



HIGHLIGHTS

Cambridge, Massachusetts

Spring 2005

National Transportation Systems Center



Curtis J. Tompkins

Director's Notes

A New Beginning

I am pleased to write the Director's column for the Spring issue of the Volpe Center *Highlights* – the first to be published since I became Director of the Volpe Center in January of this year. Before I came to the Volpe Center I had heard much about its reputation for technical excellence in transportation research, development, and technology deployment. My experience during the past few months has confirmed this impression. I have learned about the breadth of Volpe's work supporting the Department of Transportation as well as the transportation requirements of other agencies.

My tenure at the Volpe Center coincides with changes within the DOT and within Volpe Center's parent organization. Under the Norman Y. Mineta Research

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The **Center's New Director**

Focus



The evolving nature of the transportation system places continuing demands on its workforce. The Volpe Center supports the DOT in developing and implementing several capacity building programs, which are designed to enable transportation decision makers, professionals, and staff to effectively respond to changing needs. Capacity building efforts range from classroom-based training to peer-exchange workshops to Web-based distance learning and information sharing.

Professional Capacity Building Helps the Transportation Workforce Maintain Its Edge

Transportation professionals are expected to provide efficient, accessible, cost-effective, and safe transportation while adapting to rapidly changing technologies, interacting with diverse groups of stakeholders, and meeting requirements for environmental stewardship and enhanced security.

The DOT plays a critical role in ensuring that local, state, and federal transportation agencies meet these goals; over the last several years that role has begun to change, as exemplified by the Department's implementation of several professional capacity building (PCB) programs. Capacity building uses strategic communications and fosters a climate of partnership to empower the individuals that make up transportation agencies.

Throughout the federal government, agencies are expanding their use of capacity building to complement traditional methods of policy implementation such as regulation and funding.

The goal of capacity building is to foster an effective and adaptive transportation workforce that can adjust as circumstances and needs change. As DOT increases its emphasis on program results and resource management, PCB programs provide products and services that help transportation professionals attain and maintain essential skills and commitment. The Volpe Center supports the DOT in developing and implementing capacity building programs. Over the last several years, Volpe's role has expanded; several PCB programs are in various stages of development.

Beyond Training: Tailored and Targeted Learning

Capacity building programs tailor resources and support to the specific needs of particular audiences, and target delivery to only those audiences for whom it is most relevant. Accordingly, capacity building encompasses much more than traditional training. It applies learning theory using a variety of methods, such as:

- Traditional, classroom-based training
- Distance learning
- Peer exchange
- Education
- Technical assistance
- Web-based information clearinghouse.

Volpe's Growing Support to PCB

The Volpe Center's involvement in capacity building began in 1996 with the development of the Intelligent Transportation Systems (ITS) PCB Program. In 2000, Volpe began supporting the Metropolitan Capacity Building Program, which later expanded to become the Transportation Planning Capacity Building Program. These programs coordinate with stakeholders, including metropolitan planning organizations (MPOs), state DOTs, professional associations, the DOT federal headquarters and field staff, local agencies, and academic institutions; and partner with education and training institutions. Typically, Volpe teams are active in each phase of a PCB program cycle, which includes scoping the program, assessing needs and resources, planning and implementing the program, developing products and services, conducting outreach, evaluating program effectiveness, and modifying the program in response to evaluations.

More recently, Volpe's Planning and Policy Analysis Division has begun supporting the development of new PCB efforts in three areas: Roadway Safety, Environment, and Security and Emergency Management.

The Volpe Center supports several DOT capacity building efforts. Each addresses a key area of workforce expertise:

- Intelligent Transportation Systems
- Transportation Planning
- Roadway Safety
- Environmental Issues
- Security and Emergency Management

Intelligent Transportation Systems

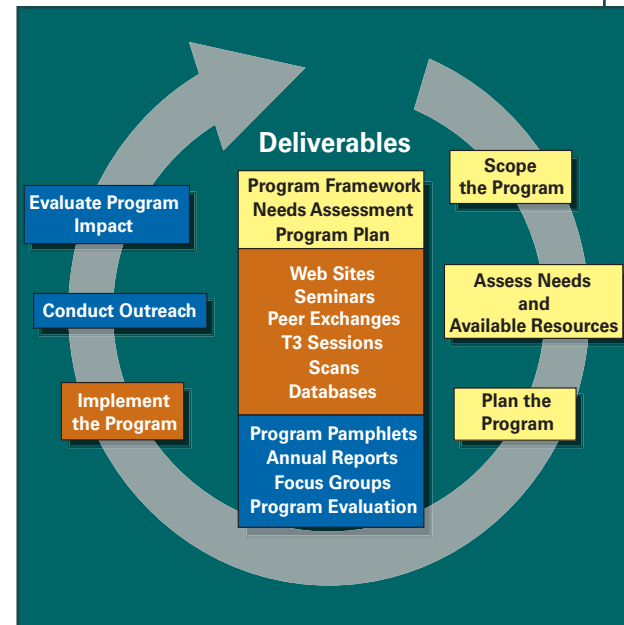
The ITS PCB Program supports successful job performance in the deployment, integration, and operations of ITS, including both technological and institutional requirements. The program also seeks to increase decision-maker understanding of ITS, the transportation planning process, and the business case for ITS. The program sponsor is the ITS Joint Program Office, which works in partnership with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Federal Motor Carrier Safety Administration (FMCSA), and the National Highway Traffic Safety Administration (NHTSA).

The Volpe Center has worked closely with the ITS PCB program coordinator to design and implement a comprehensive, nationwide program that evolves in response to the needs of the transportation professionals it serves. The program encompasses training; technical resources such as a searchable database for technical assistance; a peer exchange program; a Web site providing tools, publications, event information, and relevant links; and outreach activities.

Over the last year, as the program's focus has begun to shift from delivering traditional classroom courses to enabling learning through a variety of means, the Center has supported the development of the new PCB Program Five-Year Program Plan. Volpe teams conducted needs assessments to study ITS learning priorities for highway and transit professionals. The first draft report was submitted in November 2004. Findings from these assessments, and from several ITS Learning Forums held throughout the country, will form the foundation for the program's new mission, objectives, and priority actions by year.

Highlights of the ITS PCB Program include the Technical Training by Telephone (T3) Program, which received the "Best of ITS Award Honor" in the Training and Education Category from the Intelligent Transportation Society of America in 2004. The T3 program, which uses innovative technology in net conferencing (Web cast) to deliver short, interactive technical training sessions, has proven to be a quick, low-cost, and efficient method to deliver timely training to ITS stakeholders nationally. Volpe hosts and maintains the ITS PCB Web site, found at <http://www.pcb.its.dot.gov>.

Ms. Suzanne Sloan, of the Planning and Policy Analysis Division, has guided the evolution of the ITS PCB Program work at Volpe. Ms. Dana Larkin of the Division provides day-to-day management of the Volpe team, which includes Mr. Allan DeBlasio, Ms. Ann Steffes, and Mr. David Jackson, all of the Planning and Policy Analysis Division; Ms. Justyne Johnson of the Telecommunications Division; Mr. Dave Rutyna, Ms. Ingrid Bartinique, Ms. Elizabeth Machek, and Ms. Charity Coleman, all of CASE, LLC (an on-site Volpe contractor); and Ms. Margaret Zirker of Cambridge Systematics, Inc. (an on-site Volpe contractor).



Professional Capacity Building Program Cycle. The evolving nature of the PCB approach ensures that each program maintains its relevance and meets the needs of its diverse audience. Typically, Volpe teams are active in each phase of a PCB program approach.

Transportation Planning

The Transportation Planning Capacity Building (TPCB) Program supports effective transportation planning in state, metropolitan, rural, and tribal settings. It provides products and services designed to help decision makers, transportation officials, and staff resolve the increasingly complex issues they face when addressing transportation needs in their communities. The TPCB Program is sponsored by the FHWA and FTA Offices of Planning, and developed and implemented jointly by FTA and FHWA headquarters, the Volpe Center, FHWA divisions, FTA regions, and FHWA resource centers.

The TPCB Program develops, collects, and provides access to high-quality information, training, technical assistance, and examples of effective transportation planning practices, making full use of effective forums for anticipating and responding to issues as they relate to transportation planning capacity building. For example, the TPCB Peer Program facilitates meetings where peers can exchange effective practices and problem-solving techniques. Peer assistance may range from small group discussions to instructional workshops; it is always designed to suit the specific needs of a region, state, or locality. In FY 2004, 17 events were held with a total of 500 participants. For each peer event, Volpe assists in planning, manages all logistics, participates in all sessions, and develops a final report that is published through the TPCB Web site.

The TPCB Web site is a key component of the program, providing a variety of resources, tools, and information to users (<http://www.planning.dot.gov>). Volpe hosts and maintains the site, measures and evaluates its use, and has developed a number of technical resources resident there, including a searchable database of all MPOs in the country.

The TPCB Program supports development and delivery of training (47 course deliveries in FY 2004). Volpe recently completed development of a seminar on the essentials of metropolitan transportation planning, designed for executive board members of MPOs and other agencies. In October 2004, Volpe participated in the delivery of the pilot seminar, and recently led a train-the-trainer session with FHWA and FTA field staff. The seminar will be available for delivery starting in April 2005.

The Volpe TCPB team is led by Dr. John Boiney of the Planning and Policy Analysis Division, who is supported by Ms. Rachael Barolsky, also of the Division, and Ms. Hope Johnson and Ms. Mirna Gustave, both of CASE, LLC (an on-site Volpe contractor). Mr. Paul Christner of the Planning and Policy Analysis Division manages Volpe's support of the TPCB Peer Program.



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New PCB Programs

The Roadway Safety PCB Program is sponsored by the FHWA Office of Safety. Its mission is to develop within the transportation workforce the knowledge, skills, and abilities to improve roadway safety and reduce the number and severity of crashes. To date, the Volpe team has initiated a needs assessment and drafted a framework for the program plan. The team includes Ms. Suzanne Sloan and Mr. Allen DeBlasio of the Planning and Policy Analysis Division, as well as Ms. Elizabeth Macheck and Mr. Ben Rasmussen of CASE, LLC (an on-site Volpe contractor).

The Environmental Competency Building Program is sponsored by the FHWA Office of Project Development and Environmental Review. Its mission is to develop and maintain a high level of environmental competency and expertise to deliver FHWA's transportation program. Volpe has completed a needs assessment, a state-of-the-practice report, and a white paper on certification programs. Current work includes developing the program plan, Web site, and outreach materials. The Volpe team is led by Ms. Rachael Barolsky of the Planning and Policy Analysis Division with the support of Mr. Adam Klauber, also of the Division.

The FHWA Office of the Administrator is exploring the possibility of developing a capacity building program for surface transportation security and emergency management. The Volpe Center is providing research and strategic planning services that have included a needs assessment, a database of available training resources, and a draft plan of action. Dr. John Boiney of the Planning and Policy Analysis Division manages this effort; Mr. Matthew Rabkin and Dr. Rachel Winkeller, both of the Division, and Mr. Robert Brodesky of EG&G Technical Services (an on-site Volpe contractor), provide technical analysis and other support.



Preventing Crashes at Intersections (NHTSA)

Intersections are among the most dangerous locations on U.S. roadways. In 1999 and 2000, 9,951 vehicles were involved in fatal crashes at traffic signals, and 13,627 vehicles were involved in fatal crashes at stop signs. The National Highway Traffic Safety Administration (NHTSA), in conjunction with the Volpe Center, is developing performance guidelines for crash countermeasure systems that would provide an in-vehicle warning to drivers who are at risk of running a red light or stop sign. The goal of these systems is to reduce the frequency of intersection crashes associated with unintentional violations of traffic signals and stop signs. This work supports

the DOT's Intelligent Vehicle Initiative (IVI), which is focused on improving the safety of the nation's roadways through the continued development and deployment of advanced-technology crash-avoidance systems.

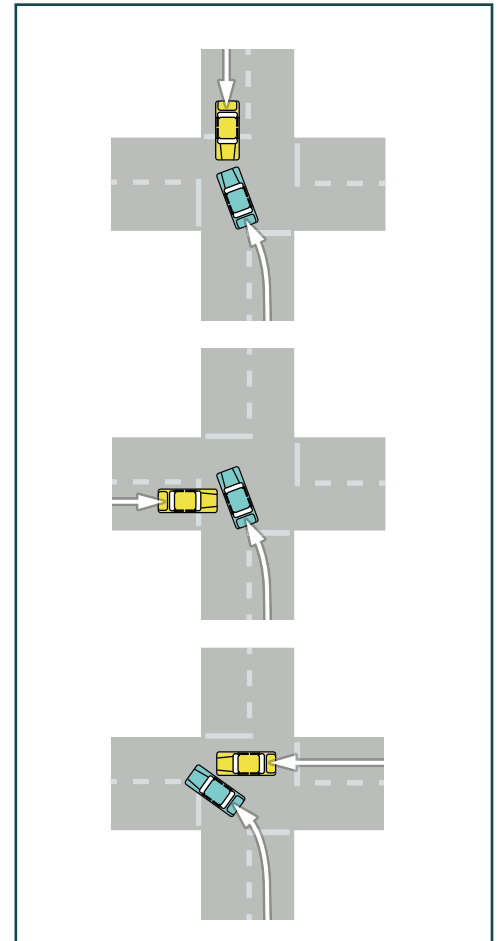
The Volpe Center recently published a report for NHTSA titled *Analysis of Fatal Crashes Due to Signal and Stop Sign Violations*. This analysis is concerned with understanding pre-crash scenarios, and concomitant circumstances, associated with traffic signal/stop sign violations in order to evaluate proposed countermeasure designs, or to offer insight to countermeasure development.

The Volpe team includes Ms. Brittany Campbell, Mr. John D. Smith, and Dr. Wassim Najm, all of the Advanced Safety Technology Division. The team analyzed the 1999 and 2000 Fatality Analysis Reporting System databases, and separated fatal crashes involving light vehicles, (e.g., passenger cars, vans, minivans, SUVs, and light trucks), that violated the traffic signal or the stop sign into three categories: single-vehicle, two-vehicle, and multi-vehicle crash. For each crash category, the report identifies the crash scenarios, describes the contributing factors, and characterizes the roadway where these fatal crashes occurred.

No significant differences were found regarding the crash categories and the roadway. While alcohol, speeding, and inattention were the three most common contributing factors of fatal crashes, the major contributing factors for each crash category provide valuable insight into the unique issues associated with each particular crash type. Single-vehicle crashes were three times as likely to involve alcohol than two-vehicle crashes. Single-vehicle crashes also had the highest rate of speeding and driver inattention. Two-vehicle crashes had the second highest involvement rate of driver inattention, while multi-vehicle crashes had the second highest rate of speed-related accidents. The report is available at <http://www-nrd.nhtsa.dot.gov/departments/nrd-12/809-779/>.

Human Factors Reports on Communications Devices (FRA)

New technologies, such as digital communications and location-finding systems, offer the potential to improve the safety and productivity of railroad operations. However, if the needs and limitations of operators are not clearly understood, such new technologies may adversely impact safety and productivity. Volpe's Operator Performance and Safety Analysis Division published three reports in October 2004 that evaluate the human factors implications of computer and communications technology in railroad operations. The Federal Railroad Administration (FRA) Office of Research and Development sponsored the research as part of its activities to develop Intelligent Railroad Systems. All three reports are available at <http://www.volpe.dot.gov/opsad/pubs.html>.



Crossing-path crashes are generally the most frequent types of intersection crashes. A recent Volpe report supports the development of intersection crash-avoidance systems that would warn drivers of an insufficient gap between vehicles and objects or pedestrians.

- Supporting Railroad Worker Communications with a Wireless Handheld Computer: Volume 1: Usability for the Roadway Worker; and Volume 2: Impact on Dispatcher Performance.** This two-volume report documents the design, evaluation, and continuing development of a digital communication device intended to improve roadway worker safety and productivity. The design evolved through an iterative process in which user requirements were turned into an initial prototype and modified based on user feedback. The original application was developed on a handheld computer with a wireless modem. The application was moved to another hardware platform (a cell phone with an integrated handheld computer) that provided improved communication functionality and the ability to provide location information using the global positioning system (GPS). The usability evaluation identified human factors issues that must be addressed for the device to be successfully implemented in the railroad environment. Dr. Jordan Multer and Dr. Thomas Sheridan of the Operator Performance and Safety Analysis Division co-authored Volume 1 with Mr. Nicolas Oriol of the Massachusetts Institute of Technology. Dr. Multer and Dr. Sheridan co-authored Volume 2 with Mr. Thimothee Masquelier of the Massachusetts Institute of Technology.

- Impact of Data Link Technology on Railroad Dispatching Operations.** This study examined digital (data link) communication as an alternative to voice radio for railroad dispatchers. This report focuses on safety, efficiency, and productivity issues associated with the introduction of a visually based (graphical and textual) data-link interface for railroad dispatchers. Dr. Jordan Multer and Dr. Thomas Sheridan of the Operator Performance and Safety Analysis Division co-authored this report with Mr. Nicolas Malsch of the Massachusetts Institute of Technology.

This Volpe study gauged user acceptance and identified human factors design issues as a communications device evolved toward a more mature design.

Another Volpe study determined that, overall, digital communications proved superior to voice radio communications in terms of railroad operations safety.



Volpe Supports Mayor’s Traffic Congestion Task Force in Washington, D.C. (DDOT)

Traffic congestion is a serious problem for downtown Washington, D.C., which is the economic heart of the District and the region. More than 350,000 people work in the downtown area, and local businesses generate 50 percent of the District’s economic output. Accordingly, Mayor Anthony A. Williams convened the Downtown Congestion Management Task Force in May 2004 with the main goals of improved traffic management and sustained economic development. The Mayor’s Task Force was comprised of 41 civic leaders, senior transportation and planning officials, and federal and district legislators.

The Volpe Center designed and facilitated a process to help the Task Force consider the problems of traffic congestion in the downtown area, develop and analyze a range of potential solutions, and present actionable recommendations. Initial data gathering identified several congestion problems:

- Traffic delays caused by double parking, improper loading and unloading, and blocked intersections;
- The need for improved public transportation;
- Inadequate short-term parking and delays caused by vehicles circling for parking;
- Delays at traffic signals;
- Delays caused by street closures and motorcades.

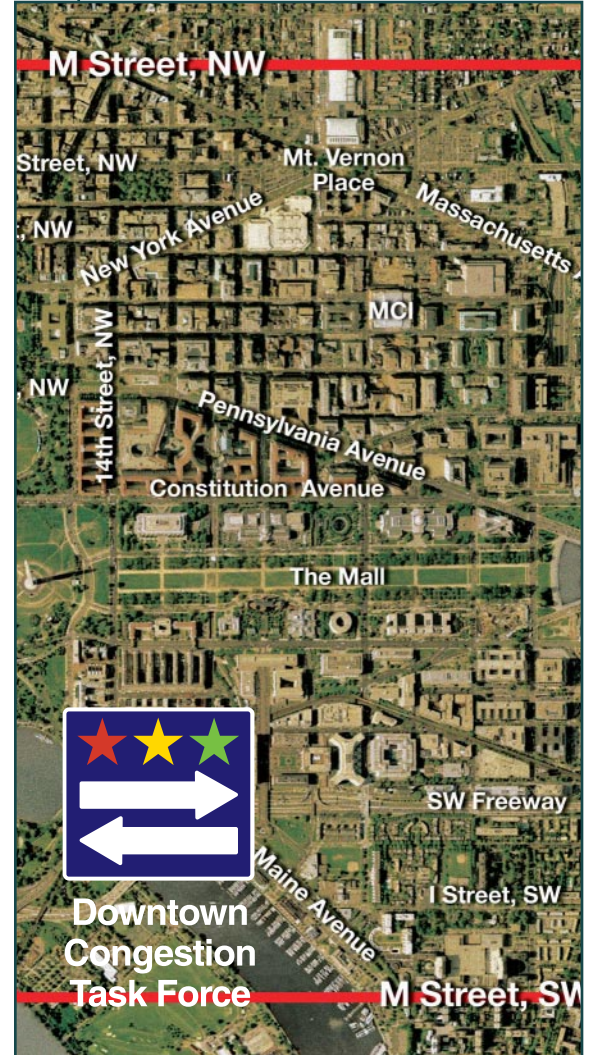
The Task Force examined a wide range of possible solutions to congestion problems, and ultimately categorized its recommendations under five action areas:

- Making public transportation a more efficient and attractive option;
- Optimizing downtown traffic circulation patterns;
- Improving the management of curbside space;
- Improving the management of on- and off-street parking;
- Enabling smarter travel choices.

At the final Task Force meeting in November 2004, recommendations were formally presented to Mayor Williams; at a public meeting in December 2004, members of the public were given the opportunity to comment and provide additional feedback. The draft final report of the Downtown Congestion Management Task Force is available at: <http://www.ddot.dc.gov>.

Mayor Williams has implemented a number of the Task Force’s near-term recommendations, including posting intersection-control aides at key downtown locations, testing advanced parking meters, installing “count-down”-style pedestrian signals, and planning for a new Downtown Circulator transit service. Data collection and best practices research are ongoing in support of some longer-term recommendations, including work to study how downtown circulation patterns and lane usage can be improved.

The District Department of Transportation (DDOT) sponsored Volpe’s work on this effort. The Volpe Center team includes Dr. Jeffrey Bryan and Ms. Ann Steffes of the Planning and Policy Analysis Division; Mr. Sean



The Volpe Center designed and facilitated a process to help the Mayor's Congestion Task Force consider the problem of traffic congestion in downtown Washington, D.C.

Peirce of the Economic and Industry Analysis Division; Ms. Shruti Mahajan of Cambridge Systematics (an on-site Volpe contractor); and Ms. Elizabeth Machek and Mr. Philip Thornton of CASE, LLC (an on-site Volpe contractor).



Security Strategies for State DOTs (PennDOT)

The surface transportation system is vital to a state's economy, security, and quality of life. For example, the loss of a critical bridge or structure could result in hundreds of casualties, billions of dollars of direct infrastructure costs, and even greater socioeconomic costs. The Volpe Center is helping the Pennsylvania Department of Transportation (PennDOT) develop a more integrated, strategic approach to security and emergency management planning for transportation assets and infrastructure across the state. The project was sponsored by the Federal Highway Administration (FHWA) Pooled Fund Program, which allows federal, state, and local agencies and other organizations to combine resources to support transportation research studies. Arizona and Indiana also contributed funds to this effort.

On December 14, 2004, Dr. Rachel Winkeller of the Planning and Policy Analysis Division delivered Volpe's final report and briefed PennDOT senior management on recommendations for a transportation security strategy. To develop the recommendations, the Volpe team applied the following three-phase methodology.

1. Analyzed current PennDOT security efforts, conducting interviews with staff from PennDOT and other relevant agencies within Pennsylvania, as well as reviewing security planning documents;
2. Documented effective practices in other state DOTs, interviewing state DOTs, federal agencies, and AASHTO (the American Association of State Highway and Transportation Officials), as well as reviewing literature (available at <http://www.pooledfund.org>);
3. Developed recommendations for enhancing PennDOT's security/emergency response program, based on the findings of phases one and two.

Key Lessons in Strategic Security Planning for State DOTs

- One-size solution does not fit all
- State DOTs need to assume a more proactive role in security
- Critical first step: an assessment of threats, vulnerabilities, and risks
- Integrate security into existing emergency response and recovery efforts

The report includes recommendations characterized as follows:

- Strategic direction for security
- Organizational structure
- Roles and responsibilities
- Relationships with external agencies and transportation providers
- Policies, plans, and procedures
- Communications/Intelligent Transportation Systems
- Infrastructure protection
- Training and exercises

Other Volpe team members include Mr. Matthew Rabkin of the Planning and Policy Analysis Division and Mr. Jordan Karp and Mr. Ben Rasmussen of CASE, LLC (an on-site Volpe Center contractor). Mr. Robert Brodesky of EG&G Technical Services, Inc. (an on-site Volpe Center contractor) and Ms. Hannah Rakoff of CASE, LLC also contributed to the effort.


In addition, on December 9, 2004, at the behest of PennDOT, Dr. Winkeller presented “Effective Practices in State DOT Security Planning” at the Pennsylvania Transportation Engineering and Safety Conference held in State College, Pennsylvania.

Transit Security Design Considerations (FTA)

A new report represents a significant milestone in the Federal Transit Administration’s (FTA) effort to make the nation’s transit systems safer and more secure in the post-September 11 world. *Transit Security Design Considerations*, prepared by the Volpe Center for FTA and published in November 2004, provides design strategies to reduce the vulnerability of transit systems to acts of terrorism.

Transit Security Design Considerations encourages a systems approach to security that encompasses all of the aspects of a transit organization – the people, the processes, the equipment, and the technology. A public transit system is in fact a network of systems. It is connected to other elements of the larger transportation network not only physically, but also through an intricate network of technology, law, regulation, and operational relationships. The report illustrates how the physical design of transit assets can support critical security functions, and provides design considerations for the major assets of transit systems – bus vehicles, rail vehicles, and transit infrastructure and communications – as well as a preliminary assessment of the vulnerabilities to various methods of attack inherent in each asset.

The myriad transit agencies across the country differ greatly in size, location, and requirements; this document was developed to allow each agency



Transit Security Design Considerations
Final Report
November 2004

U.S. Department of Transportation

FTA Office of Research Demonstration and Innovation
FTA Office of Program Management

FTA-TRI-MA-26-7085-05
DOT-VNTSC-FTA-05-02

Prepared for the FTA by:
U.S. Department of Transportation
Research and Special Programs Administration
John A. Volpe National Transportation Systems Center
Cambridge, MA 02142-1093

The new FTA document uses a systems approach to help transit professionals analyze and address risks and vulnerabilities, and build security into the design of transit projects.

to review, select, and adapt the information to suit its needs. *Transit Security Design Considerations* assembles the experience of many stakeholders and practitioners and presents this information in a structured manner that will be useful to the entire transit community. Industry specialists and practitioners have contributed significantly to the success of this venture. Almost 150 transit specialists formed 10 working groups, each focused on a critical area.

The document will be distributed on CD to a targeted audience. It is not available for general distribution. The FTA will soon be distributing the document accompanied by a letter from FTA Administrator Jennifer L. Dorn. The distribution date has not been finalized. For more information contact Mr. Matthew Rabkin at the Volpe Center 617-494-3151 or rabkin@volpe.dot.gov.

FTA's Office of Research and Technology and Office of Program Management sponsored the work. Mr. Matthew Rabkin of the Planning and Policy Analysis Division led the Volpe team and Mr. Joseph LoVecchio of the Telecommunications Division served as team leader for communications; Volpe staff members were supported by on-site contractors from Cambridge Systematics, Inc.; CASE, LLC; and EG&G Technical Services, Inc. Other contributing organizations include staff from the Transit Cooperative Research Program of the Transportation Research Board, the Community Transportation Association of America, and the American Public Transportation Association.



Volpe Center Project Management Practices

Over the last year, the Volpe Center has developed and is executing project management practices to improve cost, schedule, and quality accountability. While the Center will continue to build its business relationships based on years of trust, robust technical ability, and sponsor continuity, it will also continue to respond to evolving business management needs with methods and technologies that are becoming industry standards.

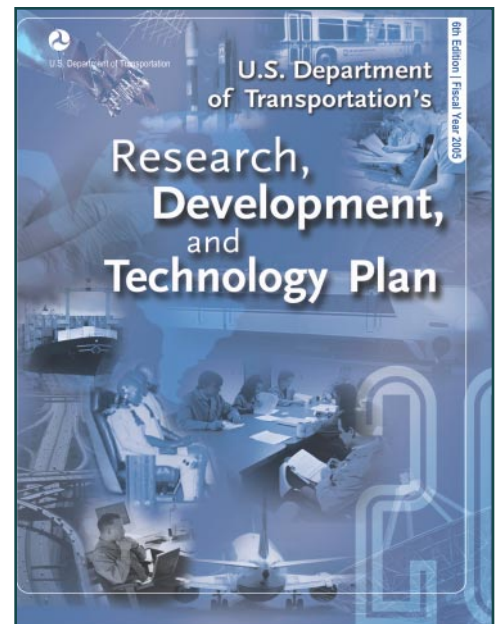
As part of this effort, a Project Management Office was formed, charged with researching, developing, and implementing new project management practices at the Center. The resultant practices will enhance project tracking, reporting, and reviews; improve the overall management of projects via formal project management plans, risk management plans, and quality assurance plans; and promote smooth project closeout. A project management information system will store all project information as well as the tools that Volpe managers need to initiate, manage, and control costs,

schedules, and deliverables. Volpe managers are being trained in the new systems, and have access to a new internal Web site on Volpe project management practices, tools, resources, and activities.

The renewed emphasis on project management recognizes that, in today's competitive environment, meeting schedules and delivering within cost estimates are as important as maintaining technical excellence.

Published and Presented

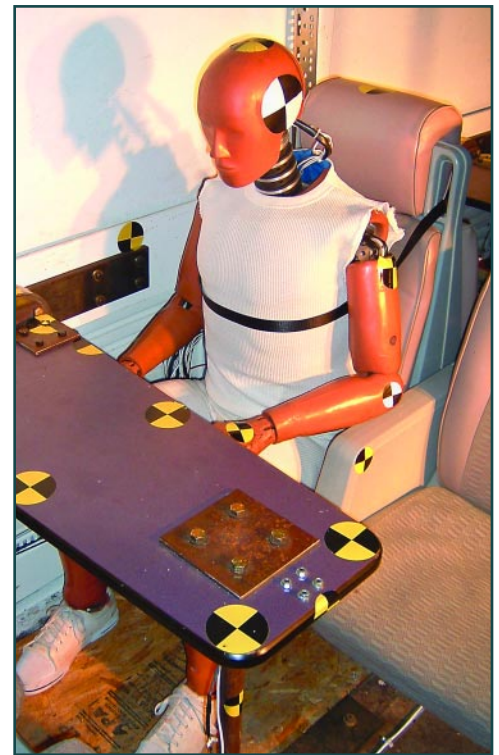
- **Operator Fatigue Management.** On October 28, 2004, Dr. Stephen Popkin of the Operator Performance and Safety Analysis Division presented the U.S. DOT Human Factors Coordinating Committee's program on operator fatigue management (OFM) to senior Swedish government officials at the Nobel Forum. The seminar, hosted by the Karolinska Institute, was designed to raise awareness among Swedish transportation officials about the potential dangers of fatigued or drowsy drivers. Approximately 70 government and industry officials attended the seminar, as well as members of the Swedish National Press. The OFM program, co-chaired by Dr. Popkin, began in 2000 to explore alternative, non-prescriptive approaches to the fatigue management of transportation personnel, reducing reliance on regulation as the primary strategy. The long-term goal of this effort is to improve safety and reduce worker fatigue by changing human behavior, corporate and government practice, and cultural norms.
- **Transportation Research, Development, and Technology (RD&T).** Ms. Annalynn Lacombe of the Economic and Industry Analysis Division led the Volpe Center team that prepared the *U.S. Department of Transportation's Research, Development, and Technology Plan*, 6th Edition, FY 2005, published in October 2004. The RD&T Plan establishes priorities for the Department's RD&T activities and links them to specific objectives and outcomes. It presents DOT's RD&T planning process, identifies the RD&T programs necessary to achieve Departmental objectives, and discusses DOT's overall strategy in carrying out the needed RD&T activities. The RD&T Plan directly supports the Department's five-year Strategic Plan, serving as the implementation document for that plan's RD&T elements. As such, the RD&T Plan provides a key resource for the Department's budget and program development process and helps to avoid program duplication. The RD&T Plan is available at <http://www.volpe.dot.gov/infosrc/strtplns/index.html>.
- **Transrapid Maglev Technology.** At the 18th International Conference on Maglev Systems and Linear Drives, Shanghai, China, October 25-28, 2004, Volpe staff presented research papers on the Transrapid maglev technology developed in Germany and under active consideration for



deployment in the United States. These studies, performed in support of the FRA's Maglev Deployment Program, provided comparative economic, public safety, and environmental information for a demonstration maglev transportation service in the United States.

- **“TR08 Maglev Electromagnetic Fields (EMF) and Radiation (EMR): Characteristics and Safety Standards.”** Dr. Aviva Brecher of the Office of Environmental Preservation.
- **“Comparison of Maglev Projects Planned for U.S. and Germany Using Transrapid Technology.”** Dr. Ronald Mauri of the Economic and Industry Analysis Division; Dr. Mark Yachmetz, FRA Associate Administrator for Railroad Development; Dr. Arnold Kupferman, FRA's manager of the Maglev Deployment Program; and Dr. John Harding of the FRA Office of Railroad Development.
- **Examining the Use of ATIS.** Mr. Sean Peirce and Ms. Jane Lappin of the Economic and Industry Analysis Division co-authored “Connecting in Seattle,” published in *Transportation Management + Engineering (TM+E)*, October 2004. The article discusses a Volpe Center examination of the factors that affect the decisions to consult advanced traveler information systems (ATIS) and to use that information. Findings were drawn from an analysis of Puget Sound Transportation Panel survey data collected during 2002 and 2003. The research was funded by the U.S. DOT's ITS Joint Program Office.
- **Royal Institute of Navigation.** Dr. James Carroll of the Surveillance and Assessment Division presented “Performance Analysis of an Integrated GPS and Enhanced LORAN System,” at NAV04: Location and Timing Applications, Royal Institute of Navigation Annual Navigation Conference and Exhibition, held in London, United Kingdom, November 9-11, 2004.
- **Human Factors in Aeronautics.** Dr. Divya Chandra of the Operator Performance and Safety Analysis Division presented “Designing and Testing a Tool for Evaluating Electronic Flight Bags” at the International Conference on Human-Computer Interaction in Aeronautics, held in Toulouse, France, September 29-October 1, 2004. The paper was written by Dr. Chandra, Dr. Michelle Yeh of the Operator Performance and Safety Analysis Division, and Dr. Vic Riley, a Volpe Center contractor.
- **IEEE Digital Avionics System Conference.** Several papers by Volpe staff members were presented at the 23rd Digital Avionics System Conference, held in Salt Lake City, Utah, October 24-28, 2004.
 - **“Alternative Surveillance Technology for the Gulf of Mexico,” Digital Avionics Systems Conference, 2004, DASC 04, Vol. 1.** Mr. Anastasios Daskalakis and Mr. Patrick Martone of the Surveillance and Assessment Division.
 - **“Deicing Decision Support Tool,” Digital Avionics Systems Conference, 2004, DASC 04, Vol. 1.** Dr. Jonathan Lee, Ms. Suzanne Chen, and Mr. Anastasios Daskalakis of the Surveillance and Assessment Division.

- **Lessons Learned from Unplanned Events.** Mr. Allan DeBlasio of the Planning and Policy Analysis Division presented “The Effects of Unplanned Events on Transportation System Management and Operations: Applying Lessons Learned to Planned Special Events” at the National Conference on Managing Travel for Planned Special Events, held in New Orleans, Louisiana, December 1-3, 2004. Mr. DeBlasio also led a Volpe team that wrote “Learning from the 2003 Blackout,” published in *Public Roads*, September/October 2004, <http://www.tfhrc.gov/pubrds/04sep/04.htm>.
- **Breath Alcohol Testing Devices.** Mr. Edward Conde of the Environmental Measurement and Modeling Division presented “NHTSA Evaluation of Breath Test Equipment” at the Blood and Breath Alcohol Test Program Management and Administration Symposium, held in Bloomington, Indiana, October 17-19, 2004.
- **International Mechanical Engineering Congress.** Several papers by Volpe staff members were presented at the 2004 American Society of Mechanical Engineers (ASME) International Mechanical Engineering Congress and Research and Development RD&D Expo, held in Anaheim, California, November 15-19, 2004.
 - **“Neutron Residual Stress Measurements on Rail Sections for Different Production Conditions,”** IMECE2004-61754. Dr. Vladimir Luzin, Dr. Thomas Gnäupel-Herold, and Dr. Henry J. Prask of the NIST Center for Neutron Research and Mr. Jeffrey Gordon of the Structures and Dynamics Division.
 - **“Impact Tests of Crash-Energy Management Passenger Rail Cars: Analysis and Structural Measurements,”** IMECE2004-61252. Ms. Karina Jacobsen, Mr. David Tyrell, and Dr. Benjamin Perlman, all of the Structures and Dynamics Division.
 - **“Development of Crash Energy Management Design for Existing Passenger Rail Vehicles,”** IMECE2004-61601. Mr. Eloy Martinez, Mr. David Tyrell, and Dr. Benjamin Perlman, all of the Structures and Dynamics Division.
 - **“Two Car Impact Test of Crash-Energy Management Passenger Rail Cars: Analysis of Occupant Protection Measurements,”** IMECE2004-61249. Ms. Kristine Severson, Mr. Daniel Parent, and Mr. David Tyrell, all of the Structures and Dynamics Division.
 - **“Finite Element Estimation of the Residual Stresses in Roller Straightened Rail,”** IMECE2004-61850. Mr. Brandon Talamini, Mr. Jeffrey Gordon, and Dr. Benjamin Perlman, all of the Structures and Dynamics Division.
- **Wake Vortex Research.** Dr. James Hallock, Chief of the Aviation Safety Division, Dr. Frank Wang of the Surveillance and Assessment Division, and Mr. George C. Green of the Federal Aviation Administration wrote “Wake Vortex Measurements to Support Safety Assessment of the



Analysis of Occupant Protection Measurements. Part of the Volpe Center's ongoing passenger rail equipment safety research for FRA includes full-scale impact tests of rail cars to measure occupant response during collision. Anthropomorphic test devices (ATDs) are instrumented with accelerometers and load cells to measure the injury risk to occupants.

Simultaneous Offset Instrument Approach Procedure at San Francisco International Airport,” presented at the 2nd WakeNet2-Europe Workshop on Capacity Gains as Function of Weather and Weather Prediction Capabilities, held in Langen, Germany, November 27-December 1, 2004.

- **Human Factors and Runway Safety.** Dr. Daniel Hannon of the Operator Performance and Safety Analysis Division presented “Using Simulators in the Training of Ground Vehicle Operators” at the 20th Annual Great Lakes Region Airports Conference, held in Chicago, Illinois, November 18, 2004.
- **Disassembly Line Balancing.** Mr. Seamus McGovern of the Airport Surface Division co-authored “Combinatorial Optimization Methods for Disassembly Line Balancing,” presented at the International Society for Optical Engineers OpticsEast 2004, Philadelphia, Pennsylvania, October 25-28, 2004.
- **International Wheelset Congress.** Mr. Jeffrey Gordon of the Structures and Dynamics Division presented a paper titled “The Effects of Wear and Service Conditions on Residual Stresses in Commuter Car Wheels” at the 14th International Wheelset Congress, held October 17-21, 2004 in Orlando, Florida. The paper was co-authored with Dr. Benjamin Perlman, also of the Division.
- **Heuristic Programming.** Dr. Alan Rao of the Railroad Systems Division presented “Heuristic Techniques Developed for Geospatial Data Fusion” at the Annual Conference of Institute for Operations Research and Management Science (INFORMS), held in Denver, Colorado, October 24-27, 2004.
- **Grade Crossing Research.** Ms. Suzanne Sposato presented “Public Education and Enforcement Research Study” at the Sixth Annual Workshop on Highway-Railway Grade Crossing Research, held in Montreal, Canada, November 22-24, 2004.
- **Transportation Security Training.** Mr. Robert Hoaglund of the Infrastructure Protection and Operations Division, supported by Mr. Allan DeBlasio of the Planning and Policy Analysis Division, presented “The Effects of Catastrophic Events on the Transportation System” on December 6, 2004 at the Transportation Security Council of the American Society for Industrial Security in Boston, Massachusetts.

For the Record

Corrections: Some names appeared in the Fall 2004 issue of *Highlights* with incorrect titles. These names should have appeared as follows: Dr. Jeffrey Bryan, Dr. Arthur Flores, and Dr. Stephen Popkin. We regret the errors.

About Curtis J. Tompkins, the New Volpe Center Director

In January 2005, Dr. Curtis J. Tompkins was appointed as the new Volpe Center Director, to oversee the operations and management of all the Center's programs. "Dr. Tompkins is a proven visionary leader," RSPA Deputy Administrator Bonasso said. "I am confident he will be an effective steward of the Volpe Center's unique mission as a high-performing organization."

Prior to joining the DOT, Dr. Tompkins served as the president of Michigan Technological University from 1991 to 2004. He spent 11 years as dean of the College of Engineering at West Virginia University, and served as a faculty member at the University of Virginia as well as the Georgia Institute of Technology. Dr. Tompkins began his professional career as an engineer at E.I. DuPont. He received his Bachelor of Science and Master of Science degrees from Virginia Tech and his doctorate in industrial and systems engineering from Georgia Tech.



Director's Notes

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and Special Programs Improvement Act, the Research and Special Programs Administration becomes two agencies: the Pipeline and Hazardous Materials Safety Administration (PHMSA), which focuses on pipeline and hazardous materials, and the Research and Innovative Technology Administration (RITA), which focuses on innovation and research in transportation technologies and concepts. As part of RITA, the Center has the opportunity to reaffirm its commitment to supporting each of the modal agencies of the DOT. Going forward, we will align ourselves with the RITA mission and work toward DOT Secretary Mineta's vision of RITA as an organization that combines the best of entrepreneurial organizations with the best of academic institutions.

Each issue of *Highlights* presents a Focus article on a significant Volpe effort. In this issue, the Focus article describes Volpe's approaches to professional capacity building – where education specialists develop the best methods to keep the transportation workforce current with technological and organizational changes in their work environments.

I appreciate how the Volpe Center's 35 years of experience provides continuity, stability, and institutional memory to our customers. One of my priorities is to maintain the legacy of customer satisfaction: continuing to perform excellent work and to be responsive to our customers are goals that are central to our success and key to our contribution to the problems facing the transportation enterprise today. Additionally, working through RITA, the Volpe Center will assist the DOT in identifying and facilitating solutions to longer-term transportation problems and opportunities.

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