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International Transit Studies Program

Report on the Spring 2002 Mission

**Safety and Security Issues at All-Bus Systems in Small- to
Medium-Sized Cities in Western Europe**

This TCRP digest summarizes the mission performed June 14–29, 2002, under TCRP Project J-3, “International Transit Studies Program.” The report includes transportation information on the cities and facilities visited, lessons learned, and discussions of policies and practices that could be applied in the United States.

This digest was prepared by Kathryn Harrington-Hughes of the Eno Transportation Foundation and is based on reports filed by the mission participants.

**INTERNATIONAL TRANSIT STUDIES
PROGRAM**

About the Program

The International Transit Studies Program (ITSP) is part of the Transit Cooperative Research Program (TCRP). ITSP is managed by the Eno Transportation Foundation under contract to the National Academies. TCRP was authorized by the Intermodal Surface Transportation Efficiency Act of 1991 and reauthorized in 1998 by the Transportation Equity Act for the 21st Century. It is governed by a memorandum of agreement signed by the National Academies, acting through its Transportation Research Board (TRB); by the Transit Development Corporation, which is the education and research arm of the American Public Transportation Association (APTA); and by the Federal Transit Administration (FTA). TCRP is managed by TRB and funded annually by a grant from FTA.

ITSP is designed to assist in the professional development of transit managers, public officials, planners, and others charged with public transportation responsibilities in the United States. The program accomplishes this objective by providing opportunities for participants to learn from foreign experience while expanding their network of

domestic and international contacts for addressing public transport problems and issues.

The program arranges for teams of public transportation professionals to visit exemplary transit operations in other countries. Each study mission focuses on a theme that encompasses issues of concern in public transportation. Cities and transit systems to be visited are selected on the basis of their ability to demonstrate new ideas or unique approaches to handling public transportation challenges reflected in the study mission’s theme. Each study team begins with a briefing before departing on an intensive, professionally stimulating 2-week mission, after which they return home with ideas for possible application in their own communities. Team members are encouraged to share their international experience and findings with peers in the public transportation community throughout the United States. Study mission experience also helps to better evaluate current and proposed transit improvements and can serve to identify potential public transportation research topics.

Study missions normally are conducted in the spring and fall of each year. Study teams consist of up to 15 individuals, including a senior official designated as the group’s spokesperson. Transit properties are contacted directly and requested to nominate candidates for participation. Nominees

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are screened by a committee of transit officials and the TCRP Project J-3 Oversight Panel endorses the selection.

Study mission participants are transit management personnel with substantial knowledge and experience in transit activities. Participants must demonstrate potential for advancement to higher levels of public transportation responsibilities. Other selection criteria include current responsibilities, career objectives, and the probable professional development value of the mission for the participant and sponsoring employer. Travel expenses for participants are paid through TCRP Project J-3 funding.

For further information about the study missions, contact Gwen Chisholm-Smith at TCRP (202-334-3246; gsmith@nas.edu) or Kathryn Harrington-Hughes at the Eno Transportation Foundation (202-879-4718; khh@enotrans.com).

About this Digest

The following digest is an overview of the mission that investigated safety and security issues at all-bus systems. It is based on individual reports provided by the team members (for a roster of team members, see Appendix A), and it reflects the views of the team members, who are responsible for the facts and accuracy of the data presented. The digest does not necessarily reflect the views of TCRP, TRB, the National Academies, APTA, FTA, or the Eno Transportation Foundation.

SAFETY AND SECURITY ISSUES AT ALL-BUS SYSTEMS IN SMALL- TO MEDIUM-SIZED CITIES IN WESTERN EUROPE

The theme of this study mission was “Safety and Security Issues at All-Bus Systems in Small- to Medium-Sized Cities in Western Europe.” Although issues involving the safety and security of their passengers, staff, and equipment are always paramount in transit managers’ minds, these topics took on an added emphasis after the events of September 11, 2001.

The purpose of the mission was to learn what other agencies are doing to ensure the safety of bus riders, agency employees, and the communities served—how they deal with security threats that include firebombs, riots, hijackings, kidnapping, vandalism, armed assaults, and bombings.

The mission focused on the four subject areas:

1. **Prevention activities**—what the agency does to reduce or eliminate threats.
2. **Preparation activities**—how the agency develops plans to respond to crises/incidents.
3. **Response activities**—what the agency would do, should a crisis occur, to save lives, protect property, and stabilize the situation.
4. **Recovery activities**—once a crisis has been stabilized, how the agency would return their system operations to normal.

Over a 2-week period, the study team members met with staff members from nine public agencies and operating companies in Belfast, Northern Ireland; Manchester, Liverpool, and Sheffield, England; and Lyon, Grenoble, Bordeaux, and Toulouse, France. (For a list of host agencies, see Appendix B.)

Transit Systems Studied—Overview

Belfast, Northern Ireland

Northern Ireland (Ulster) encompasses an area of 5,500 square miles. Belfast, the capital, is a major port and the main commercial and industrial center in the region. Belfast proper has a population of more than 300,000, and the metropolitan area has a population double that amount. The main economic activities in Northern Ireland are farming, fishing, tobacco growing, shipbuilding, and aircraft manufacturing. Unemployment is at an all-time low, and tourism is a burgeoning business.

Militant political groups, composed of only a small part of the total population, have been battling over whether to continue as part of the United Kingdom (Loyalists) or to merge with the Irish Republic (Nationalists). These two opposing groups break down along religious affiliation, with most Nationalists being Catholic and most Loyalists being Protestant. The majority of Northern Ireland’s residents are Protestant.

Most recently, this has led to 30 years of violence and terrorism (referred to locally as “the Troubles”). The worst of this has only recently ended as a result of an agreement among all involved parties leading to the formation of a government representing both groups. While most of the terrorism and bombings have ended, there still remain significant social problems related to poverty, politics, and 30 years of violence. This has led to continuing civil unrest, particularly among youths.

During the Troubles, public transit suffered considerable losses, both because of its symbolic status as a representative of government and because its vehicles are easy targets. Those losses included the death of 12 personnel, destruction of over 1,500 buses (either firebombed or taken and used as barricades), and the bombing and destruction of the Oxford Street transit facility. The Ulsterbus and Citybus employees killed in the course of duty during the Troubles have been memorialized at the Laganside bus center (see Figure 1).

Translink is the brand name of the integrated public transport operation in Belfast, which encompasses three operating companies: Citybus, Northern Ireland Railways, and Ulsterbus (the three operating companies have retained their independent legal status). Translink was formed in 1995, when the government announced major changes in the provision of public transport. The government’s goal was to encourage people to switch from private cars to public transport. Integrating the three companies was thought to be a key means of making public transport more attractive by

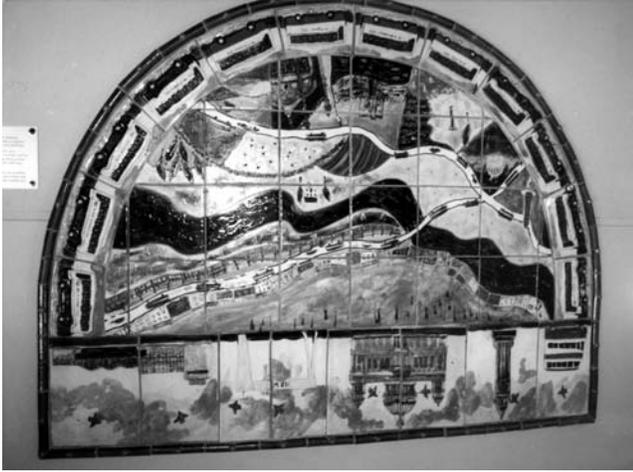


Figure 1. This ceramic panel, located in the Laganside bus center in Belfast, is a memorial to the 12 Ulsterbus and Citybus employees killed in the course of duty during the Troubles.

improving service through coordinated timetables, unified ticketing, feeder buses to railway stations, and the joint development of transport.

Translink is one of the largest companies in Northern Ireland, with approximately 3,500 employees and a budget in excess of £100 million. It provides more than 75 million passenger journeys each year. A common management structure oversees all operations and reports to a single governing board. The average age of the bus fleet is 8 years.

Citybus provides transit service within the city of Belfast, operating 60 routes with a fleet of 250 buses and a staff of 700. In 2001, Citybus carried 20 million passengers. Citybus operates at a deficit of approximately £1 million per year, which is offset by profits from Ulsterbus.

Ulsterbus is responsible for virtually all bus services in Northern Ireland, except for the city of Belfast. It operates long-distance, rural, town, and Derry city bus services. The company has 20 depots across the country, and it employs 1,250 drivers and operates 1,100 buses. Last year, it carried over 46 million passengers.

Northern Ireland Railways provides service chiefly in the Belfast suburbs and operates a long-distance line to the northwest of the province and across the border to Dublin. It carries almost 6 million passengers each year. In 2001, cross-border train service was curtailed on 89 days in response to security alerts (14 of which turned out to be real). When that happens, buses are used to transport people across the border.

Translink is somewhat of an anomaly, as it is the sole provider of public transit in Northern Ireland. All other large communities in the United Kingdom have multiple operators, a system encouraged by the country's push to privatization in the past decade or so. Having only one operator makes it easier to plan regionally and coordinate

activities and services with other agencies. It also facilitates a strong working relationship with the police, who in most other communities must partner with as many as 10 or 15 different transit operators.

A common management structure oversees all of Translink's operations and reports to a single governing board. The company is split into six divisions:

- Operations, which is responsible for all bus and rail services in Northern Ireland and cross-border service into Ireland; recreational, tourist, and education tours; private and contract hire services; Parcellink, a same-day delivery service; NIR Travel, a travel agency for rail vacations; Easibus, a local bus service using low-floor buses and operating hail-and-ride routes; and NI Railways Freight, which delivers containers on rail cars throughout Ireland.
- Marketing, which is responsible for the development, promotion, quality assurance, and communication of all Translink services.
- Human Resources, which is responsible for developing, implementing, and monitoring employment policies throughout the companies to ensure that the health, safety, development, and welfare of all staff is optimized.
- Finance, which is responsible for financial and administrative routines, corporate governance, and secretarial function.
- Infrastructure and Property, which is responsible for providing the infrastructure that enables the bus and train services to operate. This includes the track, signals, bridges, and bus and rail stations.
- Engineering, which is responsible for the maintenance of the Citybus and Ulsterbus bus fleets and the maintenance of Northern Ireland Railways rolling stock.

A metropolitan transport plan for the city of Belfast is currently being developed by the Department for Regional Development. The department was formed in 1999 with the aim of improving the quality of life for everyone in Northern Ireland by "maintaining and enhancing a range of essential infrastructure services and by shaping the region's long-term strategic development." Transportation strategy and transport policy and support are two of the department's key responsibilities.

The peace accord of 1998 brought some relief from the sectarian strife that had been the root of the violence in Ulster for three decades. The strife was between Protestants (Loyalists) and Roman Catholics (Nationalists) in the province. In 30 years, more than 3,000 people had been killed (including more than 2,000 civilians). Recent years have seen a decline in the "high-profile" terrorism that was prevalent in the 1970s. However, there is a pervading sentiment at Translink that these initiatives have meant "Peace, but not for bus drivers." Transit continues to be a particular target for isolated acts of terror in Northern Ireland, though these

acts are less often the result of organized acts of groups like the Irish Republican Army, and more often random acts of civil unrest conducted by youth under the direction of adults. In fact, civic officials pointed to Belfast's culture of "recreational rioting" among certain segments of the population. Attacks on buses and operators are relatively frequent, occurring predominately in lower-income neighborhoods located at "flashpoints" between Catholic and Protestant neighborhoods, with end-of-line layover points posing particular risks. The attacks include anti-social behavior, aggravated attacks, verbal abuse, and spitting. In many cases, the stonings and other attacks are made by youngsters under the age of 10, who are protected from criminal prosecution and who are often prodded into action by older siblings or acquaintances. Incidents in central Belfast are relatively rare.

Manchester, England

Manchester, the birthplace of the Industrial Revolution, lies in the center of the UK and is the nation's largest economic region outside London. The Greater Manchester metropolitan area includes the cities of Manchester and Salford and covers 1,286 sq km. The Manchester Ship Canal links the city with the Irish Sea at Liverpool, which is one of the country's busiest ports. When the study visited Manchester, it was in the throes of planning transit operations for the 2002 Commonwealth Games, which brought athletes from 72 nations and spectators from around the world to the city over an 11-day period just a few short months later.

Security was very much on the minds of the transit planners. In 1996, the Irish Republican Army detonated a bomb at the Arndale Shopping Center, injuring more than 200 people and destroying about 200,000 sq ft of retail space and 300,000 sq ft of office space in the city center. The event made evident the need for a city evacuation plan, and local bus systems are a key part of the plan that was subsequently developed.

The city is trying to encourage more people to use public transport, and since 1988 it has worked extensively to integrate different modes of transport. The Bus Priority Program has resulted in an impressive network of improved bus and cycle lanes and waiting areas for passengers.

Public transport in the United Kingdom (outside of London) is operated by commercial companies that decide what services to offer and what fares to charge. Those services do not, however, always meet the community's needs. Passenger transport authorities or local county councils must then step in and assume responsibility for providing necessary services.

The Greater Manchester Passenger Transport Authority determines public transport policy for the county. The Greater Manchester Passenger Transport Executive (GMPTE) is then charged with carrying out those policies, using funds provided by the Authority (which are collected from local taxes). The GMPTE either provides and manages the services itself or contracts for services with bus, tram,

and train operators. The GMPTE owns the bus stations, shelters, and stops in Greater Manchester and owns the Metrolink light rail system, which opened in 1992. It subsidizes concessionary fares (for elderly and disabled passengers) and pays to keep unprofitable services running in areas where they are needed most. It actively promotes public transport as a means of improving the environment and reducing congestion.

Greater Manchester has an extensive bus network served by 56 commercial operators. The study mission team met with representatives from one of those operators—First Manchester, a subsidiary of First plc. First plc is a UK-based passenger transport group with a fleet of 9,000 buses, a 23 percent market share, 30,000 employees, and a budget of £1.5 billion (\$2.4 billion). It is also one of the United Kingdom's leading train operators, and it manages Bristol International Airport, one of the United Kingdom's fastest growing regional airports.

First Manchester operates 235 routes and more than 100 school services from five garages in Wigan, Bolton, Bury, Manchester, and Oldham. It carries more than 76 million passengers and operates over 33 million miles per year, using a fleet of 850 buses (including double-deck buses, single-deck buses, minibuses, and low-floor articulated buses). It has two subsidiary companies: First Pennine, operating 50 buses, and First Rochdale, operating 26 buses.

Liverpool, England

Liverpool, with a population of 510,000, is a major port city stretched along the Mersey River estuary. The port handles 25 percent of all container traffic between the United Kingdom and North America. The waterfront area, home to the rejuvenated Albert Dock, which includes the Beatles Museum, draws millions of visitors each year.

Merseytravel is the name of the Merseyside Passenger Transport Authority and Executive. It coordinates public transport and works with private bus and rail operators to provide transport in the county of Merseyside, which includes Liverpool. It subsidizes services that bus operators find unprofitable to run, and it provides reduced or free fares to elderly and disabled passengers. Merseytravel provides staffed and unstaffed bus stations, more than 6,000 stops and shelters, interchanges, and layover facilities.

Arriva North West serves Merseyside, Greater Manchester, West Lancashire, Warrington, and Halton. The company runs 1,000 buses on more than 200 local bus services from its 12 depots. With a budget of almost £100 million, it is one of the largest bus operators in the area, and with a staff of 3,500, it is one of the major employers in the region.

Arriva is the second largest transit operator in Europe, operating 10,000 buses in 6 countries and carrying over 1 billion passengers annually. In Liverpool, this operation consists of Arriva Merseyside, which operates just under 1,000 revenue vehicles on 200 routes with 3,500 staff and 12 depots.

Sheffield, England

Sheffield is England's fourth largest city, with a population of 475,000. Located at the eastern end of the Peak District (a national park), the city is home to two universities.

The South Yorkshire Passenger Transport Executive (SYPTE) pays for bus services that would not otherwise be offered because they are not commercially viable. It also funds bus service for students. The South Yorkshire Local Transport Plan sets out a strategy for the development of an integrated transport system that would not only meet the needs of the people of businesses in the area, but also be affordable, accessible, reliable, safe, well publicized, and easily understood. The ultimate goal: to make bus service the travel choice for all. The bus strategy is being implemented through a partnership of the South Yorkshire Passenger Transport Authority, the SYPTE, bus and community transport operators, district councils, and the South Yorkshire police.

First Mainline is a leading bus operator in Sheffield, Rotherham, and Doncaster. It operates 640 buses and 4 depots and carries 93 million passengers each year in Sheffield. Its "Overground" is a network of high-frequency buses.

Security incidents in Sheffield have been on the upturn over the past year, primarily focusing on passenger confrontations and road rage. Weapons have also become more prevalent in these confrontations. Instances of rock throwing and other assaults on buses are showing an increase. As in Liverpool, school runs are particularly problematic, with some type of security incident an almost daily occurrence.

Lyon, France

Lyon, lying between northern Europe and the Mediterranean coast, is located in the heart of the Rhône-Alpes region, at the confluence of the Rhône and Saone rivers. The city covers 18.5 sq mi and has a population of 450,000. The metropolitan area has a population of 1.2 million. Each year, Lyon attracts a great number of visitors for business and tourism.

Sytral (Syndicat Mixte des Transports Urbains de l'Agglomération Lyonnaise, the trade union of transport in the Rhône/Lyons region) is charged with providing transit services that allow the people of Lyon to move "under the best possible conditions." It supervises the provision of public transport, which is marketed under the names TCL (Transports en Commun de Lyon) and Optibus. The Lyon public transport network consists of 100 bus and trolley lines, as well as two tram lines, four subway lines, and two funiculars. More than 1 million trips are carried daily.

The Société Lyonnaise des transports en commun (SLTC, the Lyon Company of Public Transport) a subsidiary of the group Keolis, operates the TCL bus service under a franchise with Sytral. SLTC has over 4,000 employees working in seven different transport modes. According to a recent

survey, 93 percent of its customers are satisfied with the quality of services provided on the bus lines.

Like Manchester, Lyon is a relatively frequent host to events on the world stage, such as the World Cup and G7 Conferences, in addition to local and regional events that host tens of thousands of visitors. During the early 1980s, Lyon was also home to an Islamic Terrorist Cell and narrowly escaped several major acts of terrorism. This operating environment has led SLTC to segregate its security functions, with one function managing day-to-day issues, and another (heavily involved in local coordination) taking responsibility for its response to major events.

Grenoble, France

Grenoble, site of the 1968 Winter Olympics, is the capital of the Dauphiné region. Many large companies are headquartered there, and it is home to the second-largest community of research scientists in France. The 23 communities making up the Grenoble-Alpes Metropole work together on matters relating to development, the environment, and transportation.

The SMTC (Syndicat Mixte Transports en Commun, the mixed trade union of public transport) is the organizing authority for transport in the Grenoble region. Semitag (Société d'Economie Mixte des Transports en Commun de l'Agglomération Grenobloise) has been responsible for Grenoble's public transport system since 1975, operating under a contract to SMTC. Semitag provides service on 15 bus routes and 3 trolleybus lines, which operate in an area measuring 212 sq km and containing a population of 375,000. In 1997, Semitag carried 24 million trips and provided 10.2 million vehicle-kilometers of service. Semitag is 65 percent owned by SMTC. The system employs approximately 1,200 people. TAG (Transports de l'Agglomération Grenobloise) is the brand identity of the public transportation system.

As in many of the areas observed, most security incidents are initiated by offenders in their teens and younger. Although frequency of incidents appears no higher than other French systems, several of these incidents have been severe, including shootings at buses and a petrol bomb that destroyed a bus.

Bordeaux, France

Located about 100 km from the Atlantic Ocean and at the lowest crossing point of the Garonne River, Bordeaux served briefly as the capital of France in three difficult times (during the Franco-Prussian War, at the beginning of WWI, and for 2 weeks in 1940). It has a population of 210,000 within its borders, but the metropolitan area's population is 650,000.

Bus services in Bordeaux are provided by Connex, a subsidiary of Vivendi Universal. Connex, operating under the moniker CGTE, has an 8-year contract to provide public transport services in the Bordeaux metropolitan area. The

company employs over 1,700 people and operates 558 buses over a 1,050-km network of 62 lines. The company also operates a new light-rail line in the city. Each year, Connex carries almost 62 million passengers in the Bordeaux metropolitan area.

The Bordeaux Metropole, which consists of 27 communities, sets the transport policy for the region. It decides on the route network, sets fares, and pays for major investments. Connex manages this network, advises the Metropole on system operation, manages fare collection, and pays for light investments. Contractual obligations for Connex include financial standards (including ridership and fraud rate targets), quality standards (i.e., on-time performance, customer satisfaction, and vehicle breakdown rates), and various certification activities, such as ISO standards for maintenance.

Toulouse, France

Toulouse is one of France's fastest growing cities, spurred on by its high-tech industries and universities. The city, with 700,000 inhabitants, is located on the banks of the Garonne River, close to the Pyrenees and halfway between the Atlantic Ocean and the Mediterranean Sea.

The SMTC for the Toulouse area represents the city of Toulouse, 52 surrounding towns, and Haute-Garonne. SMTC sets transport policies and fares and grants concessions for bus and metro operations. SEMVAT (SA d'Economie Mixte des Transports Publics de Voyageurs de l'Agglomération Toulousaine) is the concessionaire appointed by SMTC to operate bus services in Toulouse and the surrounding area. It has 1,700 employees. Its fleet of 452 urban buses and 66 interurban coaches carries 30 million passengers each year over a network of 53 urban routes and 22 interurban routes.

Despite Toulouse having a relatively high crime rate, the SEMVAT system is perceived as safe and is among the leaders in France with respect to low rates of security incidents. Its typical security issues do not differ significantly from the other systems (particularly those in France), but it had the misfortune to suffer a catastrophic event on September 21, 2001, that forced it to enact its most comprehensive security response ever and to look at all aspects of its response plan.

At 10:17 a.m. on September 21, 2001—just 10 days after the terrorist attacks in the United States—there was first one explosion and then another at a fertilizer chemical plant in Toulouse, next to SEMVAT's Langlade Bus Depot. These explosions caused total panic throughout the city as everyone assumed it was a terrorist attack. There were vapors in the air that people feared might be toxic. Everyone tried to leave town at once. Regular telephone service did not work; only mobile phones were effective. Fire and police personnel had a very difficult time reaching the scene of the explosions, taking an hour to get there and organize the response. The Langlade Bus Depot, which also housed SEMVAT's administrative headquarters, and more than 100 SEMVAT



Figure 2. More than 100 SEMVAT buses were destroyed by the explosion at the chemical plant adjacent to its Langlade Bus Depot.

buses were destroyed (see Figure 2). Hundreds of people were injured, and 60 people died that day.

SEMVAT had established procedures to be used in emergencies, but not one of this magnitude. Subway service was immediately stopped after the explosions. The subway command post disseminated audio messages to subway stations telling passengers to evacuate. When the explosion occurred 400 buses were operating. Bus service nearest to the explosions was halted; buses were abandoned and drivers fled. Passengers walked home.

By 1:00 p.m. all SEMVAT managers were at the subway command post to set up a crisis center. The SEMVAT crisis center established communication with the Préfecture's (regional government) crisis center and other crisis centers in the area. Ten managers with decision-making power constituted SEMVAT's crisis center. They met to manage the situation, do damage assessment, define the problem, and develop a response action framework. Mobile phones were available; computers were not. SEMVAT's immediate goals were to ensure the safety of SEMVAT employees and passengers and to resume service as quickly as possible.

Communication to the public and employees is essential during such an emergency. It was decided that one SEMVAT person would communicate the transit situation to the general public. The SEMVAT representative, the communication manager, went to the media, television, radio, and press, to get the message out to the public. SEMVAT asked the media to publicize one telephone number for employees and another telephone number for passengers. SEMVAT staff recalled that media interest was extremely high, but suggests that one should organize the information to be conveyed, anticipate questions, be informative, use precise briefing points, and do not get overwhelmed by the pressure.

The SEMVAT crisis center was quite concerned about SEMVAT employees' well being. SEMVAT used employee

telephone numbers to contact employees and to gather them for the response to the crisis. SEMVAT contacted psychologists and established a crisis cell to help employees. Many people had a need to discuss what happened. Staff also looked to managers for guidance and reassurance. Some employees had not returned to work after 9 months; some psychological effects occurred immediately, some occurred much later.

Two hours after the explosions, the President of France arrived in Toulouse. Six hours after the explosions, telephone service was restored. Ten hours after the explosions, the Préfecture stated there was no risk of a dangerous chemical situation from the explosions. Twenty-four hours after the explosions, subway service was restored. One month after the explosions, 85 percent of bus service had been restored.

Bus systems throughout France sent buses to Toulouse to replace the 100 buses lost in the explosion. SEMVAT restored service to the busiest lines first. During the service restoration period, SEMVAT sent information to the neighborhoods to advise people about the bus services in their area. They concentrated on the most damaged neighborhoods first because they felt it was most important to communicate with these neighborhoods.

In retrospect, SEMVAT management said they had learned the following lessons:

- The crisis cell must control the situation, anticipate events, and keep everyone informed.
- Employees must be kept informed on a continuous basis.
- Trauma counseling must be provided for employees.
- Families of employees must be included in the information flow and counseling.
- Emergency plans must assume that computers will not be available.
- Be flexible—be prepared to change your plans.

Safety and Security Issues

European transit agencies all agree that there exists a potential for random acts of terror that will affect them, their systems, and their communities, but they have lived with this reality for decades, in some instances have experienced acts of terror, and have adapted themselves to it. On a day-to-day basis, they are seemingly more concerned about “routine” acts of lawlessness, which would have a direct and immediate effect on their personnel and services.

United Kingdom

Most of the security/terrorist problems involving transit operators are restricted to several low-income neighborhoods in Belfast. Bus hijackings are no longer common, but acts of “anti-social behavior” have increased (rock throwing, verbal assaults, spitting, etc.). British law holds that an individual who is 10 years of age or under is incapable of

forming criminal intent or of committing a crime. Consequently, they are not responsible for their actions and may not be prosecuted. As a result, many youth will attack a bus with impunity because there is no consequence to their actions. This also migrates into the issue of sectarian violence, where reportedly it is not uncommon for an adult (in the more lawless neighborhoods) to stand behind a child and hand the child stones and missiles to throw. In this way, maximum random violence can be achieved without personal consequence.

Citybus reports the following incidents in the most-recent 1-year period:

- 1,377 broken windows,
- 36 broken windshields,
- 23 robberies,
- 13 attempted robberies, and
- 65 assaults on staff.

The cost of windows alone averages £1 million (\$1.6 million) a year. Clearly, this has a significant impact on the “bottom line” of any for-profit provider of services.

The security problems in Manchester were similar to those in Belfast, including the anti-social behavior directed toward the drivers.

First provides transportation for local schools with its regular fleet of buses. This is the single most significant security issue confronting First. Videotapes from school bus trips showed children opening emergency exits and throwing things at passing vehicles and bystanders, forcibly breaking seat backs, scrawling graffiti, playing vicious and dangerous practical jokes (in one instance, starting a fire in the bus seat and then attempting to put it out before it got out of control).

In candid discussions with senior staff at First, the team was told many of the unacceptable behaviors of the older youth are not considered by the police and courts as assault. Rather, they are viewed as youthful indiscretions and misdirected exuberance.

In Liverpool, the problems and experiences of Arriva North West were very similar to those in Belfast and Manchester. Lawlessness was and remains a constant theme. Arriva experienced the following incidents within the period of January 2001 to January 2002:

- 575 broken windows,
- 62 assaults (weapons not involved),
- 58 thefts,
- 126 acts of vandalism, and
- 47 acts of violent behavior.

Most of these events (75 percent) involved damage to windows and seats. Arriva has recently experienced a spate of attacks and vandalism with air guns/pellet rifles, which pose a very real threat to drivers and passengers.

Arriva has also experienced many of the same problems with school children. In an attempt to change the culture that

makes these acts acceptable, Arriva employs school liaison officers (drivers who volunteer for additional part-time duty). Arriva management reported that they believe the program is having an impact on behavior of children on buses.

As with the other UK properties that our group visited, Sheffield's most pressing security problems center on anti-social behavior. First Mainline has conducted threat and risk analyses for their depot and has identified those areas where they are vulnerable.

In contrast to most of the other cities visited, the local authority and the transit providers do not enjoy high levels of cooperation. As a result, this leads to poor service, questionable infrastructure, reduced crime reduction efforts, and under-resourced transfer points. To further exacerbate the problem, the public does not view robberies and attacks on drivers as priority crimes.

First Mainline has estimated that school students/passengers are accountable for approximately 75 percent of the problems that they experience. It also estimates that graffiti alone is a £500,000 (\$800,000) problem.

France

The bus operators in France work in concert with their local governments, receive significant financial support from both the national and local governments, and do not face anywhere near the level of anti-social behavior that was seen in the United Kingdom.

French bus operators/drivers are categorized as public servants. The French Code provides for more serious penalties for assaults on or crimes against public employees. As a result, the French transit systems have a built-in legal mechanism that provides a modicum of increased legal protection for their drivers. In this area, French public transport drivers have a distinct advantage when compared with their British counterparts.

In 1978, the French government created a domestic anti-terror plan called Vigipirate. Subsequent to the events of September 11, 2001, the French government updated and upgraded the plan. The French transit operators are fully integrated into this plan and are full participants.

Lyon's SLTC has conducted a risk and threat assessment and has put in place security measures. These measures are mainly composed of heightened awareness by personnel to look for out of the ordinary or abandoned items on vehicles and CCTV cameras mounted in stations and at stops. On-board cameras are not currently used extensively in France. SLTC is, however, planning to install cameras in all of their buses at the rate of 60 buses per year (three cameras per bus).

Over the past year, 12,000 incidents across all modes of transportation have been reported to SLTC, of which 8,500 were classified as minor incidents. Minor incidents involve no injury. The preponderance of the remaining issues was less minor, but still not what would be considered major.

Many of these led to citations, court appearances, and fines. Very few actually led to jail time.

The following offenses and percentages were the major contributors to SLTC's crime statistics:

- Vandalism—25 percent,
- Rock throwing—15 percent (decreasing),
- Violence or assault against an operator—6.5 percent, and
- Verbal assault—7.5 percent.

Approximately 3,500 of the incidents tracked by SLTC were reported to the police, and almost 80 percent of these involved theft (primarily pickpockets).

Over the past 4 years, SLTC has observed a 15 to 20 percent downturn in all incidents, but a slight increase in bus-related incidents.

Semitag has a grant from the French government to increase employment opportunities for the unemployed within the Grenoble community. New hires are predominantly employed as prevention agents, providing a visible presence on buses and trams and in stations, deterring fare fraud and evasion.

Semitag has recently conducted a threat assessment of its system and facilities. Over 65 percent of all incidents are related to youth crime. In response, Semitag has developed an aggressive education and awareness program within the local schools.

Semitag reported the following incidents in 2001:

- 253 threats and assaults against drivers and staff,
- 404 crimes against property,
- 88 crimes against passengers, and
- 536 minor offenses (predominantly verbal assault).

Semitag staff reported that preliminary figures for 2002 indicate a reduction in these numbers.

Semitag's most recent major event/threat was a Molotov cocktail attack against a bus in 1999. This attack destroyed the bus and traumatized the driver.

In terms of security, Bordeaux faces the same challenges as most other European cities. Connex prides itself on a very low incidence of security issues relative to other French systems. As in most of the systems visited, anti-social acts by youth and confrontations with passengers form the most significant security risk.

Technically, security is the responsibility of the national police. In reality, effective security involves everyone and requires extensive coordination. There is pending legislation in the French National Assembly to require the development of security plans for all guided transport systems.

Within CGTE, 10 percent of operational personnel are security personnel. Approximately 5 percent of CGTE's payroll is dedicated to security and training—higher than the 1 percent required by law.

CGTE has developed a metric to track incidence of violence within the system. This “violence factor” is computed by dividing the total number of attacks by the total number of trips. An assault is defined as “an incident that causes drivers to stop operating the vehicle (immediate interruption of service).” CGTE has a zero tolerance for these events.

The average violence factor for the top 20 systems in France is 1.85 assaults per million trips. The average in Bordeaux is 1.60, which equates to 98 assaults. Of these assaults, approximately 95 percent are directed against drivers and security personnel. Between 1999 and 2001, Bordeaux experienced a twofold increase in reported assaults on passengers. This increase is attributed to a more rigorous reporting system rather than any actual increase in events.

CGTE’s priority is emphasizing prevention measures. To this end, extensive training takes place for their drivers. Glass breakage is a minor issue; however, graffiti has become a major problem. All buses have radios and maintain communications with central dispatch. Buses are also equipped with video cameras. Every bus has a panic button for the driver. CGTE employs/uses seven security teams within its system.

Bordeaux has experienced a decrease in monetary losses from criminal acts, a greater feeling of security by their personnel, a decrease in driver turnover, and arguably better service as a result.

In discussing safety and security concepts, the staff of SEMVAT shared that Toulouse is rated number-one in France in terms of security. The system focuses primarily on prevention and repressive (deterrent) measures. SEMVAT has adopted a policy of zero tolerance for deliberate acts of violence or inappropriate behavior.

SEMVAT has an extensive and dynamic security organization and structure. Staff receives significant training in conflict management and resolution and post-assault training. In the event of a bus incident, a two-person team in a marked car will respond immediately to take appropriate action. SEMVAT has committed to supporting their drivers fully throughout any legal process.

As a result of these aggressive actions, the company has achieved some notable results. Assaults number approximately 25 per year systemwide. The fraud rate is less than 3 percent, while the average for all French public transport systems is 16 percent. The cost of vandalism in Toulouse is one-tenth that of the French average. These successes are attributed to a significant human presence throughout the process. SEMVAT feels that technology is an important tool, but that it is not paramount and certainly does not replace people.

EMERGENCY AND EVACUATION PLANS

It is common in Western Europe for transit agencies and local/regional governments to have emergency and evacuation plans. Many of these plans are confidential for security

purposes. A typical transit emergency plan, without attribution, is described below. A representative evacuation plan is then discussed, with emphasis on external communication.

The emergency plan outlines what actions transit personnel should take during an emergency on the bus system, including bus stations and bus garages. There is a strong emphasis on internal communication; notification of the event and its impacts to appropriate personnel and the public; command and control of the incident; specific emergency procedures to follow during major and minor incidents at bus stations and bus depots and evacuations of bus facilities, shopping areas, and center city; information about bombs, fires, and suspicious packages and people; and documentation of the incident and subsequent debriefing about the event. Emergency telephone numbers of key transit personnel, police, fire, ambulance services, and hospitals are listed. Relevant maps are provided to address bus circulation during a variety of incidents. The emergency plan is a written document provided to appropriate personnel.

The evacuation plan is a comprehensive guide about mass evacuation that normally would be managed by the appropriate government entity; the affected transit agencies would typically be directed by the government entity managing the evacuation. The evacuation plan includes all phases of the evacuation: the event; warning, informing, and moving people; shelter and services for evacuees; and recovery, reconstruction, and return. Many entities must work cooperatively for the evacuation to be effective.

An important component of the evacuation plan is information about when an evacuation is warranted; there is a discussion of the benefits of shelter in place as an effective response in many emergency situations.

During an evacuation event, it is important to communicate to many audiences, such as potential evacuees, nursing homes, hospitals, health centers, schools, transportation officials, emergency shelters, large employers, friends and relatives of evacuees, and the media. The communicated message should include who should evacuate, when they should do so, where evacuees should go, and what they should bring. Normally emergency personnel, such as police officers and firefighters, would inform evacuees through several means: door-to-door calling with loudspeakers; telephone, including automatic calling systems; television and radio; leaflet drop; teletext and internet; organizational public address and email systems; and industrial sirens. In order to overcome barriers to effective communication, the following should be considered: use a range of communication methods, ask people to notify neighbors, address known high-risk areas with specific needs, involve local authority figures early, use generic warning messages and instructions in various languages that are appropriate to the area, and use text messages on television in a variety of languages.

During most evacuation events, the emergency services press officer (e.g., police press officer) would coordinate dissemination of information to the media during the emergency phase of an evacuation. In larger evacuation events,

the appropriate government press officer would take the lead with the media, in close liaison with emergency services press officers. All organizations, including transit agencies, responding to the emergency event should coordinate their media response to ensure that a coherent picture emerges. Individual organizations may deal directly with media regarding their own functional responsibilities, as long as the overall media coordinator is aware and there is agreement on the message and information to be released. Individuals in organizations, who are approached by the media for information or an interview, should always refer the inquiry to their organizational press officer or the overall press coordinator.

Media are an important ally in getting information across to the public in an evacuation. The specific information strategy will depend on circumstances. Means of communicating with the general public during an evacuation include television, radio, and newspapers; leaflet distribution; web-sites; and ceefax/teletext.

The involvement of the transit agency in emergency plans varies from one city to another. For example, First Manchester plays a big role in the area's Emergency Contingency Plan. The Manchester Passenger Transport Authority defines the company's role and responsibilities in the case of an emergency. Drivers receive training in passenger evacuation. They have chosen not to conduct large-scale evacuation drills because they would prove to be too disruptive to the system. However, they do conduct two fire drills a month at the main station. One official remarked that it is impossible to plan for every catastrophe that could possibly occur on the system. Instead the focus is on prevention and plans are in place to deal with unusual events as they arise.

In the post-September 11 world, SEMVAT made a serious appraisal of its vulnerabilities. Part of this was brought about by the high concentration of hi-tech and aerospace industry in the Toulouse area. They initiated local action prior to action from the national level. Using Vigipirat as a baseline they considered the following contingencies:

- Sarin (non-persistent nerve agent),
- Explosives,
- Suspicious parcels,
- Suspicious people,
- Systematic inspection of vehicles and facilities, and
- Ventilation systems.

They also came to the conclusion that their drivers are the first line of defense.

MARKETING, COMMUNICATION, AND EDUCATION

The topic of marketing, communications, and education is relatively broad when applied to security issues. This section of the report will focus on the impact of security events

on ridership/rider retention, efforts to engage specific communities in prevention activities, post-incident public and employee communication, and the treatment of employees who have been victims of security incidents.

A discussion of environmental factors is in order, because they are determining factors in both security risks and system responses.

Specific Perceived Security Risks—Belfast faces daily security occurrences due to the history of violence in that city. Its major security risks are predictable and ongoing, facilitating a standard response that need not be drilled or rehearsed—actual events are a part of daily life, and that response tends to be carried out by line personnel. In contrast, cities like Manchester and Lyon see a much larger exposure from major terrorist events surrounding “world events” taking place in these cities. As a result, preventive measures and planning encompass larger segments of their respective organizations and include significant representation from outside agencies.

History of the System—In many ways, a system's history with security events appears to work for or against it. Belfast's overall culture of gang attacks on buses and Sheffield's frequent student-related assaults/vandalism appear to have created an acceptance that a certain level of “security problem” is to be expected. By way of contrast, cities like Toulouse and Bordeaux believe strongly in “zero tolerance” approaches toward security.

Legal and Regulatory Framework—The legal and regulatory framework as applied to public transportation is a key determinant of security response. In Northern Ireland, young offenders are essentially released from any sanction for violence or vandalism. As a result, older “instigators” make extensive use of these youthful offenders to attack transit resources without fear of retribution. In the United Kingdom, the deregulation/privatization of public transport appears to have created an environment where policing resources do not work with or treat incidents on public transportation any differently than any other private entity and, in fact, believe that the primary responsibility for security response rests with the transit operator. In contrast, France's nationalized police force has fostered coordinated approaches to security between police and transit operators, and that nation's treatment of transit personnel as “civil servants” carries with it much harsher penalties for attackers than they would face for similar crimes against other persons.

Financial Resources Available—There was wide variation in the level of funding available for transit in general and security specifically. Belfast, in particular, was faced with severe financial constraints (coupled with regulatory restrictions on service contraction) that severely limit the comprehensiveness of its response. As an illustration, its command center for bus operations (directing approximately

1,500 buses) was staffed by only two people during the peak period. This level of staffing would be typical of an operation 5 percent the size of Translink in the United States. By contrast, contracts in France (backed by financial resources) dictate a level of security staffing approximating 10 percent of the total workforce.

Culture of a Nation or Region—The culture of an area (as reflected in its laws and attitudes) led to very different responses. Northern Ireland’s culture of “recreational rioting,” gang activity, and severe mistrust of police have a profound impact on the security response Translink can have. The youth culture of the United Kingdom, which appears to reflect an attitude that “public property belongs to no one,” influences the level of vandalism in that system. In France, a proclivity toward centralized functions had led to a strong national policing function that appears to work very effectively with the urban transit operators. On the other hand, French attitudes toward privacy severely restrict the application of video-recording techniques in security applications, compared with what is practiced in the United Kingdom. In Northern Ireland, a “tough guy” culture significantly reduces the emphasis placed on (and usage of) employee counseling activities following a significant security incident, such as an assault. Finally, one of the most profound observed differences between the two nations was an emphasis on “technical” approaches in the United Kingdom and “people” approaches in France. In the United Kingdom, the emphasis was on closed-circuit cameras, assault shields, and projectile-resistant glass. In France, more emphasis was placed on employee selection, training, and communication.

Philosophy of System Management—Based on site visits and meetings with various transit system managers in the two nations, there were very distinct differences in philosophy that varied from resignation that a certain level of violence/damage was inevitable and should just be expected to a very convincing belief that one occurrence was too many. The general regard with which management held its line-level employees also appeared to dictate particular strategies.

Labor Environment—On the flip side of (but related to) system management philosophy was the labor relations environment of each system. This umbrella covered many of the security plans and responses of both management and their line-level employees. In particular, communication of security issues among the workforce varied not only among the nations visited, but also among the systems within each nation.

All of these environmental factors appear to have had a significant impact on plans that were developed, as well as actual responses to incidents. This should be instructive in the United States, because these are all issues that will vary from system to system.

Ridership and Rider Retention

While Translink in Belfast reports that its market share has eroded from 30 percent in the 1960s to less than 10 percent now, it also indicates that trends endemic to the United States, such as increased auto ownership and suburbanization, are the major culprits, not particularly transit security. When Translink does experience a service disruption due to a security incident, the disruption tends to be localized in nature. Because many of the areas where these incidents take place are near the ends of bus lines, this further limits impact. Translink personnel also report that ridership tends to return to “pre-incident” levels within 1 to 2 weeks of service restoration.

All systems pointed to a general avoidance of extensive communication of specific security issues to the general public. Almost universally, there was a belief that ridership losses due to security could become “self-fulfilling prophecies” by creating a perception of insecurity that would not otherwise exist. This point was highlighted in Manchester, where First Transit focuses its passenger messages on overall safety and awareness, not issues associated with specific threats. This approach leads to many communication materials (bus cards, brochures, shelter signage, etc.) that highlight general security awareness activities that are not specific to transit, as well as reminders about criminal penalties for attacks on passengers and staff and for damage to equipment. Examples include Belfast, where interior bus cards notify patrons of rewards of up to £1,000 (\$1,600) for information leading to the conviction of anyone for assault, vandalism, and so forth.

Arriva in Liverpool also emphasized that transit system employee efforts to enhance security with a heavy-handed presence can be counterproductive, if passengers who would not otherwise be fearful get the impression there are larger risks than they thought. Liverpool’s node-based system makes bus stations very active hubs, where tens of thousands of passengers board each day. Although their stations are actively staffed by security personnel, Arriva trains their security people to act more like customer service representatives. Toward this end, security staff are taught to “assume the best first.” If they see someone who looks suspicious (i.e., loitering), they are to approach the individual or group as someone who is lost or needs information. It is only after an employee becomes convinced that the “positive” reasons for the behavior are not valid that he or she begins to address the issue on the basis of assuming more sinister intentions.

In general, systems that reported more localized, lower intensity security incidents (e.g., Belfast, Sheffield) indicated that negative ridership impacts were lesser in both intensity and duration, with normal ridership patterns returning within a week or so of service restoration. This contrasts with areas that reported experience with severe, unexpected security incidents, such as the 1996 bombing in Manchester’s central business district or the fertilizer plant explosion in Toulouse in 2001. In both cases, these systems

reported significant ridership losses immediately, with extremely slow recovery of one or more years to pre-incident levels.

Engaging Communities in Prevention

Belfast's "Bee Safe Bus" focuses its efforts on very young children (6-7 years old). Recognizing that almost all security incidents are committed by persons under 20, and these children are often targeted by older radical elements to commit crime in light of liberal child crime laws, the effort here is to influence behavior before they reach the age where problems become prevalent (as young as 8). The Bee Safe program was started in September 2001 by a bus depot manager as a 3-month pilot program to discourage children from breaking windows. The program, complete with mascot (a bee, known as "Snart" ["Trans" in reverse]) and a special bus outfitted with video-playing equipment, targets 8, 9, and 10 year-olds. A male and a female driver go together to schools to encourage safety on public transportation. The Bee Safe pilot has been so successful that it is being continued indefinitely. Taking the specially outfitted Bee Safe bus into neighborhoods where incidents are prevalent, the program seeks to give a human face to Translink in the eyes of the child. They are reminded that it is their parents who pay for damage to buses through higher fares. As props, the Bee Safe bus carries various projectiles (e.g., rocks and bricks) that have been thrown at buses (this being the primary security problem in Belfast). One of the operators might hold such an object above a child's head and ask how they think it might feel if it dropped. The intent of the program is to have the children make a personal connection with the participating operators, so they might view the driver of a bus at which they could throw a rock as a friend—or at least not as an enemy.

Because so much of Belfast's issues surround the Loyalist/Nationalist issue, specific measures have been engaged to minimize this exposure within the system. Specifically, Translink has the ability (negotiated with its Trade Unions and the Fair Employment Commission) to randomly assign operators to depots, rather than basing selection on seniority. This was in response to several depots approaching a makeup that was close to 100 percent Loyalist (Protestant) or Nationalist (Catholic). If this were to occur (and become known) it would be much easier for attacks to be targeted. In addition, Translink has a policy that all depots operate in all neighborhoods, making it even more difficult to identify the background of a particular operator.

In contrast to other European cities, where major threats of service disruption exist in the central business district, Belfast's incidents and service disruptions are much more localized and neighborhood-oriented. Since Translink will not operate in areas experiencing civil unrest (with resulting service interruptions in lower-income neighborhoods that can last one or more weeks), general dissatisfaction with the loss of service has led to the creation of the SOS (Save Our

Service) campaign. The SOS campaign is a public awareness program intended to focus attention on the effects of violence on public servants in particular neighborhoods. Since attacks on public employees are not unique to transit (police officers, firefighters, and emergency medical personnel are also victimized regularly), this program is a cooperative effort among all such response agencies. The program aims its message to youth between 11 and 13 years old and their parents, and it sends subtle messages to parents, asking "Do you know what your child is doing tonight?" Northern Ireland's culture of distrust for governmental entities makes this a very challenging message to convey, as people (particularly in lower-income neighborhoods) will resist any government effort to manipulate their behavior.

The SOS program focuses on brightly colored posters and memorable messages. A pilot program was initiated in Antrim, a socially challenging region north of Belfast in May of 2002. The program was accompanied by very public announcements by respected community leaders and extensive media coverage, with a particular focus on two schools in the area. Although it is premature to gauge long-term results of the program, during the month following its introduction there were no incidents of assault against Translink employees, and community leaders sensed the beginning of a change in attitude.

In most of the areas studied, the largest share of security concern surrounds school-aged youth, particularly in the after-school period. In Sheffield, where vandalism and assaults on school-related service are an almost daily occurrence, major transit operators have collaborated with the school system to create the SAFE (Supporting a Friendly Environment) program. To date, 52 of the region's 75 secondary schools have signed onto the program, and at its core are close relationships and assigned liaisons between the transit systems and schools to identify offending youth. Because the majority of Sheffield's fleet is equipped with onboard video-monitoring equipment, this segment of the program identifies a contact in each school who knows most of the students, so individuals caught on video perpetrating an illegal act can be identified and located.

The second piece of the SAFE program is more awareness-oriented, providing schools with an incentive to improve security performance. For each day that a particular school is in session without a student-perpetrated security incident, it is awarded a "bus mile." Schools can accumulate up to 200 such bus miles per school year, which can be redeemed for special trips they would like to take.

Semitag in Grenoble also reported high incidence of school-related activity, as well as a number of initiatives aimed at reducing assaults and vandalism by students. Again, like several of the systems observed, Semitag assigns operators and other employees to visit schools to conduct educational programs on proper behavior. In addition, they employ teen actors in employee training to instruct operators on communication techniques. Within areas that experience disproportionate shares of security incidents, Semitag con-

ducts extensive meetings with neighborhood groups, sponsors neighborhood festivals, and communicates with neighbors relative to the impact of issues such as violence and fare abuse on their service.

Post-Incident Communication

In Belfast, communication of incidents is severely restricted. In fact, when an incident occurs on a bus route, one of the primary objectives is to localize it to keep it from impacting overall system operations. However, the impact may be somewhat self-defeating, as the system's open microphone radio system assures operators of hearing the initial report of an incident, without any follow up. In fact, immediately after an incident is reported via this system (Translink's radio system is only intended for emergency communications, not routine operational issues), responding inspectors turn to a private channel for their response. This has created an environment that allows the rumor mill to run freely, and there is some resentment among other operators over the lack of information. Occasionally, Translink will promote media coverage of the human side of transit violence, with lengthy newspaper stories documenting the negative quality of life experienced by riders and employees who have been victimized.

The labor environment in Belfast and lack of general communication of security results led to the creation of the "Drivers Protection Working Party." Initially created by the trade union to advocate on behalf of the operators for greater security, this group has evolved into a more cooperative effort between labor and management. At present, it consists of a committee from operating departments, Translink engineering, and union representation covering a wide spectrum of issues, including bus design school liaisons, and planning for events with significant opportunities for violence. In fact, the Bee-Safe Bus was a creation that grew from the Drivers Protection Working Party.

A unique program in Liverpool that may be categorized as "post-incident" communication actually leads to improved levels of preparation among employees who operate in a particular area in the future. Arriva deploys a team of three or four employees in each depot to complete "risk assessment questionnaires" for each route. These questionnaires are then printed into route guides that are handed out to anyone operating a particular route. Since the questionnaires are completed by operators with extensive experience on a particular route, their information can highlight particular trouble spots, such as stops where passenger/employee assaults are more common or hiding spots that rock throwers find attractive. The data sheets that result from these questionnaires contain detailed information (including photos, when appropriate) relative to the characteristics of each route. The risks assessed include not only security risks, but also normal operating hazards.

Of particular interest is the follow-up communication conducted with employees with respect to the handling of

suspects/offenders. The deregulation environment of the United Kingdom lessens the perceived penalties levied on perpetrators of violence against public transit, as it is perceived just like "any other private business." First Transit and the other private operators reported ongoing efforts at the legislative level to change this mindset and strengthen penalties against offenders.

Among all operators, First Transit in Sheffield was possibly the most aggressive about internal communication of security incidents to employees. Whenever a significant security incident occurs (e.g., assault, gang violence), an information bulletin is posted in all operating locations. First Transit's management in Sheffield highlights three reasons for such aggressive communication. First, they believe that in the absence of any information, employees will make something up. Second, they want to demonstrate to employees that management has a genuine concern about the problem, and is not simply ignoring it. Finally, management reports that (as often as not) the operator is a contributing factor in an assault through their words or actions with an irate passenger, and they want to subtly communicate the impact of attitude to their employees.

Semitag in Grenoble was unique among the operators in having pamphlets available for both passengers and employees who had been victims of assault. These pamphlets highlight procedures for reporting such incidents and telephone numbers for resource agencies available to help crime victims.

Connex in Bordeaux reported extensive post-incident communication and a strong working relationship with police and justice officials to follow security incidents through prosecution. Historically, Connex only knew what a victim reported to them. More recently, Connex has also been acquiring data from police and justice officials not only on the specifics of the incident but also on the "atmosphere" in proximity to the incident. This has led to a cooperative effort between Connex and law enforcement to address causal environmental factors. The environment in France appeared more conducive to this approach than in the United Kingdom, due to centralized police and transit operations. However, even in France, operators like Connex reported that interagency relationships work best when the relationship begins informally through personal contact and evolves into a more formal structure where participation is spelled out, information exchange is open, and gains are mutual.

Treatment of Employee Victims

Counseling of employees following assaults or other traumatic security incidents is relatively commonplace in Europe, as it is in the United States. Differences, however, do exist in various systems as to whether counseling is voluntary or mandatory.

In Northern Ireland, the culture (particularly among males) is to "get on with it" after an incident, resulting in Belfast's Translink adopting counseling relatively recently. Voluntary counseling only became available in the 1990s.

At the present time, mandatory debriefings following incidents are being considered, but are meeting some differences of opinion within the organization. Voluntary counseling is also made available to the victim's immediate family, and Translink maintains a series of "self-help" videos available to all employees at any time on topics related to incident-induced stress. Management reports that communication between counselors and management is becoming more regular, in order for the organization to learn more about patterns in employee wellness.

The issue of assault pay is one that carries some differences of opinion, at least in the United Kingdom (in France, this benefit is provided by the government). Most everyone indicates agreement that employees who are victims of assault should be compensated. Amounts vary, and there are concerns about abuse of assault pay provisions, as certain employees appear to be "victimized" more often than one would expect.

In some of the UK systems (Sheffield being an example), assault pay is only awarded after the actions of an employee can be definitively ruled out as a causal factor. Other factors that may influence the award and amount of assault pay vary by carrier and include requirements that employees stay with their vehicle (unless in danger of more grievous harm) and a condition that they return to work. For employees who are seriously injured in attacks, Sheffield pays their average wage for up to 1 year. First Transit in Sheffield is also unique in that their trade union pays each operator up to £1,000 if an assault results in 5 or more days off, requires hospital attention, and is reportable to police. This provision is insured by the Union, with premiums included in the dues charged to operators.

In Belfast, assault pay was introduced in the 1970s at the outset of extensive violence against the transit system. Originally, this pay was for physical attack only. Operators who had been attacked could collect their average weekly wage for the duration of recovery, based on the average pay for 13 weeks prior to the assault. In 1999, this benefit was extended to include non-physical (i.e., psychological) trauma, following an incident in which paramilitaries forced an operator to surrender his identification (including home address) and forced him to drive a bus with a bomb onboard to a specific location where it could be detonated, under threat of retribution against his family. Currently, for non-physical events, the first 2 days following an incident are automatically paid, and extended benefits of up to 4 weeks pay may be arranged, depending on the incident.

Manchester's approach is similar to Belfast in the amounts and duration of assault pay. However, and particularly given a drastically lower frequency of assaults on employees, First Transit closely monitors patterns of usage to identify potential abuse. Sheffield is similarly interested in potential abuse, and focuses much of its attention on training personnel in the appropriate manner in which to communicate with difficult passengers. System management in Sheffield believes that employees may be a contributing

factor in assaults, and in analyzing assault victims among employees, found that 40- to 50-year-old males with 20 or more years in the company and a particularly unwieldy personality type were much more likely to be victims of assault than other employees. This has led to awareness and training programs specifically targeted at this group.

External Communications

Translink officials are responsible for external communications to passengers and the public during incidents that disrupt Translink services. Members of Translink's Marketing Department serve as official spokespeople during the incident and coordinate dissemination of information to passengers and the public. These staff members issue press releases via email to radio and television stations post bulletins on the company's website, send press releases to local newspapers, and conduct press conferences.

Translink staff also contact police and community groups when incidents occur. During certain service disruptions, Translink inspectors and senior staff are sent to transit centers and key bus stops to advise passengers of major changes of bus service. During minor reroutings in troubled areas many passengers are aware of the route being moved from a troubled street to a nearby safer street. Translink staff has recently started to explore the use of text messages to mobile phones as a means of communicating with passengers during service disruptions.

Merseytravel in Liverpool realized that many of their transit partners, such as Arriva, were working hard to improve safety, but that many of these efforts were not fully coordinated with others and sometimes even redundant. As a result of these circumstances, Merseytravel initiated TravelSafe in 2002.

TravelSafe is a multi-agency effort to improve safety and security on the Merseytravel system. Merseytravel, Merseyside Police, transport operators, such as Arriva, Safer Merseyside Partnership, government officials, passenger representatives, and a representative from the Local Courts serve on the TravelSafe Board. This Board focuses on the strategic aspects of safety and security issues, obtains funding for safety and security initiatives and strives to maximize operational effectiveness of such initiatives.

In early 2002, TravelSafe developed and implemented Operation Bream on a selected bus corridor in Merseyside. This pilot project was intended to assess the actual level of crime/disorder and to provide reassurance to passengers. One reason for this initiative was market research showing 10 percent of passenger trips were not being made due to fear of traveling. Operation Bream involved intensive policing and revenue protection by Merseyside Police, Merseytravel, Arriva, MASS (Maritime and Aviation Security Systems, a specialized private security company with rapid response capability), and local traffic wardens during a 4- to 6-week period in the spring of 2002. During Operation Bream, 121 arrests were made; 513 people were stopped

and searched; 327 intelligence reports were filed; 18 fixed penalty notices were issued; fare payments of 24,334 passengers were checked, additional fares were levied, and some passengers were ejected from vehicles; 144 concessionary and prepaid tickets were withdrawn; and two school services were checked. This effort reduced verbal and physical assaults on bus personnel, reduced fare evasion, and resulted in an excellent passenger reaction. The media was not informed before initiation of Operation Bream but offered substantial positive coverage during this pilot project. Based on the results of this pilot, Merseytravel expects TravelSafe to be continued, expanded, and improved.

First Mainline, one of two bus operators in Sheffield, reports that driver and passenger assaults, vandalism, and stone throwing are the principal safety and security incidents in Sheffield. Officials estimate that school children participate in 75 percent of these incidents on First Mainline buses; passenger dissatisfaction leads to assaults on drivers, according to these officials.

First Mainline uses assault screens in the bus driver's area and closed circuit television to help reduce incidents and to apprehend and convict perpetrators. They are participating in the SafeMark initiative, an incentive program for schools to encourage appropriate behavior on buses by their students. Also, First Mainline, a member of First Group like First Manchester, encourages government officials in England to consider the American approach to school bus transportation. First Mainline is also working with local police to identify safety improvements at key points on their bus system.

Many of SLTC's safety and security efforts are applied to the entire TCL system. For example, there are 40 intervention technicians in the Prevention and Intervention Department who respond to incidents on the bus, rail, tram, school, and funicular services. These Intervention Technicians have police-like powers, but cannot arrest perpetrators or handcuff suspects. These personnel are mobile and uniformed. There is a separate department for fare evasion.

SLTC has three command centers, one for bus, one for rail, and one for trams. SLTC is currently considering establishment of one unified command center. The bus control center is equipped with computers and telephones to allow for tracking of buses using TCL's Visulys system, an early automatic vehicle location system with global positioning and wheel rotation technology. The bus control center has a direct connection to the police via a direct emergency line; individual control center workstations also have non-emergency direct telephone connections to the police. The bus control center is able to make announcements regarding a specific bus or all buses via a speakerphone system.

The driver's area on buses includes a telephone, secret alarm, hidden microphone, speakerphone for the driver, speakerphone for announcements from the control center, and small text screen. When a driver provides certain standardized information to the bus control center, Intervention Technicians and/or Police Officers will respond to the bus. If a driver puts on flashing emergency lights, police will

automatically assist such a bus. SLTC and the police have a positive working partnership.

Video cameras had been placed on 100 TCL buses by June 2002. Each year 50 additional buses and 60 trolleybuses will receive video cameras. Generally there are three cameras per bus, which are placed in strategic locations. SLTC also uses fake cameras on buses. A sign on the bus advises passengers they are being recorded. If an incident is reported on a bus, the appropriate video is retrieved. The video is reviewed simultaneously by a representative of SLTC and a judicial police official. The recording is then used by police and/or in Court. Recently, SLTC purchased a video recording system that allows them to use tape, CD-Rom, and diskette. Video recorded images may be retained for 8 days, unless there is a police investigation, which allows the recorded images to be kept for 1 month or longer if required by the police or Court system. Vibrations of the bus and high temperatures on the roof of the bus can cause problems for the video-recording system.

SLTC also devotes effort to collection and analysis of incident data in order to improve safety and security. Incident data is entered into a computer database and analyzed from several perspectives. An incident report is prepared every day and distributed within SLTC and to various police officials and municipalities. A monthly security meeting is held in each municipality in which SLTC provides bus service.

If the court awards money to SLTC for an assault, the company passes on the money to the person who was attacked. The law provides heavier penalties for crimes against transportation employees.

SLTC believes a major step in improving security is to eliminate fare evasion. In July 2002, SmartCards will be initiated on TCL service with funds provided by Sytral. SLTC will go to schools to brief students on how to behave on the bus system.

If an incident occurs which disrupts service, the bus control center makes announcements on appropriate buses to advise passengers of the situation. Announcements are also made at relevant bus stations. SLTC's Marketing Department emails a press release to all radio stations first, and then emails the press release to television stations and newspapers. SLTC also posts notices on its website about service changes.

Semitag employs 60 prevention agents, 30 control staff, and 10 Transport Police to provide safety and security on TAG. Prevention agents reassure passengers by such actions as handling minor incidents, riding the system when children get out of school, and reminding passengers not to smoke. Prevention agents are generally in their first job, do not stay long in this job, and are typically between 18 and 26 years of age. Semitag reports that 78 percent of passengers want prevention agents on the system, and some passengers want prevention agents to be more capable so they can handle major incidents on the system. Semitag trains prevention agents, controllers, and drivers how to manage

difficult situations. Drivers also receive training in human relations.

Semitag uses community and passenger outreach programs to encourage safe travel on TAG. One program utilizes Semitag employees as volunteers to go to high schools, primary schools, and other schools to conduct theatrical presentations and music contests to encourage proper travel by children. These employee volunteers receive 1 hour of paid leave for each hour of volunteer work. “Passeport” is a booklet distributed to students that is both fun and informative about proper transit use. Semitag produces and distributes to passengers a booklet outlining what passengers should do if an incident occurs while they are using TAG.

Semitag employs several means to inform the public about unexpected service changes. Bus drivers make announcements on buses, prevention agents go to major passenger points to tell riders about changes, and information notices are displayed at bus stops. For major events, television stations, radio stations, and newspapers are notified.

Connex Bordeaux indicates it has safety and security problems like other European cities, but assaults against drivers and other employees and against passengers are less frequent in Bordeaux than the industry average in France. Also, Connex Bordeaux reports very few stone throwing incidents.

Drivers receive stress reduction and conflict resolution training. Each driver receives 3 days of training every 3 years, including other training. All buses are connected to the bus control center via radios. Buses are also equipped with emergency buttons and alarms. A microphone near the driver allows the bus control center to listen to what is happening on the bus.

Connex Bordeaux has recently conducted a pilot program of using cameras on 20 buses. Cameras are visible to passengers and notices about cameras on buses are prominently displayed. Very few incidents occurred on these buses. Both drivers and passengers like cameras on buses, but some others debate their use. Connex Bordeaux plans to equip all buses with cameras over a 3-year period.

Connex Bordeaux and the police have an excellent working relationship. When a driver reports an incident, the bus control center notifies both Connex Bordeaux security forces and the police about the details of the incident. Both Connex security and the police proceed to the location of the incident. Upon arrival, the Connex security team attends to the passengers, driver, and the bus, if necessary. The police will apprehend the suspect. Fire emergency personnel would care for anyone with injuries. Under certain circumstances, the driver will be taken by Connex security to a hospital for psychological counseling. Connex Bordeaux has an arrangement for this counseling service with a hospital. The Connex security team includes a replacement driver to continue the bus service. Connex Bordeaux tells the other drivers the details of driver assaults and advises them whether the criminal has been arrested. Police arrest over 70 percent of the suspects in driver assaults.

Connex Bordeaux uses an incident form suggested by the police. Connex regularly analyzes incident data and provides a monthly report to the police. The police and Connex representatives meet every 2 weeks. Connex Bordeaux also conducts community outreach to prevent incidents from occurring. Connex employees, primarily bus drivers, go to neighborhoods and schools to develop and implement prevention programs. For example, Connex drivers wearing Connex Bordeaux scuba gear teach underwater classes. Connex Bordeaux personnel feel safer now that the school and neighborhood prevention activities are occurring.

DRIVER PROTECTION—ACTIONS AND TECHNOLOGIES

Translink has taken an aggressive approach to protecting passengers and drivers in its vehicles. These include the following:

- Double-glazed side windows.
- Anti-assault screens to protect the driver (the drivers do not like the enclosure, but Translink is installing them for their protection). The screens often have a small opening, allowing someone to reach in and open the door in case the driver has a heart attack or other medical emergency.
- Anti-bandit driver glazing (two layers of glass with a plastic interlayer; not quite bulletproof. Such glazing proved its value in a recent incident in which a bus was caught in crossfire; a bullet went through the glass, but was almost stopped by the glass. The driver was slightly injured by bits of glass).
- A driver escape hatch to allow the driver to get out of the vehicle after an accident or other incident prevented the driver’s door from opening (the driver would not be able to break the glass in the anti-assault screen to get out).
- An alarm button that is linked to an audible alarm and flashers and that triggers “Help Me” to appear on the bus sign.
- Four-camera video systems (some visible, some hidden). Mixed with dummy cameras, these systems have been fairly effective in reducing vandalism (see Figure 3). They also allow the driver to monitor the upper deck on a double-decker bus. The Data Protection Act allows people to ask to see images of themselves recorded by the video system; the images are stored for 30 days, but plans are to shorten that to a 2-day period when the systems are switched to digital images.
- Two-way radio systems for communication between the driver and the depot. Not all vehicles have radios installed. The radio is only to be used in an emergency (the system is not used to manage service delivery).

In addition, the buses have concealed starter switches, making them more difficult to steal.



Figure 3. Translink's onboard video cameras and recording devices, which allow the driver to monitor the lower and upper decks of the bus, have been fairly effective in reducing vandalism.

There are no cubbyholes or other space between the seats. Not only does this make the bus easier to clean, but it also means there is no place to hide packages. The cantilevered seats are placed tight against the vehicle wall to discourage pickpockets.

"We don't want the bus to look like an armored vehicle," said a representative of Translink's Technical Department. "The Technical Department specifies the requirements for all new vehicles, and we try to integrate security elements right into the design of every new bus."

Translink is considering installing a safe in the driver's compartment that can be opened only from underneath the bus. In addition, they are considering switching to an exact-fare system, so that the driver would no longer need access to the money. This would be a deterrent to robbers, but also possibly to passengers, who might balk at the idea. The company would also like to install an automatic vehicle location (AVL) system, but doing so would require a monitoring

system and a fully staffed controlled room, and that would be difficult to fund.

Supervisory vehicles are assigned to circulate in problem areas to identify "hot spots" and recommend action. As necessary, routes are diverted to avoid problem areas (dispatchers have authority to decide). The agency enlists the help of organizations that can affect problem resolution and provide access to police intervention. It also tracks and analyzes incidents to predict problem areas and avoid future incidents, and it discontinues service to problem areas as a means of encouraging the community to become involved in solving the problem.

Arriva in Liverpool had similar equipment to enhance security on vehicles:

- Two-way radios /mobile phones;
- Emergency alarm button and internal and external displays;
- Partial assaults screen driver compartments; and
- Video cameras throughout vehicle, both visible and hidden.

In addition, Arriva provided the following:

- Training programs to help operators learn to manage violent and aggressive behaviors,
- Community partnerships on a broad scale,
- School personnel assigned to educate and interact with problem students,
- Development and analysis of incident data to be broadly disseminated,
- Assault pay and counseling,
- Identification and removal of personnel with high risk of involvement in incidents,
- Higher level of screening of new personnel to identify unwanted traits, and
- High level of training for intervention officers provided by police agencies.

It was interesting to note that Arriva's operators were not as eager to install full or even partial assault screens as were their Belfast counterparts. The drivers and staff considered the assault screens as less than desirable because they impeded interaction with the passengers, brought ventilation problems, and caused troublesome glare. Arriva has taken a much more aggressive approach to the use of technology and resources to identify, quantify and target specific problems.

In Manchester, there is heavy reliance on the application of external operator protection, such as operator cages, external evacuation measures, and the ability to communicate problems to a central authority. Operators in the Manchester system were less willing to sacrifice customer interaction and personal comfort for the full assault screens, and compromises on optional screens were more evident.

Manchester was aggressive in the use of video (hidden and open) and used large signs to notify customers about



Figure 4. The Greater Manchester Public Transport Executive makes widespread use of video cameras in its bus stations.

this use (see Figure 4). The city was also actively pursuing global positioning system (GPS) options to identify the locations of vehicles in trouble.

The Manchester property placed a higher level of importance on the age and training of operators involved in incidents and tended to focus more on the improvement of the operator's performance in these cases. This attitude was consistent with data from Manchester that suggested that conflicts between drivers and passengers represented a higher percentage of problems than in other operations. However, school operations are considered the source of the greatest number of problems in the system as a whole.

Vehicle security approaches in Manchester include the following:

- Two-way radios /mobile phones;
- Emergency alarm button and internal and external displays;

- Partial assault screen driver compartments;
- Video cameras throughout vehicle, both visible and hidden; and
- GPS for vehicle location.

In addition, First has implemented the following strategies:

- Identification of operator performance issues and training,
- Pursuit of improved relations with local authorities and schools,
- Interaction with community authorities,
- Use of service improvements rather than service reductions in areas of concern, and
- Improved analysis of company data to identify causes of incidents.

The First property in Sheffield took similar security measures, such as separating bus drivers from the passenger compartment by an anti-assault door and screen (see Figure 5).



Figure 5. The drivers on First Mainline buses in Sheffield, UK, are separated from the passenger compartment by an anti-assault door and screen.

The Sheffield property had similar security issues as in Manchester, with the major problems focused on service to school-aged children. The lack of legal avenues to address the inappropriate and destructive behavior of young offenders diminished the ability of these properties to achieve high standards for all passenger behaviors. Some additional focus was on the need to identify and address operator performance and expectations.

The Sheffield organization was working to identify and improve route configurations resulting in bus layovers in unsafe locations, make operators' handling of money handling more secure, and deal with youth violence that represented close to 75 percent of all bus incidents.

Vehicle security approaches were similar to those for Manchester, with the exception of GPS. The training and outreach strategies were also similar.

Within the United Kingdom, higher levels of operator protection in response to incidents of assault, vandalism, or other anti-social behaviors did not reduce the occurrence rate of incidents, and in fact seemed to have the opposite effect. The approaches that seemed to work best did not focus on incidents, but rather attempted to influence social values and to educate transit users, beginning at a very early age. These proactive steps were taken behind the scene, and when necessary involved police, local authorities, schools, estate or neighborhood councils, religious organizations, and employers. This demonstrates how effective a transit agency can be in raising community values and standards, or how easy it is to accept the current norm and suffer the consequences.

In Lyon, roughly 10 percent of employees are security-related. The structure of the security approach is multi-layered. There are 140 fare enforcement personnel, 120 "ambassador watchers" who serve as liaisons to schools, with education, interaction, and mediation with school-age problems as their primary focus. There are 50 intervention specialists who are responsible for first intervention with all street-related incidents and must request assistance when deemed necessary for criminal activities.

All layers of the security team are responsible to adequately document and report activities. Communications of security activities are compiled and presented daily to all employees and used as a base of interaction with community authorities. Interaction with the national and municipal police is extensive and targeted to the proper authority. Meetings with the national police are scheduled monthly to review statistics and plan responses.

This cooperative approach has proven effective for both police and the transportation system. Assaults on operators are low and are pursued by both police and transit security personnel. Most assaults result in monetary fines rather than jail.

Lyon has moved heavily into video surveillance on all modes of service and in stations. Video is stored for short periods and shared directly with authorities when applicable. Lyon was one of the few properties that shared fare evasion

statistics with us. They claimed a 15 percent successful fare evasion rate.

Vehicle and station security measures in Lyon included the following:

- Limited but increasing use of video on coaches,
- Extensive use of video in transit stations,
- Emergency response buttons that activate visual warning lights and displays,
- Radio over-ride that allows central dispatch to monitor on-bus conversations,
- Digital displays to acknowledge receipt of emergency request discreetly to driver,
- Vandal-proof seating, and
- Graffiti coating on windows.

In addition, the transit agency took the following actions:

- Coordinated with schools to provide education, enforcement, and follow up to misconduct;
- Provided dispatchers with a direct link to bus and police in all incidents;
- Provided police a direct link for monitoring criminal activity;
- Extensively documented security issues;
- Trained operators and security staff on a regular basis;
- Maintained database of all activity and shared it with all levels of employees;
- Made effective use of community resources in areas of security promoted by both the transit operator and community authorities; and
- Funded operator community activities to improve relations.

Security concerns in Grenoble were almost exclusively focused on school-age children. With over 65 percent of all incidents directly related to youth, Grenoble has pursued an extensive interaction with school authorities and uses an aggressive training and intervention program for school-age passengers, who compose 55 percent of all riders. A group of 45 volunteers provides much of the interaction with students and uses theatre, skits, and poetry contests to achieve this goal. Roughly 40 percent of all reported incidents were minor offenses (predominately verbal assaults).

Interaction with police agencies is superior to those witnessed in other larger areas, with local authorities logging more than 1,700 hours per month onboard the system. A comprehensive anti-terrorist plan has been developed by the Ministry of Home Defense and is actively promoted with all transit personnel.

Semitag makes limited use of CCTV in its vehicles. The police presence is very apparent in all areas of operation, and an anti-terrorism plan is in place. The national police are responsible for public safety and coordination issues in Bordeaux. Connex schedules meetings with the national police every 2 weeks, and the meetings focus on review of

substantial collection of incident data. Incident data is compiled by day/time/neighborhood/type and shared daily with police personnel. The shared goals of the police and transit provider are heavily focused on “sense of security” issues with the general population. Cooperation in this system is extremely high and effective. Zero tolerance for passenger misconduct results in reduced incidents in all areas.

Assaults on drivers constituted only 98 reports, with 41 of those actually physical in nature. Half of all assailants are identified, and 70 percent of the cases are successfully prosecuted.

Due to the relatively minor problems within the Bordeaux system, a greater focus has been given to community networking and prevention rather than intervention and arrest.

Operator training programs in stress management and conflict resolution are required, with a minimum requirement of 3 days in every 3-year period. Promotion and sponsorship of operator participation in community activity result in over 2,000 annual hours of community service in a variety of activities.

To enhance vehicle and operator security, Connex has installed two-way radio systems on its fleet. A panic button in the operator compartment, together with an audio component, is monitored by both the dispatch center and the police, and the dispatchers have direct communication with the police. Video surveillance cameras are used onboard buses, and GPS is used to pinpoint the location of any vehicle sending a distress signal.

Multiple security teams are on the street at all times, and a database of all incidents is compiled daily.

In Toulouse, SEMVAT reported taking a number of aggressive approaches to improving security. Human interaction was considered the most important aspect of the security plan, with operators trained to “not ignore anything” that might indicate a security concern. Operator security devices on vehicles were limited. Assault screens and other protective devices were considered obstacles to the human interaction necessary to promote safety. Cameras on buses were thus absent, with operators and dispatchers instead relying on two-way radio communication, emergency call buttons, and hidden listening devices that are monitored during an incident.

SEMVAT has established its own staff of security intervention personnel, primarily to compensate for inadequate response from the national police in dealing with incidents. SEMVAT has equipped the security staff with motorcycles and trained them to preserve evidence, defuse hostility and if necessary intimidate problem passengers until police respond. The motorcycle squad boasts a response time of 5 to 7 minutes to all incidents (police response typically takes somewhere between 20 and 30 minutes, if they respond at all). The security team was clearly designed to address the youth problems evident in all the properties visited and seemed to be effective in that goal.

Station security was at a very high level. Video cameras panned entire areas to eliminate blind spots, audio systems

continuously monitored inside areas, security staff was dispatched to an area when even the “mood” of passengers indicated the potential for problems. No toilets are available, music is not allowed in the stations or onboard vehicles, and loitering is discouraged (passengers on the platform are asked to leave if more than two trains pass through the station while they are standing there).

After any incident, the operator is required to talk with a counselor for a minimum of five sessions. One employee is assigned to dealing directly with the victim when responding to any incident. All operators involved receive post-aggression training and are fully debriefed following an assault, and prosecution is rigorously pursued in any event.

Toulouse experiences less than one-tenth the number of acts of vandalism common in other systems in France. SEMVAT’s experience is evidence that a focus on human interaction can be more effective than isolating the driver behind assault screens. The SEMVAT system, lacking security screens, onboard video, and other devices, has been successful in reducing the number of incidents, making passengers feel safe, and protecting the company’s staff and infrastructure.

STAFF HIRING AND TRAINING

Unemployment in Northern Ireland is at the lowest level it has been for many years. Translink offers job security, driver training, competitive pay, benefits, and a pension program. Translink actively recruits drivers, and it participates in local job fairs (albeit with limited success). Applicants are required to be 21 years of age or over and have at least 2 years’ driving experience.

Translink works equally hard to retain its current staff of drivers. Labor turnover is 8.2 percent annually at Citybus and 5.3 percent at Ulsterbus. The number of applicants for bus-driver positions at Translink decreased from 1,213 in 1995 to 292 in 2001. Twenty-five percent of applicants are offered training positions. In order to fill open positions, Translink must recruit and hire 120 bus drivers each year.

Translink is working diligently to train its bus drivers in customer service and stress management techniques, and the “soft skills,” such as customer relations, are now emphasized in recruitment efforts.

Translink enjoys a good relationship with the two unions that represent its workers. On most issues, Translink and the unions work together, not against one another. Both unions have rejected hazard pay for drivers on high-risk routes on the grounds that all drivers drive all routes (rotating assignments).

Translink does pay assault pay to employees that are victims of an attack or trauma. When it was first established in the 1970s, the assault pay covered only physical attacks, but in 1999 it was extended to include trauma cases.

Drug and alcohol testing for employees in safety-sensitive positions is not mandatory under United Kingdom law.

Translink does, however, have a drug and alcohol testing program, but alcohol testing is currently limited to the Rail Division, where anyone whose job duties have a safety element can be randomly selected for testing or sent for testing for “just cause.” Standards are clearly defined in the employee policy, and the agency staff believes that the testing policy will likely be extended to the other two divisions in the near future.

Absenteeism due to attacks and trauma has a profound effect on Translink. Not only are these employees missing a great number of workdays, but some victims are physically or mentally never able to return to work at Translink. Translink has worked hard to design and support a comprehensive counseling and rehabilitation program for employees that have been the victims of violence.

The Safety Department analyzes all positions within Translink for potential problems and addresses and solves on-going safety problems. There has been a marked increase in the number of attacks and incidents directed at staff, passengers, and property. Vandalism is a significant problem. The Safety Department looked at ways to focus on the violence and reduce the number of occurrences. They believe the key to doing so is to involve the local community as a whole and target children 11 to 13 years old. The Marketing Department created a public awareness campaign entitled “Where Are Your Children Tonight?” The campaign brings awareness to parents and neighbors on where children are in the late and early night hours.

At First Manchester, all drivers and staff are required to take conflict avoidance training. Everyone is doing a much better job of reporting accidents and incidents within the company and to the police. First Manchester believes the rise in violent activity in society is consistent with the rise of assaults on drivers. The company has stressed to their drivers that sometimes it is appropriate to break the rules rather than having a confrontation with the passengers. For instance, it may sometimes be better to ignore smoking or eating on the bus, which are minor offenses, rather than confronting the person and risk being assaulted.

Two initiatives First Manchester is using to educate children about transit are the “Fast Freddie” and the “Crucial Cruise” programs. Both programs are geared toward younger children with the idea of making them think about the consequences of their actions. The company also has dedicated youth services and school services. By promptly working with individual schools to address behavioral problems with specific students, the agency can prevent bad behavior from escalating.

First Manchester is making a big push to change the attitudes of legislators and the police to recognize that crimes committed on buses are indeed crimes and should be handled accordingly. Window breaking is viewed in England as an operational problem. In Belfast, it is viewed as an engineering problem. One tactic used in Belfast to make the public aware of major incidents on certain bus lines is to stop

service for a given period. First Manchester believes that temporarily discontinuing service does not solve the problem and, in fact, maintaining the service is a better solution.

Arriva does have a company-wide drug and alcohol testing policy and program. The program covers all Arriva employees and testing is randomly conducted. If the test comes back positive for drugs, the employee is fired. If the test is positive for alcohol, the ramifications depend on the blood alcohol level.

New drivers receive a total of 6 weeks of training, which includes 4 weeks in the classroom and 2 weeks behind the wheel of a transit vehicle.

MASS says that it pays employees above the market rate as a means of attracting high-caliber applicants. Given the current low unemployment rate, it has been somewhat difficult to hire competent qualified persons to work in security. The company has rigorous hiring standards.

Each new employee comes in under a 6-month probation period. New hires receive training from the local police department, training in cultural awareness, and conflict avoidance.

Each driver at First Sheffield is required to have a Passenger Carrier Vehicle (PCV) license. A PCV is a bus and coach specific license and is similar to a Commercial Driver’s License. The PCV must be renewed every 5 years.

Driver turnover is high at about 14 percent and it is quite costly for the company. The initial cost to train a new driver is about £2,000. The average rate of pay is £7.20 per hour—a competitive wage. Everyone that leaves employment is asked to participate in an exit interview. The primary reason given for leaving the company is stress on the job. First Sheffield keeps detailed statistical information on accidents and incidents. Their analysis has shown that the older, long-term drivers are assaulted more often than younger drivers are.

France does not have a mandatory drug and alcohol testing program for safety sensitive transit employees. However, SLTC does have a policy for testing for reasonable suspicion for alcohol. SLTC conducts background checks on all potential hires, and no one with a criminal record is hired.

Semitag has trained staff to go out to the local schools and speak about transit and violence. They have partnered with schools to prevent violence, fraud, and bad behavior. This program was presented to over 115,000 children last year at 24 high schools and 24 primary schools. The Semitag staff is trained to answer all questions regarding transit. In the past, they have used theatre type programs to train students on acceptable behavior on the buses and the trams. For the primary schools, they have created a special “Passport Program,” which is a fun way to teach children how to safely use public transportation.

Connex would much rather be proactive than reactive so they have given their drivers and managers extensive training in stress management and conflict resolution. The annual

cost of training averages 3 percent of wages, although the company is only contractually required to spend 1 percent on training.

Security is a group exercise at SEMVAT in Toulouse. They have a work group that meets once a month whose sole purpose is security. They offer training courses for all new hires on conflict resolution and offer post aggression/post assault training.

RESTORATION OF SERVICE

Restoration of service after disruption due to an accident or civil disobedience means different things to different agencies. In Belfast, once dispatch has been notified of an incident, operations on that route are immediately either shifted to other streets or are suspended. Drivers must remain cool and calm as they maneuver down narrow side streets and other roads not usually taken by the bus.

Service is usually suspended in the vicinity of the trouble or incident until the area can be thoroughly checked out by both the transit agency staff and the authorities, who are searching for the perpetrators. Usually, however, the perpetrators flee the area after an act of violence or vandalism. But until the area is deemed safe, no service will be provided on routes through and near the area, which is a significant inconvenience to the passengers and community who rely on public transportation to get to work, the store, church, or the doctor.

The bus involved in the incident is taken out of service; if a replacement is available, it will be put on the route when safe to do so. If no replacement bus is available, then the headways (time between buses) will be adjusted accordingly, resulting in longer waiting times for passengers.

If the driver and/or passengers are injured, medical care is immediately sought. There is, of course, a cost to this medical care—not only for the medical services, but also for time off from work.

Communicating to the riding public is extremely important when a disruption of service occurs. The marketing department goes into action, immediately sending faxes, emails, and Web-based announcements to get the word out to the media as to what the service interruption entails.

GPS, automatic vehicle location systems, and computer-aided dispatch are all critical components when service disruptions occur. Knowing exactly where each bus or train in the system is will allow dispatch to make appropriate diversions as necessary.

Occasionally a mobile command post will be set up where service has been disrupted, allowing better access to the scene. These mobile centers can be as elaborate as having direct access to all police, fire, and emergency medical service responders, as well as computer and satellite hook-up, to as little as an old transit bus retrofitted by taking the seats out and a table and chairs set up inside along with a two-way radio.

SUMMARY

Several observations can be made based on what the team saw and heard on the mission:

- Initiatives to provide better safety and security are tied directly to the particular safety and security problems of the community and transit system.
- Policies, such as making change on buses and using the transit system to provide transportation for students, have a great effect on safety and security. Changing a policy may be the most effective and efficient way to improve safety and security.
- Community outreach initiatives have been very successful in improving safety and security. Partnering with police, schools, community organizations, government officials, and businesses has helped transit agencies provide safer and more secure transit services.
- Transit employees are a valuable resource to help improve safety and security.
- More funding allows for a more comprehensive and more effective safety and security program. Transit systems with strong government financial support appeared to have more effective safety and security programs.
- Most major security incidents, such as a terrorist attack, are managed by the appropriate government entity. The transit agency is but one of many entities reacting to the incident. The transit agency will respond more effectively if it understands its role and has an emergency plan that its employees understand.
- Internal and external communications are vital components of effective emergency and evacuation plans. The media can be an important ally during emergencies.

APPENDIX A—STUDY MISSION TEAM MEMBERS*

Martin Sennett, *Team Leader*, General Manager
Greater Lafayette Public Transportation Corp. (CityBus),
Lafayette, Indiana

W. Stan Alverson, Manager, Security, Central Ohio Transit
Authority, Columbus, Ohio

Stephen Bland, Executive Director, Rabbit Transit, York,
Pennsylvania

Charles Carr, Manager, Public Transit Division, Mississippi
Department of Transportation, Jackson, Mississippi

Patrick Dixon, Safety and Training Director, Champaign-
Urbana Mass Transit District, Urbana, Illinois

Susan Hausmann, Transit System Safety Manager, Texas
DOT—Public Transportation Division, Austin, Texas

Hubert Hinton, Transportation Specialist, City of Annapolis
Department of Transportation, Annapolis, Maryland

Onalee Pallas, Executive Director, Sanilac Transportation
Corp., Carsonville, Michigan

Louis Schulman, Administrator, Norwalk Transit District,
Norwalk, Connecticut

Dwight David Smith, Director of Operations, Capital Area
Transportation Authority, Lansing, Michigan

John Sorrell, Manager, Wiregrass Transit Authority, Dothan,
Alabama

Andy Szakos, Chief, Transit Services Division, Fairfax
County Department of Transportation, Fairfax, Virginia

Jack Thompson, Operations Manager, Stark Area Regional
Transit Authority, Canton, Ohio

Kathryn Harrington-Hughes, *Mission Coordinator*, Director
of Operations, Eno Transportation Foundation, Washington,
D.C.

*Titles and affiliations are as of the time of the study mission.

**APPENDIX B—STUDY MISSION HOST
AGENCIES/COMPANIES****United Kingdom***Belfast*

Translink
Department for Regional Development
Wrightbus

Manchester

First Manchester
First North West

Liverpool

Arriva North West
Merseytravel
Capital Security Services
MASS
Arriva Merseyside

Sheffield

First Mainline

France*Lyon*

Societe Lyonnaise des transports en commun (SLTC)
Sytral

Grenoble

Societe d'Economie Mixte des Transports en Commun de
L'Agglomeration Grenobloise (Semitag)

Bordeaux

Connex Bordeaux (operating as CGTE)

Toulouse

Societe d'Economie mixte des voyageurs de l'agglomeration
Toulousaine (Semvat)