



Volpe
National
Transportation
Systems
Center

Volpe Center Highlights

Cambridge, MA

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Spotlight



Recognizing that technological innovation will be a major force shaping the transportation system of the 21st century, the Volpe Center hosted the Secretary of Transportation's "Spirit of Innovation in Transportation Conference" on June 24 and 25. The conference was attended by U.S. Secretary of Transportation Rodney Slater, Deputy Secretary Mortimer Downey, Research and Special Programs Administrator Kelley Coyner, White House Chief of Staff John Podesta, U.S. Secretary of Commerce William Daley, over 30 senior-level panelists and moderators, and nearly 400 attendees from industry, government, and academia. The conference brought together leaders from the technology and transportation communities to consider integrated strategies to stimulate continuing technological innovation in transportation, and also addressed issues critical to achieving innovation, such as ensuring a highly skilled workforce capable of meeting or exceeding our national transportation goals. Opportunities for translating projected advances in cybertechnology, material sciences and nanotechnology were examined, and the application of alternative fuels to new transportation-related products and services was highlighted. U.S. DOT is now at work re-evaluating some of the ideas presented at the conference, including new research and education concepts, and the Transportation Strategic Planning and Analysis Division at the Volpe Center is compiling the conference proceedings. In addition, Mrs. John A. Volpe participated in the re-dedication of the Operations Research Center and in a reception honoring her husband, former U.S. Secretary of Transportation and Governor of Massachusetts John Volpe.

At right, Commerce Secretary Daley gives the second-day luncheon speech. Below, Secretary Slater and Mrs. Volpe.



Director's Corner



Secretary Slater (left) and Volpe Center Director Dr. Richard John confer at the Spirit of Innovation in Transportation Conference.

embrace the new concepts and technologies. The rate of technological change is much greater than the rate at which new technologies and concepts can be absorbed.

The Spirit of Innovation in Transportation Conference addressed the opportunities for innovation in the next century and the most promising new technologies. The Conference brought forth a number of clear messages:

- The capacity to transform new knowledge and ideas into new products, processes and services is a top priority in both the public and commercial sectors. The process of innovation is at the heart of the linkage between the emergence of new technologies and the realization of their potential for enhancing economic growth and the public good.
- To ensure continuing and sustainable innovation in a period of rapid technological change, it is essential to have the operators and users of the transportation enterprise embrace the new concepts and technologies.

Continued on Page 2....

Inside...

Safety	2
Mobility	3
Economic Growth	3
Human and Natural Environment	4
National Security	5



Safety

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



Vehicle Safety, Aggressivity, and Crashworthiness Presentation (NHTSA)

Mr. George Neat, Chief of the Vehicle Crashworthiness Division, in support of the National Highway Traffic Safety Administration (NHTSA)'s Office of Research and Development, recently gave a presentation on vehicle aggressivity and fleet compatibility work. The presentation took place at the joint meeting of the European Enhanced Safety of Vehicles Committee (EEVC) Working Group and the International Harmonization of Research Activities (IHRA) Working Group on Vehicle Compatibility, held in Berlin, Germany. This work investigates the safety implications of having a wide variety of cars — ranging from compacts to sport-utility vehicles — in a particular fleet.

The presentation included a status report on vehicle aggressivity measurement research at the Volpe Center that uses a measurement process developed by the Spanish Research Institute. Mr. Neat also reported on the results of 12 vehicle crashworthiness models that are being evaluated by the Volpe Center.

Draft Recommendations to Improve Railroad Worker Safety (FRA)

A member of the Switching Operations Fatalities Analysis (SOFA) Committee, Mr. David Skinner, of the Operations Performance and Safety Analysis Division, attended a SOFA meeting hosted by the United Transportation Union in St. Louis, MO. The SOFA Committee, composed of safety and operations experts from the Federal Railroad Administration (FRA), the American Association of Railroads (AAR), and the private sector, has been analyzing the 76 fatalities that occurred from January 1, 1992 to July 1, 1998 among railroad workers engaged in switching, coupling, and classification operations. The goal is to eliminate the 7 to 15 fatalities that, on average, occur each year. The Committee drafted several recommendations to improve safety among railroad workers, assisted by the Volpe Center's research on railroad worker safety, which has underscored the importance of human factor issues: crew utilization, intra-crew communications, proper radio protocols, rule violations, situational awareness, and job briefings. Volpe research has helped to identify trends in specific types of fatalities. Two additional SOFA Committee meetings are scheduled over the next two months, at which additional recommendations will be drafted to improve railroad worker safety.

International Meeting on Fixed Guideway Ride Motion (FRA)

As part of the support provided to the FRA's Office of Research and Development, several Volpe Center staff members participated in the meeting of the International Organization for Standardization's Subcommittee on the Evaluation of Human Exposure to Mechanical Shock and Vibration (ISO/TC108 SC4), recently held in Montreal, Quebec. Dr. Don Sussman, Chief of the Operator Performance and Safety Analysis Division, convened the working group responsible for establishing a new standard for the evaluation of rail and fixed guideway ride motions. Dr. Bob DiSario, of the same division, served as a technical expert on ride statistics within that group. Mr. Herb Gould, of the Office of Safety and Security, served as a technical expert on the health impacts of repeated mechanical shocks, and participated in the working group responsible for developing methods of evaluating the health impacts of repeated shocks. A major accomplishment of the meeting was to elevate the committee draft on fixed guideway ride motion (developed under the leadership of the Volpe Center and the FRA) to a new "Draft International Standard." Delegates from most of the major Western European and North American industrial nations attended, as well as representatives from Japan, Poland and the Czech Republic.

Director's Corner Continued.....

- The research and development paradigm must change from one focused on the development of new technologies to one equally focused on the diffusion of new technologies into the system. Ongoing activities, such as the Garrett A. Morgan Technology and Transportation Futures Program, for developing the next generation of transportation professionals, and the Intelligent Transportation System Professional Capacity Development Program, are outstanding examples of the tools needed for the necessary technology diffusion.

By holding forums such as this one, in which we act as a bridge between the technology and transportation communities, the Volpe Center is becoming increasingly recognized, both inside and outside of the government, as having a vital leadership role in ensuring a continuing and sustainable innovation climate for the transportation enterprise. We are making a difference.

Handwritten signature of Richard R. Johnson

Mobility



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

Volpe Center Directs Intelligent Transportation Systems Training Program (ITS JPO)

Responding to the Federal Transit Administration (FTA), Mr. Joseph LoVecchio, of the Telecommunications Division, coordinated and directed the presentation of the FTA's Intelligent Transportation Systems (ITS) Professional Capacity Building (PCB) Course at FTA's San Francisco regional office. PCB is a joint program of the FTA and the Federal Highway Administration (FHWA), directed by U.S. DOT's ITS Joint Program Office (JPO).

The PCB program assists in the deployment of ITS through the development of appropriate ITS knowledge and skills in federal, state, and local government agencies, as well as in the transportation industry. Intelligent transportation systems are designed to improve the safety and efficiency of surface transportation of people, vehicles, and goods through the application of technology. The Volpe Center acts as Program Manager for the FTA ITS PCB program. In that role, the Center develops and delivers awareness training on the transit applications of ITS. One of the training resources developed by the Volpe Center is the 4-hour "National ITS Architecture Course: An Introduction for Senior FTA Staff." In attendance were FTA regional staff and Mr. Ronald Boenau, Chief of the FTA's Advanced Public Transportation Systems Division.

Economic Growth & Trade



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

First Meeting of Corridors and Borders Flagship Initiative

Ms. Bahar Barami, of the Policy and Technology Analysis Division, represented the Research and Special Projects Administration at the first meeting of the U.S. DOT Flagship Initiative on Corridors and Borders. The Flagship Initiatives are designed to achieve the DOT goal to "advance America's economic growth and competitiveness" by demonstrating that the activities of member agencies produce outcomes that improve "the safety and efficiency of the movement of people and goods across the U.S.-Canada and U.S.-Mexico borders through investment in infrastructure and information technology improvements." Called "Flagship" because a flagship is the "largest or the finest ship of a shipping line," these initiatives are designed to define

performance indicators for measuring progress towards achieving U.S. DOT's strategic goals. At the meeting, as a follow-up to the February 1999 DOT Leadership Conference, a two-year agenda was developed to serve as an action plan drawn from each DOT assistant secretary and modal administrator's strategic plan and performance plan. Also participating were representatives from the Office of the Secretary of Transportation and other modal agencies involved in international goods movement.

Volpe Center Participates in International Heavy-Haul Railroad Operations Conference (FRA)

At the request of the FRA's Office of Research and Development, Mr. Brian Marquis, of the Structures and Dynamics Division attended the International Heavy Haul Association (IHHA) Specialist Technical Sessions Conference on Wheel/Rail Interface, held in Moscow, Russia. Mr. Marquis collected information in support of the Volpe Center's ongoing research into methods for predicting and avoiding derailments and strategies for minimizing wear of wheel and rail. The IHHA, established in 1983, is committed to the exchange of information between railroads involved in heavy haul operations. This conference was devoted to issues related to the wheel/rail interface and focused, in particular, on heavy-haul freight operations. Papers and poster sessions were presented at the conference by railroad organizations from countries around the world, including Australia, Brazil, Canada, China, Russia, South Africa, and the United States. Mr. Marquis also visited the All-Russian Railway Research Institute Test Center, which has equipment for conducting tests on railroad-related components and test tracks for testing vehicles. This facility is similar to U.S. DOT's Transportation Technology Center in Pueblo, CO.

Deployment of Y2K-Compliant FAA System Completed (FAA)

National deployment of the Y2K-compliant version of the Federal Aviation Administration's Traffic Management System (TMS), developed, operated, and maintained by the Volpe Center for the FAA, was recently completed. The TMS is the real-time, operational computer system that the FAA uses to predict, detect, and handle air traffic congestion problems. Completion of deployment is a major milestone that culminates several years of software conversion, re-engineering, and integration with new hardware. Since the Volpe Center originally developed TMS, the system capabilities have expanded and the number of users and sites has grown. Volpe Center staff were responsible for upgrading over one million lines of code in the system to new open system software code, and for integrating the software with Y2K-compliant hardware. The Volpe Center, which houses the TMS "hubsite," was the first site to be declared operational with the Y2K-compliant system, in January 1999. Since February 1, 1999, over 70 operational FAA field sites have had their TMS hardware, software, and communications equipment replaced with Y2K-compliant equipment. In addition, Canadian and European sites are being upgraded. The field site deployment has been a cooperative activity with participating staff from the FAA and the Volpe Center. The Volpe Center has provided operations support from the hubsite and on-site training at each FAA site to ease the transition to the new system. The Y2K version of TMS affords the FAA significant improvement in processing speed, reliability, and opportunities to utilize industry-standard technology for future system enhancements.

Navigational Technology Meeting Highlights Volpe Center GPS Work

The Volpe Center participated in The Institute of Navigation (ION) Annual Meeting on Navigational Technology for the 21st Century, held in Cambridge, MA from June 28 to 30. Messrs. James Carroll and David Phinney, of the Center for Navigation, presented a paper entitled "Advanced Tools for Waterway Pilotage," and Ms. Karen Van Dyke chaired a session on Commercial Aviation. The conference covered a wide variety of Global Positioning System (GPS) applications and focused on the integration of navigation information in air, land, marine, and space systems. The meeting also covered issues pertaining to GPS integrity, differential GPS navigation/communications integration, interference issues, and electronic charting. Many of the papers presented directly impact the work the Volpe Center is performing for agencies and organizations such as the FAA, the Office of the Secretary of Transportation, the U.S. Coast Guard, the St. Lawrence Seaway Development Corporation, the Department of Defense, the Panama Canal Commission, Aircservices Australia, Deutsche Flugsicherung (the organization responsible for air traffic control in German airports), and the Chilean Department of Aviation.

Human and Natural Environment

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



Volpe Center Joins Congressman Capuano in Boston Harbor Islands Tour

On the morning of Saturday, June 19th, Volpe Center Director Dr. Richard John and staff member Mr. Peter Jones participated with U. S. Representative Michael Capuano and a number of invited guests on a briefing and visit to the Boston Harbor Islands National Recreation Area (BHINRA). Congressman Capuano had visited the Volpe Center earlier in the year and, during a discussion of navigational and marine projects, expressed interest in learning more about the Boston Harbor Islands. The BHINRA is managed by the Boston Harbor

Islands Partnership, a 13-member board appointed by the Secretary of the Interior representing the National Parks Service (NPS) and a broad range of State, city, private, and public agencies. Funding arrangements are equally complex, with a mixture of federal, state, local, and private funds. Volpe Center staff member Dr. Jeffrey Bryan has supported NPS in its task of distilling the diverse stakeholders' viewpoints into a management plan for the BHINRA, due in November 1999. The tour included a boat trip around some of the 16 islands and a short tour of Fort Warren on George's Island. Mr. George Price, NPS Project Manager for the National Recreation Area, led a discussion of the creation and diverse purposes behind the formation of this unique partnership. In addition to the Congressman's family and Volpe Center staff, guests included representatives from NPS, the Coast Guard, the Massachusetts Department of Environmental Management, the Massachusetts Governor's office, the Metropolitan District Commission (MDC), the Massachusetts Port Authority (Massport), Friends of the Boston Harbor Islands, the Island Alliance, the Sierra Club, and other environmental groups.

Noise Measurement at Logan Complements Volpe Support to FAA, NASA

During the month of June, Messrs. Gregg Fleming, Christopher Roof and David Senzig of the Safety and Environmental Technology Division, Mr. David Read, an on-site contractor, and a team of five students from the Massachusetts Institute of Technology performed measurements of aircraft noise in the proximity of flight tracks at Boston's Logan International Airport. The Volpe Center supports the National Aeronautics and Space Administration (NASA) by providing expertise in the measurement of aircraft noise. This effort complements the Center's support to the FAA in the development and maintenance of the Integrated Noise Model (INM), a computer model for airport noise prediction and analysis. The sponsor is Mr. Kevin Shepard, Chief, Structural Acoustics Branch, NASA Langley Research Center. The purpose of the Volpe team's Logan measurements is to determine sound propagation over water and other acoustically similar open areas. The information thus obtained will be used to determine the accuracy of lateral attenuation regressions in the INM, originally developed from theoretical algorithms.

Secretary Slater Visits Robert F. Kennedy Elementary School

U.S. Transportation Secretary Rodney E. Slater recently visited the Robert F. Kennedy Elementary School in Cambridge, MA, meeting with three second-grade classes and the U.S. DOT volunteers who participated in the "Lunch Buddies" program this year. Also on hand were Research and Special Programs Administrator Kelley Coyner and Volpe Center Director Richard R. John. The "Lunch Buddies" program, which allows Volpe Center volunteers to read to second-grade classes on their lunch breaks, is the newest addition to the Volpe Center TEAM (Tutoring, Educating, and Mentoring) Effort, which was established in 1992. The TEAM Effort, headed by Ms. Lynn Murray, Chief of the Communications and Technology Outreach Division, presents Volpe Center employees and contractors with the opportunity to participate in volunteer activities, reinforcing the Center's commitment to the community. At Secretary Slater's visit, Principal Lydia Torres spoke about the seven-year partnership between the Volpe Center and the Kennedy School, and Cambridge School Superintendent Bobbie D'Alessandro also spoke about Volpe Center contributions to education. Secretary Slater spoke enthusiastically about the value of education and described U.S. DOT's Garrett A. Morgan Technology and Transportation Futures Program.

National Security



Advance the nation's vital security interests by ensuring that the transportation system is secure and available for defense mobility and that our borders are safe from illegal intrusion.

Development of Approach to Army Strategic Mobility and Rapid Deployment (DOD)

On June 17, Dr. Frank Hassler, Director of the Office of Strategic Programs and Resource Planning, and Mr. Rod Cook, Chief of the Environmental Engineering Division, met with Col. Michael Cannon, the U.S. Army's Tank-Automotive and Armament Command (TACOM) Program Manager, for the purpose of developing a framework for rapid force projection, strategic mobility and seamless transportation. TACOM, located in Warren, MI, is responsible for lifecycle management of various transportation assets. These assets, referred to as deployment enablers, are a vital piece of the Army's Strategic Mobility Plan. The Volpe Center has been providing engineering and acquisition support so that the requirements of strategic mobility are met. At a previous meeting held at the Volpe Center in May, Col. Cannon expressed his

need to develop a vision of seamless, rapid transportation of Army and commercial transportation assets to meet strategic mobility in the 21st century. The Volpe Center responded to the challenge with a strawman framework and a conceptual model for a "system of systems" approach to rapid deployment and forward projection.

Defense Department Sponsors Russian Railroad Safety Inspections (FRA)

During the week of June 13th, Mr. James Lamond, of the High Speed Ground Transportation Division, conducted railroad safety inspections at two locations in Russia – the Scientific Research Institute for Chemical and Construction Machinery, located in Sergiev Posad, and the Revda Naval Facility, near Murmansk. These inspections were in support of the DOD's Defense Threat Reduction Agency (DTRA), Cooperative Threat Reduction (CTR) program. The railroad facilities consisted of 15 kilometers of track at each installation and are used to transport missiles and missile components. The tracks were found to be in poor condition due to the lack of recent maintenance. However, with minor repairs, the tracks could be upgraded to meet minimal operation requirements. More substantial repair projects would be needed to ensure satisfactory rail quality over the long term.