MOTOROLA

Digital Trunked System Knocks Down Largest Fire in a Decade

Chief Douglas Forsman

"November 7, 2008 marked the largest fire in a decade and the first major test of our countywide 800 MHz digital trunked system. Not only did everything work well, everyone was interoperable—fire, EMS and police—during an incident that required a lot of communication and coordination."

– Chief Douglas Forsman, Champaign Fire Department

Situation: Lack of continuous interoperability countywide

The Champaign Fire Department serves a burgeoning community of almost 75,000 in downstate Illinois. Along with its sister city of Urbana, it is also host to the University of Illinois and 42,000 students. Despite the rural complexion of its surrounding environs, Champaign is a bustling city with all the public safety and communication challenges of a major metropolis. As Champaign grew, it was outgrowing its analog radio system (UHF for law enforcement and VHF for fire) which was not able to provide the level of interoperability needed for major incidents and multiple agencies across the county.

Solution: Motorola ASTRO® 25 digital 800 MHz trunked radio system

With assistance from a grant, Champaign County transitioned to a Project 25 digital radio system in 2007 that is, according to Deputy Chief Eric Mitchell, "a total public safety system" across its 1000 square miles. The Motorola ASTRO® 25 system provides interoperable communications among 1800 users from 30 different agencies, including police, fire, sheriff, EMS and public works. The five-site, eight-channel system features Gold Elite consoles at METCAD (the 911 dispatch center in Urbana) and also delivers interoperability with talkgroups on the statewide STARCOM Project 25 system.

Result: Shared communication among multiple agencies

For the first time in his 28-year career, says Deputy Chief Mitchell, the entire county is on the same radio system. "Everybody has always operated on their own system and now police, fire, EMS, public works and the University of Illinois agencies are connected. In the event of a large incident or a disaster, we have the capability with this system for everybody to move to a talkgroup that we can talk to each other on and communicate what's going on in the incident."

Champaign, IL
- Population 75,000
- 42,000 students
- 1,000 square miles

Solution
- ASTRO 25 Digital 800 MHz trunked radio system
- STARCOM 21 Project 25 system
- XTS 5000 and XTS 2500 digital radios

Results
- County-wide interoperability
- Unmatched reliability
- Uninterrupted communications and optimal efficiency

Photo © LaPayne Photography

"We were able to talk and respond like clockwork. You don't want communications to ever be an issue on scene."

– Chief Douglas Forsman, Champaign Fire Department

From pockets of coverage to true interoperability countywide.

Prior to implementing a digital 800 MHz trunked radio system, Champaign County experienced "pockets of interoperability" according to Greg Abbott, 911 Coordinator for METCAD (Metropolitan Computer-Aided Dispatch) and system manager of the digital 800 MHz trunked system. "Our old system was UHF and VHF, and interoperability was an issue. If fire wanted the police, it was okay, but it was lacking in the other direction. Even in rural Illinois, we were hampered for frequencies and 800 MHz was the only place we could go."

Rather than transition to a short-term solution, Abbott continues, "We realized we were looking at it the wrong way – our real need was system capacity, features, and looking to the future of communications. In-building coverage was also big and we were looking at where the industry was going. With the new ASTRO 25 platform, we have increased our system capacity and provide interoperability across the county."

A digital system that performs seamlessly under fire.

The countywide system was put to the test on November 7, 2008 in what Chief Douglas Forsman describes as the largest fire in a decade and one of the top five in his 45-year career. As he looked out his picture window early that morning, he saw the sky lit up six miles away. A three-story, 125-year old building under renovation in downtown Champaign was ablaze.*

"A huge body of fire was showing upon our arrival, so we knew this was going to be challenging, not only for the building on fire but for those adjacent to it," he explains. "We called a second alarm and then a third alarm very quickly which brought a huge amount of resources there, and it was a task that took us most of the day. It involved not only the fire department, but police for security and public works for helping us clear the streets and demolish portions of the building that had burned, so it was a multi-agency, multi-discipline activity that required a lot of coordination and communication."

Utilizing Motorola XTS® 5000 and XTS® 2500 digital radios, renowned for their ruggedness, clarity and full-featured functionality, numerous agencies worked the inferno. The huge range of talkgroups and encrypted channels made sharing information and managing resources run like clockwork, according to Champaign's chief. "It would have been an absolute nightmare if the P25 standard hadn't been in place," he says. "When you need all of the resources to deal with a significant incident, they're all there and they can all switch to a shared channel."

Uninterrupted communications and optimal efficiency.

As the fire raged, Greg Abbott responded to the dispatch center in which is located in neighboring Urbana to monitor system performance. "The countywide system performed admirably. At the peak of the fire, we had five talkgroups in use for fire exclusively and we had eight more talkgroups for normal traffic. At peak loading, the 5:30am to 6:00am range, we were only using 35% of the system's capacity with 600 radios. I was amazed by its performance."

**Firehouse* Magazine (November 2009) reported that 110 firefighters, nine engines, four ladders, one squad and one incident command vehicle were on scene; six buildings were damaged and the historic building destroyed, totaling three-and-a-half million dollars.

On the previous analog system, interoperability would have been "face to face" with hand signals, runners going back and forth, re-transmissions and long waits for airtime to communicate. There would have been multiple radios and channels for an incident commander to juggle to coordinate resources. Given the magnitude of the fire, this would have jeopardized the safety of responders and the effectiveness of the response.

"That morning it was important for us to talk to units at various locations and to do so uninterrupted. We could talk to our dispatch center on one talk group, to the police agency on another talk group. We need to have uninterrupted communications with the people that are in peril and the system helped us do that, no question about it," says Chief Forsman.

Durable radios that withstand and deliver.

Firefighters are in a demanding business where radios get dropped daily and endure extreme heat and cold, smoke, water and humidity. Motorola digital radios are well-designed with continuous input from the fire service about features they need most: devices should be easy to use and operate by firefighters with top-mounted displays, knobs that can be turned while wearing gloves and large, easy-to-access emergency buttons.

"You can't take a device that was designed for CEOs who are away from the office and still need to communicate and make that work for the fire service," explains Lieutenant Brad Bone, who was on scene on November 7th. "It's just not going to do it. They're not going to be rugged enough. The battery life won't be there and exposing them to extreme temperatures and moisture is just not going to work out."

"At the peak of the fire, we had five talkgroups in use for fire exclusively and we had eight more talkgroups for normal traffic. At peak loading, the 5:30am to 6:00am range, we were only using 35% of the system's capacity with 600 radios. I was amazed by its performance."

– Greg Abbott, 911 Coordinator, METCAD Emergency Communications

Lieutenant Brad Bone

"You can't take a device that was designed for CEOs who are away from the office and still need to communicate and make that work for the fire service. It's just not going to do it. They're not going to be rugged enough. The battery life won't be there and exposing them to extreme temperatures and moisture is just not going to work out."

– Lieutenant Brad Bone, Champaign Fire Department

On scene and in-building coverage.

When it comes to clarity and coverage, says Deputy Chief Mitchell, "One of the things that firefighters absolutely rely on when they're inside is radio communications with the outside crews, so in-building communication was extremely important to us and having good, reliable, clear in-building coverage was important. Now that we've used the radios for several months, we're very happy with the in-building coverage and the performance of the system."

Greg Abbott agrees, "It is superior to the in-building coverage we had previously." According to Chief Forsman, if there had been communications problems on the fireground, "We would have simply overcome it with the simplex option on the radio. We can switch to the simplex antenna-to-antenna if need be, but we did not need to do it on November 7th, because we did not have any communication problems that day."

Multiple agencies and users, together as one.

Champaign County's plans for expansion include connecting into the statewide STARCOM system for seamless roaming and adding new data capabilities such as over-the-air programming. "I tell other departments who are considering a digital trunked system, don't be afraid to make the change. We have not experienced any downside," says Chief Forsman. Over at the dispatch center Greg Abbott concurs, "In fact, I can't imagine a scenario where we'd ever go back."

MOTOROLA

Motorola, Inc. 1301 E. Algonquin Road, Schaumburg, Illinois 60196 U.S.A. www.motorola.com/publicsafety/radios 1-800-367-2346

RO-26-1009