



Volpe
National
Transportation
Systems
Center

Volpe Center Highlights

Cambridge, Massachusetts

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Director's



Notes

Dr. Richard R. John

Volpe at TRB and Beyond

The Volpe Center's vision is to be a world-recognized catalyst for innovation in transportation and logistics. This *Highlights* issue demonstrates the major role that the Center has come to play in the activities of the Transportation Research Board (TRB), which works to bring together the entire transportation community. The many contributions cited here illustrate that the Center now is recognized domestically and internationally as a source of expertise, knowledge, and insight concerning transportation innovation.

Not long ago, the Volpe Center was referred to as "the best-kept secret in Massachusetts." The Center is no longer a secret. At venues such as the TRB Annual Meeting, a reference to the Volpe Center is understood immediately by the attendees, and is recognized as a guarantee of competence and objectivity. In the transportation world, we truly are seen as a national resource.

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U.S. Rep. Kilpatrick Visits Volpe

On January 20, 2000, U.S. Rep. Carolyn Cheeks Kilpatrick and four members of her staff (Messrs. Gene Fisher, Peter Bernard, Derrick Miller, and Greg Roberts) visited the Volpe Center to learn more about how the Center can serve as a catalyst for innovation in transportation on the local level. Rep. Kilpatrick represents Michigan's 15th Congressional district, which is centered in Detroit.



U.S. Rep. Kilpatrick and her staff visit Volpe.
(left to right) Gene Fisher, Peter Bernard, Rep. Carolyn Cheeks Kilpatrick, Dr. Richard R. John, Derrick Miller, Greg Roberts

Rep. Kilpatrick hopes to organize a forum in Detroit that brings together key stakeholders to propose solutions to problems that hinder the city from achieving economic health and quality of life. Urban sprawl and access to transportation are just a few of the problems that Detroit faces. Dr. Richard R. John, Director of the Volpe Center, and several Volpe staff members met with Rep. Kilpatrick at a round-table meeting to discuss the forum and the role of the Center in helping local authorities make informed transportation decisions.

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Mr. William Lyons of the Service Assessment Division discussed how major cities are using transportation planning to confront regional problems, including how to reduce congestion and air pollution while encouraging economic development. Insights were drawn from 23 Volpe studies performed for the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) on how major metropolitan areas are responding to the transportation planning expectations of the Transportation Equity Act for the 21st Century (TEA-21).

Mr. Lyons provided examples on how elected officials in areas such as Northern New Jersey turn to the transportation planning process to build political and public support for major investments. Ms. Cheryl Little of the Economic Analysis Division elaborated on the high priority that DOT places on environmental justice in local transportation decision making.

Other topics of the round-table discussion included transportation and urban development, sustainable and livable communities, highway/transit/airport/seaport interconnectivity, partnerships and processes for effective system development, and accessible communities and welfare-to-work initiatives. In addition to the round-table discussion, Rep. Kilpatrick's visit also included a tour of the Multi-Media Operations Center (MMOC) where she viewed project demonstrations of the Enhanced Traffic Management System (ETMS) and the Panama Canal Communications, Traffic Management, and Navigation (CTAN) System.

Volpe Staff Have Active Role in TRB

From January 9 to 13, 2000, the Volpe Center had a significant role in the Transportation Research Board's (TRB) activities during its annual meeting in Washington, D.C. Attracting more than 8,000 transportation professionals from around the world, the meeting offered the Center an unparalleled opportunity to share its knowledge and perspectives in transportation policy, practice, and research with others and to promote innovation in transportation. The TRB meeting agenda spanned all areas and modes of transportation. Participation by Volpe staff included chairing 11 sessions, and delivering 26 papers and other presentations. Staff also gave demonstrations on vehicle tracking and information systems, noise measurement and modeling techniques, and facilities and environmental management systems at the Volpe Center exhibit.

Human Factors Across the Modes

Dr. Donald Sussman, Chief of the Operator Performance and Safety Analysis Division, was one of four featured guest speakers addressing the TRB's executive council on approaches to achieving advances in transportation safety. His talk was entitled "The Human Factors in Safety: Operator Performance and Other Behavioral Issues Across Modes." Dr. Sussman also chaired the first meeting of the new Subcommittee on Railroad Operational Safety and was the moderator of the "Human Factors Considerations in Railway Operations" session, which was sponsored by the Committee on Vehicle User Characteristics.

During that session, Mr. John Pollard of the Operator Performance and Safety Analysis Division and Ms. Stephanie Markos of the High Speed Ground Transportation Division presented "Passenger Rail Car Emergency Evacuation Considerations." The presentation described analytical and experimental studies of problems related to evacuating railroad passengers during emergencies.

At the same session, Mr. David Skinner of the Operator Performance and Safety Analysis Division presented the results of a Switching Operations Fatality Analysis (SOFA) working group. The group was formed at the request of the Federal Railroad Administration (FRA) to review recent fatal incidents and to develop recommendations for reducing fatalities in switching operations. The group included representatives from the FRA, the Association of American Railroads, the United Transportation Union, the Brotherhood of Locomotive Engineers, the American Short Line, and the Regional Railroad Association.

Dr. Judith Bürki-Cohen also of the Operator Performance and Safety Analysis Division organized and co-chaired a workshop on the Challenge of Simulator Validation. In addition, Dr. Bürki-Cohen presented "Simulator Validation: The Case of Platform Motion" at the Human Factors in Transportation 33rd Annual Workshop.

Dr. Jordan Multer of the Operator Performance and Safety Analysis Division and Ms. Anya Carroll of the Accident Prevention Division gave presentations at the Passive Highway-Railroad Crossings Workshop. Dr. Multer's presentation was entitled "Solving the Accident Puzzle: Human Factors Methods for Highway Grade Crossings." Ms. Carroll's presentation was entitled "Federal Railroad Administration's Highway-Railroad Grade Crossing Research Needs Workshop." Ms. Carroll's talk provided an historical background of the workshop that was sponsored by the Federal Railroad Administration (FRA) and was conducted at the Volpe Center in 1995 to determine research needs for highway-railroad grade crossing safety. Her presentation focused on human factors issues related to passive crossings that were identified at the workshop. Ms. Carroll also presented the current status of grade crossing safety research being conducted at the Volpe Center in support of the FRA and DOT's Intelligent Transportation Systems Joint Program Office (ITS/JPO) to the Committee on Rail-Highway Grade Crossings.

Mr. Michael Sheehan of the Operator Performance and Safety Analysis Division presented "International Organization for Standardization (ISO) Technical Committee 204 Activities." This ISO Technical Committee promotes the development of international Intelligent Transportation Systems (ITS) standards for the public transport industry. Mr. Sheehan discussed four proposed standards: an Australian proposal for a public transport stop numbering protocol; a U.S. proposal for public Transport Communications Interface Profile (TCIP) standards; a U.S. proposal for a public transport vehicle area network standard; and a U.S. proposal for a public transport vehicle cabling standard. The last two items are based on existing Society of Automotive Engineers' (SAE) standards in use in the United States. The presentation was given at the "Transit Intelligent Transportation Systems: International Developments" session, which was sponsored by the Section on Public Transportation. Mr. Sheehan filled in for Mr. Alan Kiepper of Parsons Brinckerhoff Quade and Douglas, Inc. who was unable to attend.

Rail Technology and Safety

Mr. Robert Dorer, Chief of the High Speed Ground Transportation Division, chaired the first portion of a two-part session entitled "Development and Deployment of High Speed Rail and Maglev Technologies." The session focused on the status of technology and was sponsored by the Federal Railroad Administration (FRA) and the Committee on Guided Intercity Passenger Transportation. Mr. Dorer also chaired the Committee's annual meeting. The second portion of the same session discussed high speed ground transportation in the marketplace and, as part of that session, Mr. Ron Mauri of the Center for Transportation Information presented "Defining the Market for Seven U.S. Maglev Projects." The seven proposed Maglev projects are located in California, Florida, Georgia, Louisiana, Maryland, Nevada, and Pennsylvania.

Ms. Debra Chappell of the Accident Prevention Division presented a status report on the Four-Quadrant Gate Project, which includes obstacle detection and positive train control technologies, at a session entitled "Advances in High Speed Rail Technology." The Committee on Guided Intercity Passenger Transportation sponsored the session. In addition, Ms. Chappell and Mr. Ashish Aggarwal, Mr. Andy Lam, and Mr. Marco DaSilva also of the Division were invited by the Federal Railroad Administration (FRA) to demonstrate the benefits of the system in place at the Four-Quadrant Gates Project (School Street, Groton, Connecticut) as part of the FRA's "Showcase on Technology" exhibit.

Dr. Ted Sussmann of the Structures and Dynamics Division co-chaired the session entitled "Track Substructure: Reconstruction Versus Maintenance." The session was sponsored by the Committee on Railroad Track Structure System Design and the Committee on Railway Maintenance.

Mr. David Tyrell of the Structures and Dynamics Division gave a presentation entitled "FRA Full-Scale Crash Test Program" at the "Advances in High Speed Rail Technology" session. The Committee on Guided Intercity Passenger Transportation sponsored the session. Mr. Tyrell also presented the results of the first full-scale rail passenger car collision test at a meeting to the presidents of the commuter railroads. The test consisted of a single car with accelerometers, strain gages, and displacement transducers colliding with a fixed wall at 35 mph, and included instrumented dummies in several interior configurations. The tests were designed by Mr. Tyrell and Ms. Kristine Severson and Mr. A. Benjamin Perlman also of the Division. The structural portion of the test was implemented by Transportation Technology Center, Inc., a subsidiary of the Association of American Railroads. The occupant protection portion of the test was implemented by Simula Technologies, Inc., a subsidiary of Simula, Inc. The test was conducted at DOT's Transportation Technology Center in Pueblo, Colorado.

Intercity Passenger Transportation

Mr. Robert Dorer, Chief of the High Speed Ground Transportation Division, chaired the annual meeting of the Committee on Guided Intercity Passenger Transportation.

Mr. John Zolock of the Structures and Dynamics Division gave a presentation entitled "A Study of Low-Speed Curving Performance of MU Type Commuter Cars" at the "Contemporary Commuter Rail Issues" session. The Committee on Commuter Rail Transportation sponsored the session.

Mr. William Lyons of the Service Assessment Division chaired the "Advances in Research for Managing Public Transit" session. The Committee on Transit Management and Performance sponsored the session.

Travel Demand: Capacity and Pricing

Mr. Larry Barr of the Accident Prevention Division presented a paper entitled "Testing for the Significance of Induced Highway Travel Demand in Metropolitan Areas." The paper presented the results of a study performed at the Federal Highway Administration (FHWA) under the sponsorship of an Eisenhower Research Fellowship grant. The paper was one of five included in the "Statistical Evaluation of Induced Travel Effects" session that presented recent research results on the effects of induced travel; that is, the effects of adding highway capacity on travel behavior. A panel discussion of the policy implications of induced travel immediately followed the session. The addition of highway capacity as a transportation improvement strategy continues to be a controversial issue of interest to transportation analysts, planners, environmental groups, and the traveling public. An article summarizing some of the findings presented in the session and the panel discussion appeared in the *Washington Post* on January 13, 2000. The session was sponsored by the Committee on Statewide Multimodal Transportation Planning, the Committee on Passenger Travel Demand Forecasting, the Task Force on Transportation and Sustainability, and the Committee on Highway Capacity and Quality of Service.

Dr. Robert Dial of the Service Assessment Division presented a paper entitled "Minimal Revenue Congestion Pricing, Part II: Efficient Algorithm for the General Case" at the "Network Pricing and Traffic Equilibria" session. The session was sponsored by the Committee on Transportation Network Modeling and the Committee on Traffic Flow Theory and Characteristics. Dr. Dial also gave a presentation on a new traffic assignment algorithm at a meeting of the Committee on Transportation Network Modeling.

Dr. Douglass Lee of the Service Assessment Division gave a presentation entitled "The Efficient City: Impacts of Transportation Pricing on Urban Form" at the "Transportation Pricing and Urban Form: Using Market Forces to Achieve Smart Growth Objectives" session. The Committee on Transportation Economics sponsored the session. Dr. Lee's presentation explained how transport underpricing might be the cause of many of the features of sprawl that people do not like, and how addressing transportation pricing and investment might be more effective at correcting these features than methods such as land use controls and high occupancy vehicle (HOV)

lanes. These conclusions (and others) are derived from a review and informal synthesis of several theories from urban geography, an evaluation of the degree of inefficiency in urban transport pricing and investment, and an empirical assessment of how large the impacts would be if transportation and land use were efficient.

Dr. Lee also presented a paper entitled "Benefit-Cost Evaluation of Traveler Information: Seattle's WSDOT Web Site" at the Use and Evaluation of Advanced Traveler Information Systems session. The Committee on Intelligent Transportation Systems sponsored the session. The paper was based on a spreadsheet model to assess the benefits and costs of providing traveler information via the Internet.

Transportation Workforce Census

Dr. Basav Sen of EG&G Technical Services, Inc. presented a poster of the paper "Complete Count of the U.S. Transportation Workforce," which he co-authored with Mr. Michael Rossetti of the Transportation Strategic Planning and Analysis Office. The paper used different types of economic classification data to develop a methodology that provides a consistent and comprehensive count of the U.S. transportation workforce. The poster was presented at the "Using Information Technology, Geographic Information Systems, and Economic Data for Transportation" session. The session was sponsored by the Committee on Spatial Data and Information Systems and the Committee on Information Systems and Technology.

Airport Capacity Enhancements and Economic Development

Dr. Eugene Gilbo of the Automation Applications Division presented a paper entitled "Optimal Utilization of Airport Capacity for Strategic Traffic Flow Management" at the session on "Airport Operations and Performance." The Committee on Airfield and Airspace Capacity and Delay sponsored the session. The paper showed how optimal, dynamic allocation of arrival and departure capacity could reduce delays and increase airport throughput, solving congestion problems. The optimization model can be used as an efficient decision support tool for operational enhancement of existing airport capacity and strategic traffic flow management. The work reported in the paper is being conducted in the scope of the Advanced Traffic Management System (ATMS) program, which is sponsored by the Federal Aviation Administration (FAA).

Mr. Stewart Butler of the Economic Analysis Division was the discussant at the panel discussion entitled "Role of Airports in State and Local Economic Development." The panel was sponsored by the Committee on Transportation and Economic Development and the Committee on Aviation Economics and Forecasting. As the panel discussant, Mr. Butler spoke last and commented on the remarks of the previous three speakers. He concurred with a general theme of the panel that a new airport, or the expansion of an existing airport, will not by itself generate economic development in a region. Airport expansion helps a region's economy only if it is undertaken primarily to accommodate the area's growing needs for passenger and cargo air transportation. Mr. Butler illustrated this point using Orlando International Airport as an example.

Techniques for Predicting Traffic Information

Dr. Haris Koutsopoulos of the Service Assessment Division co-authored a paper entitled "Simulation Laboratory for Evaluating Dynamic Traffic Management Systems" that was presented at the session "Network Flow and Assignment Models," which was sponsored by the Committee on Traffic Flow Theory and Characteristics. The paper discusses a simulation-based laboratory for the evaluation of Advanced Traveler Information Systems/Advanced Traffic Management Systems (ATIS/ATMS). It demonstrates the technology's applicability with a case study on the benefits of ATIS that provides traffic information based on predicted traffic conditions.

Ms. Jane Lappin of EG&G Technical Services, Inc. presented "Who Are the Likely Users of ATIS? Evidence from the Seattle Region" at the "Use and Evaluation of Advanced Traveler Information Systems" session, which was

sponsored by the Committee on Intelligent Transportation Systems. Ms. Lappin also presented "Technology Push Versus Demand Pull" at the "Intelligent Transportation Systems: What is Appropriate to Ensure Mobility?" session, which was sponsored by the Committee on Accessible Transportation and Mobility and the Committee on Intelligent Transportation Systems.

Environmental Transportation Alternatives and Noise

Ms. Melissa Laube of the Service Assessment Division co-authored a paper entitled "Grand Canyon National Park: Assessment of Transportation Alternatives." The paper presented the results of the Volpe Center's review of the alternatives analysis performed by the National Park Service (NPS) for transit service at the Grand Canyon. The review was sponsored by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) in response to a requirement by the U.S. Congress. Alternatives considered were light rail, standard bus, articulated bus, and articulated bus on busway. The paper was presented at the second portion of a two-part session entitled "New Transportation Initiatives for National Parks and Public Lands," which was sponsored by the Task Force on Transportation Needs for National Parks and Public Lands, the Committee on Bus Transit Systems, the Committee on Rural Public and Intercity Bus Transportation, and the Committee on Intermodal Transfer Facilities.

Ms. Cynthia S.Y. Lee of the Safety and Environmental Technology Division was the chair of the first portion of a two-part session entitled "Transportation-Related Noise Issues." The Committee on Transportation-Related Noise and Vibration sponsored the session. Dr. Judith Rochat of the Safety and Environmental Technology Division was the chair of the second portion of the session. Ms. Lee and Dr. Rochat also presented an update of the software upgrade and model validation status of the Traffic Noise Model (TNM), the Federal Highway Administration's (FHWA) state-of-the-art computer program for highway traffic noise prediction and analysis. The presentations were given during a meeting of the Subcommittee on Highway Noise.

Asset Management

Mr. Allan DeBlasio of the Economic Analysis Division and Dr. Sue McNeil of the University of Minnesota presented "Asset Management: What is the Fuss?" at the first portion of a two-part session entitled "Asset Management Concepts and Innovations." The Committee on Strategic Management sponsored the session. This presentation highlighted the work that the Volpe Center has been doing for the Federal Highway Administration's (FHWA) Office of Asset Management and the American Association of State Highway and Transportation Officials (AASHTO) Task Force on Asset Management. Mr. DeBlasio presented the findings of a survey sent to the AASHTO member states. This survey identified the inventories and management systems used by state DOTs to administer assets. The survey also ascertained how the management within the state DOTs makes investment decisions and values their assets. Dr. McNeil presented the common themes that emerged from a peer-to-peer exchange that was sponsored by the AASHTO and the FHWA in December 1999. Dr. McNeil also discussed the experiences of the participants in asset management, the successes they achieved, the barriers that they face, and the directions in which they want to move in the future.

Ethics in Partnering

Mr. David Glater, Chief Counsel of the Volpe Center, was the chair of the "Ethics in Partnering" session. The Committee on Transportation Law sponsored the session. The program consisted of presentations by three panelists: a senior ethics counsel with a large defense contractor (Raytheon), the U.S. Navy's chief ethics attorney, and an attorney in private practice who is the co-chair of the American Bar Association's Public Contracts Section Committee on Ethics. To provide background for the panelists, Mr. Glater described the origins of current efforts to promote partnering, provided several alternative definitions, and described examples of partnering taking place in the transportation industry today. He summarized the benefits and risks associated with partnering

activities, and listed the major legal issues that typically arise in transportation-related partnering relationships, including ethical standards for public and private sector partnership participants.

Transportation Education

Volpe Center staff from the Transportation Strategic Planning and Analysis Office played an integral part in the planning and implementation of a special forum entitled "Innovative Tools for Identifying and Delivering Training for Transportation Practitioners." The forum was sponsored by the Committee on Education and Training and the Committee on Technology Transfer. The event drew approximately 130 people, representing three continents. The insights that practitioners, academics, and government officials received from the morning presentations and afternoon panels will provide an excellent resource to support the formal and informal learning endeavors of employees who operate the transportation enterprise.

Volpe Center Exhibits at TRB

This year's exhibit theme was "Bringing about Transportation Innovations by Teaming with State and Local Government Agencies." The exhibit featured demonstrations focusing on vehicle tracking and information systems, noise measurement and modeling techniques, and facilities and environmental management systems. The Volpe Center exhibit also gave attendees the opportunity to view and order technology and policy reports and to meet the authors of those reports, bringing to life the people that make innovations in transportation happen. Nearly 50 reports were ordered at the exhibit. In addition, new employees were recruited in conjunction with the unveiling of the Center's new Career Opportunities Web site.

Vehicle Tracking and Traveler Information Systems

The Volpe Center is assisting several federal and local agencies in implementing vehicle tracking and communications systems. The Center is continually enhancing its vehicle tracking and data fusion capabilities to incorporate new technologies such as the distribution of vehicle location data over the Internet, low-cost communications methodologies, and interactive kiosks for dissemination of traveler information. The vehicle tracking system is capable of providing a seamless display of tracking and other information from vehicles that use a wide range of tracking technologies, including Cellular Digital Packet Data (CDPD) cellular, two-way paging, radio frequency, and low-earth and geosynchronous satellites. The system also can send text messages to mobile units and to monitoring stations, and offers centralized map serving. Mr. Bill Baron and Mr. Scott Ardisson of the Infrastructure Protection and Operations Division demonstrated these technologies and explained how they are being tested with local transportation agencies such as the Massachusetts Bay Transportation Authority. To further illustrate how this technology works, they set up a system that tracked the Transportation Research Board's (TRB) shuttle bus as it made rounds among the three hotels sponsoring the TRB Annual Meeting.

Noise-Related Measurement Programs

Mr. Christopher Roof, Ms. Amanda Rapoza, Ms. Cynthia Lee, Dr. Judith Rochat, and Mr. Gregg Fleming of the Safety and Environmental Technology Division's Acoustics Facility showcased their work in support of federal and state transportation-related agencies. The display highlighted noise-related measurement programs in the national parks in support of the National Overflights Rule. Examples of noise measurement instrumentation were on display. Recent publications supporting the Acoustics Facility's initiatives in noise measurement and modeling also were available. Acoustics Facility staff demonstrated noise measurement procedures in the field, answered questions, and were available to demonstrate computer models that were developed by the Volpe Center.

The Acoustics Facility currently provides support to the Federal Aviation Administration (FAA), the Federal Highway Administration (FHWA), the National Aeronautics and Space Administration (NASA), and the transportation departments of several U.S. state highway agencies. Work for the FAA includes development of their Integrated Noise Model (INM), which is used for modeling aircraft noise near airports. Work for the FHWA includes the development of their Traffic Noise Model (TNM), which is used for modeling noise near highways, as well as the design of highway noise barriers and the development of educational tools related to highway noise. In support of NASA, the Acoustics Facility has been examining potential technical improvements to aircraft noise models. The Acoustics Facility also provides direct technical support to state highway agencies in the use of the TNM.

Facility and Environmental Management System

Mr. Paul Bushueff, Ms. Jennifer Papazian, and Mr. Paul Kudarauskas of the Automation Technology Division demonstrated the capabilities of the Facilities and Environmental Management Information System (FMS/EMIS), which was developed originally for the U.S. Postal Service (USPS). The FMS/EMIS demonstration featured a complete facility management system with modules to describe real property and a project's management capability to acquire real estate, manage new construction, and conduct repair and alteration activities; and modules to perform lease management, contracting activities, and financial management. In addition, they demonstrated the Environmental Management System (EMS) component with modules to track asbestos surveys, tank surveys, compliance audits, storm water, pollution prevention including waste management and recycling, and energy management. This system includes an extensive management and performance-reporting component. The system is being extended to provide more comprehensive asset and real estate management tools in order to support the state DOT requirements of Colorado. A number of other state DOTs, including Pennsylvania, and regional transit authorities with similar business needs, showed strong interest in using the systems and in participating in the collaborative development process.



*Volpe staff at the demonstration of the Facility and Environmental Management System.
(left to right) Paul Kudarauskas; Dr. Frank F. Tung, Deputy Director of the Volpe Center; Jennifer Papazian; Paul Bushueff*

Career Opportunities Web Site Unveiled

The Volpe Center unveiled its new Career Opportunities Web site as part of an effort to take advantage of the many transportation-oriented college and university students at the Transportation Research Board's (TRB) Annual Meeting. This site features information on transportation careers, new job listings, and information on how to apply for a position at the Volpe Center. Mr. Peter Jones of the Center's Human Resources Management Division was on hand at the booth and in the TRB Recruitment Room to answer questions and to provide information about the Center. Faculty members and students from universities around the country were interested in the John A. Volpe Internship, which consists of work periods at the Volpe Center combined with tuition reimbursement for up to \$10,000 for a graduate student whose studies are in the transportation field. The internship recipient is selected on a competitive basis.

SBIR Exhibit Featured at TRB (OST)

In keeping with DOT Secretary Rodney E. Slater's theme of technology and innovation, the DOT's Small Business Innovation Research (SBIR) program was featured at an exhibit at the Transportation Research Board's (TRB) Annual Meeting. Mr. Joseph Henebury of the Communications and Technology Outreach Division manages this program in support of the DOT Office of Small and Disadvantaged Business Utilization. Mr. Henebury and Ms. Linda Duck also of the Division, Ms. Susan Sandler of EG&G Technical Services, Inc., and Mr. Robert Kelly of the Federal Highway Administration (FHWA) supported the exhibit. Hundreds of attendees, representing small businesses, various state DOTs, and academia, visited the booth. The SBIR exhibit was a successful venue for developing and commercializing the innovative ideas of the small business community and promoting participation in the program. In conjunction with the exhibit, Mr. Henebury conducted an SBIR planning meeting with the modal SBIR representatives.



Promote public health and safety by working toward the elimination of transportation-related deaths, injuries, and property damage.

age tolerance for these aircraft and was able to address concerns expressed by participants. Several attendees subsequently requested copies of the *Damage Tolerance Assessment Handbook* and the video, *Damage Tolerance: An Introduction*, both prepared by the Volpe Center for the FAA. As a representative of the Center, Dr. Arin demonstrated our staff's expertise not only on technical issues but also in the important area of consensus building and participatory change. The outcome of this meeting and future directions will be addressed in a letter to be issued by the Small Airplane Directorate's Standards Office.

Preparation for Wright Brothers Centennial

On December 17, 1903, the Wright Brothers made their historic flight from Kill Devil Hill, Kitty Hawk, North Carolina. To celebrate the centennial of the flight, the American Institute of Aeronautics and Astronautics (AIAA) is planning to publish a special series of papers in their archival journals. Each journal will carry histories of key technologies in a number of technical areas. The Editor-in-Chief of the AIAA Journal of Aircraft has invited Dr. James Hallock, Chief of the Aviation Safety Division, to prepare



Orville Wright aboard the Wright Flyer

a paper on aircraft wake vortices from the time of the Wright Brothers (who observed wake vortices in their wind tunnel) up until today. Dr. Hallock is the author of a 1990 report entitled "Aircraft Wake Vortices —An Annotated Bibliography (1923-1990)." This bibliography has been brought up to date and is available on the Volpe Center Web site at <http://www.volpe.dot.gov/wv/wv-bib.html>.

Volpe Studies the Effects of Amtrak Rulebook Consolidation (FRA)

The Federal Railroad Administration (FRA) has established a cooperative agreement with Amtrak to support the rail carrier's efforts to consolidate its safety rulebooks. Amtrak is involving both unions and management in a participatory process to carry out the consolidation. The rail carrier believes this process will improve the safety climate across the organization. At the same time, the Volpe Center is supporting the FRA by documenting safety improvements that are expected to result from consolidating the rulebooks, and by developing a research strategy for monitoring and assessing those changes.

As part of their preliminary work, Dr. Joyce Ranney of the Change Management Division and Dr. Mary Stearns of the Operator Performance and Safety Analysis Division have successfully developed the institutional interfaces that are necessary to create a team made up of the different parties involved in the rulebook changes. They developed methods of collaboration, and instigated a process to study the effects of Amtrak's rulebook consolidation on safety behavior at Amtrak. Their research measures safety behaviors before and following implementation of the consolidated rulebook. To initiate this research, Dr. Ranney and Dr. Stearns have been working with Amtrak's Boston Operations, and will begin to collect baseline data in February 2000.

This work is part of the FRA's Safety Research Program, which is managed by Dr. Jordan Multer of the Operator Performance and Safety Analysis Division. By bringing together human factors and organizational change skills, the project exemplifies the Volpe Center's ability to work across disciplines.

"ITS Technology at Highway-Rail Intersections: Putting It To the Test" Transmitted for Publication (FHWA)

On January 19, 2000, Ms. Anya Carroll of the Accident Prevention Division submitted a final report entitled "ITS Technology at Highway-Rail Intersections: Putting It to the Test" to the DOT's Intelligent Transportation Systems Joint Program Office (ITS/JPO). The report details the proceedings from the ITS/JPO Highway-Rail Intersection (HRI) Evaluation Workshop held at the Volpe Center from May 6 to 7, 1999. At the workshop, nearly 60 officials from the public and the private sectors met to discuss ITS/HRI projects currently deployed or under development. Seven nationwide demonstration project sites were discussed, representing sites in California, Maryland, Texas, Connecticut, Illinois, Minnesota, and New York. There were also several panel discussions covering comparative analyses, ITS implementation issues, ITS passive grade crossing issues, and ONE DOT next steps. Participating speakers represented both headquarters and field staff from numerous modal administrations within DOT, university and private sector project evaluators, state DOTs, railroads and transit authorities, the National Transportation Safety Board (NTSB), the Volpe Center, and the Jet Propulsion Laboratory. Generally, both public and private stakeholders agreed that the application of integrated technology at HRIs is the focus of the future and that the HRI program needs to be continued and expanded. The report will be published as an electronic document and available through the ITS/JPO's Electronic Document Library.

Mobility



Ensure that the transportation system is accessible, integrated and efficient, and offers flexibility of choices.

Volpe Staff Member Presents Global Positioning Systems Lecture at MIT

Mr. John Kraemer of the Center for Navigation presented a lecture on Global Positioning Systems (GPS) at the Massachusetts Institute of Technology (MIT) on January 24, 2000. The talk was part of an intensive one-week lecture series on transportation technology. The lectures were open to the entire MIT community, but were intended primarily for graduate students majoring in transportation studies. Professor Alan Chachich, who organized the lectures, pointed out that many students have very little understanding of the practical applications of key technologies that make modern transportation systems feasible. GPS is an example of one of these technologies.

Mr. Kraemer presented an overview of GPS from its inception in 1972 to today's GPS Modernization Program, which will be implemented over the next several years. Also included were specific transportation-related applications of GPS including the U.S. Coast Guard's (USCG) Differential GPS Marine Radiobeacon System, the Federal Aviation Administration's (FAA) Wide Area Augmentation System (WAAS) and Local Area Augmentation System (LAAS) programs, and the Volpe Panama Canal Commission (PCC) Project. Dr. James Carroll of the Center for Navigation presented information on the Center's Panama Canal work. He is the Program Manager for the project.

Volpe Participates in Annual American Meteorological Society Meeting (FAA)

Dr. Thomas Seliga of the Surveillance and Sensors Division attended the 80th Annual American Meteorological Society (AMS) meeting from January 9 to 14, 2000, in Long Beach, California. Dr. Seliga is the co-author of five papers that were presented at the conference; he personally presented three of the papers.

The first paper, "Contribution to a Baseline Understanding of the Impact of Weather on Airline Carrier Operations," presents a methodology for assessing the impact of weather on airline carrier operations. The second paper, "Challenges and Opportunities for Using Weather Information to Support Transportation," discusses the Volpe Center's role in improving and developing new weather services for multimodal transportation applications. Dr. Basav Sen of EG&G Technical Services, Inc. and Mr. Michael Rossetti of the Transportation Strategic Planning and Analysis Office were co-authors of this paper. The third paper, "The Stand Alone Weather Sensors System: An FAA Program for Replacement and Backup of Critical Weather Observations at Service Level 'C' Airports and Flight Service Stations," discusses the Stand-Alone Weather Sensors (SAWS) system. The fourth paper, "Final Performance Evaluation of the Automated Lightning Detection and Reporting System (ALDARS)," presents the results from a series of tests to confirm the operational integrity of the Federal Aviation Administration's (FAA) ALDARS prior to its deployment. The fifth paper, "Comparisons of Observer Reports of Thunderstorms with Similar Reports Derived from the National Lightning Detection Network Data," describes an analysis that was performed to compare manually observed thunderstorm observations to similar reports developed with ALDARS algorithms and lightning flash data from the National Lightning Detection Network (NLDN).

The theme of the 80th AMS Annual Meeting was "Applying Environmental Science to Societal Needs in the New Millennium." Dr. Seliga participated in two conferences: the Second Symposium on Environmental Applications and the 16th International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology. Both conferences include major topics of interest to the FAA programs that involve weather, and related systems and issues. The Volpe Center is supporting the FAA in a number of areas dealing with weather systems and with the relationship of weather to airline delays.

Valley Forge National Historical Park Works with Volpe to Resolve Transportation Issues (NPS)

Dr. Jeffrey R. Bryan of the Volpe Center's Change Management Division has been working with the Valley Forge National Historical Park (NHP), the Philadelphia Support Office of the National Park Service (NPS), the Pennsylvania Division of the Federal Highway Administration (FHWA), and the Pennsylvania DOT to resolve issues on several transportation projects affecting the Park.

Valley Forge NHP is perhaps the best-known location associated with the American Revolution. The goal of the NPS is to make Valley Forge NHP accessible for visitors. However, the park is located in the middle of rapidly growing suburban communities along the Philadelphia Beltway. The volume of traffic traversing the park, especially during commuting hours, has detracted seriously from the visitor experience and made it difficult to get to and around the Park. In addition, some of the planned major highway construction near Valley Forge potentially threatens the watershed of a Class A stream running through the Park.

Dr. Bryan led a consulting team of transportation planners and engineers to support the NPS in conducting a detailed assessment of the key transportation issues; developing, with the Valley Forge NHP and other key stakeholders, the strategic outcomes necessary for successful resolution of the transportation issues; and working jointly with the stakeholders to create mutually acceptable agreements.



*Valley Forge NHP is best known for its role in the American Revolution
(Photo courtesy of Valley Forge Convention & Visitors Bureau)*



Boston residents and visitors can access Boston's Harbor Islands by ferry from the Boston Waterfront

Volpe Staff Member Participates in Boston Water Transportation Forum (NPS)

Dr. Jeffrey R. Bryan of the Volpe Center's Change Management Division recently was a panelist at the Boston Water Transportation Forum sponsored by the Boston Municipal Research Board. The panel was comprised of federal, state, city, and private sector representatives who have been working on water transportation planning for the Boston Harbor.

As a change management specialist, Dr. Bryan manages complex projects and provides services in the areas of managing large system change, designing team-based organizations, and stakeholder management. Dr. Bryan has been supporting the National Park Service (NPS) in developing an interim and long-term water transportation plan for the new national park in Boston's Harbor Islands.

Unlike most national park areas, Boston's Harbor Islands is administered by a partnership of national, state, and local representatives appointed by the Secretary of the Interior to develop and implement a comprehensive park management plan. Currently, the partnership is working to determine the services and facilities to be provided in the national park area.

At present, Boston's Harbor Islands are served by daily passenger ferries that operate seasonally from Long Wharf on the Boston Waterfront to George's Island and from Hewitt's Cove in Hingham, Massachusetts, to George's. Weekend ferries run from Lynn Heritage State Park in Lynn, Massachusetts, to George's. From George's, free water taxis take visitors to Gallop's, Peddock's, Lovell's, Bumpkin, and Grape islands.

As a member of the recent panel, Dr. Bryan discussed the complexity of issues related to current and future water transportation in the Boston Harbor including the need for intergovernmental cooperation; capital improvements; and operational, environmental, and access issues.



Protect and enhance communities and the natural environment affected by transportation.

Ms. Lesueur, a member of the Pasadena, Supple & Columbia Roads Neighborhood Association, has been recognized by Project R.I.G.H.T., Inc. (PRI) as a significant contributor to the revitalization of the Roxbury and Dorchester communities. PRI is a collaborative of community-based street associations, block and crime watches, social service agencies, housing and neighborhood development corporations, churches, youth service providers, and businesses within the Greater Grove Hall (Roxbury/North Dorchester) community in Massachusetts.

In addition, Ms. Lesueur is one of the founders of the Kendall Square Learning Project (KSLP), a nonprofit charitable 501(c)(3) organization, that provides adults with an opportunity to improve their skills in English and learn basic life skills such as filling out a job application. Formed by Volpe Center employees, KSLP is part of the larger Volpe Tutoring, Educating, and Mentoring (TEAM) Effort.

Volpe Selected as Model Agency

The Office of Strategic Programs and Resource Planning's Program Development and Resource Management Division recently hosted an informal briefing and question-and-answer session about the Volpe Center's Workforce Planning Pilot for Ms. Susan Cavanaugh and Mr. Preston Brown, two representatives from the National Academy of Public Administration (NAPA). The purpose of the visit was to solidify and finalize NAPA's choice of the Volpe Center as a model agency for their government-wide workforce planning guide and training program, which is scheduled to be completed in Spring 2000. NAPA will use the Volpe Center's Workforce Planning Pilot as one of two models featured in its guide.

Mr. Randy Berquist from the Office of the Secretary (OST) recommended the Volpe Center to NAPA as a model agency in October 1999. From that point on, Ms. Mary Beth Hines of the Program Development and Resource Management Division worked closely with NAPA to explain the Volpe Center's Workforce Planning Pilot, to provide

Volpe Staff Member Attends President's Town Meeting

Ms. Olive Lesueur, a senior analyst from the Volpe Center, was invited to President Bill Clinton's Town Meeting on January 18, 2000, in Roxbury, Massachusetts. The town meeting, which took place at the Orchard Gardens housing development in Roxbury, provided President Clinton with an opportunity to address lawmakers, law enforcement officers, and community leaders on anticrime initiatives. Ms. Lesueur received an invitation because of her extensive involvement in community efforts to improve Boston's inner city neighborhoods.

Ms. Lesueur, a member of the Pasadena, Supple &



President Bill Clinton speaks at the Roxbury, Massachusetts, town meeting

samples of work products, and to arrange for the recently held meeting. Dr. Frank Hassler, then Director of the Office of Strategic Programs and Resource Planning; Ms. Jeanne Fuller, Chief of the Program Development and Resource Management Division; Ms. Elisabeth Gordon, Chief of the Human Resources Management Division; Ms. Lydia James of the Human Resources Management Division; and Ms. Hines were all present at this session. Ms. Hines and Ms. James will serve as panel members at NAPA's Workforce Planning training session in April 2000.

NAPA is an independent, nonprofit organization chartered by the U.S. Congress to improve government at all levels. It was established in 1967 and is comprised of a membership of elected fellows, more than 500 current and former cabinet officers, members of the U.S. Congress, governors, mayors, legislators, diplomats, jurists, business executives, public managers, and scholars. NAPA also receives support from businesses, foundations, and nonprofit organizations.

Economic Growth and Trade



Advance America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

Volpe Enhances Weather Information in FAA Traffic Management System (FAA)

Recently, the Volpe Center enhanced the weather information available through the Traffic Management System (TMS), which is the real-time computer system that the Federal Aviation Administration (FAA) uses to predict, detect, and handle air traffic congestion problems. Weather images from the Integrated Terminal Weather System (ITWS) now are available through the private TMS Collaborative Decision Making (CDM) Program Web site. The CDM Program is the FAA's high priority initiative to provide improved operational service through sharing of information between the airlines and the FAA's air traffic organization. The Volpe Center's CDM Program Web site is only accessible to CDM participants who are connected to CDMnet. CDMnet

is the umbrella term used to describe a collection of private intranets that are connected to each other at the CDMnet hub site located at the Volpe Center. CDMnet participants include most of the major domestic airlines, the Federal Aviation Administration's (FAA) Air Traffic Control System Command Center (ATCSCC), the National Weather Service's Aviation Weather Center (AWC), Lincoln Laboratory, and some aviation products vendors.

ITWS, which combines data from a number of sensors into an integrated picture of the weather situation surrounding an airport, is the state-of-the-art system for accurately depicting convective weather (e.g., storms, lightning, etc.). The Volpe Center obtains the ITWS data from Lincoln Laboratory, a federally funded research and development center of the Massachusetts Institute of Technology (MIT). Lincoln Laboratory provides the Volpe Center with ITWS images from New York City, Dallas, Memphis, and Orlando, the four sites where the system currently is deployed. In addition, the Center also started providing images from the Terminal Convective Weather Forecasting Product, which uses ITWS data to predict convective weather up to an hour in advance. The availability of the enhanced weather information means that air carriers now will be able to use these products in their flight planning and that the FAA now will be better equipped to manage the nation's air traffic.

This well-deserved and highly visible success is a tribute to the entire staff of the Volpe Center, which not only has maintained the highest professionalism, energy, and creativity in project performance, but also has gone the extra mile in participating effectively in professional associations and other transportation committees.

Every issue of the *Volpe Journal*, as well as these monthly *Highlights*, notes the extensive participation of Volpe staff in working groups of government and industry representatives and in conferences around the world where staff present technical papers and serve as organizers, panelists, and session chairs. In addition, recognition of the Volpe Center's expertise is expressed in many other ways.

The Global Positioning System (GPS) technical community's respect for Ms. Karen Van Dyke clearly is reflected in the many offices that she holds in the Institute for Navigation, including the office of Executive Vice President of the Executive Committee. The Department of Defense (DoD) expressly asked that Mr. Ross Gill be part of the team assessing the condition of Russian railroad lines and railcars to be used for transporting nuclear missiles to dismantling facilities. Dr. Kim Cardosi's professionalism and reputation as an expert on human factors issues has made her an influential member of the international air traffic control community. The Department of State specifically requested Mr. Kevin Green's participation on the U.S. delegation at several major international climate change conferences.

The Panama Canal Commission (PCC) initially sought out the Volpe Center because of the work performed by our Center for Navigation for the St. Lawrence Seaway Development Corporation. In turn, our work for PCC has led to further programs in Central America. Dr. John Hobbs, a nationally recognized expert in the field of explosives detection, recently received an Award of Appreciation in recognition for his "many years of outstanding service" from a committee of industry, government, and university representatives at the American Society for Testing and Materials (ASTM).

The Volpe Center's GPS expertise has led to work with Germany, Australia, and Chile. The long-standing Enhanced Traffic Management System (ETMS) developed for the Federal Aviation Administration (FAA) now is generating requests for work by other international organizations such as the private nonprofit Canadian Air Traffic Control (ATC) organization. The Center is cooperating on a project to examine ways to promote sustainable urban travel with the Organization of Economic Cooperation and Development and the European Conference of Ministers of Transport. The Center also has a cooperative agreement for collaboration on high priority research with the Transport Research Center of the Dutch Ministry of Transport.

The Volpe Center has a steady stream of visitors from across the technology and transportation community, both domestic and global, seeking our expertise on major issues, guidance on promising areas for innovation, and insights into a wide range of specific topics. A sample of our visitors during the last year includes officials from the Land Transport Safety Authority of New Zealand and the Swedish National Road and Transport Research Institute, the Research Director for New Mexico's DOT, and the President of the Council on Competitiveness.

The examples noted above—and many more could be listed—demonstrate the Volpe Center's steadily growing reputation and influence. The Center's high stature is a tribute to the entire staff and management, and provides an auspicious beginning for the 21st century.



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In This Issue... U.S. Rep. Kilpatrick Visits Volpe.

