

VOLPE HIGHLIGHTS

Volpe Center Supports Air Traffic Control Upgrades at Military Bases in the Pacific Region

The Volpe Center's Physical Infrastructure Systems Center of Excellence is assisting the U.S. Air Force (USAF) Pacific Air Force Major Command and the 853rd Electronic Systems Group at Hanscom Air Force Base in a series of upgrades and relocations of air traffic control facilities and systems at military air bases in the Pacific region. In particular, the Volpe Center conducts Air Traffic Control and Landing Systems site preparations and relocations from current sites to new and more modern Air Traffic Control Tower and Radar Approach Control facilities at these bases. A Volpe Center team provides on-site technical assistance to manage site and cutover preparations, testing from the old to the new facilities, and system inspection and acceptance.



Upgrades at these air bases also include testing Enhanced Terminal Voice Switch Systems and installing Standard Terminal Automation Replacement Systems, which fuse multiple radar inputs and tracks and displays both aircraft and weather conditions to air traffic controllers. Bases that have been completed in this program include Kadena and Yokota Air Bases in Japan and Kunsan Air Base in Korea.

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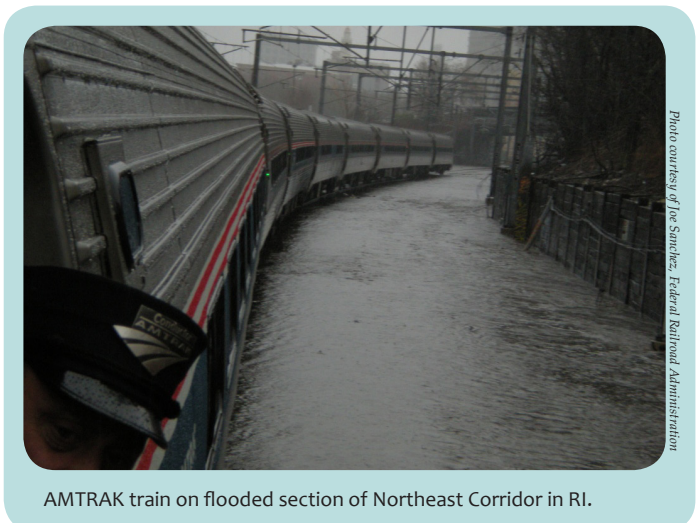
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Volpe Emergency Transportation Team Responds to Northeast Floods

A Volpe Center emergency transportation response team was activated in late March to respond to record-breaking rain and severe flooding rarely seen in New England. With bridges, highways and train tracks impacted from Maine to Connecticut, traffic was snarled and major East Coast routes were significantly impacted by detours and closures. The Volpe Center team helped staff the Federal Emergency Management Agency's (FEMA) Joint Field Offices in Andover, MA and Warwick, RI where they lent key support to coordinating critical transportation recovery efforts, public assistance, and rail and highway transportation restoration.

The U.S. DOT's Regional Emergency Transportation Representative for New England, New York and New Jersey, Volpe Center staff member Terry Sheehan led a Volpe team comprised of Lydia Rainville, Leo Wetula and David Crawford to rapidly assist response efforts. The Volpe team provided technical assistance to

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AMTRAK train on flooded section of Northeast Corridor in RI.

Volpe Director Meets with U.S. Transportation Secretary



Photo courtesy of U.S. DOT, Office of the Secretary

During a recent trip to Washington, DC, Volpe Center Director Robert Johns (right) joined RITA Administrator Peter Appel in a meeting with U.S. Transportation Secretary Ray LaHood (left). Opportunities for the Volpe Center to support the Department's Strategic Goals were discussed.



Volpe Center Photo

Lappin Leads Transportation Research Board ITS Committee

Jane Lappin recently became the fourth chairperson of the Transportation Research Board (TRB) Intelligent Transportation Systems (ITS) Committee. Ms. Lappin, a social scientist in the Volpe Center's Multimodal Systems Research and Analysis Center of Innovation, has been active in the ITS Committee since 1995.

Ms. Lappin has organized and chaired many ITS-related TRB panels, presentations, and workshops, and published papers on ITS market and traveler behavior with Volpe colleagues. A former chairperson and founding member of the ITS International Benefits Evaluation and Costs Working Group, Ms. Lappin is also an Associate Editor for the Institute of Engineering and Technology Intelligent Transport Systems journal. Her work portfolio at the Volpe Center includes oversight of large program evaluations, such as the evaluation of the ITS Integrated Corridor Management Initiative; specific research projects, such as an investigation of traveler behavior in the presence of road pricing; and client support for strategic marketing. She also supports the ITS Joint Program Office as the US coordinator of agreements with the European Commission and Transport Canada for joint ITS research and information sharing.

Ms. Lappin will serve a renewable three-year term as chair to the ITS Committee.

Aggressive New Fuel Economy and GHG Emissions Standards

The National Highway Traffic Safety Administration (NHTSA), working with the Environmental Protection Agency (EPA), has finalized Corporate Average Fuel Economy (CAFE) standards as part of a new harmonized national program designed to reduce fuel consumption and greenhouse gas (GHG) emissions. The standards will apply to the new light vehicle fleet from 2012 through 2016.

NHTSA estimates that the new CAFE standards will result in benefits totaling more than \$180 billion over the lifetime of the more fuel-efficient fleet, including:

- Cost savings to consumers from reducing future fuel needs by 61 billion gallons.
- Prevention of 654.7 million metric tons of CO₂ emissions.

NHTSA expects that by any measure, total benefits of the new standards far outweigh total costs. The Volpe Center supports NHTSA in CAFE rulemaking, in part through managing the CAFE Compliance and Effects Model, also known as the Volpe Model.

For more information, visit:

- Standards for Model Years 2012-2016:
[EPA-NHTSA Joint Final Rule](#)
- [Joint Rule Proposed for New Fuel Economy Standards](#)

Solicitation for Innovative Proposals by Small Businesses

The U.S. DOT Small Business Innovative Research (SBIR) Program, administered by the Volpe Center, seeks innovative research proposals from small businesses to address specific research challenges facing the modal administrations. The second and final SBIR Program solicitation for Fiscal Year 2010, inviting small businesses to submit research proposals that address high priority goals within DOT, is now available online at <http://www.volpe.dot.gov/sbir>.

The solicitation has identified awards in four research topics from the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA). They are: Driver Detection Cell Phone Blocker System (NHTSA), Global Positioning System (GPS) and Related Data Compression Algorithms (FHWA), Transportation System Performance Measurement Using Existing Loop Infrastructure (FHWA), and Mobile Device Application Component (FHWA).

Proposals are due on May 14, 2010.

New Locomotive Simulator Serves as Human Factors Laboratory



Rearview of the CTIL. (From left to right): Tom Olthoff, the senior programmer and Mel Jones, the project manager, from simulator developer Alion Science, with CTIL Program Director Michael Jones of the FRA's Equipment and Operating Practices Division.

Inset: John K. Pollard of the Volpe Center's Human Factors Research and System Applications Center of Innovation operating the simulator.

Below: A panoramic photo of the interior of the CTIL simulator.

The Federal Railroad Administration (FRA) recently installed the Cab Technology Integration Laboratory (CTIL) at the Volpe Center.

The CTIL is a locomotive simulator that serves as a human factors research laboratory. It will allow researchers to evaluate new locomotive automation technologies, instrumentation and add-on equipment prior to installation in the actual locomotive cabs in relation to their effects on operator workload, error rates and productivity.

The locomotive simulator will help researchers to: improve the design of controls and displays to minimize potential errors, increase situational awareness, enhance an operator's awareness of the movements of other trains and hazards that may appear on the right-of-way, and study the impact of impairment on human perception and sensation. It will also expand the transportation community's knowledge of safety policy, operating procedures, and organizational factors that promote safe rail operations.

The CTIL will advance efforts to prevent train accidents caused by human error by helping researchers to create realistic simulations of a number of conditions and scenarios encountered during railroad operations.

The Volpe Center is working to ensure that the CTIL is shared with other researchers and industry. As part of a study on whole-body vibration being conducted by QinetiQ, the simulator is currently in use to study seated body position while operating a locomotive.



Volpe Emergency Response to Floods *(continued from p. 1)*

FEMA's Emergency Response/Incident Management Assistance, Preliminary Damage Assessment, and Rapid Needs Assessment teams. The Volpe Center also coordinated with the Federal Highway Administration, Federal Railroad Administration, Federal Aviation Administration, Amtrak, and state DOTs on rail freight and transit service disruptions. Situational awareness of critical transportation infrastructure was also provided to U.S. DOT's Crisis Management Center, the U.S. Department of Homeland Security, state and local emergency operation centers, and non-governmental organizations.

A key Volpe role was supporting efforts to identify and prioritize critical transportation infrastructure affecting commercial facilities and residential populations at risk during response operations. Of particular concern was the flooding of Interstate-95 in metropolitan Providence, the main arterial in the state and lifeline to response efforts. The Volpe Center team worked with the Rhode Island DOT, FHWA and the emergency Re-Routing, Messaging and Inspection Task Force to respond to the I-95 closure and other critical highway disruptions throughout the state.

The 1980s: Shifting National Priorities Leads to Expanded Sponsor Base



Advanced Automation Systems for air traffic control.

The decade of the 1980s was a time of transition for the Transportation Systems Center (TSC) – today the Volpe Center – as both its personnel skills mix and project expertise shifted in response to changing U.S. Government policies and priorities. During the 1970s, much of the Center’s early work for U.S. Department of Transportation (DOT) surface modes focused on research, development and demonstrations of advanced technologies in bus and rail transportation and new concepts in surface vehicles, including “People Movers.” In the 1980s, the nature of the Center’s work in these areas shifted to a more comprehensive approach that incorporated requirements analysis and systems assessments of transportation options. This shift led to an expansion of the Center’s sponsor base to non-DOT sponsors with substantial transportation missions.

Faced with more complex logistics needs, the U.S. military turned to the Center for its in-depth transportation expertise. By mid-decade, the Defense Department (DOD) called on the Center to support the enhancement of their strategic mobility and logistics capability. A 1985 Memorandum of Understanding for Logistics Support signed by U.S. DOT and DOD led to a significant expansion of the Center’s work in this area. At the same time, devastating terrorist vehicle bombings against the U.S. Marine Corps barracks and the American Embassy in Beirut, Lebanon, caused significant loss of life and shifting national priorities. Building off its aviation security expertise, TSC responded rapidly by expanding its physical security support activities, including anti-blast concepts for U.S. Government buildings, including the State Department’s overseas embassies and other critical infrastructure.

DOD sought TSC’s technical expertise in December 1985 when a chartered plane carrying more than 240 American soldiers crashed in Gander, Newfoundland, killing all aboard. A review of the crash concluded that the plane was overloaded and there was a lack of safety protocol. Because of the Volpe Center’s proven expertise in developing safety databases, DoD called on the Center for a solution. Volpe created a valuable tool to evaluate the safety record of carriers used by the military. The aviation assessment tool was further developed by the Center on behalf of Federal Aviation Administration (FAA).

Aviation remained a significant part of the Center’s activities throughout the decade, especially the development and deployment of future air traffic management and air traffic control concepts for the FAA. Major initiatives such as Advanced Automation Systems, Advanced Traffic Management Systems, and Enhanced Traffic Management Systems all shared a common characteristic: the need for expertise in applying advanced information, communications, navigation and surveillance technologies to complex air traffic management and control needs. In the wake of a mid-air Aloha Airlines accident in 1988, Volpe lent critical support to FAA’s National Aging Aircraft Research Program launched to investigate and prevent further accidents due to aircraft structural fatigue.



Photo courtesy of Department of Defense

In the 1980s, the Volpe Center expanded its logistics capabilities in response to national strategic mobility needs.

The end of the 1980s was marked by heightened TSC involvement in the formative years of what would become a key U.S. DOT surface transportation activity – Intelligent Vehicles/Highway Systems (IVHS), which evolved into today’s Intelligent Transportation Systems (ITS) program. This new concept, which focused on the successful application of advanced technologies to surface transportation, was an excellent fit with the Center’s existing skills and capabilities and closely paralleled the advanced aviation work TSC had been successfully performing for many years.

This is the third in a special series of stories honoring the Volpe Center’s 40th anniversary of Federal service to the Nation.



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