



## Interoperability ACU-1000

*It sounds like a nightmare conjured up in the 2 a.m. darkness.*

*A runaway chemical reaction in a railcar results in an explosion and fire. Responding fire, law enforcement, and security personnel attempt to communicate, but each department uses a different radio frequency. What follows is awkward and time-consuming dispatch relays to convey critical information from the incident site to adjacent roadblocks, from the roadblocks to the command center.*

Unfortunately, it wasn't a bad dream; it was a real incident at a major chemical plant near Lake Jackson, Texas, in 2002. The incident made Lake Jackson Police Chief Paul Hromadka and Capt. J.R. Dunlap realize they needed an interoperability solution—a way local public safety agencies could talk to one another.

“We realized that we really needed to find some way to talk to each other. There could be other disasters, even more major than this. We could have a terrorist incident, or a Columbine-type situation,” Dunlap says. “Dispatch relays are awkward, and they eat time. Losing time sometimes can mean losing property, or life, or both. And there's always the possibility of misinformation. That incident made us start looking, and the ACU-1000 seemed like the best and most cost-efficient solution.”

The ACU-1000 is a switch that can interconnect dissimilar radio systems. It was developed privately and extensively tested in an operational setting with assistance from the National Institute of Justice (NIJ). The ACU-1000 allows wireless communication systems to be combined at the audio baseband by using the received audio from one radio system as the source audio for one or more transmitters of differing technologies.

However, even the most cost-efficient solution can represent a significant expenditure for a department of less than 50 sworn officers, particularly when no one has had the opportunity to use the equipment and test its capabilities. Hromadka and his department turned to the manufacturer and NIJ's National Law Enforcement and

Corrections Technology Center (NLECTC)—Northeast in Rome, New York, for help in making their choice. The manufacturer agreed to provide equipment for a free onsite demonstration, and NLECTC—Northeast agreed to provide onsite technical assistance during installation. When it became apparent in May 2003 that workers at a local chemical plant would strike, Lake Jackson requested a stepped-up timetable to allow the department to test the equipment during the strike.

Just 3 days before the start of the strike, staff from NLECTC—Northeast arrived in Lake Jackson. Two days later, the dispatch center had a working ACU-1000 audio gateway to provide interoperability between the different radio frequencies used by the Lake Jackson Police Department, the neighboring Clute and Freeport police departments, the Brazoria County Sheriff's Department, and security forces from two chemical plants. Installation included an ETS-1 Ethernet connection that allowed dispatchers to control the ACU-1000 from their dispatch consoles, eliminating the need to move to access the equipment. In addition, dispatchers and senior Lake Jackson officers were trained on system use.

“NLECTC—Northeast was great. They not only sent someone down to set it up, the center's staff person remained available by phone practically around the clock for the duration of the strike,” Dunlap says. Although Dunlap reported that no major incidents took place during the 10-day strike, it gave Lake Jackson a good opportunity to test the equipment's ability and determine that the ACU-1000 represented the right interoperability solution for them. Dunlap says the department plans to purchase equipment as soon as funding becomes available.

Interoperability is one of the research missions of NIJ's Communications Technology Program (CommTech). Through CommTech, NIJ hopes to solve both short- and long-term interoperability problems involving wireless public safety telecommunications and information technology applications. CommTech is helping bridge the gap in emergency communication by identifying, adopting,

and developing interoperability solutions that include open-architecture standards for voice, data, image, and video communication systems. These solutions will allow multiple parties to exchange information on the spot—no matter where that “spot” is—fixed facilities, mobile platforms, even personal devices. The NLECTC system then helps take these developed solutions to the field as part of its mission to assist local and State agencies.

***For more information on the Lake Jackson Police Department's experience with the ACU-1000, contact Capt. J.R. Dunlap, 979-415-2700 or [ljunlap@brazosport.cc.tx.us](mailto:ljunlap@brazosport.cc.tx.us). For more information on interoperability assistance offered by the National Law Enforcement and Corrections Technology Center-Northeast, contact Charles Stephenson, 315-339-6184 or [Charles.Stephenson@L-3Com.com](mailto:Charles.Stephenson@L-3Com.com). To find out more about the National Institute of Justice's CommTech program, log on to [www.ojp.usdoj.gov/nij/sciencetech/commtech.htm](http://www.ojp.usdoj.gov/nij/sciencetech/commtech.htm).***

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