Terrestrial Lines Down, Photo by Daniel Cima, Courtesy American Red Cross.

Satellite communications: helping millions

The Red Cross of America is a humanitarian association that helps millions of people a year recover from disasters across the world. The use of satellite communications within the humanitarian sector has seen a marked rise in recent years. Helen Jameson spoke to Keith Robertory, Disaster Services Technology Manager for the American Red Cross to find out how the organisation is using satellite based technology and why.

Question: Mr. Robertory, thank you for your time. Can I begin by asking what your job as Disaster Services Technology Manager for the American Red Cross entails?

Keith Robertory: In a nutshell, I'm responsible for all the technology that the American Red Cross deploys on larger relief operations. For perspective, this is about 50 disasters of the 70,000 disasters that the Red Cross responds to annually in the United States, which are mostly handled by local Red Cross chapters.

My unit of four full-time paid staff and hundreds of volunteers deploy cell phones, IP phones, satellite phones, laptops, networking infrastructure, printers, faxes and other equipment. We setup the email accounts, conference call numbers and other services that will be necessary for the operation. In a matter of days – and sometimes shorter – we have setup the equivalent of an office for a few hundred people in what was a vacant building.

We are the hard-core technology people in a soft-touch humanitarian organisation.

Question: To what extent are satellite communications used in Red Cross operations?

Keith Robertory: Satellite VSAT data technology is the first tool in our tool box of options for setting up a site. We can arrive on-scene with our VSAT remote terminals and

other equipment to provide voice and data communications regardless of local infrastructure's conditions. With each VSAT unit, we will provide network connectivity to over 100 IP-based devices.

The tool box is also filled with cell phones, cellular air cards, land lines, and other more terrestrial-based technologies.

Satellite phone technology is the last tool in our tool box of options for providing communications. When it is impractical to use a VSAT, cellular phones are not functioning, and other wireless communication is having issues, satellite phones are the final option. Given the cost and infrequency of use, these are usually held in reserve.

Question: Have you noticed an increase in the amount of satellite-based communications that are used in the aftermath of disasters? If so, why is this?

Keith Robertory: I believe there is an increase in the use of satellite technology after a disaster, but I also see a hardening of terrestrial based services to reduce disaster-caused downtime. Many organisations realise now that things can get out of hand very quickly when communications fail. This has led to those organisations bolstering their technical capacity to ensure continuity of operations.

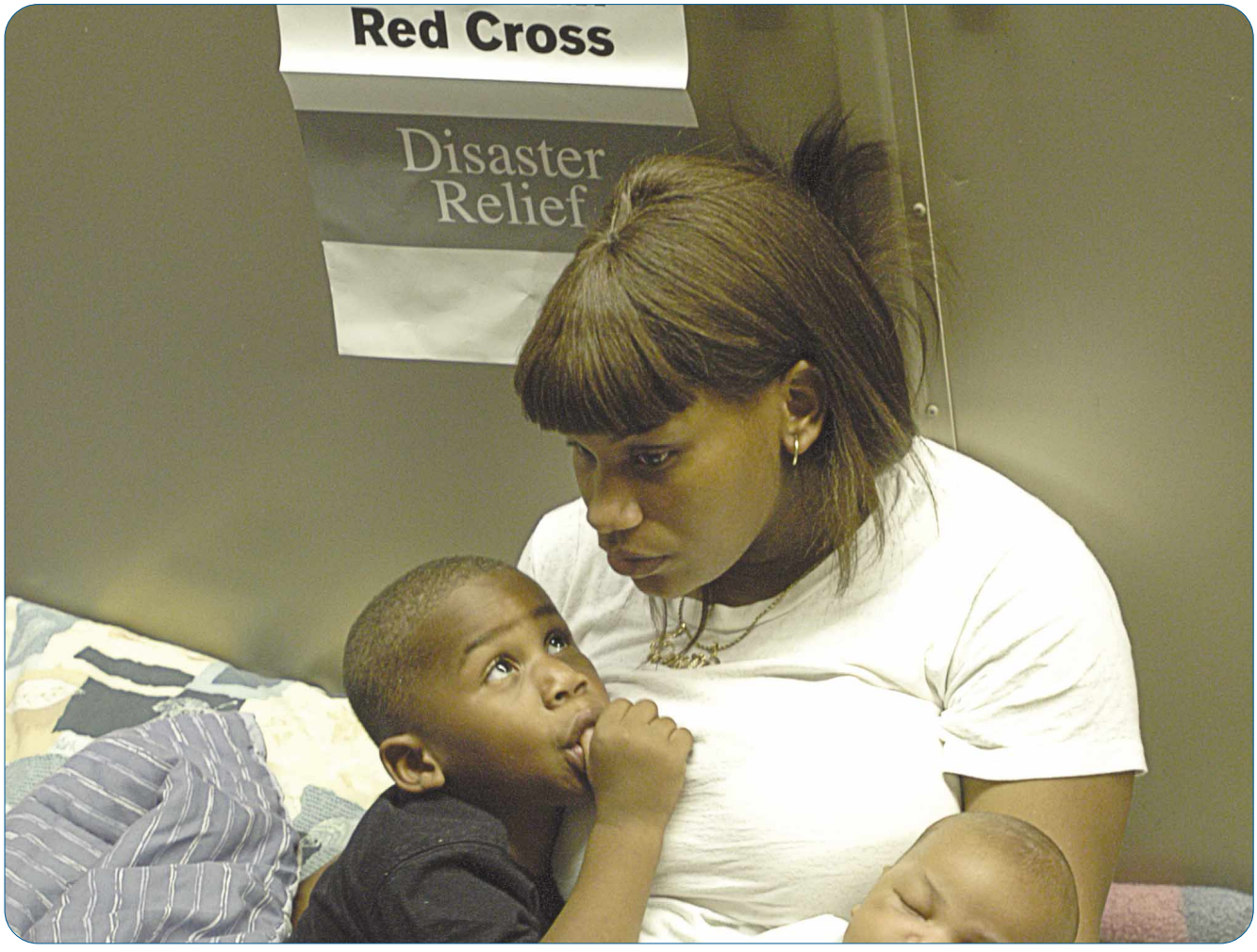
The United State Government — through the Urban Area Security Initiative Grant Program — distributed millions of dollars to state and local agencies over the past few years to increase their preparedness for disasters. I'm sure that had a lot to do with local agencies adding satellite technology to their capabilities. This is leading to satellite service providers risking overloading the beam in a particular area when so many responders are planning to rely on satellite services all at the same critical time.

The cellular phone vendors in the US have also spent a lot of money and resources hardening their cellular services. I believe they have also realised that consumers in risk areas will move to the cellular provider that either remains functional during the storm or comes back the quickest. This has increased competition for satellite communications following disasters. As a result, I don't think it is hard to predict that quality will go up and costs go down in both satellite and terrestrial services, which benefits me as a user of both satellite and cellular technologies.

Question: When deployed to the scene of a disaster, re-establishing lost communications must be a top priority, but what are the steps that you take once you arrive at the scene?

Keith Robertory: One of the first resources we roll into an area to support Red Cross operations is our communication response vehicle. This truck includes a 1.2 meter satellite dish, a satellite phone, cell phones from three major providers, IP phones, laptops, two-way radios and other communication gear. Upon arrival, the crew will scan the cellular vendors for signal and position the truck for a clear look-angle to the satellite. This information helps us determine what people and equipment to send into the area to augment the local chapter resources.

Meanwhile the crew will start to deploy the equipment on the truck to provide voice and data communications for the leadership team on the ground. The operational foot print expands as additional Red Cross volunteers



Red Cross Photo, by Daniel Cima, Courtesy American Red Cross.

and equipment arrives to meet the needs of the community. My teams' focus remains meeting the communication needs of the Red Cross operation throughout.

Question: Does the Red Cross own a satellite network for its exclusive use or does it rely upon equipment leased or donated – or a combination of the two?
Keith Robertory: The Red Cross functions on donations from the public, and we need to be good stewards of that trust. We run a constant balance between seeking donated services and paying for the services we need.

The Red Cross operates two fixed ground stations and about 60 remote stations. All of our satellite data equipment has been purchased or donated, and is outright owned by the Red Cross. We do pay for satellite airtime and support contracts to ensure the highest availability possible. One of our vendors discounts their services generously, where another one chooses not to.

We own enough satellite phones to cover us throughout most of the year, and then rely on rentals if the need for satellite phones exceeds our inventory. We do not rent satellite data equipment due to the setup and configuration time required compared to the speed our business requires.

Question: Is satellite equipment convenient and easy to use for Red Cross Workers? Is extensive technical knowledge required by the operator to set up and begin using the equipment? Do you have technical teams deployed to the scene or can just about anybody use the equipment?
Keith Robertory: The best asset that I have is Red Cross volunteers. These volunteers leave their homes, jobs and families to respond to an area of the country where they may not have been, to help people they don't know and not ask for anything in return. We have a core of volunteers who are very technically savvy to setup and deploy our equipment. It is a 40 hour training course to operate the satellite trucks. Many people learn through on-the-job training by others.

Our "fly-away" VSAT breaks down into five FedEx overnight. As you can image, manually assembling and pointing a VSAT are not simple tasks. Technical teams pull from four areas to support Red Cross operations, these are: computer operations, networking, communications (radio) and customer service. Each area has its own unique specialities that build together to an operational solution.

It takes special people to setup our network in such a short time, and some aspects are not user friendly. Most Red Cross volunteers are "equipment users" and have no desire to be technical. They don't wonder how they have an Internet connection in the middle of a disaster. I have volunteers who are technical and want to use their skills to help the Red Cross fulfil our mission. When all goes right, we become transparent – just like any good IT shop.

Question: The Red Cross is obviously a humanitarian organisation that relies heavily on donations. Does this mean that satellite communications are often overlooked as they are considered to be cost-prohibitive, even if they are the best – or only – solution?
Keith Robertory: Satellite communication is burdened with preconceived notion of being cost-prohibitive, which is something that I constantly need to be aware of and dispel when engaging management, partners and donors. However, it is very expensive to get terrestrial service restored and wired into a building on a priority basis at expedite or telecom service priority rates following a disaster. This factor makes our business model for satellite data communications cost-effective given the dynamic nature of responding to disasters. Our annual costs are fixed and predictive regardless of use. This allows me to budget and control costs to maximise the donated dollar. Even in very busy years, my satellite costs remain fairly stable.

Keep in mind that if I were a business unit that only used the satellite systems sporadically, it would not be a cost-effective solution as economics forces tighter business models. Very few Red Cross chapter can afford to have their own satellite systems for local disasters.

Question: In the future, do you envisage an increased level of use of satellite-based communications or even hybrid communications in the aftermath of disasters? Is there more that the satellite industry can do to help humanitarian organisations like the Red Cross?
Keith Robertory: I believe that the key factor to keep in mind here is that the American Red Cross relies on many tools in our technology tool box. We need a combination of diverse capabilities to meet the demands of disaster relief operations in a cost-effective manner. There are times when the full-blown satellite-based network with laptops, printers and phones is the only answer, and other times when one simple cell phone will do. Unfortunately, this isn't even a continuum where we dial in the right answer; it is the convergence of many factors to have the right solution.

My solutions work well domestically in the US, whereas my colleagues who deploy internationally have different needs, challenges and solutions. They support a smaller team with fewer computers and phones; but they have the added cultural, regulatory and technical challenges that come with moving from country to country. In addition, they leave equipment behind to help build the capacity of the host country's Red Cross society.

My international colleagues purchase replacement equipment after each deployment to restock the supplies. How they use satellite is a whole other discussion.

The impact of disasters has been increasing for decades in the United States as people migrate to the scenic, yet disaster prone areas of the country – near coast lines threatened by Hurricanes, near rivers that overflow the banks, near earthquake fault zones, and the list goes on.

There would be less need for the Red Cross if the satellite industry looked to solutions that cost-effectively equip the general public so they can be better prepared for disasters and not require humanitarian services after a disaster.

One stepping stone would be smaller equipment, less subject to weather fade, easily carried and deployed by a non technical person, and where the charges are not based on usage. ■

Red Cross Image, by Michael Seamans, Courtesy American Red Cross.