contained comm van that used the Motorola Mascot-I 800 MHz secure trunked radio system. If you'll notice, there is a decided lack of Amateur Radio participation in this disaster. Daily briefings were held and, finally after two days, the FBI decided it would be in their best interests to start attending these daily briefings so they could keep on top of events.

Recovered body parts were transported to a makeshift morgue at a local National Guard Armory about four miles from the crash site. Here the difficult and time consuming task of obtaining positive identification of human remains took place. It took almost four years to accomplish, but all 44 people aboard the ill-fated flight were positively identified.

On the 1st anniversary of the crash, (I can't help remembering this rather pathetic situation), a 150-foot carpet was ordered and placed down so Attorney General John Ashcroft could walk from his limo to a nearby tent to address attendees at the event without getting his shoes dirty! Your tax dollars at work!

Richard Lohr's forum was well attended and he held everyone spellbound as he recounted the various stages of the recovery process undertaken at the UAL Flt 93 crash site in western Pennsylvania. He and his EMA personnel did a tremendous job in the face of an intimidating task and equally intimidating federal agencies that muscled in and took over.

That's it for this month, gang. Next month we'll take another look at the 2nd Annual EmComm Conference held at Shamokin Dam, PA at the end of October. A lot of valuable information was offered, and this stuff needs to be disseminated rapidly in order to be ready when the next terrorist attack happens. Until then, remember our motto: Preparedness is not optional. ■