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Traffic Incident Response

PRACTICES IN EUROPE

February 2006

INTERNATIONAL TECHNOLOGY SCANNING PROGRAM

N O T I C E

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16. Abstract Effective response to traffic incidents can enhance safety and mobility for both road users and responders. The Federal Highway Administration, American Association of State Highway and Transportation Officials, and National Cooperative Highway Research Program sponsored a scanning study of traffic incident response practices, procedures, and technologies in England, Germany, the Netherlands and Sweden. During its study, the scan team observed several common attributes among the organizations in each country involved with incident response. They include a national authority with responsibility for coordinating incident response, national transportation agencies with traffic patrols that respond to incidents, clear jurisdictional responsibility for the police authority responding to incidents in an area, coordinated training for all major incident responders, and national auto clubs that provide roadside repair and towing services. The team developed 25 recommendations for potential implementation in the United States. They include adopting a national goal for incident response, developing national guidance on incident response performance measures, and establishing Transportation Operations Centers of Excellence for incident response research. The recommendations are aligned with the focus areas of the National Traffic Incident Management Coalition, which plans to participate in implementing the team's recommendations.					
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Traffic Incident Response

PRACTICES IN EUROPE

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INTERNATIONAL TECHNOLOGY

Scanning Program

The International Technology Scanning Program, sponsored by the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the National Cooperative Highway Research Program (NCHRP), accesses and evaluates innovative foreign technologies and practices that could significantly benefit U.S. highway transportation systems. This approach allows for advanced technology to be adapted and put into practice much more efficiently without spending scarce research funds to re-create advances already developed by other countries.

FHWA and AASHTO, with recommendations from NCHRP, jointly determine priority topics for teams of U.S. experts to study. Teams in the specific areas being investigated are formed and sent to countries where significant advances and innovations have been made in technology, management practices, organizational structure, program delivery, and financing. Scan teams usually include representatives from FHWA, State departments of transportation, local governments, transportation trade and research groups, the private sector, and academia.

After a scan is completed, team members evaluate findings and develop comprehensive reports, including recommendations for further research and pilot projects to verify the value of adapt-

ing innovations for U.S. use. Scan reports, as well as the results of pilot programs and research, are circulated throughout the country to State and local transportation officials and the private sector. Since 1990, approximately 70 international scans have been organized on topics such as pavements, bridge construction and maintenance, contracting, intermodal transport, organizational management, winter road maintenance, safety, intelligent transportation systems, planning, and policy.

The International Technology Scanning Program has resulted in significant improvements and savings in road program technologies and practices throughout the United States. In some cases, scan studies have facilitated joint research and technology-sharing projects with international counterparts, further conserving resources and advancing the state of the art. Scan studies have also exposed transportation professionals to remarkable advancements and inspired implementation of hundreds of innovations. The result: large savings of research dollars and time, as well as significant improvements in the performance of our Nation's transportation system.

Scan reports can be obtained through FHWA free of charge by e-mailing international@fhwa.dot.gov. Scan reports are also available electronically and can be accessed on the FHWA Office of International Programs Web Site at www.international.fhwa.dot.gov. ■



INTERNATIONAL TECHNOLOGY

Scan Reports

Safety

- *Traffic Incident Response Practices in Europe* (2006)
- *Safety Applications of Intelligent Transportation Systems in Europe and Japan* (2006)
- *Roadway Human Factors and Behavioral Safety in Europe* (2005)
- *Traffic Safety Information Systems in Europe and Australia* (2004)
- *Signalized Intersection Safety in Europe* (2003)
- *Managing and Organizing Comprehensive Highway Safety in Europe* (2003)
- *European Road Lighting Technologies* (2001)
- *Commercial Vehicle Safety Technology and Practice in Europe* (2000)
- *Methods and Procedures to Reduce Motorist Delays in European Work Zones* (2000)
- *Innovative Traffic Control Technology and Practice in Europe* (1999)
- *Road Safety Audits—Final Report and Case Studies* (1997)
- *Speed Management and Enforcement Technology: Europe and Australia* (1996)
- *Safety Management Practices in Japan, Australia, and New Zealand* (1995)
- *Pedestrian and Bicycle Safety in England, Germany, and the Netherlands* (1994)

Planning and Environment

- *Transportation Asset Management in Australia, Canada, England, and New Zealand* (2005)
- *Transportation Performance Measures in Australia, Canada, Japan, and New Zealand* (2004)
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- *Sustainable Transportation Practices in Europe* (2001)
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- *European Intermodal Programs: Planning, Policy, and Technology* (1999)
- *National Travel Surveys* (1994)

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- *Intelligent Transportation Systems and Winter Operations in Japan* (2003)
- *Emerging Models for Delivering Transportation Programs and Services* (1999)
- *National Travel Surveys* (1994)
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- *International Contract Administration Techniques for Quality Enhancement* (1994)
- *European Intermodal Programs: Planning, Policy, and Technology* (1994)

Operations

- *Traffic Incident Response Practices in Europe* (2006)
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- *Freight Transportation: The Latin American Market* (2003)
- *Meeting 21st Century Challenges of System Performance Through Better Operations* (2003)
- *Traveler Information Systems in Europe* (2003)
- *Freight Transportation: The European Market* (2002)
- *European Road Lighting Technologies* (2001)
- *Methods and Procedures to Reduce Motorist Delays in European Work Zones* (2000)
- *Innovative Traffic Control Technology and Practice in Europe* (1999)
- *European Winter Service Technology* (1998)
- *Traffic Management and Traveler Information Systems* (1997)
- *European Traffic Monitoring* (1997)
- *Highway/Commercial Vehicle Interaction* (1996)
- *Winter Maintenance Technology and Practices—Learning from Abroad* (1995)
- *Advanced Transportation Technology* (1994)
- *Snowbreak Forest Book—Highway Snowstorm Countermeasure Manual (translated from Japanese)* (1990)



Infrastructure—General

- *Construction Management Practices in Canada and Europe* (2005)
- *European Practices in Transportation Workforce Development* (2003)
- *Contract Administration: Technology and Practice in Europe* (2002)
- *European Road Lighting Technologies* (2001)
- *Geometric Design Practices for European Roads* (2001)
- *Geotechnical Engineering Practices in Canada and Europe* (1999)
- *Geotechnology—Soil Nailing* (1993)

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Infrastructure—Bridges

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- *Performance of Concrete Segmental and Cable-Stayed Bridges in Europe* (2001)
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- *European Practices for Bridge Scour and Stream Instability Countermeasures* (1999)
- *Advanced Composites in Bridges in Europe and Japan* (1997)
- *Asian Bridge Structures* (1997)
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EXECUTIVE

Summary

Recent U.S. transportation studies have shown that 50 to 60 percent of all congestion in urban areas is caused by nonrecurring events and about half of that is caused by traffic incidents such as crashes, spilled loads, and disabled vehicles. That proportion is substantially higher on rural highways. Effective response to these incidents can have a significant benefit on traffic safety and mobility in both urban and rural environments. This scanning study was conducted to examine programs and practices that provide coordinated response to traffic incidents.

In April 2005, a team of 12 incident response specialists from the United States visited four European countries to assess and evaluate various practices for responding to traffic incidents. Team members included transportation agency personnel from State agencies and the Federal Highway Administration (FHWA) and individuals representing several perspectives involved in incident response, including police, fire, emergency medical services, trucking, and research. During the 2-week scan, the team met with members of about 30 organizations representing a broad range of incident response stakeholders. From these hosts, the team heard numerous presentations about traffic incident response practices from a variety of perspectives, including road authorities, fire departments, police agencies, emergency medical services (EMS), automobile clubs, recovery providers, and other groups. The team also saw many examples of responder equipment. From the information obtained during the scan, the team identified several areas where practices in the United States have the potential to be improved. This report describes the team's findings and recommendations.

The traffic incident response (TIR) study began in December 2003 with the completion of a desk scan that recommended England, Germany, the Netherlands, and Sweden as the four countries to visit during the trip. The initial team meeting occurred in June 2004 in Washington, DC, and the trip took place April 8-24, 2005. The purpose of the trip was to identify practices, issues, challenges, and innovative procedures that the host countries use in responding to incidents. The major focus of the team members was on the activities and coordination efforts that take place after an incident is detected. The team members were interested in a wide range of perspectives, including those of transportation agencies (at all levels) and emergency responders (fire, police, EMS), as well as removal efforts, traffic control at the incident site, communication between the various stakeholders, and related issues.

The team's recommendations can best be appreciated if one has an understanding of the working relationships among and between the pertinent organizations in the various countries. There were several generally common attributes among the organizations in each country involved in incident response:

- A national agency or authority assumed some responsibility for coordinating incident response and/or motorist information activities. The agency varied among the countries, but each country generally had a leading group. Several countries also had some type of national directive or mandate to address traffic incident management.
- Some national transportation agencies had national or regional traffic patrols that provided traffic control and limited motorist assistance to drivers and incident responders.
- The police authority responding to incidents had clear jurisdictional responsibility. Unlike in the United States, where several police agencies may have jurisdiction at the site of an incident (State, county, city), the countries visited had one police agency with jurisdiction at a particular scene. That agency might be a local or regional one, but it would be the only police responder at an incident scene. As a result, these responders received specialized training associated with freeway incidents.
- Local fire departments had significant resources and training for incident response efforts. Some fire departments had response equipment that provided the ability to remove vehicles and debris from the roadway.
- Emergency medical services were provided at a level comparable to or higher than the paramedic level found in the United States, and they were highly coordinated with police, fire, and major incident responders. In some countries visited, medical response included the dispatching of a doctor to the incident site and the use of helicopters for medical responder transport.
- One or more national auto clubs provided roadside repair or towing services to members. In most countries visited, a large proportion of drivers are members of an auto club. In a large majority of cases, auto club responders are able to provide roadside vehicle repairs that allow motorists to continue their trip. Response vehicles often have the additional capability of towing vehicles for short distances off the motorway to a place of safety. Response times from these private motor clubs were short enough that the transportation agency service patrols did not have to concentrate on providing duplicate services.
- In some countries visited, recovery companies are contracted



Executive Summary

through the road agency or police to respond to incidents on controlled-access highways. These recovery specialists were required to meet minimum qualifications and response time criteria to maintain their contracts.

Findings and Recommendations

The team members learned about many interesting practices, policies, technologies, and programs during the scan. At the end of the 2-week visit, the team met for a day to review the scan findings and develop 25 recommendations for potential implementation in the United States. The team members recognize that some of these recommendations may already be in place at some locations in the United States, but they believe they should be implemented uniformly at the State and/or national level. The recommendations are organized to be consistent with the three focus topics identified by the National Traffic Incident Management Coalition (NTIMC): 1) programs and institutions, 2) tactical and onscene management, and 3) communications and technology. Several team members are involved in coalition activities and the coalition is taking a major role in implementing the recommendations.

Programs and Institutional Issues

Six of the 25 recommendations are associated with programs and institutional issues that represent the strategic aspects of incident response and address how countries, organizations, and individuals approach the basic challenge of developing and coordinating incident response programs. The six recommendations address the following subjects:

- **Recommendation 1.** National unified goal for incident response
- **Recommendation 2.** Incident responder relationships
- **Recommendation 3.** Integration of practitioner and research perspectives
- **Recommendation 4.** Incident response performance measures
- **Recommendation 5.** Incident response training
- **Recommendation 6.** Private-sector role

Tactical and Onscene Operations

Seventeen of the 25 recommendations are associated with tactical and onscene operations issues that address the activities of responders at an incident site and the onscene coordination of the various responders. The 17 recommendations address the following subjects:

- **Recommendation 7.** Role of transportation agency personnel
- **Recommendation 8.** Incident command and coordination
- **Recommendation 9.** High-visibility garments
- **Recommendation 10.** Buffer zone
- **Recommendation 11.** Visibility and positioning of response vehicles
- **Recommendation 12.** Safety of incident responders using extrication equipment

- **Recommendation 13.** Enhancements for incident response vehicles
- **Recommendation 14.** Increased authority for transportation agency personnel
- **Recommendation 15.** Procedures for restoring roadway capacity
- **Recommendation 16.** Clearance time targets
- **Recommendation 17.** Removing fatalities from incident site
- **Recommendation 18.** Coordination of tactical response
- **Recommendation 19.** Response dispatch
- **Recommendation 20.** Welfare of road users upstream of long-duration incidents
- **Recommendation 21.** End-of-queue advance warning
- **Recommendation 22.** Preplanned diversion routes
- **Recommendation 23.** Variable speed limits

Communications and Technology

Two of the 25 recommendations are associated with communication and technology issues that address how responders communicate with each other (particularly interagency communications) and with travelers, and how technologies can be used to improve incident response and management. The two recommendations address the following subjects:

- **Recommendation 24.** Coordinated traffic information centers
- **Recommendation 25.** Improving communication practices

Additional Observations

In addition to the recommendations, the team observed many unique, interesting, or otherwise noteworthy practices and technologies that team members believed were worth describing to U.S. practitioners. No recommendations are associated with these observations; they are merely provided as seeds for thought. The findings include the following:

- A service patrol vehicle in Sweden with several unique features
- Use of motorcycles for incident response activities
- Equipping auto club assistance responders with computer diagnostic equipment
- Widespread use of automated enforcement for red-light running and speeding
- Use of cell phone cameras to send patient information to hospitals
- Use of advanced hardware for transporting patients to the ambulance and portable fire suppression systems
- Use of software to identify cut points by vehicle model when using extrication equipment
- Use of virtual training with coordinated training of all perspectives of incident responders
- Portable lighting that minimizes glare for approaching vehicles



Introduction

The Texas Transportation Institute's *2005 Urban Mobility Report* estimated that incidents cause 52 to 58 percent of total delay in large urban areas.¹ The Federal Highway Administration (FHWA) indicates that incidents account for about 25 percent of total nonrecurring congestion.²

FHWA also reports that about 20 percent of all incidents are secondary incidents.³ Incidents also present a serious hazard to responders. Over half of fire, emergency medical services (EMS), and police fatalities are transportation related and about 15 percent of the fatalities result from being struck by a vehicle.⁴ Increasing the effectiveness of incident response practices has the potential to improve mobility and increase safety for both road users and responders.

In the United States, FHWA has had a focused program on traffic incident management for more than a decade. Many other organizations have also focused efforts on incident management, including initiatives to determine the state of the practice, develop guidance on creating traffic incident management programs, document successful practices, assess needs, and provide training and education. In the early 1990s, several organizations united to form the National Incident Management Coalition to support, heighten awareness of, and provide education on incident management. A successor organization, the National Traffic Incident Management Coalition (NTIMC) (<http://timcoalition.org>) was formed in June 2004 as a cooperative, national organization to spearhead, conduct, and track activities in traffic incident management and assume a leadership role in developing a national agenda for traffic incident management. The coalition's mission is to provide a multidisciplinary partnership forum spanning the public safety and transportation communities to coordinate experiences, knowledge, practices, and ideas toward safer and more efficient management of incidents affecting traffic. NTIMC focuses on incident management that does the following:

- Enhances the safety of onscene responders and motorists passing or approaching a roadway incident
- Strengthens services to incident victims and stranded motorists
- Reduces incident delay and costs to the traveling public and commercial carriers

As part of the continuing effort to improve incident management practices in the United States, a team of 12 incident response specialists (many of whom are active in NTIMC) visited four European countries in April 2005 to assess and evaluate various practices for responding to traffic incidents and identify

procedures, practices, and technologies that might improve the effectiveness of U.S. incident response. During the 2-week scan, the team met with numerous officials and heard many presentations about traffic incident response practices from a wide variety of perspectives, including road authorities, fire departments, police agencies, EMS, automobile clubs, recovery providers, and other groups. The team also saw many examples of responder equipment. From the information obtained during the scan, the team identified several areas where practices in the United States have the potential to be improved. This report describes the scan, the team's findings, and the recommendations to improve the effectiveness of traffic incident response in the United States.

The purpose of the scan was to identify policies, practices, issues, challenges, and innovative procedures that the host countries use in responding to incidents. The major focus of the team members was on how agencies respond to an incident after it is detected and how the response is coordinated among various agencies and organizations with responsibility for or involvement in responding to incidents. Team members were interested in a wide range of perspectives, including those of transportation agencies (at all levels) and emergency responders (fire, police, EMS), as well as removal efforts, traffic control at the incident site, communication between the various stakeholders, and all related issues. Major issues of interest included pre-incident planning of response actions; how organizations respond to incidents and operate onscene during the response; how transportation/highway agencies coordinate incident response with emergency responders (police, fire, EMS) and vehicle/debris removal/cleanup services; the tools, systems, and communication technologies used to respond to incidents; coordination of response activities; and management and administration of incident response resources. While the team members recognized that the most significant incident response efforts are associated with urban areas, they also wanted to know about incident response actions associated with incidents that occur outside of urban areas. General topics of interest to the panel included the following:

- **Incident planning and training**—What organizations are involved in responding to incidents? How do different organizations plan, train for, and coordinate response activities?
- **Incident response actions and onscene operations**—What response and clearance procedures are used for different types

of incidents? How is scene command established and maintained? What traffic control procedures are used? How are patient care, responder safety, and other onscene challenges addressed?

- **Tools, systems, and communication technologies**—How do various responders communicate onscene and away from the scene? How are motorists informed of incident impacts? What equipment is used by responding units (including fire, police, EMS, rescue/extrication, towing/recovery, traffic control, transportation agency, and others)?
- **Incident response management and administration**—What are the budgeting issues and processes related to incident response? What are the performance measures related to incident response and how are they used in assessing programs?

Team Members

Traffic incident response efforts involve a wide spectrum of perspectives and organizations. The team assembled for this scanning study mirrored this spectrum of perspectives in an effort to optimize the value of the information gained. The 12 members of the multidisciplinary team included transportation agency personnel from four States and FHWA, plus representatives of the police, fire, EMS, trucking, and research perspectives. The team members were Rebecca Brewster (American Transportation Research Institute), John Conrad (Washington State DOT), John Corbin (Wisconsin DOT), Henry deVries (New York State Police), Gene Hawkins (Texas A&M University), David Helman (FHWA), Greg Jones (FHWA), Kevin McGinnis (National Association of State EMS Directors), Ron Moore (McKinney, TX, Fire Department), Mark Olson (FHWA), Larry Tibbits (Michigan DOT), and Mike Zezeski (Maryland State Highway Administration). John Conrad and David Helman were team co-chairs. Appendix A contains contact information and short biographies for the team members. Figure 1 is a photograph of the team during the visit to Trafik Stockholm in Sweden.



Figure 1. *Scan team members (left to right: Henry deVries, Gene Hawkins, Mark Olson, Rebecca Brewster, Kevin McGinnis, Greg Jones, John Conrad, Larry Tibbits, John Corbin, Dave Helman, Mike Zezeski, and Ron Moore).*

Scan Preparation

Planning for the Traffic Incident Response (TIR) scan trip began in December 2003 with the completion of a desk scan. The purpose of the desk scan was to review traffic incident response practices in a variety of countries and identify the four countries that would provide the most useful information about practices and technologies that could be implemented in the United States. The desk scan recommended that the team visit England, Germany, the Netherlands, and Sweden during the study. While many other countries in the world have extensive traffic incident response programs, these four countries provided the optimal combination of advanced practices located within reasonable proximity of one another so that they all could be visited within the constraints of a 2-week scan. The team met in June 2004 to identify the critical issues to address during the scan and develop a list of amplifying questions to give the host countries in advance. These amplifying questions, in Appendix B, were intended to help the host countries determine whom to invite to the meetings with the U.S. contingent and what to present to the group.

Team Meetings and Travel Itinerary

During the 2-week scan, the team visited representatives in four countries: England, Germany, the Netherlands, and Sweden. The team members left the United States on April 8 and held their first team meeting on April 10 in Birmingham, England. They met with representatives of several groups in and around Birmingham on April 11 and 12. The team left England on April 13 and met with their German hosts April 13 through 15 in meetings near Ahrweiler, Bergisch-Gladbach, and Cologne. The midpoint team meeting was held April 16 in Bergisch-Gladbach. The team left Germany on April 16 and met with representatives in the Netherlands in Delft and Arnhem on April 18 and 19. The team traveled to Sweden on April 20 and met with the Swedish hosts in Stockholm from April 20 to 22. The wrapup team meeting was held April 23. The team met in Washington, DC, on July 21 and 22 to review a draft of the final report and refine the implementation plan. Table 1 summarizes the team meetings and travel schedule.

Host Delegations

During the scanning study, the team members met with representatives of about 30 organizations that represented a broad range of incident response stakeholders. The majority of the organizations represented one of the following perspectives: road agency (city, regional, or national), fire, police, EMS, auto clubs, and education, as indicated in table 2. A list of individuals the team met with and contact information are in Appendix C. Many organizations represented in the meetings are known by acronyms, which are based on the native-language name of the organization. The team also visited several sites in the four countries, which are listed in table 3 (see page 4).



Table 1. *Team meetings.*

Date	Location	Purpose or Host
June 4, 2004	Washington, DC	Initial team meeting to determine emphasis areas and develop amplifying questions
April 10, 2005	Birmingham, England	Kickoff trip meeting to review travel plan and make note-keeping assignments
April 11-12, 2005	Birmingham, England	Meet with English hosts
April 13-15, 2005	Ahrweiler, Bergisch-Gladbach, and Cologne, Germany	Meet with German hosts
April 16, 2005	Bergisch-Gladbach, Germany	Midtrip meeting to review findings to date
April 18-19, 2005	Delft and Arnhem, Netherlands	Meet with Dutch hosts
April 20-22, 2005	Stockholm, Sweden	Meet with Swedish hosts
April 23, 2005	Stockholm, Sweden	Final trip meeting to identify key findings and develop preliminary recommendations
July 21-22, 2005	Washington, DC	Final team meeting to finalize report and implementation plan

Report Organization

The team members learned about many interesting practices, policies, technologies, and programs during the scan. While the original intent was to collect information about incident response on all types of roadways, the vast majority of information gathered was specific to freeways (known as motorways in Europe). At the end of the 2-week trip, the team met for a day to review its observations and findings and to develop recommendations for potential implementation in the United States.

The team's general observations and findings are described in Chapter 2 and the recommendations are described in Chapters 3 to 5. At the final meeting, the team determined that the recommendations would have greater implementation value if the organization of the report paralleled that of the three overarching topics identified by the National Traffic Incident Management Coalition (NTIMC).⁵ These topics are identified in Table 4 (see page 4) along with the chapters where the scan recommendations are presented. Table 4 is followed by three additional tables (see pages 5 and 6) that pro-

Table 2. *Types of host organizations represented in meetings.*

Type of Agency	Country			
	England	Germany	Netherlands	Sweden
National or Regional Road Agency	X	X	X	X
Local Road Agency	X			X
Police	X	X	X	X
Fire		X	X	X
EMS		X	X	
Auto Clubs	X	X	X	
Educational		X	X	
Other	X		X	

vide descriptions about the issues in each topic. While a number of the recommendations described in each chapter are already in place in some locations around the United States, the team believes that more widespread and uniform implementation of the recommendations at the State and/or national level would greatly improve incident response.



Introduction

Table 3. *Sites visited during the scan.*

Country	Sites Visited	Location
England	<ul style="list-style-type: none"> • RAC Control Centre • National Traffic Control Centre 	Bescot Quinton
Germany	<ul style="list-style-type: none"> • German Academy for Crisis Management (AKNZ) • German Research Institute (BAST) • Central Fire Department Headquarters 	Ahrweiler Bergisch-Gladbach Cologne
Netherlands	<ul style="list-style-type: none"> • Offices of Traffic Management Center • ANWB Dispatch Centre • Netherlands Institute for Fire Service and Disaster Management (NIBRA) 	Delft Wolfheze Arnhem
Sweden	<ul style="list-style-type: none"> • South Link Underground Motorway • Trafik Stockholm Center 	Stockholm Stockholm

Table 4. *NTIMC topics and issues.*

Topic	Issues	Chapter Containing Recommendations	Issue Details
Programs and Institutions	<ul style="list-style-type: none"> • Policy • Program Resources • Multiagency Relationships 	3	Table 5
Onscene Operations	<ul style="list-style-type: none"> • Responder Safety • Secondary Crash Prevention • Traffic Control • Incident Site Management • Quick Clearance 	4	Table 6
Communications and Technology	<ul style="list-style-type: none"> • Integrated Interagency Communications • Transportation Management Systems • Traveler Information 	5	Table 7



Table 5. *NTIMC issues for traffic incident management programs and institutions.*

Issue	Description
Policy	Traffic incident management is often part of, but not at the center of, an agency's routine mission. As such, benefits and performance are not measured. Policymakers are not informed of the benefits of traffic incident management and the potential for further improvements for enhanced safety and reduced delay. Traffic incident management is only one of several agency operational responsibilities and is not usually a service program with its own line-item budget. Traffic incident management, as performed by transportation agencies, is often a fragmented, part-time, reactive activity with responsibilities divided among maintenance staff, traffic operations units, TMC management, and ITS project staff. Local laws and conventions such as boundary constraints, towing practices, and clearance policies inhibit improvements in key areas.
Program Resources	Traffic incident management, as a lower-tier activity, often is limited by resource availability from budgets unrelated to traffic incident management or agency priorities. Practitioners are challenged to fund new programs and/or take on new responsibilities in constrained fiscal environments and times of downsizing governments. Resource availability often is uneven among stakeholder agencies.
Multiagency Relationships	Each agency has a unique culture that may not be well understood by other stakeholders. Roles are defined informally on a case-by-case basis. Role conflicts may be partially resolved at the site and are disregarded after the incident. Key stakeholders can be uninvolved for extended periods. Stakeholder involvement is determined by personality strength or agency size. Level of attention and involvement depends on recent events or the personality of a strong program chairperson. Problems can be repeated frequently.

Source: NTIMC

Table 6. *NTIMC issues for traffic incident management onscene operations.*

Issue	Description
Responder Safety	Traffic incidents are one of the most dangerous tasks responders handle. Improving safety requires training, equipment, research, policy development, updated statutes, and performance standards.
Secondary Crash Prevention	These crashes can range from 14 to 20 percent of all crashes. Improvements in traffic control, quick clearance, and management of the original incident scene could reduce the rate of secondary crashes.
Traffic Control	Traffic control often is not a consistent part of all incidents. All responders may not understand and use the basic procedures required for the safe movement of traffic. Proper use of traffic-control devices and detour routes, better onscene traffic control, and continuous monitoring of the incident impact can improve responder safety and traffic flow and decrease secondary crashes and motorist delays.
Incident Site Management	Although agencies may respond to similar traffic incidents on a frequent basis, multiagency efforts to streamline processes are unusual. Proper positioning of response vehicles, early deployment of tow trucks, and mutually understood emergency-lighting procedures can improve safety, traffic flow, and clearance times.
Quick Clearance	Implementing quick clearance requires individual and multiagency actions in changing laws and policies; training; striking interagency agreements; setting onscene responder priorities; streamlining investigation procedures, towing regulations, and procedural updates; and establishing challenging performance standards for clearance.

Source: NTIMC



Introduction

Table 7. *NTIMC issues for traffic incident management communications and technology.*

Issue	Description
Integrated Interagency Communications	Voice communications among diverse response agencies have been hampered by a lack of direct connectivity among communications systems. In addition, data and information transfer (e.g., incident detection, traffic information, and resource availability) among agencies and applications may be nonexistent, possibly caused by incompatibility (e.g., lack of a “common language” or integration).
Transportation Management Systems	While the use of technology for detection, verification, and clearance of highway incidents has increased dramatically over the past decade, multiagency co-location in centers that use this technology is limited. Surveillance and detection efforts would benefit from the integration of transportation management systems and public safety computer-aided dispatch technologies. Multiagency agreements on policies and procedures for traffic management during incident response (signal timing changes, opening and closing lanes, and ramp metering) may not yet be established.
Traveler Information	Agencies may not be able to integrate and interpret information from multiple sources. Access to real-time, incident-specific information and travel-time estimates for route segments may not be available to motorists.
Incident Site Management	Although agencies may respond to similar traffic incidents on a frequent basis, multiagency efforts to streamline processes are unusual. Proper positioning of response vehicles, early deployment of tow trucks, and mutually understood emergency-lighting procedures can improve safety, traffic flow, and clearance times.

Source: NTIMC



GENERAL OBSERVATIONS

and Findings

As the team traveled in the four countries, it gained many valuable insights into European practices for traffic incident response and observed some significant differences between practices in the United States and Europe. To provide a context for the recommendations presented in the following chapters, this chapter describes the team's more significant observations. The recommendations can best be appreciated if one has an understanding of the working relationships among and between the pertinent organizations in the various countries.

General Observations

Most of the countries the team visited are geographically compact and have higher population densities than most of the United States. This makes it more practical for those countries to implement and operate national traffic management and traffic information systems. In some respects, the countries in Europe more closely resemble individual States or multistate regions in the United States from the standpoint of implementing some recommendations. Compared to the United States, the countries visited generally are less complex institutionally, with fewer layers of overlapping authority for incident response. This may increase the challenges associated with implementing European strategies in the United States.

Each country reported a significant projected increase in highway usage over the next several years. With the exception of Sweden, which is in the midst of an ambitious construction program over the next 12 years to “ring” Stockholm with an obviously overdue highway and tunnel system, each country's transportation agency recognized that it could no longer “build its way out of congestion,” and that proper management of roadway and personnel resources was necessary to offset the tremendous economic and quality-of-life issues resulting from congestion. England, Germany, and the Netherlands have diligently developed plans and practices that leverage the benefits of coordinated incident response among transportation agencies, police, fire, EMS, and private-sector resources.

All four countries have a high level of commitment to incident management, often in the form of a national edict or policy. Typically, one agency has overall responsibility for the program and regularly measures performance. Ownership of the incident response process was found to be a key element of effective incident response programs.

Cultural Contrasts

While the focus of the scanning study was on incident response, the team members experienced many different aspects of the countries they visited during their travels. As they traveled on planes, trains, subways, buses, taxis, and boats; ate in various restaurants; stayed in different hotels; and interacted with the people in each country, team members were able to observe firsthand many significant cultural characteristics in the four countries. As they did so, they were able to contrast these characteristics with those of the United States. Many of these cultural characteristics represent nothing more than a different way of living and give each area its unique identity. However, the team members believe that some of these cultural characteristics have a direct impact on the transportation systems in each country.

Probably the most significant cultural characteristic affecting the transportation system is the extent to which European road users follow driving regulations. In several cases, the hosts indicated that most drivers in their countries tended to adhere to the rules of the road when traveling. The team also learned that concern about tort liability issues is significantly less, although tort concerns appear to be growing in some countries. These factors were important considerations when the team members began to evaluate traffic incident response practices for potential implementation in the United States.

Incident Response Stakeholders

European agencies have a very integrated approach to incident response. Police, fire, EMS, and highway agencies work closely with one another to develop response plans and respond to incidents. The key stakeholders involved in European incident response are described below.

Police

Police play a significant role in incident management in Europe. In England, the police are in charge at all motorway (freeway) incidents. In Germany, motorway police have responsibility for highway incidents. The police authority responding to incidents has clear jurisdictional responsibility. Unlike some U.S. localities, where several police agencies may have jurisdiction at the site of an incident (State, county, city), the countries visited had one police agency with jurisdiction at a particular scene. That agency might be a local or regional one, but it would be the only police responder at an incident scene. As a result, these responders received specialized

General Observations and Findings

training associated with freeway incidents. Police also tended to have the command responsibility at incident scenes. For example, in England, the responsible police agency takes the lead in dealing with all incidents. England has 39 police agencies, but only one has jurisdiction at a particular incident scene.

Fire and Rescue

Fire department personnel were involved in incident response in all four countries, but appear to be particularly integrated in Germany and the Netherlands. Some fire departments had response equipment (such as cranes) that provided the ability to remove vehicles and debris from the roadway.

Emergency Medical Services

The team found that emergency medical services appear to be provided at a level comparable to or higher than the paramedic level found in the United States and are highly coordinated with police, fire, and major incident responders. All of the countries visited have highly evolved helicopter EMS systems. England and Germany use highly trained emergency medical technicians or paramedics. In Germany, these are supplemented by physicians who respond to most scenes and provide most of the advanced life support. In the Netherlands, highly specialized nurses provide most of the advanced life support ambulance care, occasionally supple-

mented by physicians in the field. In Sweden, a mix of nurses and emergency medical technicians and paramedics is employed.

Roadside Assistance Patrols

The team found an impressive commitment to roadside assistance in all four countries, particularly with the private-sector automobile associations in England, Germany, and the Netherlands. These auto groups, described in more detail later in the report, provide a valuable service by repairing or removing vehicles that have broken down on the motorway. Some national transportation authorities had national or regional traffic patrols that provided traffic control and limited motorist assistance to drivers and incident responders.

Towing and Recovery Providers

A significant finding related to towing and recovery providers is that several countries have established performance requirements for this service. These recovery specialists were required to meet minimum qualifications and response-time criteria to maintain their contracts. In some countries, recovery companies are contracted through the road agency or police to respond to incidents on controlled-access highways.

Highway Operations Contractors

England has a private-sector contractor that provides incident support on the motorways for the Highways Agency. Other duties include routine and cyclical maintenance, management functions, winter service, program management, and other activities. It maintains a fleet of incident support units (ISU), an example of which is shown in figure 2.

Universities and Academies

Several countries also have an educational element involved in incident management and response activities. The most significant involvement of a university was found in the Netherlands. One day of meetings was held at the roadway authorities building located on the campus of Technical University Delft. The facility included a demonstration area behind the building (see figure 3) where research could be conducted and promising technologies demonstrated. The first day of meetings with the German hosts took place at the German Academy for Crisis Management, Emergency Planning, and Civil Protection (AKNZ), a competency center for education, research, and national and international exchange on the federal level. It appears to the team that the university and research community is leveraged into traffic incident response training and technology development. One team member was asked to be a guest lecturer at the University of Applied Sciences in Cologne. The group addressed included police, fire, and EMS personnel in bachelor's degree-level emergency service management tracks, which include traffic incident management content.



Figure 2. AmeyMouchel incident support unit.



Figure 3. Research and demonstration facility in the Netherlands.



PROGRAMS AND

Institutions

To gain maximum efficiency and effectiveness, incident response programs must have programmatic and institutional support at all levels. This programmatic and institutional support represents the strategic aspects of incident response and addresses how countries, organizations, and individuals approach the basic challenge of developing and coordinating incident response programs. The scan team learned of many examples in which various agencies or groups had made significant commitments to incident response and/or the larger challenge of incident management. The team found several with potential implementation value in the United States. This chapter describes the team's incident response recommendations related to programs and institutions.

National Incident Response Policy

In all four of the countries visited, the team observed a strong national commitment to incident response. Several countries had specific legislation or a national policy that established or contributed to the national emphasis on incident response. In England, for example, the Traffic Management Act of 2004 addresses several key areas of traffic management for added emphasis, including incident response issues.⁶ This act, key parts of which are summarized in Appendix D, gives the Highways Agency greater responsibility for responding to and clearing incidents. England is also developing the *Fast Roads Manual* (not yet available when this report was published), which describes response procedures and a national standard that defines the protection of workers responding to a traffic incident.⁷ This 28-page document provides guidance to workers assisting stranded motorists on the side of the road. In Germany, the Executive Order on Delay Management addresses several issues associated with trying to reduce the impacts of incidents.⁸

The Netherlands established an incident management program and achieved a 25 percent reduction in process time in 4 years. The Dutch also produced a traffic management manual⁹ and established a national policy on the order of priority for safely responding to an incident. These priorities are identified in table 8. As the list shows, Dutch responders make efforts to provide for their own safety and that of the other traffic moving through the incident site before taking action to assist incident victims. A video shown to the team during its

Table 8. *Safety priorities for handling incidents.*

Country	Safety Priorities
England	<ol style="list-style-type: none"> 1. Prevent escalation 2. Establish cordon 3. Protect scene and those working there 4. Organize temporary traffic management with HA support
Netherlands	<ol style="list-style-type: none"> 1. Responder safety 2. Traffic safety 3. Assistance to victims 4. Maintaining flow 5. Salvaging cargo/vehicle

visit to the Netherlands shows the first incident responders arriving at the scene of an incident. The video indicated that the first action taken by the initial responders was to set out cones to provide some level of protection for them while they attended to the vehicle and provided for a more orderly movement of traffic through the incident scene, improving the level of safety for traffic. The responders then approached the vehicles involved in the incident to assist the victims. The succeeding responders to the incident site provided a greater degree of traffic control through the site or diverted traffic to another route.

The team also observed that some countries appear to devote significant resources to incident response activities. These activities are also tied to performance measures (discussed later). If the performance measures are not met, additional resources are committed until the performance targets are satisfied. In addition, the team saw examples of cost sharing between stakeholders. For example, in Sweden, the costs of supporting Trafik Stockholm are divided between the city and national road authority based on the number and location of incidents handled.

In the team members' opinion, the level of national commitment observed in several of the countries visited was a significant contributing factor to the success of the incident response programs in those countries. The team believes that a similar national commitment should be an important element of the overall traffic incident management program in the



Programs and Institutions

United States. To that end, the following is the team's recommendation on a national policy for incident response.

RECOMMENDATION 1

National Unified Goal for Incident Response

The United States should develop and adopt a national unified goal for incident response. The goal should address the following:

- Address the safety of responders and the traveling public (similar to the Dutch policy presented in table 8).
- Recognize the improvement to travel time reliability from better incident management.
- Improve traveler information to the public.
- Establish real-time, interoperable communications between responders.

Onscene Working Relationships of Incident Responders

In each country, the team heard presentations by various groups involved in incident response activities in that country. The team was generally impressed by the familiarity of the presenters with one another even though typically they were from different organizations. It was apparent to the team that the various stakeholders involved in incident response in the four countries had close working relationships. In all four countries, incident responders typically included many of the stakeholders mentioned previously.

In England, the police are in charge at incidents. Highways Agency traffic officers are starting to provide traffic control assistance, and incident support units (provided by area maintenance contractors) assist the traffic officers. Emergency services are provided by fire and EMS responders. Removal and recovery are done under contract. Auto clubs and associations provide another layer of support for vehicles broken down on the shoulder. The activities of these responders are coordinated primarily through police dispatch centers, while distribution of motorist information is coordinated through a national traffic control center.

The Netherlands provided another excellent example of coordination among incident responders. The partners include police, EMS, fire, highway authority, recovery services, and the national auto club. The Dutch approach is to have coordinated, collective decisionmaking among the responders at the scene.

The team also found an excellent example of a unique working relationship in Germany. The Germans have an organization known as Technisches Hilfswerk (THW) that provides support services for long-duration incidents. These services may include units for electrical power, lighting, relief support, and logistical support such as food and other necessities. They may also provide support services to road users upstream of a long-duration incident trapped in the queue. THW and other support services for

disaster and extended response rely on a remarkable system of volunteers coordinated between employers and the government. The government reimburses employers for employee wages when they are involved in response. This affords a quickly expandable response resource system.

The level of coordination between incident responders in the four host countries provides an excellent example for U.S. practice. While such cooperation does exist in many areas of the United States, the team believes that the responder relationships observed in Europe provide a good model for U.S. practices and the basis for the following recommendation.

RECOMMENDATION 2

Incident Responder Relationships

Incident responders should adopt formal working agreements. The formal agreements should do the following:

- Be incorporated into day-to-day operations to the point that they are accessible as part of computer-aided dispatch schemes.
- Be integrated into training programs and included in regular rehearsals for incident response scenarios.
- Be the subject of ongoing joint planning.
- Be addressed as part of the debriefing activities of individual incidents.

The team also observed that universities are integrated into the development and refinement of incident response programs. The team recognizes that U.S. researchers are involved in traffic incident management activities, but believes that such efforts can be improved. The team offers the following recommendation related to the relationship between practitioners and researchers.

RECOMMENDATION 3

Integration of Practitioner and Research Perspectives

Integrate the U.S. research network into incident response/management program development by establishing one or more Transportation Operations Centers of Excellence.

- The integration effort should highlight the parallel potential of such a research resource for technology, tools research, and development.
- Transportation Operations Centers of Excellence could provide geographically distributed data management for performance monitoring and reporting (e.g., Texas Transportation Institute's data on mobility measures).



Performance Measures

The team learned that performance measures are an important part of incident response programs in several areas and in several of the countries visited. The team observed performance measures in a variety of applications:

- Reduced fatalities and injuries (England)
- Response time as the basis for fire station and EMS base location, and resource allocation on a local or regional basis (Germany and the Netherlands)
- Response time as the basis for towing and recovery contracts (the Netherlands)

Perhaps the most common examples of performance measures were those used by auto clubs in England, Germany, and the Netherlands. EMS response time requirements are tailored on a region-by-region basis in Germany, accounting for urban and rural differences. Enforcement of these measures is not punitive, but may result in more resources being provided in areas where response times slip above the limits. Active and visible performance measurement of call centers or traffic management centers can drive customer awareness and improved service and responsiveness (England and the Netherlands). Germany and the Netherlands had incident auditors who go to an incident site and evaluate the effectiveness of the responders and their adherence to defined response protocols.

The team observed that performance measures serve a more integral role in incident response in the countries visited than they do in the United States. The team believes that performance measures could serve a beneficial role in U.S. incident response activities if properly implemented. Based on its observations, the team offers the recommendations below on performance measures.

The team learned that the countries visited have varying degrees of response time guidelines and requirements for EMS practices, but the guidelines and requirements are generally on a broader scale than in the United States (equivalent to a State or national scale versus an individual service or locale scale). In Germany, these guidelines are established on a district-by-district level though generally required by federal statute. The team believes that there is value in nationally facilitated and encouraged State or regional EMS response time guidelines and recommends that such guidelines be developed in the United States as described in Recommendation 4.

Training

The team found a strong commitment to training activities among responders in the countries visited. Of particular note was the extent to which response stakeholders participated in joint and coordinated training activities that included a specific focus on different incident response scenarios. In the Netherlands, all responders to traffic incidents are required to have at least first-aid training. This assures a more rapid response by personnel who know how to protect an injured patient from further

RECOMMENDATION 4

Incident Response Performance Measures

The United States should develop comprehensive national guidance on incident response performance measures that local and/or regional stakeholders can use to assess incident response programs:

- System operation should be based on the measured performance of the individual components.
- The national guidance should account for regional variations in practices, but should establish basic minimum criteria.
- Budgets should be correlated to performance measures to meet performance standards.

The United States should evaluate the potential for using performance measures as a means of assessing the performance of private-sector incident response partners, including the following:

- Performance-based responders
- Highway maintenance contractors
- Traffic control subcontractors
- Heavy equipment leasers and owner-operators (i.e., tow trucks, cranes, hazardous material cleanup equipment, etc.).

The United States should develop statewide guidelines based on national practices for EMS response time to traffic incidents:

- Guidelines should have appropriate rural and urban adjustments.
- Guidelines should be supported by additional resources to assist EMS providers in meeting them.

injury and provide basic lifesaving care (e.g., stopping major bleeding, opening an airway).

Perhaps the best example of training demonstrated was at the Netherlands Institute for Fire Service and Disaster Management (NIBRA) facility near Arnhem. The team was shown a virtual training program known as the Advanced Disaster Management Simulator (ADMS™), which was developed to address the needs of first responders by training, testing, and validating emergency processes and procedures designed to prevent the loss of life and property. NIBRA selected a firm to develop and deliver comprehensive training programs that allow fire officers, incident managers, and other emergency response personnel to work together and train as an integrated team. The hosts invited team members representing fire, police, EMS, and departments of transportation to participate in a limited training scenario in which a tanker truck exploded on a freeway. Figure 4 (see next page) illustrates two images from the training exercise.

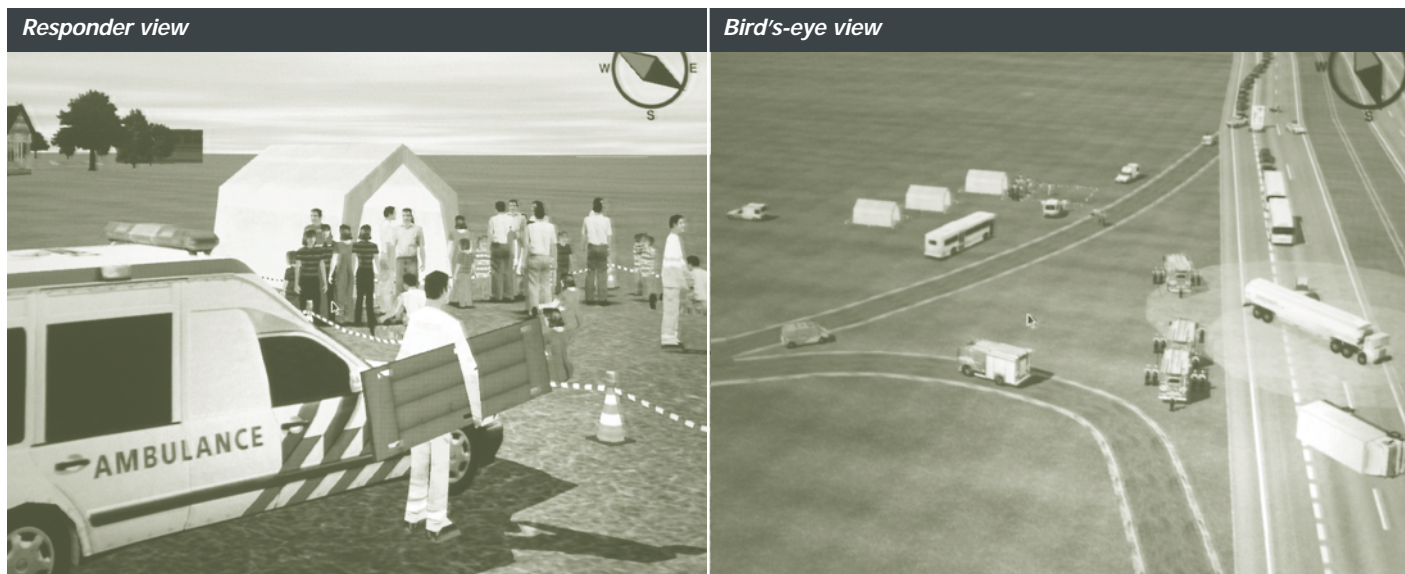


Figure 4. Images from virtual training example.

Based on the examples of integrated training activities observed in the host countries, the team believes that significant value would be realized from better integrating traffic incident response into first responder training. Accordingly, the team recommends the following.

RECOMMENDATION 5

Recommendation 5. Incident Response Training

Universal first responder training should focus more on traffic incident response, including the following:

- Integrate road incidents into first responder training.
- Conduct regular, coordinated interdisciplinary training activities that apply across agencies and jurisdictions.
- Increase the emphasis on first-aid training for all responders.
- Emphasize training in incident responder safety and basic traffic control procedures (similar to the Netherlands' safety priorities described in table 8) and integrate into the interdisciplinary training program, including certification of staff and accreditation of organizations to improve national accountability.

Private-Sector Role

In most of the countries visited, a large proportion of drivers belong to an auto club. In a majority of cases, the auto club responders are able to provide roadside vehicle repairs that allow motorists to continue their trip. The response vehicles often have the additional capability of towing vehicles for short distances off

the motorway to a place of safety. Response times from these private motor clubs were short enough that the transportation agency service patrols did not have to concentrate on providing duplicate services.

As mentioned in the Chapter 2, automobile clubs play a significant role in England, Germany, and the Netherlands. In each country, the team learned how the auto club service patrols provide roadside assistance to vehicles that have broken down on the freeway. Although they are not the only auto clubs in the host countries, the team heard presentations from RAC Rescue (formerly the Royal Automobile Club) in England, Allgemeiner Deutscher Automobil Club (ADAC) in Germany, and Algemene Nederlandse Wielrijders Bond (ANWB) in the Netherlands. These organizations provide multiple services to club members, but the scan team's focus was on roadside assistance. The philosophy of the auto clubs is to repair a disabled vehicle whenever possible. In all three countries, the auto clubs succeed in getting vehicles back on the road some 82 to 90 percent of the time they dispatch a repair person. Accordingly, response vehicles are equipped to fix a wide range of malfunctions. Many response vehicles could also tow a disabled vehicle from the roadside to safe refuge area, from which a fully equipped tow vehicle could relocate the disabled vehicle to a repair facility. Figure 5 illustrates several of these vehicles. Typically, they carry a wide range of repair equipment, including gasoline, replacement batteries, fuses, water, oil, and sometimes a computer that can be connected to the vehicle to diagnose problems. In the Netherlands, the team observed a wide range of service vehicles, including vehicles for assisting passenger vehicles, a motorcycle that provides quick assistance in congested conditions, vehicles equipped to assist heavy vehicles, and a variety of towing vehicles.

The team learned that the annual cost of belonging to an auto club was in the US\$65-to-\$100 range. The annual membership



RAC Rescue



ADAC on German motorway



ADAC vehicle



ADAC vehicle (Note tow bar and diagnostic computer.)



ANWB vehicle



ANWB motorcycle



Figure 5. Auto club service vehicles.



Programs and Institutions

fee is significantly less than the mandatory tow fee imposed by the national authority when a vehicle breaks down on a freeway and the driver is not a member of an auto club. Furthermore, the labor associated with the repair assistance provided by the auto clubs is free.

In England and the Netherlands, the team visited an auto club operations center, from which service vehicles are dispatched to assist members with disabled vehicles. The auto clubs had advanced call centers and dispatch operations that allow for rapid response. They also had technical libraries with repair manuals from various manufacturers.

The private sector played an important role in incident response efforts in several countries. Examples include auto clubs in England, Germany, and the Netherlands, incident support units in England, and towing and recovery services in England and the Netherlands. The team believes that the private sector should play a greater role in assisting motorists in the United States and recommends the following.

RECOMMENDATION 6

Private-Sector Role

NTIMC or other stakeholders should conduct exploratory discussions with appropriate private-sector organizations to identify ways they could assume a greater role in the quick clearance of incidents and free responder agencies to focus on other responsibilities, such as traffic control at the incident scene.

- **Develop a business model to address the following components of incident clearance: receipt of calls about incidents, dispatch of resources to incidents, and repair or towing to clear incidents.**
- **Include the following private-sector organizations: towing and recovery services, auto clubs, call centers, and other organizations as appropriate.**



TACTICAL AND

Onscene Operations

The greatest value of an effective incident response program is realized at the scene of an incident. It is at the incident scene where strategic plans evolve into tactical activities and onscene operations. The tactical and onscene operations address the activities of responders at an incident site and the onscene coordination of the various responders. The scan team learned a great deal about onscene incident response practices in the four countries visited and the degree of tactical coordination that takes place during an incident. This chapter describes the team's recommendations on tactical and onscene operations. Recommendations address incident responders, clearance practices, tactical considerations, dispatch practices, response times, and road users upstream of incidents.

Incident Responders

A significant amount of the information the European hosts presented related to various aspects of incident responders. These include responder safety, responsibilities, procedures, operational relationships, and other factors. The team has more recommendations addressing incident responders than any other category.

Transportation Agency Personnel Responding to Incidents

The team learned of several examples in which transportation agency or road authority personnel were involved in responding to incidents, and some have been described previously in this report. The Highways Agency in England has traffic officers who provide traffic control support to the police responding to an incident on a motorway. The IM+ program in the Netherlands has several incident response specialists involved in various aspects of incident response. Finally, the Swedish Road Authority uses the Road Assistant as a service patrol on the ring road around Stockholm. These service patrols use a specialized vehicle with several unique features (described in Chapter 6). The team believes that greater involvement of transportation agency personnel as key players in incident response programs would improve the effectiveness of response efforts. Accordingly the team offers the following (Recommendation 7).

Incident Command

The team found a well-defined command structure in several countries, through pre-incident planning (such as the police having overall command at all incidents) to onscene command coordination (such as that practiced in the Netherlands) in which all

RECOMMENDATION 7

Role of Transportation Agency Personnel

Transportation agency personnel should assume an aggressive role in responding to incidents as a part of operating the transportation system. The team observed several examples in which agency personnel provided services that included using service patrols to assist motorists, providing traffic control for incidents, and removing vehicles and cargo from the roadway.

commands met within 15 minutes of arriving on the scene to develop a unified command. The team also learned that commanders and command vehicles were typically well defined through the use of green vests for commanders and green lights for command vehicles. The team suggests the following recommendation related to command structure.

RECOMMENDATION 8

Incident Command and Coordination

Develop national guidance that addresses the issues of command and coordination of incident responders for a wide range of incident types. The guidance should address the following:

- Develop guidelines to identify commanders and command vehicles within each response specialty at an incident site. The identification could be as simple as a unique colored vest for commanders and special lighting for vehicles.
- Transportation-agency and private-sector responders should be knowledgeable about the local incident command system and coordinate with all public-safety responders within a short time after arriving at a major, multiresponse incident.

Safety of Incident Responders

The team learned of several incident response practices that emphasize the safety of responders, victims, and road users. Some



Tactical and Onscene Operations

of these safety principles are well known in the United States, but the team found more widespread adoption of these principles in Europe. Specific examples include the use of high-visibility garments, use of a buffer zone, and various aspects related to responding vehicles.

High-Visibility Garments

High-visibility garments are widely used in Europe. While the actual design of these garments varied among responders, the team observed such garments being used by police, traffic control specialists, EMS, and others. Figure 6 provides a few examples of the high-visibility garments observed during the visit. The team was impressed by the widespread use of these safety garments and recommends greater use in the United States as follows.

RECOMMENDATION 9

High-Visibility Garments

Develop national guidelines on the use of high-visibility garments at incident sites. The guidelines should address the following:

- Requirements for high-visibility garments for all responders at an incident scene.
- High-visibility vests for incident victims who are outside of their vehicles, but still in the incident area.

Police—the Netherlands
(Note access to service items.)



Traffic officer—England



Motorcycle paramedic—England



Police—Germany



Road patrol—Sweden



Firefighter—Sweden



Figure 6. Examples of high-visibility garments for responders.



Buffer Zone

The team learned that incident responders have well-defined plans for traffic control at incident sites. In the Netherlands, for example, the incident management manual defines a 1-meter buffer zone between the working area and moving traffic. While this is a well-defined practice in temporary traffic control zones in the United States, its application has not been widely implemented in incident response zones. Therefore, the team offers the following recommendation on buffer zones at incident sites.

RECOMMENDATION 10

Buffer Zone

Revise Chapter 6I of the *Manual on Uniform Traffic Control Devices* to improve the safety of incident responders by separating moving traffic from the incident response area. The guidelines should protect responders by defining clear, or buffer, zones near moving traffic that responders should not occupy.

Response Vehicles

Response vehicles are a necessary part of the incident response equation. The larger the incident, the larger the number of response vehicles that will come to the scene. The team found several examples in which the host countries have developed guidelines for positioning response vehicles at an incident site, markings to increase the visibility of response vehicles, and the use of emergency vehicle lighting at a site. Figure 7 provides examples of vehicle markings for a wide range of vehicles observed during the study. Figure 8 (see next page) illustrates the use of retroreflective dots to define the shape of the vehicle at night for approaching vehicles. These dots are coordinated with the overall vehicle color so that they are not visible in daylight. The team also learned that some hosts had guidelines for using vehicle emergency lighting at an incident scene, but the team did not receive copies of these. Only the shielding vehicle uses emergency lighting; the remaining vehicles onsite turn their emergency lights off. Discussions with fire department personnel in Germany indicated that volunteer personnel were not allowed to drive personal vehicles to the incident site. They were required to park at an offsite

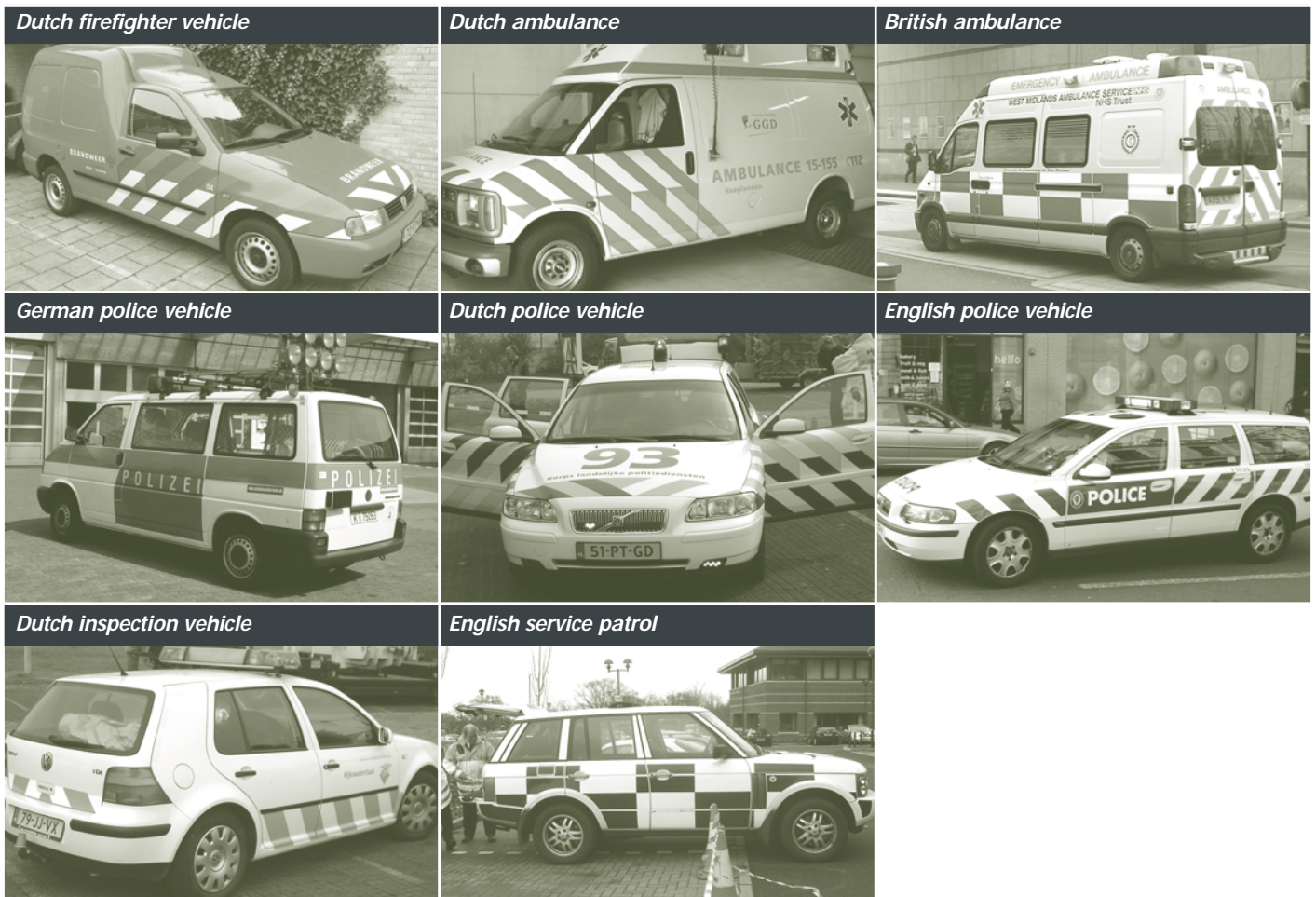


Figure 7. Examples of vehicle markings.



Figure 8. *Retroreflective dots used to define vehicle shape.*

location where official vehicles could pick them up and transport them to the incident scene.

Given the findings of the trip on response vehicles, the team recommends the following.

RECOMMENDATION 11

Visibility and Positioning of Response Vehicles

Develop national guidelines to improve the visibility and positioning of vehicles responding to incidents. The guidelines should address the following:

- Determining the most effective positioning of response vehicles.
- Providing uniform vehicle marking and lighting patterns, and limiting operating lights to the vehicle(s) shielding the incident site from approaching traffic.
- Prohibiting private vehicles of responders at the incident scene.

Extrication Procedures

In the Netherlands, the team learned of a product that could increase the safety of fire fighters using extrication equipment to free trapped victims. Many modern cars present potential hazards to personnel using extrication equipment if cuts are made at inappropriate locations on a vehicle. For example, high-pressure cartridges for airbags, electrical power systems in hybrid vehicles, high-strength components, and airbag sensors could all present a safety hazard to an operator. Responders in the Netherlands use a software package that identifies hazard locations on specific vehicle models so that they know what areas of the vehicle to avoid when using extrication equipment. The program, Crash Recovery System® from Moditech, displays a top and side view of the vehicle, indicating the safety features in various color schemes.¹⁰ The team recommends that similar information be provided to responders as follows.

RECOMMENDATION 12

Safety of Incident Responders Using Extrication Equipment

Provide responders with information that will allow them to avoid using extrication equipment on areas of a vehicle that could present a safety hazard to responders if cut using the equipment.

Incident Response Vehicles

The European countries the team visited have incorporated several unique features and capabilities into some of their incident response vehicles. Examples of these include the following:

- A rear seat was provided in motorist assistance patrol and service vehicles. The extra seat provides a location where incident victims can be debriefed and sit safely during incident clearance.
- High-back swivel seats were provided in ambulances instead of bench seats.
- Motorcycles were used to gain quicker access to incident sites in congested traffic. Motorcycle-based services include paramedics, motorist assistance, and vehicle removal (see Chapter 6 for an example).
- All fire department response vehicles in Sweden carried extrication equipment.

Some of these enhancements could be incorporated into U.S. practices. The team suggests the following recommendations as response vehicle enhancements.

RECOMMENDATION 13

Enhancements for Incident Response Vehicles

Identify response vehicle enhancements that could improve the capabilities and effectiveness of responders. Potential enhancements include the following:

- Extra seats in incident response vehicles (such as service patrol vehicles) that provide a safe haven for incident victims or a location to debrief and interview the victims.
- Swivel high-back seats with belt or harness restraints in EMS vehicles (instead of bench seats and CPR seats in U.S. ambulances, which crash tests have shown to be dangerous). Encourage their appropriate use (i.e., direction of seating position and use of restraints) through model State statutes and/or Occupational Safety and Health Administration (OSHA) language.
- Motorcycles that provide various incident response capabilities.
- Extrication equipment in all fire department response vehicles. This will reduce the time spent waiting for extrication equipment to arrive and allow vehicles to be cleared from the roadway sooner.



Increased Authority for Incident Responders

The team found that transportation agency incident responders had some degree of increased authority in England and Sweden. For example, in Sweden, service patrol vehicles were equipped with emergency lighting and sirens similar to police vehicles that helped the responding vehicle to get to the incident site faster. In England, Highways Agency traffic officers could remove a vehicle without the owner's permission. The team believes that providing transportation agency responders with increased authority could have great value in improving response time, clearance time, and traffic control. The team offers the following recommendation.

RECOMMENDATION 14

Increased Authority for Transportation Agency Personnel

Consider giving transportation agency responders greater authority to help them arrive faster at incident sites and better manage traffic at the sites. Traffic control responsibilities should be assumed by transportation agency personnel with specialized training in traffic control at incident sites. The guidelines should include the following:

- Vehicle lighting and sirens similar to those on police and fire vehicles.
- Ability to direct vehicle movement and determine vehicle removal.

Clearance Practices

The team learned about several practices that help reduce the time required to clear an incident site and return it to normal traffic flow. The team believes that some of the observed practices could improve clearance of incidents in the United States, and suggests several recommendations on clearance practices.

Restoring Roadway Capacity

England has two types of recovery: statutory and nonstatutory. Statutory clearance takes place when a vehicle presents an obstruction, is in a dangerous position, or has been abandoned. In these situations, the vehicle can be removed without the owner's permission. Otherwise, the vehicle is removed by the owner's auto club or by other arrangements made by the owner. In both England and the Netherlands, guidelines identified the maximum time a vehicle could be on the shoulder before it would be removed. The team also learned that the mandatory towing fee for this type of removal was typically much greater than the annual cost of a membership in an automobile club that provides free towing, creating an incentive to belong to an automobile club.

The team learned that Germany has a national highway police agency whose officers have specialized training in clearance practices, particularly on what equipment is needed to clear a site and

when to salvage spilled cargo versus clearing it without regard for its salvage value.

Greater reliance on private-sector towing and recovery services in the United States would benefit from national guidance on certification and qualification criteria, such as that used in England, Germany, and the Netherlands.

RECOMMENDATION 15

Procedures for Restoring Roadway Capacity

Develop national guidelines that address removing vehicles from an incident scene without the owner's permission so that the roadway can be cleared in a timely manner. This includes removal of disabled vehicles on the shoulder. The guidelines should address the following:

- Criteria for determining responsibility for deciding when to remove a vehicle
- Criteria that establish conditions under which removal is appropriate (such as time on the shoulder and hazard presented to passing road users)
- Recommended fees for mandatory towing

Develop guidance for determining when to clear spilled cargo from the roadway versus when to salvage the cargo.

- This determination can be facilitated by having police officers trained in quick clearance and heavy vehicle recovery. Police officers should know how to get the right equipment to the scene to accomplish the necessary tasks.

Develop national requirements and processes for certifying private incident responders such as towing companies, auto club service patrols, and private ambulance organizations.

Clearance Time Guidelines

Some speakers mentioned that their countries had specific guidelines for clearance times for different types of incidents, although the team was not provided with specific information about those guidelines. Having specific guidelines would help to identify the resources needed for a particular incident.

RECOMMENDATION 16

Clearance Time Targets

Develop recommended clearance time targets for typical incident types and recommended procedures for achieving those targets.



Tactical and Onscene Operations

Removing Fatalities from the Incident Scene

In most cases, the time required to clear an incident is longer if there is a fatality. A medical official may be required to declare the victim officially dead or a thorough criminal investigation may need to be conducted. In Germany, the Netherlands, and Sweden, responders may remove the entire vehicle with the deceased victim still inside to an offsite location where the victim can be removed and the investigation continued. The team also learned that EMS personnel in Germany (where a doctor is usually at the scene) and the Netherlands are empowered to officially declare a victim dead. These procedures help open the roadway to traffic sooner.

RECOMMENDATION 17

Removing Fatalities from Incident Site

Develop policies to relocate deceased victims from the incident scene in a more timely manner. Potential improvements include the following:

- Remove vehicles from the incident scene with the deceased victim still in the vehicle. The victim can then be recovered from the vehicle in a safer location and the incident can be cleared sooner.
- If not already practiced in an area, allow EMS personnel to declare a victim dead and provide specially trained personnel with medical examiner powers to conduct the initial scene investigation so that the body can be removed quickly.

Tactical and Dispatch Considerations

The team members perceived that the countries visited had a relatively consistent approach to coordinating onscene response. In particular, the team found that in the Netherlands traffic incidents are treated in a similar manner irrespective of which agency is the initial responder. While there were certainly some differences in approaches between countries, the team found similar tactical approaches and recommends the same for the United States.

RECOMMENDATION 18

Coordination of Tactical Response

Tactical response plans should be developed that will promote consistent response to traffic incidents irrespective of which organization is the first to respond.

The team found that Germany dispatched multiple responding agencies or types of responders to an incident scene before getting an onscene report identifying the resources needed for the response. This practice can reduce the time required to clear an incident and restore normal traffic flow. The team also learned that preplanned response assignments identify which units to dispatch to an incident based on the type of incident. These assignments are scalable from small to large incidents. Also, the team observed close coordination between dispatch centers and towing and recovery responders. The team recommends that these practices be considered in the United States as indicated below.

RECOMMENDATION 19

Response Dispatch

The following dispatch practices should be considered for implementation in the United States:

- U.S. agencies should adopt the practice of simultaneous dispatch of first responders to incidents.
- Responders should develop preplanned response assignments that identify what units to dispatch based on the type of incident. The response dispatch guidelines should be scalable from small to large incidents.
- Agencies should incorporate towing and recovery responders into dispatch and traffic management center operations. Where appropriate, road service vehicles (such as auto clubs) should also be incorporated into center operations.

Road Users Upstream of Incident

As in the United States, the team found that in Europe some incidents can create queues where travelers may be stranded for hours with no escape opportunity. Germany and the Netherlands have established programs to address the welfare of those stranded in queues for long periods by providing water, food, and other support services. The team believes that U.S. practices could better consider the needs of users upstream of incidents through the following recommendation.

RECOMMENDATION 20

Welfare of Road Users Upstream of Long-Duration Incidents

Agencies/organizations should give attention to the welfare of those involved in long-duration queues resulting from an incident.



The team also found that several host countries have procedures for warning upstream road users of the approaching end of queue. Figure 9 provides an example of the types of end-of-queue warning and lane closure vehicles used in Germany. The end-of-queue warning vehicle (vehicle on the left in the figure) will position itself just upstream of the congestion to warn high-speed vehicles that they are approaching slower traffic. This vehicle has a warning sign on top that says “stau,” which roughly translates to “backup.” The vehicle will move upstream or downstream to maintain the same relative position with the end of the queue. The team believes that this practice has value and recommends it for use in the United States.

RECOMMENDATION 21

End-of-Queue Advance Warning

Onscene traffic control should provide end-of-queue warning to inform road users before they reach the end of the queue.

The team found widespread use of preplanned diversion routes on the motorways in several countries. These diversion routes are identified with symbols on permanent signing, so when a diversion route is put into effect, motorists need only to be told to follow a particular symbol. This reduces the effort needed for traffic control near the scene of a major incident. Figure 10 illustrates a diversion route symbol on a roadway. The team offers the following recommendation on preplanned diversion routes.



Figure 9. German end-of-queue warning vehicles.



Figure 10. Example of permanent diversion route symbol sign.

RECOMMENDATION 22

Preplanned Diversion Routes

Agencies should develop preplanned diversion routes on high-volume freeways that would allow traffic to divert to alternate routes with minimal effort and reduce the demand for onscene traffic control.

As previous scanning teams had observed in Europe, the team found the use of variable speed limits an effective means of controlling traffic upstream of an incident site. On motorways in England, Germany, and the Netherlands, overhead gantries at regular intervals have a variable message sign above each lane capable of displaying a speed limit for that lane. Figure 11 illustrates one of



Figure 11. Example of variable speed limit in Germany



Tactical and Onscene Operations

these signs. Variable speed limits could be useful in the United States, and the team offers the following recommendation.

RECOMMENDATION 23

Variable Speed Limits

Evaluate the use of variable speed limits as a means of slowing traffic upstream of an incident and moving traffic out of lanes blocked by the incident. The variable speed limit concept should be technology independent and focus on the ability to change speeds and not the technology for changing speeds.



COMMUNICATIONS AND Technology

Communication and technology issues address how responders communicate with each other (particularly interagency communications) and with travelers, and how technologies can be used to improve incident response and management. The scan team observed a few examples of how communications and technology can be used to improve the implementation of strategic and tactical activities and coordinate the incident response actions of various responders. This chapter describes the use of traffic management centers and communication practices to improve the effectiveness of incident responses and the team's associated recommendations.

Traffic Management and Information Centers

The team visited several transportation-related centers, listed in table 9. These centers provided valuable insight into

Table 9. *Transportation centers visited by team.*

Name of Center	Location	Type of Center
RAC Control Centre	Bescot, England (near Birmingham)	Auto club dispatch center
National Traffic Control Centre	Quinton, England (near Birmingham)	National traffic information center
ANWB Dispatch Centre	Wolfheze, Netherlands	Auto club dispatch center
Trafik Stockholm Center	Stockholm, Sweden	Traffic management center

various aspects of traffic incident response activities. The National Traffic Control Centre in England was of particular interest, as its purpose was to coordinate distribution of traffic information to road users on a national level. The team believes that coordinating travel information on a national and/or regional basis has value and recommends the following.

RECOMMENDATION 24

Coordinated Traffic Information Centers

Agencies in the United States should implement traffic information centers on a national, State, and/or regional basis to coordinate the distribution of traffic information to road users, improve traffic incident data sharing, and coordinate national incident response performance measurement on a 24/7 basis.

- For nationwide coverage, the focus should be on providing effective traffic incident response on the entire Interstate System, not just in urban areas. Efforts should also include communicating incident information to travelers on a regional and local basis.
- Transportation agencies should move toward operating traffic management centers 24 hours a day, 7 days a week. Around-the-clock operations could take multiple forms, including transportation staffing around the clock, provisions to activate quickly and remotely, and/or arrangements to allow other 24-hour agency personnel to activate the system.

Communication Practices

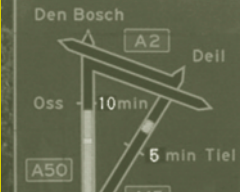
The team learned that the European hosts face many of the challenges that U.S. practitioners face. One of the team's observations was that the various responders had good communication capabilities and coordinated them at a national or regional level. Accordingly, the team recommends improved communication practices in the United States.

RECOMMENDATION 25

Improving Communication Practices

U.S. communication practices should be improved by integrating traffic incident communication needs through SAFECOM in the U.S. Department of Homeland Security.





ADDITIONAL OBSERVATIONS OF

Specific Practices

In addition to the team findings that led to the recommendations, the team observed many unique, interesting, or otherwise noteworthy practices and technologies worth describing to U.S. practitioners. The team does not recommend any of these practices for implementation in the United States, but believes there is value in sharing the information with U.S. practitioners.

Response Vehicles

Several observations relate to the design, use, or other aspects of response vehicles described below.

Swedish Service Patrol Truck

In Stockholm, the Swedish hosts displayed one of the roadside service and incident response vehicles used on the ring road around Stockholm. Figure 12 illustrates this vehicle. These vehicles have several features that enhance incident response:

- Truck-mounted attenuators on the back of the vehicle provide some degree of protection to incident responders.
- A changeable message sign on the back of the vehicle can display a variety of preselected messages to approaching traffic.
- A small crane can be used to remove passenger cars involved in incidents from the roadway.
- An exterior video camera mounted on a telescoping pole transmits real-time video to the traffic center from the incident site.
- A rear seat in the front of the vehicle provides a place for passengers of a disabled vehicle to sit while the vehicle is serviced.

Auto Club Response Vehicles

As indicated previously in the report, auto club membership is at a much higher level in Europe than in the United States. One benefit this provides to incident response is that some auto club responders try to repair vehicles at the incident location rather than tow the vehicle to a repair facility. The auto clubs that met with the team indicated they are able to repair 80 to 90 percent of the vehicles they are dispatched to (see section on Private-Sector Role). One reason they are able to repair such a high percentage is that the response vehicles carry computer diagnostic tools that help them identify the cause of a vehicle breakdown and repair the vehicle onsite without requiring a tow. In England, the agreement with the auto clubs is that a vehicle should be removed if it is quicker to remove the vehicle than it is to repair it.

Motorcycle Response Vehicles

Sweden has a prototype design for a towing trailer for passenger cars that can be pulled by a motorcycle. The trailer can be folded so that it is no wider than the motorcycle when traveling to the incident scene.

Incident Responder Capabilities

Fire and EMS experts on the team observed several practices among the hosts that may be of interest to U.S. practitioners in the fire and EMS fields.

Fire Response Capabilities

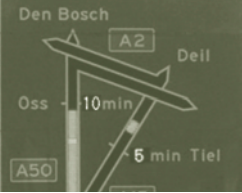
The team observed that response vehicles in the Netherlands and Sweden carry Firexpress, a portable fire-suppression device. It contains about 25 gallons of water and produces a high-density fog that can extinguish closed-compartment fires such as those typically found in a vehicle trunk, passenger compartment, or engine compartment area. Chapter 8 lists a Web site for this product. The unit purports the following advantages:

- Maximum fire-fighting capability with minimal water
- No dangerous recoil
- No spreading of burning debris
- Minimal amount of secondary/entrained air drawn in to the spray pattern
- Safe to use directly on humans

Medical Response Capabilities

Noteworthy practices used by EMS and other medical personnel involved in traffic incident response in Europe include the following:

- EMS personnel use cell phone cameras to send pictures of crashed vehicles and perhaps their occupants (patients coming to the hospital) to emergency rooms to better inform hospital personnel of the forces exerted on the patients.
- In one German service, the ambulance cot is loaded on a hydraulic mount that enables cot tilt and other positioning, as well as one-person operation in loading and unloading. This mounting device appears to be much sturdier than American cot mounts. A Dutch ambulance had an American-made, single-person operating cot that also appeared to have stronger cot mounts than American counterparts.
- One large German ambulance service employs a wheeled chair that is similar to some American stair-chairs, except that it



Additional Observations of Specific Practices

Service patrol vehicle



Attenuator



Vehicle crane



Vehicle camera



Figure 12. Swedish road service patrol vehicle.

is mounted in the passenger compartment with an easy roll-off, roll-on ramp. EMS personnel said that 90 percent of their emergency patients are transported on this chair rather than on a cot.

Traffic Safety and Operations

The host countries have several traffic safety and traffic operations practices that the team members considered noteworthy, but not all of them may be directly transferable to U.S. practice.

Traffic Safety Treatments

The team observed a strong commitment to many aspects of traffic safety in the countries visited. Examples include the following:

- Automated enforcement is widely used for speed enforcement and red-light running in all four countries.
- The Swedish are developing a speed control system that controls the speed of individual vehicles using Global Positioning System (GPS) technology. The GPS coordinates are matched with speed limit information. If the vehicle



exceeds the speed limit, the accelerator pedal vibrates to alert the driver.

Traffic Operations and Management

Traffic operations practices the team observed that may be of interest to practitioners include the following:

- In England, technology is used to scan and automatically recognize vehicle number plates (license plates). One application of this technology is to develop travel time information that is shared with travelers.
- A combination of historical data and current information is used to develop short-term travel time predictions that are communicated to travelers. This approach allows drivers to get information about the actual travel time to expect and not the time experienced by travelers that have driven that stretch of roadway already.
- The Netherlands has begun testing graphic route information panels (GRIP), which display a graphical representation of travel times on alternate routes. These could have particular use for diverting traffic during major incidents. Figure 13 illustrates these test signs.
- Several traffic centers the team visited operated on a 24/7 basis.

Scene Management

Managing the scene at a long-duration incident can present many challenges. Two practices were observed in Germany that could be of benefit in the United States:

- Germany has a large volunteer effort that can be involved in responses to major incidents through Technisches Hilfswerk (THW), the federal government's disaster relief organization. The assistance may be onscene by providing power, lighting, and other support services, or may be directed at the welfare of road users stuck in a long-duration queue. Individuals typically serve in THW in lieu of mandatory military service. The government reimburses

employers for the wages of employees who leave work for incident response.

- A portable lighting unit, called Powermoon® (shown in figure 14), is used at nighttime incidents to provide scene lighting in a manner that reduces the glare for approaching vehicles.



Figure 14. Powermoon lighting system.



Figure 13. GRIP demonstration signs in the Netherlands.





S U M M A R Y O F

Recommendations

The 12 members of the traffic incident response scan team traveled to four European countries in April 2005 to exchange ideas with their counterparts and identify practices, procedures, and technologies that might have implementation value in the United States. Chapters 3, 4, and 5 of this report describe the findings of the team on the three overarching topics identified by NTIMC. These chapters contain 25 recommendations the team believes have potential implementation value in the United States. These recommendations are repeated in this chapter.

The team believes that the greatest potential for successful implementation of these recommendations is through a synergistic effort with the National Traffic Incident Management Coalition. NTIMC can fully leverage the value of the scan recommendations to the national transportation and public safety communities, and the recommendations have the potential to accelerate the maturity and impact of NTIMC.

Implementation of these recommendations on a national level is likely to require innovative hybrid approaches by Federal and nonfederal organizations. Because these recommendations impact the public safety community as well as the transportation community, they may require more intensive deliberation by the public safety community.

The following pages summarize the recommendations presented in each of the three overarching NTIMC topics.

Recommendations Related to Programs and Institutions (Chapter 3)

Six of the 25 recommendations are associated with programs and institutional issues that represent the strategic aspects of incident response and address how countries, organizations, and individuals approach the basic challenge of developing and coordinating incident response programs. The six recommendations are listed below.

Recommendation 1.

National Unified Goal for Incident Response

The United States should develop and adopt a national unified goal for incident response. The goal should address the following:

- Address the safety of responders and the traveling public (similar to the Dutch policy presented in table 8).

- Recognize the improvement to travel time reliability from better incident management.
- Improve traveler information to the public.
- Establish real-time, interoperable communications between responders.

Recommendation 2.

Incident Responder Relationships

Incident responders should adopt formal working agreements. The formal agreements should do the following:

- Be incorporated into day-to-day operations to the point that they are accessible as part of computer-aided dispatch schemes.
- Be integrated into training programs and included in regular rehearsals for incident response scenarios.
- Be the subject of ongoing joint planning.
- Be addressed as part of the debriefing activities of individual incidents.

Recommendation 3.

Integration of Practitioner and Research Perspectives

Integrate the U.S. research network into incident response/management program development by establishing one or more Transportation Operations Centers of Excellence.

- The integration effort should highlight the parallel potential of such a research resource for technology, tools research, and development.
- Transportation Operations Centers of Excellence could provide geographically distributed data management for performance monitoring and reporting (e.g., Texas Transportation Institute's data on mobility measures).

Recommendation 4.

Incident Response Performance Measures

The United States should develop comprehensive national guidance on incident response performance measures that local and/or regional stakeholders can use to assess incident response programs.

- System operation should be based on the measured performance of the individual components.
- The national guidance should account for regional variations in practices, but should establish basic minimum criteria.



Summary of Recommendations

- Budgets should be correlated to performance measures to meet performance standards.

The United States should evaluate the potential for using performance measures as a means of assessing the performance of private-sector incident response partners, including the following:

- Performance-based responders
- Highway maintenance contractors
- Traffic control subcontractors
- Heavy equipment leasers and owner-operators (i.e., tow trucks, cranes, hazardous material cleanup equipment, etc.).

The United States should develop statewide guidelines based on national practices for EMS response time to traffic incidents. The guidelines should do the following:

- Have appropriate rural and urban adjustments.
- Be supported by additional resources to assist EMS providers in meeting the guidelines.

Recommendation 5. **Incident Response Training**

Universal first responder training should focus more on traffic incident response, including the following:

- Integrate road incidents into first responder training.
- Conduct regular, coordinated interdisciplinary training activities that apply across agencies and jurisdictions.
- Increase the emphasis on first-aid training for all responders.
- Emphasize training in incident responder safety and basic traffic control procedures (similar to the Netherlands' safety priority described in table 8) and integrate it into the interdisciplinary training program, including certification of staff and accreditation of organizations to improve national accountability.

Recommendation 6. **Private-Sector Role**

NTIMC or other stakeholders should conduct exploratory discussions with appropriate private-sector organizations to identify ways they could assume a greater role in contributing to the quick clearance of incidents and free responder agencies to focus on other responsibilities, such as traffic control at the incident scene.

- Develop a business model to address the following components of incident clearance: receipt of calls about incidents, dispatch of resources to incidents, and repair or towing to clear incidents.
- Include the following private-sector organizations: towing and recovery, auto clubs, call centers, and other organizations as appropriate.

Recommendations Related to Tactical and Onscene Operations (Chapter 4)

Seventeen of the 25 recommendations are associated with tactical and onscene operations issues that address the activities of responders at an incident site and the onscene

coordination of the various responders. The 17 recommendations are listed below.

Recommendation 7. **Role of Transportation Agency Personnel**

Transportation agency personnel should assume an aggressive role in responding to incidents as part of operating the transportation system. The team observed several examples in which agency personnel provided services that included using service patrols to assist motorists, providing traffic control for incidents, and removing vehicles and cargo from the roadway.

Recommendation 8. **Incident Command and Coordination**

Develop national guidance that addresses the issues of command and coordination of incident responders for a wide range of incident types. The guidance should address the following:

- Develop guidelines to identify commanders and command vehicles within each response specialty at an incident site. The identification could be as simple as a unique colored vest for commanders and special lighting for vehicles.
- Transportation agency and private-sector responders should be knowledgeable about the local incident command system and coordinate with all public-safety responders within a short time after arriving at a major, multiresponse incident.

Recommendation 9. **High-Visibility Garments**

Develop national guidelines on the use of high-visibility garments at incident sites. The guidelines should address the following:

- Requirements for high-visibility garments for all responders at an incident scene.
- High-visibility vests for incident victims who are outside of their vehicles, but still in the incident area.

Recommendation 10. **Buffer Zone**

Revise Chapter 61 of the *Manual on Uniform Traffic Control Devices* to improve the safety of incident responders by separating moving traffic from the incident response area.

The guidelines should protect responders by defining clear, or buffer, zones near moving traffic that responders should not occupy.

Recommendation 11. **Visibility and Positioning of Response Vehicles**

Develop national guidelines to improve the visibility and positioning of vehicles responding to incidents. The guidelines should address the following:

- Determining the most effective positioning of response vehicles.
- Providing uniform vehicle marking and lighting patterns that limit operating lights to the vehicle(s) shielding the incident site



from approaching traffic.

- Prohibiting private vehicles of responders from the incident scene.

Recommendation 12.

Safety of Incident Responders Using Extrication Equipment

Provide responders with information that will allow them to avoid using extrication equipment on areas of a vehicle that could present a safety hazard to responders if cut using the equipment.

Recommendation 13.

Enhancements for Incident Response Vehicles

Identify response vehicle enhancements that could improve the capabilities and effectiveness of responders. Potential enhancements include the following:

- Extra seats in incident response vehicles (such as service patrol vehicles) that provide a safe haven for incident victims or a location to debrief/interview the victims.
- Swivel high-back seats with belt or harness restraints in EMS vehicles (instead of bench seats and CPR seats typically found in U.S. ambulances, which crash tests have shown are dangerous). Encourage their appropriate use (i.e., direction of seating position and use of restraints) through model State statutes and/or Occupational Safety and Health Administration language.
- Motorcycles that provide various incident response capabilities.
- Extrication equipment in all fire department response vehicles. This will reduce the time spent waiting for extrication equipment to arrive and allow vehicles to be cleared from the roadway sooner.

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Increased Authority for Transportation Agency Personnel

Consider giving transportation agency responders greater authority to help them arrive faster at incident sites and better manage traffic at the sites. Traffic control responsibilities should be assumed by transportation agency personnel with specialized training in traffic control at incident sites. The guidelines should include the following:

- Vehicle lighting and sirens similar to those on police and fire vehicles.
- Ability to direct vehicle movement and determine vehicle removal.

Recommendation 15.

Procedures for Restoring Roadway Capacity

Develop national guidelines that address removing a vehicle from an incident scene without the owner's permission so that the roadway can be cleared in a timely manner. This includes removal of disabled vehicles on the shoulder. The guidelines should address the following:

- Criteria for determining responsibility for deciding when to remove a vehicle.
- Criteria that establish conditions under which removal is

appropriate (such as time on the shoulder and hazard presented to passing road users).

- Recommended fees for mandatory towing.

Develop guidance for determining when to clear spilled cargo from the roadway versus when to salvage the cargo.

- This determination can be facilitated by training police officers in quick clearance and heavy vehicle recovery. Police officers should know how to get the right equipment to the scene to accomplish the necessary tasks.

Develop national requirements and processes for certifying private incident responders such as towing companies, auto club service patrols, and private ambulance organizations.

Recommendation 16.

Clearance Time Targets

Develop recommended clearance time targets for typical incident types and recommended procedures for achieving those targets.

Recommendation 17.

Removing Fatalities from Incident Site

Develop policies to relocate deceased victims from the incident scene in a more timely manner. Potential improvements could include the following:

- Remove a vehicle from the incident scene with the deceased victim still inside. The victim can then be recovered from the vehicle in a safer location and the incident can be cleared sooner.
- Where not already practiced, allow EMS personnel to declare a victim dead and provide specially trained personnel with medical examiner powers to conduct the initial scene investigation so the body can be quickly removed.

Recommendation 18.

Coordination of Tactical Response

Tactical response plans should be developed that will promote consistent response to traffic incidents irrespective of which organization is the first to respond.

Recommendation 19.

Response Dispatch

The following dispatch practices should be considered for implementation in the United States:

- U.S. agencies should adopt the practice of simultaneous dispatch of first responders to incidents.
- Responders should develop preplanned response assignments that identify what units to dispatch based on the type of incident. The response dispatch guidelines should be scalable from small to large incidents.
- Agencies should incorporate towing and recovery responders into dispatch and traffic management center operations. Where appropriate, road service vehicles (such as auto clubs) should also be incorporated into center operations.



Summary of Recommendations

Recommendation 20.

Welfare of Road Users Upstream of Long-Duration Incidents

Agencies/organizations should give attention to the welfare of those involved in long-duration queues resulting from an incident.

Recommendation 21.

End-of-Queue Advance Warning

Onscene traffic control should provide end-of-queue warnings to inform road users before they reach the end of the queue.

Recommendation 22.

Preplanned Diversion Routes

Agencies should develop preplanned diversion routes on high-volume freeways that would allow traffic to divert to alternate routes with minimal effort and reduce the demand for onscene traffic control.

Recommendation 23.

Variable Speed Limits

Evaluate the use of variable speed limits as a means of slowing traffic upstream of an incident and moving traffic out of lanes blocked by the incident. The variable speed limit concept should be technology independent and focus on the ability to change speeds and not the technology for changing speeds.

Recommendations Related to Communications and Technology (Chapter 5)

Two of the 25 recommendations are associated with communication and technology issues that address how responders communicate with each other (particularly interagency communications) and with travelers, and how technologies can be used to improve incident response and management. The two recommendations are listed below.

Recommendation 24.

Coordinated Traffic Information Centers

Agencies in the United States should implement traffic information centers on a national, State, and/or regional basis to coordinate the distribution of traffic information to road users, improve traffic incident data sharing, and coordinate national incident response performance measurement on a 24/7 basis.

- For nationwide coverage, the focus should be on providing effective traffic incident response on the entire Interstate System, not just in urban areas. Efforts should also include communicating incident information to travelers on a regional and local basis.
- Transportation agencies should move toward operating traffic management centers 24 hours a day, 7 days a week. Around-the-clock operations could take multiple forms, including transportation staffing around the clock, provisions to activate quickly and remotely, and/or arrangements to allow other 24-hour agency personnel to activate the system.

Recommendation 25.

Improving Communication Practices

U.S. communication practices should be improved by integrating traffic incident communication needs through SAFECOM in the U.S. Department of Homeland Security.



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Web Sites

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Web sites of Interest

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3. England's Traffic Management Act of 2004
<http://www.opsi.gov.uk/acts/acts2004/20040018.htm>
4. Moditech Crash Recovery System®
<http://www.moditech.com>
5. Firexpress
<http://www.firexpress.com>
6. Netherlands Incident Management Handbook (English version)
http://www.incidentmanagement.nl/images/Incident%20Managment_tcm22-1559_uk_def_versie_tcm22-1787.pdf
7. Technisches Hilfswerk (THW)
<http://www.thw.de/english>
8. Powermoon
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Larry Tibbits is chief operations officer (COO) at the Michigan Department of Transportation (MDOT), overseeing 2,200 employees in the Bureaus of Highway Development and Highway Delivery, seven Region Offices, and 26 Transportation Service Centers. Traffic operations are part of the organizational responsibility of the COO, and the Michigan Intelligent Transportation System in the Metro Detroit area reports directly to Tibbits. Incident management, including successful courtesy patrols, is a major part of that organization. Tibbits began his MDOT career in 1970 and has held various positions in traffic engineering, public transportation, and railroad engineering. Tibbits has a bachelor's degree in civil engineering from Michigan State University. He serves on Civil and Environmental Engineering Advisory Boards for Wayne State University and Michigan State University.

Michael Zezeski is the director of the Office of CHART (Coordinated Highways Action Response Team) and ITS Development for the Maryland State Highway Administration (SHA). In his position, Zezeski oversees all of Maryland SHA's ITS programs, including the CHART statewide operations program. Before that, Zezeski served as chief of the Traffic Development and Support Division in the Office of Traffic and Safety. He has more than 27 years' experience in traffic engineering, traffic operations, and ITS. Zezeski has a bachelor's



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A M P L I F Y I N G

Questions

The purpose of this scan is to identify practices, issues, challenges, and innovative procedures that the host countries use in responding to incidents. The major interest of the team members is in the activities and coordination efforts that take place after an incident is detected. The team members are interested in a wide range of perspectives, including those of transportation agencies (at all levels) and emergency responders (fire, police, medical), as well as removal efforts, traffic control at the incident site, communication between the various stakeholders, and all related issues. While the team members recognize that the most significant incident response efforts are associated with urban areas, we would also like to know about incident response actions associated with incidents that occur outside of urban areas.

1. What do you do to plan and train for incidents?

- a. What agencies, organizations, groups, and companies are involved in responding to incidents?
 - i. How does this change according to different types of incidents?
- b. What are the laws, policies, memoranda, etc., that impact how you respond to incidents?
 - i. Are there forums for planning and organizing incident response/management activities (such as debriefing of major incidents, planning in advance for traffic control and alternate routes, etc.)?
- c. What provisions have been developed for long-term road closures?
- d. How do you train/certify personnel for incident response?
 - i. Traffic control (flaggers, use of devices, etc.)
 - ii. Hazardous materials
 - iii. Towing and recovery

2. How do you respond and operate onscene during an incident?

- a. Who is in charge and does that change as an incident evolves?
 - i. Is there a national policy for defining the command structure at an incident?
 - ii. When an official from one responding agency arrives onscene, are other responders provided with its size-up information?
- b. Is there a program, policy, or legislation for quick clearance of

incidents (i.e., removing vehicles, goods, and debris from the roadway as quickly as possible without concern for damage to the vehicles, goods, or debris)?

- c. What practices and procedures are employed for positioning of emergency response vehicles when arriving at highway incidents?
 - d. What practices and resources are used for recovery and clearance of incidents, and what are the most successful approaches?
 - i. How are towing and recovery services provided?
 - ii. Are there financial incentives for reduced clearance time?
 - e. How do you provide traffic control onscene?
 - i. What standards exist for traffic control?
 - ii. Who is responsible for providing traffic control?
 - iii. How do you manage the end of the queue?
 - iv. How is traffic control used to protect responders while maintaining safe traffic flow?
 - f. Is the emphasis on onscene patient care or rapid evacuation to hospital care?
- ## 3. What tools, systems, and communication technologies do you use during (in response to) an incident?
- a. What systems and or technologies are in place to enable interagency communications responding to and onscene (voice, data, and video)?
 - b. How do you inform road users of an incident and the impact of the incident on traffic flow?
 - i. Use of roadside technologies
 - ii. Media outlets
 - iii. Personal communications
 - c. What is the role of dispatch, emergency, and traffic management centers in responding to an incident?
 - d. Please provide a list of equipment carried on response vehicles and photographs of vehicles for the following types: EMS (ground and air response to scenes), police, fire, rescue/extrication, service patrol, transportation agency, recovery, etc.
 - e. What future systems are being researched and developed for incident response?

4. How do you manage and administer resources? How do you evaluate performance to help administer resources (performance measures)?



Amplifying Questions

- a. What are the budgeting issues and processes related to incident response and scene management? How are budgeting needs of different responding organizations coordinated?
 - b. How are incident management programs budgeted and prioritized in the budget process? How do the budgeted amounts for incident management compare to the value of maintenance investment and capital construction investment? Who determines the priorities, and how do they decide? Are incident management program budgets directly tied to achieving certain performance levels?
 - c. What system performance measures are used to measure the effect of the incident response program on the performance of the transportation system? Examples would be motorist travel time, average speed, vehicle or person hours of delay, travel reliability, transportation safety, response times, clearance times, etc.
 - d. What data systems are used (e.g., transportation and public safety) and how are differences in definitions of data elements used by these disparate agencies reconciled to obtain more complete data about an incident?
5. Provide a set of typical scenarios and ask for a typical response. Relate scenarios to each question.
- a. #1: Disabled vehicle on shoulder—no impediment to traffic flow
 - b. #2: Crash blocking one or more lanes
 - i. No injury
 - ii. Minor injury requiring transportation to hospital
 - iii. Critical injury requiring transportation to major trauma center
 - iv. Fatality
 - c. #3: Hazardous material or roadway damage requiring road closure for extended period of time

NOTE TO HOST: If possible, the team members would like to see examples of the latest, most innovative vehicles that might respond to a typical incident (police, EMS, DOT, fire).



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S U M M A R Y O F E N G L A N D ' S T R A F F I C

Management Act of 2004

In June 2002, the Highways Agency (HA) and the Association of Chief Police Officers (ACPO) commissioned a review of roles and responsibilities in managing the strategic road network. This review was commissioned as a result of the Secretary of State's request that the Highways Agency take a more proactive role in traffic management on the network with the specific remit of the following:

- Reducing congestion
- Improving safety
- Improving journey reliability times

This was to be achieved by making the best use of existing road network capacity. The review, which concluded in November 2002 and was published in June 2003, detailed a strong case for a transfer of certain traffic management tasks from the police to the HA. This would enable the Agency to take a more proactive role in traffic management and for the police to focus less on traffic congestion and more on the prevention and detection of crime. In consequence of this review the Traffic Management Act 2004 was enacted.

Summary of Act

1. Part 1 of the Act allows the Highways Agency to carry out some of the traffic management functions on motorways and trunk roads, which until now have only been carried out by the police. A new role for the Highways Agency provides greater focus on traffic management and keeping traffic moving, whilst freeing up police time to focus on crime detection and prevention.
2. Part 1 of the Act empowers the Secretary of State for Transport, as the traffic authority for trunk roads in England, to establish a uniformed on-road Traffic Officer service to manage the traffic consequences of random incidents such as breakdowns, obstructions, debris, and accidents on the strategic road network (which comprises the majority of motorways and all-purpose trunk roads in England). Traffic Officers will have special constabulary-type powers to stop and direct traffic and place and operate traffic signs. The Traffic Officer started working alongside the police in April 2004 and took on their full role with powers towards the end of that year. Traffic Officers will continue to be rolled out initially onto the motorway network throughout 2005, starting with the South East in August.
3. To complement the powers being taken in the Act, the Secretary of State is establishing a national network of Regional Control Centres. These will be operated by the Highways

- Agency in partnership with the Police, and will monitor and manage traffic on the strategic road network.
4. Secondary legislation is now being pursued to enable Traffic Officers to have similar powers to the police (as prescribed in the Removal and Disposal of Vehicles Regulations 1986) to remove vehicles, in prescribed circumstances, from the strategic road network. Provision will also be made for disposing of such vehicles and the recovery of costs (via a statutory charge) for the removal, storage, and disposal of vehicles removed by traffic officers. The disposal and cost recovery powers will be similar to those that the police and others enjoy under sections 100-102 of the Road Traffic Regulation Act 1984 and will be vested in the Secretary of State. It is envisaged that the secondary legislation will be introduced by March 2006.
 5. More information about the role of the Traffic Officers can be found at the Highways Agency Web site:
http://www.highways.gov.uk/knowledge/tcc/traf_off/index.htm.

Questions about the Act

The following presents questions and responses related to the Traffic Management Act.

What Does Part 1 of the Traffic Management Act 2004 (TM Act) Do?

To enable the transfer of traffic management tasks from the police to the Agency, the TM Act enables the Secretary of State to create an on-road uniformed Traffic Officer service. Traffic officers will predominately manage the traffic consequences of random highways events, such as obstructions, debris removal, accidents, and breakdowns. Specifically the TM Act enables Traffic Officers to carry out these traffic management functions by providing them with special powers similar to those that the police currently have to stop and direct traffic and place and operate temporary traffic signs. The Act also sets out the type of duties that can be assigned to Traffic Officers, defines where they can operate, and sets out offences in relation to the special powers and to traffic officers themselves.

What Duties can be Assigned to a Traffic Officer?

The duties that may be assigned to Traffic Officers must be either connected with the management of traffic or the performance of any other functions the Secretary of State has as the traffic or highways authority for a road. This means that the majority of



Summary of England's Traffic Management Act of 2004

duties assigned to Traffic Officers will relate to the management of traffic. However, it also allows some highways authority duties to be assigned. As Traffic Officers are the "eyes and ears" of the Agency on the ground, they may be asked to patrol the network to report back on overgrown vegetation or damage to infrastructure. If the Act did not enable Traffic Officers to be assigned some highway authority duties, Traffic Officers would not be able to do this.

What Special Powers Does a Traffic Officer Have?

Traffic Officers can be assigned special powers in order to carry out their duties. Under the TM Act they have the power to stop and direct vehicles, cyclists, and pedestrians when in regulation of traffic in a road. This is the same power a police constable has under section 35 and 37 of the Road Traffic Act 1988. They also have the power to stop vehicles under section 163(1) and (2) of the Road Traffic Act 1988. This in effect would enable a traffic officer to stop and pull over a vehicle. This power will only be used where that vehicle poses a safety risk, for example a lorry's tarpaulin has come loose and needs securing. Traffic Officers also have the same power as a police constable has under section 67(1) of the Road Traffic Regulation Act to place and operate temporary traffic signs. This power will be used to direct/warn traffic due to an accident or obstruction ahead.

Can Traffic Officers Close Lanes, Carriageways, and Roads?

Yes. As Traffic Officers have the power to stop traffic, they can in effect close lanes, carriageways, and roads. However, they can only do so in relation to unplanned events. Traffic Officers can't be used to established traffic management systems for road works and avoid obtaining temporary traffic regulation orders! They will also conduct rolling roadblocks, manage traffic at traffic surveys, and could also escort abnormal loads if required.

Are There Any Limitations to the Use of the Special Powers?

Yes. Under section 5(3) of the TM Act Traffic Officers can only use the special powers for a purpose connected to the following:

- Maintaining or improving the flow of traffic on a road
- Preventing or reducing the effect of anything causing congestion or that has the potential to cause congestion on a road
- Avoiding danger to persons on or near a road
- Preventing damage to anything on or near a road
- Or anything incidental to these purposes.

From the above it is clear that a Traffic Officer's remit is focused on the safe movement of traffic and the reduction of congestion. Traffic Officers can only use the special powers for a purpose described above on a road that they have jurisdiction for (see next section) and they must be in uniform.

What is a Traffic Officer's Jurisdiction?

Traffic Officers can only use the special powers on roads within their jurisdiction. By virtue of the act traffic officers can operate on any road in England for which the Secretary of State is the traffic

authority. In essence this means Traffic Officers can only operate on roads for which the Highways Agency is responsible. Traffic officers can operate on motorways and all-purpose trunk roads, although the initial rollout will only be on motorways. A Traffic Officer's jurisdiction can also be limited to specific Agency routes. For example they may only operate on the M1 between J12 and 15 or at certain tunnels.

What about Operating on Local Roads and in Scotland and Wales?

Traffic Officers can use their special powers on local roads. However, they must have consent from the local highways authority or the police. It is likely traffic officers may need to use their special powers off network when:

- Signs may need to be placed on local roads warning of the major incident ahead on the motorway or
- Where diverted traffic off the network will impact heavily on local roads. Traffic officers may then be asked to assist in managing traffic on local roads.

A similar agreement is in operation on the Welsh border. Traffic Officers can operate on Welsh roads providing they have the consent from the local highways authority or the national assembly for Wales. Traffic will not operate over the Scottish border as agreed with the Scottish Executive.

What Offences are Contained within Part 1 of the Act?

It is an offence not to comply with a direction given by a Traffic Officer or a traffic sign placed by a Traffic Officer (providing it is not advisory). The offence and penalties are the same as those attached to sections 35, 36, 37, and 163(1) and (2) of the Road Traffic Act 1988. Therefore, if motorists, cyclists, or pedestrians fail to stop or proceed as directed by a Traffic Officer then they could receive a fine not exceeding £1,000 or a fixed penalty fine of £60. In the case of motorists there is a possibility that they could have three penalty points endorsed on their license. If motorists or cyclists fail to comply with a sign placed by a Traffic Officer then they may be subject to a fine not exceeding £1,000. Depending on what sign has been breached, offences may include fixed penalty fines of up to £60 and for motorists three points endorsed on their license. Under section 10 of the TM Act there are also offences against Traffic Officer themselves. This is to ensure Traffic Officers are protected when in execution of their duties. Therefore it is an offence to assault, willfully obstruct, or impersonate a Traffic Officer. It is also an offence to fail to give a name and address to a Traffic Officer where that Traffic Officer reasonably believes that person was the driver of a vehicle who failed to comply with a direction given or sign placed by a Traffic Officer. The penalties are fines of up to £5,000 and in severe cases imprisonment not exceeding 1 year.

Do Traffic Officers have any Enforcement Powers?

No. The Agency, ACPO, and the Government felt that enforcement sits best with the police and their focus on the detection and



prevention of crime on the network. Where an offence is committed a traffic officer will notify the police, who will deal with the situation as they see fit.

When will we see Traffic Officers on the Network?

Traffic Officers have been operating in the West Midlands since April 2004. In the first instance they undertook in a coordination and liaison role working very closely with the police, as Part 1 of the TM Act did not come into force until October 4, 2004. The first batch of Traffic Officers in the West Midlands have now completed powers legislation training and were rolled out onto the network in January 2005. Traffic Officers will continue to be rolled out on to the motorway network through 2005 and into early 2006, starting with the South East in August 2005 and completing with the East Midlands in 2006.

Are there any Further Powers Traffic Officers Require?

Yes. Traffic Officers will require statutory removal powers similar to those that the police currently have to remove and dispose of vehicles. The Agency will also require powers in regard to storing and disposing of such vehicles. Provision will also need to be made in respect of recovering costs for the removal, storage, and disposal of the vehicles. This can be achieved through secondary legislation, which is envisaged to be introduced at in the first quarter of 2006. In the interim Traffic Officers will continue to rely on the police powers.

Who will Take the Lead at Incidents?

Police will retain primacy at all major incidents including those where serious injury or fatalities have occurred. Under the TM Act a Traffic Officer must always comply with any direction given by a police officer. Minor incidents will be dealt with by Traffic Officers without the need for police attendance.

How Does Part 1 Fit in with the Rest of the Traffic Management Act?

Part 1 of the TM Act is distinct from the rest of the Act. Traffic Officers have no duties or powers elsewhere in the act. For example they cannot direct statutory undertakers to move off the network nor are they undertaking civil enforcement duties. Part 1 should therefore be looked at in isolation from the rest of the Act.

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