



The JFK AirTrain system is an example of an integrated rail security network.

By Rich Sampson

In late 2006, RAIL Magazine published its special edition (#16) on Passenger Rail Security, which included a number of recommendations. This article highlights the industry's initial response of applying technology and software to the challenge.

Overhead cameras. Bomb-resistant trash bins. Boots on the ground. These, and many other aspects, are all vital elements in keeping passenger rail systems safe and secure in the post-9/11 world. However, these components of passenger rail security are most effective when working together as part of a seamless, coordinated security network. With SEKURFLO technology, assembled and administered by Bombardier

Transportation, assembling and administering a security regime becomes a more united front of passenger rail security.

Coordinated Protection

The varying tools that constitute a security platform for most North American passenger rail systems include personnel, procedures and techniques allied with technology and equipment that focus on different aspects of the system that might be vulnerable to outside threats. Personnel are deployed throughout the network to act as the literal eyes and ears of the security network, monitoring and responding to situations as they develop, while also acting as a deterrent against hostile acts. Technology and equipment – such as video cameras, environmental sensor

stations and enhanced railcars and station facilities – establish barriers to suspects accessing and infiltrating the rail system, while also mitigating or avoiding events from causing more damage. Passenger rail systems are crafting and implementing procedures and methods for their staff to prevent intended damage to their system and respond to acts if they do occur.

While all these elements are essential for a secure passenger rail network, positioning them to interact with each other is a significant challenge, especially for the largest rail operators. To help such systems combine their various security aspects into a cohesive security posture, Bombardier Transportation worked with rail operators and security experts to create SEKURFLO – a name chosen to signify its blend of security with network fluidity. As

a multi-faceted technology solution, SEKURFLO installs both its new hardware and software within a passenger rail network to achieve enhanced coordination for security and safety.

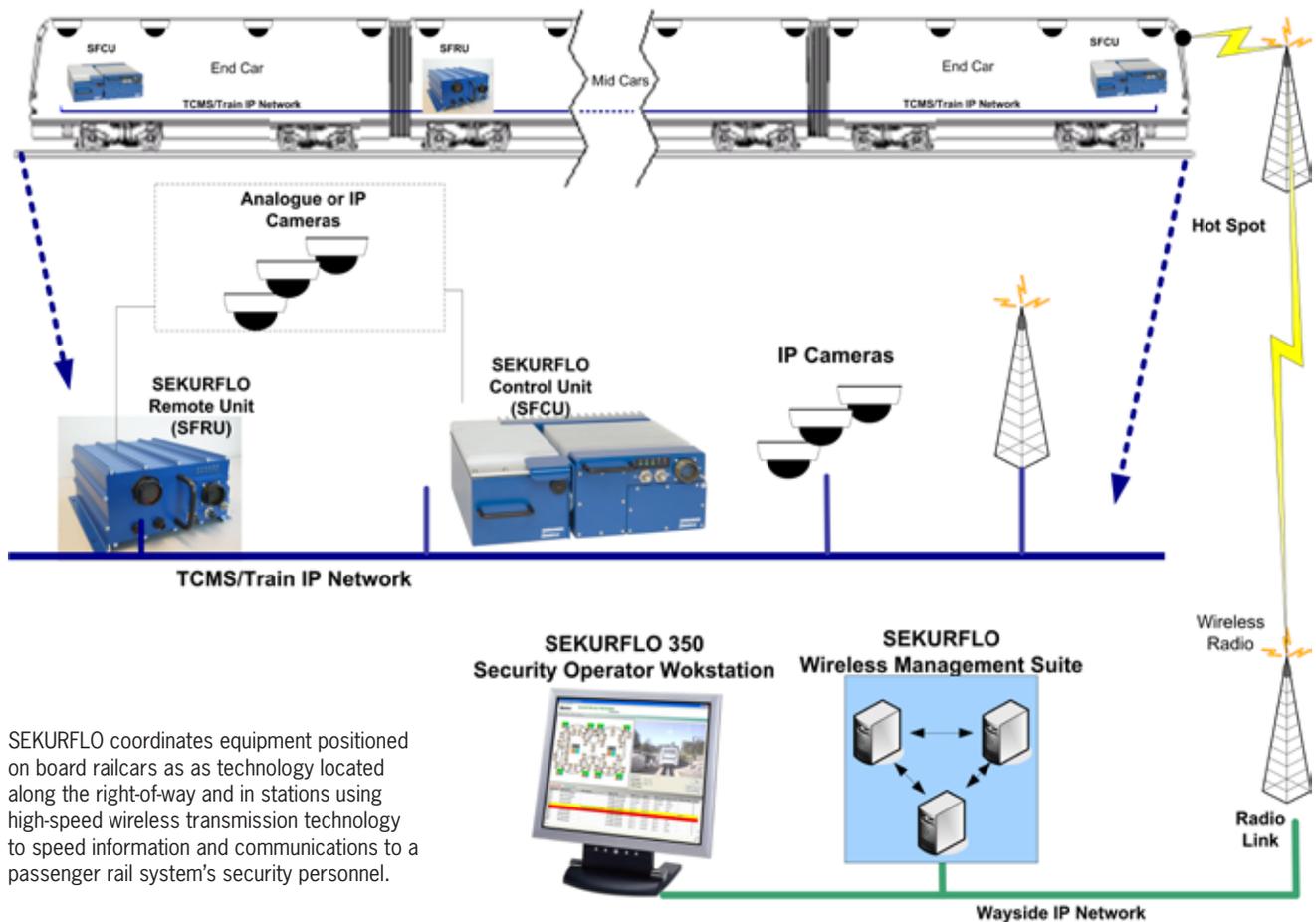
SEKURFLO operates within three key environments of a passenger rail network: on-board the railcars, through the space that trains and passengers travel – stations, tunnels, rights-of-way – and at the security control center, which is often co-located with the system’s operations nerve-center. In these areas, SEKURFLO technology links the personnel, procedural and technological tools of a given system together to provide a cohesive security network. Additionally, by more closely connecting these elements, the product aims to produce a security network that can better achieve the most commonly-cited priority by passenger rail security experts – speed in accurately communicating information and response.

Across the System

Although SEKURFLO’s backbone of integrating a broad collection of security tools can be understood in conceptual terms, its true applicability is best understood in the specifics it can offer to a rail system. And while Bombardier’s Chris Crawford – who oversees the program for the company – is quick to point out that SEKURFLO is not a one-size-fits-all approach and is fine-tuned to meet the needs and work with the resources of each system, it does include core components that are fundamental to its application.

One such aspect is its on-board railcar systems integration. SEKURFLO is applicable to subway and metro cars, light-rail vehicles or commuter rail coaches – regardless of age or manufacturer. The on-board aspect coordinates technologies such as cameras and microphones, railcar data processors and information recorders, and

even sensors on the doors and windows to compile a composite overview of the security situation on any railcar at any moment. SEKURFLO then wirelessly transmits that information back to personnel staffing the security control center, allowing them to assess and react to conditions aboard their trains. Moreover, if a security situation develops on-board, SEKURFLO can focus its attention to the area or even person in question, and transmit those conditions to security personnel in real-time. For example, a video camera in a certain railcar can be activated by the control center to focus on the events occurring there and instantly relay that information to transit police or emergency personnel as needed. SEKURFLO achieves this by prioritizing among the various components connected to its platform and assigning bandwidth space to the most pressing concerns. And while these tools – such as railcar cameras, computers and



SEKURFLO coordinates equipment positioned on board railcars as well as technology located along the right-of-way and in stations using high-speed wireless transmission technology to speed information and communications to a passenger rail system’s security personnel.



SEKURFLO's control units are positioned on-board trains to record and transmit data.

sensors – perform their most vital work during serious situations, SEKURFLO can also be utilized during less-threatening times to detect everyday concerns such as vandalism or disputes between passengers.

“SEKURFLO plays an active role aboard rail vehicles where it’s installed,” says Crawford. “It’s more than just connecting cameras and wires – it makes the railcar an active participant in the situation.”

Likewise, the technology enhances the security posture of the stations, tunnels and other rail facilities that host trains and the passengers who ride them. Due to the very real concerns presented by terrorist acts, passenger rail stations are now often among the best-equipped security venues, holding video surveillance equipment, explosive-proof trash containers, airborne chemical analysis sensors and designated positions for security personnel. However, like the security aspects on rail vehicles, these provisions often function as stand-alone attributes, without much connection to the other elements. SEKURFLO finds its value here by joining these tools together and, again, transmitting information to the command center and personnel fanned-out through the system.

Take, for instance, a situation whereby a chemical analysis monitor detects a potentially dangerous substance in a station. Not only

could that equipment notify those in its immediate vicinity with loud noise and flashing lights, through SEKURFLO, it could also notify the command center, which might immediately halt all trains in their positions with their doors closed to prevent further exposure, and also alert the cell phones and data receivers of transit police and emergency rescue to deploy their response procedures. Along with the devices installed in passenger stations, similar sensors and technologies can be integrated along the wayside trackbed, subway tunnels and rail yards.

“In the train space, you need a holistic and proactive view to provide the highest levels of security,” Crawford explains. “Singular tools and technologies are good in of themselves, but are even more beneficial if they work together.”

In as much that SEKURFLO transforms the utility of previously isolated components aboard train cars and throughout the rail infrastructure, perhaps its most profound value is to the system’s experts in administering the security control center. Much like a conductor directing an orchestra, a centralized nerve center that oversees a passenger rail system’s security effort is vital to its effectiveness. Most rail networks have established such posts, often linked with their standard operations centers, as both functions are based on access

to the same type of equipment. But these centers are even more crucial for security programs, as a unified point of command allows for more accurate and complete gathering of information and avoids confusion when orders must be followed precisely. By integrating SEKURFLO into these nexuses, security command center personnel can better compile and distribute information and improve decision-making by uniting all their security tools through one common platform.

“As a coordinated command and control center for passenger rail, SEKURFLO allows systems to manage events – regardless of severity – by using a common method of receiving and releasing information across their network.”

Speed Saves Lives

When the various aspects and tools of passenger rail security are managed and coordinated through SEKURFLO or by other means, the ultimate goal is not merely improving efficiency or maximizing the values of its investments in security products. Much more fundamental is the priority on saving lives should a situation threaten the safety and security of its passengers. Due to the inherent nature of passenger rail – with its high numbers of riders riding trains every day and high-profile, often very contained stations and facilities – it is a natural, and tragically common target for terrorists around the world. While it is indeed fortunate that no attacks have been successful in North America, passenger rail operators are nonetheless categorically serious about their duty to protect the lives of their passengers.

Chris Crawford explains that as Bombardier engineers and researchers met with the rail security personnel while developing SEKURFLO, they commonly heard that the rapidity of which they could receive information on a security event, quickly analyze it, and then

deploy response procedures was the basic element in saving as many lives as possible should such an event occur. As a result, SEKURFLO was designed and organized around that principle.

In practice, this means that the technology includes several software and hardware aspects to speed information and communications to the control center and on-the-ground transit police and emergency responders. SEKURFLO's wireless data transmission grid is its foundational element, connecting the security tools in railcars, stations and along the railroad to the control point at a rapid pace. Additionally, a tiered priority process is embedded within the software to activate the elements closest to an event, and reduce the activity profile of the less urgent ones in order to move the most vital information first. However, all the input nodes remain active and connected throughout the network in case a well-planned attack targets multiple vehicles or facilities.

The designers and developers of SEKURFLO believe these unique aspects of the technology allow it to affect a speedy and reliable process of information and communication activity to keep rail passengers safe.

"Saving lives is the paramount objective of SEKURFLO," says Crawford. "Time and again, we heard from rail operators that safety is enhanced by the fastest response, and we believe that SEKURFLO allows that to happen easily."

Moreover, by protecting rail

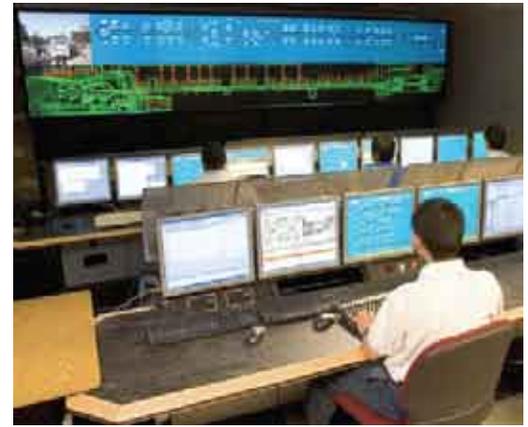
passengers, the system also allows operators to safeguard their assets – railcars, stations and other equipment. While saving lives certainly must take top priority, a rail system that loses crucial assets cannot provide adequate service, which can produce catastrophic consequences for regional economies and community vitality. The same provisions that keep passengers safe also prevent or minimize damage to the vehicles, facilities and infrastructure that moves them.

Stitching the Security Blanket

SEKURFLO is currently being designed and deployed in Bombardier's homeland of Canada, to the Toronto Transit Commission's multi-modal rail network and Vancouver's SkyTrain system. While even the most basic details of SEKURFLO's application in those communities are understandably extremely restricted, their top security officials believe the new technology will allow them to better protect and serve their riders.

"A growing number of transit agencies are selecting SEKURFLO as a security solution designed especially for rail applications," said William Spurr, President, Bombardier Transportation -- North America. "Market reaction to this product has been very positive, and we look forward to finalizing agreements with transit agencies here in the future."

(For more information on Toronto's rail transit network and Vancouver's



The control center functions as the nerve center for SEKURFLO's coordination of multiple security aspects.

SkyTrain, see RAIL #3 - ed.)

At the same time, Crawford and his colleagues at Bombardier are also integrating SEKURFLO in systems worldwide. London's Underground network – one of the world's largest – is adding SEKURFLO to several lines, while 1,300 regional rail vehicles on the Ile de France will also utilize the system, along with South Africa's new GAUtrain network. Through these initial applications, Bombardier expects SEKURFLO to provide a real and tested model of enhanced security technology that will appeal to passenger rail operators across North America and the rest of the world.

"All of our employees here in Quebec – and around the world – that had a hand in creating SEKURFLO feel a real and emotional connection to it," says Crawford. "We hope we're playing a small step in keeping rail passenger safe, and that's something we all take quite seriously." **R**

SkyTrain in Vancouver is currently installing SEKURFLO on its automated rapid transit system.

