MINETA TRANSPORTATION INSTITUTE

The Norman Y. Mineta International Institute for Surface Transportation Policy Studies (MTI) was established by Congress as part of the Intermodal Surface Transportation Efficiency Act of 1991. Reauthorized in 1998, MTI was selected by the U.S. Department of Transportation through a competitive process in 2002 as a national “Center of Excellence.” The Institute is funded by Congress through the United States Department of Transportation’s Research and Innovative Technology Administration, the California Legislature through the Department of Transportation (Caltrans), and by private grants and donations.

The Institute receives oversight from an internationally respected Board of Trustees whose members represent all major surface transportation modes. MTI’s focus on policy and management resulted from a Board assessment of the industry’s unmet needs and led directly to the choice of the San José State University College of Business as the Institute’s home. The Board provides policy direction, assists with needs assessment, and connects the Institute and its programs with the international transportation community.

MTI’s transportation policy work is centered on three primary responsibilities:

Research

MTI works to provide policy-oriented research for all levels of government and the private sector to foster the development of optimum surface transportation systems. Research areas include: transportation security; planning and policy development; interrelationships among transportation, land use, and the environment; transportation finance; and collaborative labor-management relations. Certified Research Associates conduct the research. Certification requires an advanced degree, generally a Ph.D., a record of academic publications, and professional references. Research projects culminate in a peer-reviewed publication, available both in hardcopy and on TransWeb, the MTI website (http://transweb.sjsu.edu).

Education

The educational goal of the Institute is to provide graduate-level education to students seeking a career in the development and operation of surface transportation programs. MTI, through San José State University, offers an AACSB-accredited Master of Science in Motion, MTI’s quarterly newsletter, covers innovation and Technology Transfer MTI promotes the availability of completed research to professional organizations and journals and works to integrate the research findings into the graduate education program. In addition to publishing the studies, the Institute also sponsors symposia to disseminate research results to transportation professionals and encourages Research Associates to present their findings at conferences. The World in Motion, MTI’s quarterly newsletter, covers innovation in the Institute’s research and education programs. MTI’s extensive collection of transportation-related publications is integrated into San José State University’s world-class Martin Luther King, Jr. Library.

DISCLAIMER

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About MTI</td>
<td>02</td>
</tr>
<tr>
<td>Administration and Staff</td>
<td>03</td>
</tr>
<tr>
<td>NTSCOE Activities</td>
<td>13</td>
</tr>
<tr>
<td>Communications and ITT</td>
<td>36</td>
</tr>
<tr>
<td>Education</td>
<td>42</td>
</tr>
<tr>
<td>Board of Trustees</td>
<td>44</td>
</tr>
</tbody>
</table>
About The Mineta Transportation Institute

The Mineta Transportation Institute (MTI) was originally designated by Congress as a non-technical, policy research and education center in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and reaffirmed by the Institute’s Board of Trustees after reauthorization in the Transportation Equity Act for the 21st Century (TEA-21) in 1998. MTI undertakes research, education, and information/technology transfer programs relative to the policy control and management of all surface transportation modes. Within those parameters, MTI produces studies of the best examples of surface transportation policy and management activities in the world, accumulates those into peer-reviewed publications, and communicates best practices to MTI’s professors, students, and the nation’s transportation leaders.

During the 1991 ISTEA, 1998 TEA-21 and 2005 SAFETEA-LU debates, Congress strongly expressed the desire to assure the international competitiveness of the nation’s transportation systems. Because much larger motor vehicle fuel taxes are available in other industrialized countries, the U.S. will not be able to outspend so it must outsmart the competition. Therefore, MTI’s objective is to identify through research, to teach through education, and to broadly disseminate through information/technology transfer programs the best transportation practices in use throughout the world. MTI’s work encompasses all modes of surface transportation, including the interface between those modes.

MTI is organized by function, with directors operating in each of three departments – Research (including the National Transportation Finance Center, the National Transportation Security Center of Excellence for both US DOT and DHS, and the National High-Speed Rail Policy Center), Education, and Communications and Information & Technology Transfer.
ADMINISTRATION AND STAFF

NTSCOE Directors

Brian Michael Jenkins
Director
bmjenk@ix.netcom.com

Brian Michael Jenkins was appointed in 2008 to lead MTI’s National Transportation Security Center of Excellence and its continuing research on protecting surface transportation against terrorist attacks. As a leading authority on terrorism and sophisticated crime, he works with government agencies, international organizations and multinational corporations. He is also a senior advisor to the president of RAND. Mr. Jenkins was deputy chairman of Kroll Associates, an international investigative and consulting firm, and he was chair of RAND’s political science department, where he directed research on political violence.

Mr. Jenkins has a B.A. in fine arts and a masters’ degree in history, both from UCLA. He studied at the University of Guanajuato, Mexico and at the University of San Carlos, Guatemala where he was a Fulbright Fellow and received a fellowship from the Organization of American States.

Mr. Jenkins was a paratrooper and a captain in the Green Berets. He is a decorated combat veteran, serving in the Special Forces in the Dominican Republic and Vietnam. He returned to Vietnam as a member of the Long Range Planning Task Group, receiving the Department of the Army’s highest award for his service.

Since then, he has served on numerous U.S. and international task forces investigating terrorist attacks. In 1996, President Clinton appointed Mr. Jenkins to the White House Commission on Aviation Safety and Security. He was an advisor to the National Commission on Terrorism and served on the U.S. Comptroller General’s Advisory Board. Mr. Jenkins is the author of several articles, reports and books, including International Terrorism: A New Mode of Conflict and Will Terrorists Go Nuclear?
Dr. Frances L. Edwards is the Deputy Director of MTI's National Transportation Security Center and a professor and director of the Master of Public Administration program at San Jose State University. She is a research associate of the Mineta Transportation Institute and an editorial board member of the Public Administration Review (PAR). Dr. Edwards is co-author with Friedrich Steinhausler of two books in the NATO Science Series on terrorism threats and response, and with Brian Jenkins on 9/11. She also authored numerous chapters for text and professional books.

She has written more than 30 professional journal articles, most recently on cross border disaster response issues in Journal of Contingency and Crisis Management, and on federal homeland security grants in State and Local Government Review. She serves on the ASPA Hurricane Katrina Task Force, and was a member of the Executive Session on Domestic Preparedness at Harvard, the Bioterrorism Working Group at Stanford, three NATO expert workshop panels on terrorism, and the California Seismic Safety Commission. For 25 years Dr. Edwards was a practitioner, including 14 years as the Director of Emergency Preparedness for San Jose, California, the nation’s tenth largest city. She has a Ph.D. and M.U.P. from New York University, an M.A. from Drew University, and a Certificate in Hazardous Materials Management from the University of California, Irvine.

The New York Times, Washington Post and other national media have identified Dr. Edwards as one of the nation’s leading experts on disaster response and recovery planning and training.
There are four MTI NTSCOE Research Associates who are integral to the completion of all research projects and it is with pleasure that we present their biographies.

Bruce R. Butterworth  
*NTSCOE Research Associate*

Bruce Butterworth has had a distinguished government career working at congressional, senior policy and operational levels. Between 1975 and 1980, he was a professional staff member for the House Government Operations Committee, running investigations and hearings on many transportation safety issues, particularly in aviation. Between 1980 and 1991, he worked at the Department of Transportation, 8 of them in the Office of the Secretary. He managed negotiations on air and maritime services in the GATT (now WTO), chaired US delegations to United Nations Committees, and was part of the response to Pan Am 103. Between 1991 and 2000, he held two executive posts in aviation security, as the Director of Policy and Planning, and then as the Director of Operations. Among other things, He was responsible planning and rulemaking and for regulatory compliance, managing 900 field agents. He worked hard to improve security and the performance of security measures by US airlines and airports. He was also responsible for federal air marshals and ran the FAA’s aviation command center, successfully managing the resolution of hijackings and security emergencies. He launched a successful program of dangerous goods regulation and cargo security after the 1995 ValuJet crash, was a key player in the response to the ValuJet and TWA 800 accidents, and worked closely with the Congress, the National Security Council staff and the intelligence community and law enforcement community.

Between 2000 and 2003, he was an Associate Director at the U.S. Holocaust Memorial Museum (responsible for security and building operations). Finally, between January of 2003 and September of 2007, he was one of two Deputy Directors in a 1,300 person Engineering Directorate at NASA's Goddard Space Flight Center, and instituted a successful laboratory safety program. He retired from Federal Service in 2007.

As an MTI/NTSCOE Research Associate, he has co-authored seven major publications along with Brian Michael Jenkins. He also co-authored a May 2007 study for the Center for American Progress on cargo Security entitled: Keeping Bombs off Planes: Securing Air Cargo, Aviation’s Soft Underbelly. In February of 2009 he published with Mr. Jenkins an opinion piece on information sharing entitled: “A campaign the Secretary must win” and on March 23, 2010 an opinion piece on intelligence and aviation security in the Washington Post entitled “What we can learn from the Christmas Day Bombing Attempt.”

Mr. Butterworth was awarded a Master of Science degree from the London School of Economics in 1974.
Daniel C. Goodrich

NTSCOE Research Associate

Daniel C. Goodrich, MPA, CEM is a research associate with the Mineta Transportation Institute at the College of Business, San Jose State University. He is also the instructor for “Security for Transportation Professionals” in the Master of Science in Transportation Management program at MTI.

Dan was a 2006 Fellow of the Foundation for Defence of Democracies, studying terrorism at University of Tel Aviv. He has delivered ten professional papers, including Campus Emergency Management at the FEMA Higher Education Conference in 2010, employee emergency preparedness at the Natural Hazards Conference in 2009, police in disaster response at the 2nd Istanbul Conference on Democracy and Global Security in 2007, maritime security at the American Society for Public Administration in 2007, and “Fourth Generation Warfare” at the 2006 NATO STS-CNAD meeting in Portugal. In 2004 he chaired a session on “First Responders” at the NATO Advanced Research Workshop in Germany, and in 2003 he was a member of the NATO Expert Panel on Nuclear Security and Terrorism.


Dan has been an emergency management coordinator for Lockheed Martin Space Systems, and an analyst in the Santa Clara County Department of Public Health emergency management organization, working on hospital exercises, strategic national stockpile planning and Metropolitan Medical Response System planning, training and exercise development and implementation. He has been the director for eight exercises for the San Jose Metropolitan Medical Task Force, where he created facilitated exercises, from which Harvard University’s Kennedy School of Government created a case study. Dan served in the United States Marine Corps for ten years, including leadership positions in Security Forces; and in the Army Reserve as a small arms instructor, including service in Iraqi Freedom. He is a consultant to the California Department of Transportation, and has trained NASA/Ames Research Center staff in emergency management.

Dan has a masters degree in public administration from San Jose State University, and is a Certified Emergency Manager.
Renee Haider joined MTI as a Research Associate in May 2010. She brings to the MTI team over eighteen years of experience in training, education, and project management in the surface transportation sector. Prior to joining MTI she served as an Associate Director of the National Transit Institute (NTI) in the Edward J. Bloustein School of Planning and Public Policy at Rutgers, The State University of New Jersey. Ms. Haider had been with NTI since its formation in 1992. As the Associate Director she was involved in both development and delivery of NTI programs in all of its focus areas. Prior to this position, she served as an Assistant Director for Workplace Safety and Security Programs.

Ms. Haider has developed, directed, and managed a wide range of transportation training programs targeted at transit management, professional trainers and front-line employees. She has served as a project manager or key team member on an array of research and training projects for FTA, FMCSA, FHWA, TCRP, NCHRP and TSA and worked with several University Transportation Centers (UTCs) to jointly develop and deliver training programs. In addition, she has consulted with transit organizations across the U.S. and Canada to customize programs to meet their unique needs.

At MTI, she continues to focus on safety and security in the surface transportation sector by conducting relevant research projects and concentrating on the application of results to practice. Current projects include a Bus Operator Behavior Awareness Research and Development Program, Security Best Practices for High-Speed Rail, and a project on public outreach efforts to underrepresented populations sponsored by TSA.
Christopher Kozub joined MTI’s growing team of internationally recognized transportation experts as a Research Associate in May 2010 and brings a unique background encompassing over 30 years of experience in the emergency services, transportation safety and security, and training fields.

Before coming to MTI, Mr. Kozub served for the past ten years as an Associate Director at Rutgers University where he worked with the National Transit Institute, the Voorhees Transportation Center, and the newly formed Center for Transportation Safety, Security, and Risk. During his time at Rutgers, he was the principle investigator on a number of federally sponsored surface transportation research, training, and outreach projects addressing system safety, emergency management, system security, and terrorism awareness and response.

Prior to joining Rutgers, Mr. Kozub served as the Director of Training for the Operation Respond Institute (ORI) in Washington, DC where he developed and delivered specialized emergency response training on behalf of the FRA and FHWA as well as Amtrak, VIA Rail, Conrail, and other railroads and transit systems. While at ORI he worked closely with Amtrak to develop and deliver security, safety and tactical training to emergency responders along the northeast corridor in connection with the infrastructure improvements, operational changes, and new equipment acquisitions associated with Acela high speed rail service implementation.

Mr. Kozub has also held senior management positions at emergency services training centers for New Jersey’s Hunterdon and Middlesex counties where he worked with the Association of American Railroads and Conrail to bring specialized hazardous materials training to the northeast part of the country. He also worked with the Port Authority of New York and New Jersey to develop and deliver fire, rescue, and hazardous materials training for their police and emergency services’ departments, including the development of a specialized WMD program following the 1995 Tokyo subway attacks.

Kozub works with key stakeholders in the federal agencies, surface transportation trade associations, and labor organizations to develop and implement safety and security training programs for front-line employees, supervisors and emergency responders in the public transit, highway, rail, and maritime modes. He has also testified before Congress, providing a broad industry perspective on current issues in public transit operational and infrastructure security.
Several MTI team members contribute to the successful completion of NTSCOE activities.

Honorable Rod Diridon, Sr.
*Executive Director*
diridon@mti.sjsu.edu

Rod Diridon has overall executive authority and responsibility for the operation of the Mine-ta Transportation Institute at San José State University and has oversight responsibility for the Surface Transportation Security Division at MTI.

Executive Director Diridon is considered the father of modern transit in California's Silicon Valley. His political career began in 1971 on the Saratoga City Council. Due to term limits, he retired in 1994 after five terms and six times as chair of both the Santa Clara County Board of Supervisors and its transit board. He is the only person to chair the nine-county, 110-city, 27-transit-district San Francisco Bay Area’s three regional governments: Metropolitan Transportation Commission, Bay Area Air Quality Management District, and Association of Bay Area Governments.

Mr. Diridon chaired more than 100 international, national, state, and local activities, most regarding transportation and the environment. He is chair emeritus and the governor’s appointee to the California High Speed Rail Authority Board and chair of the American Public Transportation Association’s High Speed and Intercity Rail Committee. He chaired the American Public Transit Association in Washington DC, was vice chair of the International Transit Association in Brussels, and continues as a director. Mr. Diridon chaired the National Association of Counties’ Transit and Railroads Committee, advised the Federal Transit Administration, and chaired the Transportation Research Board’s Transit Cooperative Research Program.

In 2007-08 Mr. Diridon chaired the national Council of University Transportation Centers Board. He also serves on the corporate advisory board of Wells Fargo Bank and the corporate board of Empire Broadcasting Company. From 1969 to 1976, he served as founder and president of the Decision Research Institute, which developed a “shared survey” research procedure adopted by UNICEF. He frequently provides testimony to Congress and speaks throughout the world on sustainable transportation. Mr. Diridon earned a B.S. and an M.B.A. at San José State University, served two combat tours as a US Navy officer in Vietnam, has been listed in Who’s Who in America since 1974, and was recently cited by International Metro Magazine as one of the 50 who most influenced mass transit in North America in the past century. He has received top awards from the American Public Transportation Association, the national High Speed Ground Transportation Association, and others. The area’s main railroad station was renamed the San Jose Diridon Station upon his retirement in 1994 from elected office.
Karen Philbrick stands in as the administrative facilitator for the security center while Brian Jenkins is out in the field. Karen is responsible for compliance with federal guidelines and represents the center on DHS conference calls and other director level administrative activities.

Dr. Philbrick was appointed the Director of Research for the Mineta Transportation Institute in May 2009. During her time with MTI, Karen has overseen the selection of 25 new research projects and the publication of 21 peer reviewed research reports.

Before joining MTI, Karen served as the Assistant Director of the National Center for Intermodal Transportation, a Title III University Transportation Center based at the University of Denver in Denver, Colorado. During her tenure at that Center, her work focused on the assessment, design, and development of planning methodologies and tools, technology, and human resources needed to improve intermodal connectivity. Dr. Philbrick has also been extensively involved in studies investigating Fatigue Management Planning and Best Practices in Responding to Critical Incidents in the Transportation Industry. As part of her research, she interviewed thousands of locomotive engineers and conductors as well as airline pilots, maritime industry representatives, and truck drivers. In addition, she interviewed New York City firefighters directly affected by the events of 9/11. This laid the groundwork for the successful completion of her dissertation, which examined a mathematical model for understanding Emotional Distress in Emergency Workers Following a Terrorist Attack.

On an international level, Dr. Philbrick has contributed to the development of educational and training materials for intermodal specialists. Her work has formed a key portion of an international training effort and seminar, Innovations and Challenges in Intermodal Transportation, which has been delivered in the Philippines, Indonesia, and most recently Vietnam. She has been a member of the U.S. delegation to the Asian Pacific Economic Cooperation (APEC) Transportation Working Group since 2000.

With the highest honors, Dr. Philbrick earned a B.A. from California State University, Fresno, an M.A. from Columbia University, an Ed.M. from Columbia University, and a Ph.D. from the University of Denver.
Donna Maurillo coordinates the information transfer functions for the Mineta Transportation Institute NTSCOE.

Director Maurillo joined MTI in 2007, managing information and technology transfer (ITT), such as symposia, forums, and public meetings. She also manages MTI’s communications vehicles such as the website, annual report, media relations, social media, and other public outreach, and she manages special projects.

Ms. Maurillo managed corporate communications for Silicon Valley technology companies. She also managed venture capital and technology accounts for Hill & Knowlton and other PR agencies, and she was an instructor and consultant in corporate communications for many years.

She has published more than 50 articles on business, politics, and current issues, she co-authored two books on self-employment, and she writes a weekly newspaper column. Her Rotary Club named her Rotarian of the Year, she was twice listed in Outstanding Young Women of America, and she presided over several non-profit boards, primarily in the arts and social services. She served on staff for former California Secretary of State Bruce McPherson, and she earned an outstanding service award from UCSC after serving ten years as its alumni association president.

She earned her B.A. from the University of California and delivered the commencement address. Currently, she is enrolled in MTI’s Master of Science in Transportation Management program, and she is a member of the Phi Kappa Phi academic honor society. She achieved her 30 minutes of fame as a contestant on Jeopardy.
Jill Carter
Office Manager and Executive Assistant
carter@mti.sjsu.edu

Jill Carter provides office management and clerical support to all security research projects as required including the maintenance of all MTI files.

Ms. Carter applies her business skills to MTI office management, where she also oversees the student staff and financial records. Ms. Carter also is executive assistant to Rod Diridon. She and her husband own an automobile repair facility, where she managed office operations, accounting, staffing, sales and general administration. At the Campbell School District library, Ms. Carter purchased books and equipment, instructed library skills, and organized the book fair. At Bank of America, she was a bookkeeper and teller.

She is involved with the activities of her five children, including sports, fundraisers, PTA and classroom support. She attended San Jose State University, where she studied liberal arts.

Meg Fitts
Research Project Manager
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Meg Fitts provides administrative and publication support for the security research projects.

Ms. Fitts joined the MTI staff in December 2007, first as a Communications Assistant and then as a Research Project Manager. She supports the Research Director administering contracts, budget tracking, and research projects, and taking the reports through the publication process of peer review, editing, formatting, and printing. She also is responsible for supporting MTI’s National Security Center of Excellence Director in preparing DHS proposals, budgeting, reporting, and contracting.

She has a background in finance recruitment in New York City and locally, as well as sales support in the high-tech industry in Southern California. She attended Chaminade University of Honolulu and State University of New York, Old Westbury as a math major. Ms. Fitts is active in community boards, is Rotaract District Governor of District 5170, past president of the Rotaract Club of Silicon Valley, and is an advocate of service above self.
In 2004, with the approval of its Trustees, MTI established the National Transportation Security Center funded jointly by US DOT and Caltrans grants. In 2007, MTI became part of the new Transportation Security Center of Excellence (a consortium of seven universities and research centers) created by the Department of Homeland Security. Funding was initiated in 2008. The new designation provides more stable support for research overall and permits projects jointly funded by DHS and DOT, thereby ensuring that research will consider transportation and security needs.

Brian Michael Jenkins, a former member of the White House Commission on Aviation Safety and Security and advisor to the National Commission on Terrorism, has led MTI’s research on terrorism and surface transportation since its inception in 1996. He continues to serve as the NTSCOE director. Mr. Jenkins is assisted by Dr. Frances Edwards, who serves as deputy director, and administratively by Dr. Karen Philbrick.

The primary NTSCOE staff includes Bruce Butterworth, whose career on Capitol Hill, in the U.S. Department of Transportation (DOT), and as a former Director of Operations for Security at the Federal Aviation Administration (FAA) encompasses three decades of government experience. To meet its demands, the NTSCOE has recently expanded its research staff. Renee Haider, a former Associate Director at the Rutgers National Transit Institute, joined MTI in 2010, bringing to the NTSCOE more than 18 years of experience in training, education, and project management focusing on transportation safety. Chris Kozub, also a former Associate Director at the Rutgers National Transit Institute, joined MTI in 2010, bringing 30 years of experience in emergency services and transportation safety and security. The primary team is assisted by a team of specialist consultants recruited worldwide.

MTI NTSCOE focuses its research on five main areas: threat analysis; security policy and procedures; disaster planning and emergency management; safety policy and procedures; and developing training programs and materials for security, safety, and emergency-response activities.

The NTSCOE’s research focuses on examining actual events through detailed case studies and quantitative analysis of its unique and expanding computerized database to identify terrorist targeting, tactics, and methods; to distill lessons learned; and to identify best practices. Its research is empirical, that is, based on real data, quantitative where possible. Its findings are intended to be pragmatic and impactful—producing applicable results that can be used by stakeholders to evaluate and sometimes change their practices. The NTSCOE is international in outlook, learning lessons from worldwide experience, and it makes its research readily available to users through reports, summit meetings, briefings, training programs, and outreach materials.

The NTSCOE’s current priorities are to make its computerized database—a compendium of more than 2,300 attacks on surface transportation targets—more rapidly responsive and more powerful. This will enable even more detailed analyses to help stakeholders decide key policy and operational issues; to complete the NTSCOE’s blueprint for supporting a DHS-sponsored consortium project aimed at refining methods of threat and security analyses; to expand its work in safety analysis and training; and to support urban transit systems and new high-speed-rail projects in the United States with up-to-date research results. The NTSCOE places great emphasis on delivering usable reports, along with training products, as projects or phases of projects are completed. Between July 1, 2009, and June 30, 2010, the NTSCOE published nine peer-reviewed reports.
Activities

In this past year, the NTSCOE team made several presentations to the Department of Homeland Security (DHS), the Federal Transit Administration (FTA), the Counter Improvised Explosive Device Working Group, and at Transportation Research Board meetings. In May 2010, Mr. Jenkins had the honor of providing testimony before the House Homeland Security Committee, Subcommittee on Intelligence, Information Sharing and Terrorism Risk Assessment on domestic threat in the wake of the Times Square bombing attempt.

In March, Mr. Jenkins, Bruce Butterworth, and Dr. Karen Philbrick, represented MTI’s NTSCOE at the University Programs Summit, Washington DC. Mr. Jenkins made two presentations - “What Makes the Infrastructure Resilient?” and “Prevention Strategies for Surface Transportation Systems” - while Dr. Philbrick represented MTI’s NTSCOE at the COE directors’ meeting.

Dr. Edwards, Dan Goodrich and Bill Medigovich worked with Caltrans headquarters staff to develop an updated version of the federally-mandated Continuity of Government/Continuity of Operations (COOP/COG) Plan. MTI’s expert staff assisted with Caltrans’ participation in both the statewide Golden Guardian Exercise and a special agency-level tabletop exercise for executives. As a result of the lessons learned, the COOP/COG essential functions, line of succession, and alternative facilities information have been updated and brought into alignment with new federal and state essential functions lists.

Dr. Edwards and Mr. Goodrich were asked to present their research on the role of transportation in university-level emergency planning at several conferences this past year. These included the Natural Hazards Conference in Colorado; the Naval Postgraduate School, Monterey Homeland Security Conference in California, and the FEMA Higher Education Conference in Pennsylvania. Their well received and widely publicized research concluded that the inclusion of a transportation unit inside the operations section would enhance campus response capabilities. The publication of their research includes complete checklists for all ICS/SEMS/NIMS–required Emergency Operations Center positions, which are available as PDFs and as downloadable adaptable versions. Follow-on seed grant work was conducted to determine whether additional supporting documentation of training and exercise support for university emergency operations centers would enhance the adoption of the emergency planning materials.
International Activities

Expanding MTI’s international partnerships and connections is a priority for MTI’s NTSCOE. In September 2009, Brian Jenkins was invited by the U.S. DOT to participate in a series of meetings with transportation officials in Mumbai, India. These meetings were followed by briefings to Indian officials in San Jose, California, in early 2010. Based on these interactions, a memorandum of understanding between the State of Maharashtra, India and MTI was signed in June 2010. This will allow MTI to collaborate in research on transportation security and to assist India in developing secure transportation systems. Jenkins will participate in a second round of meetings in Mumbai in September 2010.

Bruce Butterworth participated in DHS-arranged meetings with Israeli officials in January 2010. An experienced Israeli researcher was subsequently enlisted to produce detailed case studies of terrorist attacks for the DHS-sponsored Bus Operators’ Awareness project. Mr. Butterworth also met with officials in the United Kingdom in February 2010, and Brian and Bruce were subsequently invited to the United Kingdom to observe a field exercise in June 2010 on the effects of terrorist bombs on rail coaches. While there, they briefed British officials on the trend analyses and results derived from MTI’s database, which UK officials recognize as unique to the field. Cooperation on research issues will continue between British officials and MTI.

Jean-François Clair, a former high-ranking official in France’s security service (DST), co-authored an MTI case study of an attempt by terrorists in France to derail a high-speed train. Mr. Clair will also participate in a new MTI survey of security measures at high-speed-rail systems worldwide.

At the request of the U.S. DOT, MTI briefed visiting Ministry of Transportation officials from the People’s Republic of China and has agreed to an exchange of research data. MTI also briefed Japanese rail officials at the request of the American Public Transit Association (APTA).
NTSCOE Research Findings Summary

Although terrorists remain obsessed with attacking commercial airliners, as evidenced by the attempt in December 2009 to sabotage a Northwest airliner flying between Amsterdam and Detroit, they view public surface transportation as a more accessible killing field. As of September 1, 2010, terrorists had carried out 74 attacks on airliners and airports that served them, (outside of the war zones in Iraq, Afghanistan, and Somalia) since 9/11, resulting in 121 deaths and 216 injuries. During the same period, terrorists carried out 1,190 attacks against public surface transportation worldwide, resulting in 3,300 deaths and 11,500 injuries.

Many of the attacks on surface transportation (including some of the most spectacular) were carried out by individuals and groups connected with the global jihadist terrorist campaign. These include the March 2004 bombing of commuter trains in Madrid, which killed 191 people; the July 2005 bombing of three London subway trains and a bus, which killed 52; and the July 2006 attack on commuter trains in Mumbai, which killed 207. However, other groups, from Palestinian resistance factions in the Middle East to Tamil separatists in Sri Lanka, have also carried out devastating attacks. For example, in May 2010, Maoist guerrillas in India derailed a passenger train onto the tracks of an oncoming freight train, killing 148 people.

Terrorist plots abroad include a plot to spread ricin on London’s Heathrow Express in April 2005; a failed attempt in July 2005 to replicate the deadly July 7 bombings; an August 2005 plot to release toxic chemicals on London’s Tube; a November 2005 plot to bomb train stations in Melbourne or Sydney; an April 2006 plot to blow up a commuter train in Milan; a failed attempt to bomb German trains in August 2006; and a January 2008 plot to bomb the Barcelona Metro.

Since 9/11, public surface transportation systems in the United States have also been the targets of a number of terrorist plots, including a January 2003 plot to release cyanide on New York subways; an August 2004 plot to blow up a subway station in midtown Manhattan; a July 2006 plot to blow up subway tunnels under the Hudson River; a 2008 plot to attack the Long Island Railroad; and a September 2009 plot to blow up New York subways.

When successful, terrorists can achieve the high body counts they seek—body counts that are not necessarily in the thousands. In December 2003, a bomb on a train in Stavropol killed 42 people; in February 2004, a bomb in Moscow killed 40; in March 2004, ten bombs killed 191 rail commuters in Madrid; in July 2005, 56 people, including four suicide bombers, were killed by four bombs in London; and in July 2006, seven bombs killed 207 rail passengers in Mumbai. In 2007, a bomb exploded aboard the India-Pakistan Friendship Train, killing 66. In December 2009, a terrorist bomb derailed the Moscow-to-St. Petersburg express, killing 26. The deliberate derailing of a passenger train in West Bengal killed 148. These eight attacks alone killed 776 persons, the rough equivalent of the death toll from 7 to 10 airline crashes. The MTI database contains 48 attacks against bus and train targets that killed more than 25 people and 18 that killed more than 50 since 1970.

MTI was one of the first research centers to address this trend. Its research on transportation security issues began in 1996 with case studies, a chronology of terrorist attacks, and security summits that brought together operators and government authorities.
State transportation agencies are required to have plans for the continuity of their government functions during any catastrophic disaster, as well as for the continuation of the essential services that they provide to the people of the state, other levels of government, other state agencies, and federal partners during response, recovery and mitigation phases of emergency management. Emergency management guidance is normally provided in state laws, such as an Emergency Services Act, that defines the roles and responsibilities of state-level agencies. Headquarters-level Emergency Management Plans (EOP), Continuity of Government (COG) Plans, and Continuity of Operations (COOP) Plans embody the actions of the specific agency in disasters, with appropriate guidance detailed in checklists and annexes for the various subdivisions of the agency’s headquarters staff.

The Incident Command System was created in the 1970s in California by the fire service for use in large scale emergencies. Over time, it has evolved to the command and control system for all emergencies in California. After the terrorist attacks of September 11, 2001, President George W. Bush mandated that all emergency response must be conducted using the National Incident Management System (NIMS) in order to receive the federal share of emergency response funds. Homeland Security Presidential Directive-5 (HSPD-5) was issued by President Bush on February 28, 2003, and ICS became the basis for NIMS.

After Hurricane Katrina, there was a new emphasis on catastrophic emergency planning. Transportation is the basic enabler for all first responders to fulfill their disaster roles. Without open, clear and safe roadways, all forms of response are slowed or stopped. Therefore, a COOP and COG planning process for catastrophic emergencies is essential to augment the Emergency Operations Plan (EOP) that addresses “normal” emergencies.

The overall emergency management structure must be in place to support implementation of the EOP, COOP and COG. The emergency management structure must support organization-wide policy setting for the department while also supporting the governor’s need for information. Such a system requires training employees on the plans and their roles, including personal and family emergency preparedness. Exercises are essential to evaluate the success of the training and the completeness of the EOP, COOP and COG. A chain of command including delegation of authority is required, along with alternate EOC locations.

Planning must include recovery, with training and documentation for receiving reimbursements from the Federal Highway Administration (FHWA) and the Federal Emergency Management Agency (FEMA), and plans for audit and appeal processes. Post-disaster mitigation measures must also be included, recognizing Disaster Mitigation Act 2000 mandates.

The role of the emergency operations center (EOC) must be defined and exercised. It includes support for the governor’s policy decision making, and facts to assist in setting statewide priorities for the allocation of scarce resources. The state’s transportation agency serves as a link between the local governments that need assistance and the state and federal resources that can be activated. As such, the state transportation department’s headquarters EOC coordinates with the department’s district EOCs, the state emergency management agency’s regional EOCs, and the state-level operations center to manage resource requests and services delivery, based on the department’s essential functions.

A hierarchy of emergency plans supports emergency response actions. Standard operations procedures (SOPs) guide behavior at the field level. The EOP guides the department in managing a disaster, while the COOP and COG focus on catastrophic events and the potential loss of executive
leadership and headquarters facilities. Department resources must be organized to support the department’s own essential functions, as well as federal primary-essential functions and mission-essential functions, as defined in new federal guidelines.

This research project was intended to lay the groundwork for establishing priorities that would lead to a mature management capability for emergencies, disasters, and catastrophes. Because transportation agencies typically have significant experience with “normal emergencies” on the roadways, and they routinely work with state police and state fire agencies in disaster situations, some elements of a mature emergency management capability have not been emphasized. The following activities should be completed by a state level transportation agency to ensure a robust response and recovery capability. An EOC should be created, and reasonable alternative EOC sites selected and developed. The EOP and COOP should be developed, staff should be trained on the plans, and regular exercises should be held.

Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis
Project #2875
Publication #WP 09-02
Investigators: Brian Michael Jenkins and Bruce Butterworth

This report provides data on terrorist attacks against public surface transportation targets and serious crimes committed against such targets throughout the world. The data are drawn from the MTI database of attacks on public surface transportation, which is expanded and updated as information becomes available. This analysis is based on the database as of February 20, 2010. Data include the frequency and lethality with which trains, buses, and road and highway targets are attacked; the relationship between fatalities and attacks against those targets; and the relationship between injuries and attacks against them. The report presents some preliminary observations drawn from the data that can help stakeholder governments, transit managers, and employee to focus on the ways the most frequent and/or most lethal attacks are carried out as they consider measures to prevent or mitigate attacks that may be considered likely to happen in the United States.

Supplement to MTI Study on Selective Passenger Screening in the Mass Transit Rail Environment
Project #2876
Publication #09-05
Investigators: Brian Michael Jenkins, Bruce Butterworth and Larry Gerston

MTI analyzes and advances initiatives that can reduce risks and increase security in public surface transportation. An excellent example of such forward-thinking research is MTI’s analysis of selective passenger screening in the rail environment. In February 2007, MTI published a groundbreaking analysis of the use of this technique in Selective Screening of Rail Passengers (MTI Report 06-07), by Brian Michael Jenkins and Bruce R. Butterworth.

In 2008, at the request of the DHS Science and Technology Directorate, MTI began a review of the implementation of selective screening in various transit systems and in Amtrak to determine best practices and lessons learned. The research continued in 2009 and involved site visits at transit systems and personal and telephone interviews. A supplement to the 2007 report (carefully reviewed to avoid releasing details of any transit system’s security program) was published in January 2010 (MTI Report 09-05). The supplement describes screening programs currently implemented (or planned) by nine transit agencies and identifies best practices. It also discusses why three other transit agencies decided not to implement passenger screening at this time. The analysis reconfirms the earlier conclusion that selective screening is a viable security option, but that it must be based on clear policies and carefully managed to avoid perceptions of racial or ethnic profiling and it must have public support. The supplement also addresses new developments such as vapor-wake detection canines, continuing challenges, and areas of debate.

MTI and the American Public Transportation Association (APTA) co-sponsored a Rail Passenger Selective Screening
Summit, which brought together government and industry stakeholders on June 18, 2009, during APTA’s annual Rail Conference, in Chicago, Illinois. The summit workshop was moderated by Brian Michael Jenkins, Director of MTI’s NTSCOE. Speakers included MTI Research Associate Bruce R. Butterworth, ; Greg Hull, president of the American Public Transportation Association (APTA); Paul MacMillan, chief of police, Massachusetts Bay Transportation Authority, Transit Police Department; Ron Masciana, deputy chief, Metropolitan Transit Authority (MTA), New York; Jesus Ojeda, security coordinator, Southern California Regional Rail Authority; Ed Phillips, operations deputy, Office of Security, Amtrak; and John P. Sammon, assistant administrator, Transportation Sector Network Management, Transportation Security Administration (TSA). The edited transcript of the summit, Rail Passenger Selective Screening Summit (MTI Report S-09-01), was published by MTI in October 2009.

The 1995 Attempted Derailing of the French TGV (High-Speed Train) and a Quantitative Analysis of 181 Rail Sabotage Attempts (Former title: The Evolving Nature of Terrorist Acts Against Surface Transportation: Capturing Lessons Learned)

Project #2877
Publication #09-12
Principal Investigator: Brian Michael Jenkins, Bruce Butterworth and Jean-Francois Clair

On August 26, 1995—the final Saturday and busiest weekend of France’s summer holiday season—terrorists attempted to derail the TGV (Train à Grande Vitesse) between Lyon and Paris by planting a bomb. Fortunately, their crude triggering mechanism failed to detonate the bomb, and subsequent analysis indicates that even had the bomb gone off, the explosion would not have derailed the train. Nevertheless, the psychological effect of an explosion on the train would have been enormous. France’s TGV was the first high-speed rail system in Europe and today remains a source of national pride. That gives the trains the iconic status, or “emotional value,” typically sought by terrorists. Moreover, a successful attack on the TGV would have sent further shudders through a nation already rattled by a terrorist bombing campaign that had commenced a month before.

The perpetrators of the attempted derailment were members of the GIA (Groupe Islamique Armé), an Algerian terrorist organization that had extended its campaign to France. At the time of the attempt on the TGV, GIA terrorist teams had already carried out a series of attacks in Paris, most of them directed against accessible transportation targets. In response, the French government sent thousands of police and soldiers into metro and train stations, which may have compelled the terrorists to contemplate other venues and means of attack. The terrorist campaign ended in November 1995 with the death or capture of most of the terrorist network, although one more bombing occurred in 1996.

The TGV episode, one of a continuing series of case studies by the Mineta Transportation Institute (MTI), points to a continuing problem: Since 1995, terrorists have attempted to derail trains on at least 144 occasions.

Given the expansion of high-speed rail systems in Europe, Asia, and North America, where 15 high-speed rail projects are in preparation or under way in the United States alone, the TGV case study has been expanded to include a chronology and statistical analysis of attempted derailments worldwide. This analysis examines the geographic distribution of the attempts, the methods used by the saboteurs, and the outcomes. Although based on a small universe of events, it underscores both the attractiveness to terrorists of attacking transportation systems—a successful attack can result in high body counts, significant disruption, dramatic images, and enormous publicity, all things sought by terrorists—and the difficulties of achieving success. Ordinary bombings on trains and buses and in stations and depots give terrorists a higher return on investment per bomb than derailments.

The incidents included in the analysis take place outside of conventional wars, although many of them were part of guerrilla wars and broader terrorist campaigns. Wartime sabotage of rail transport is reviewed in a separate section. One such campaign, the Russian sabotage campaign against German invaders during World War II, resulted in an extra-
ordinary volume of attacks, but it depended on a national effort that included training thousands of partisans and keeping them equipped with explosive devices. No contemporary guerrilla army or terrorist group can summon these kinds of resources.

A final section of the analysis, which appears just before the chronology of attacks, lists some of the security measures appropriate for preventing deliberate derailments, particularly in response to high-threat situations.

**Emergency Management Training and Exercises for Transportation Agency Operations**

**Project #2910** (this project was funded with DOT Grant dollars and was completed in this fiscal year)

Publication # 09-17

Investigators: Frances Edwards, Ph.D. and Daniel Goodrich

Training and exercises are an important part of emergency management. Plans are developed based on threat assessment, but they are not useful unless staff members are trained on how to use the plan, and then practice that training. Exercises are also essential for ensuring that the plan is effective, and outcomes from exercises are used to improve the plan. Exercises have been an important part of gauging the preparedness of response organizations since Civil Defense days when full-scale exercises often included the community. Today there are various types of exercises that can be used to evaluate the preparedness of public agencies and communities: seminars, drills, tabletop exercises, functional exercises, facilitated exercises and full-scale exercises.

Police and fire agencies have long used drills and full-scale exercises to evaluate the ability of staff to use equipment, protocols and plans. Transit and transportation agencies have seldom been included in these plans, and have little guidance for their participation in the exercises.

A research plan was designed to determine whether urban transit systems are holding exercises, and whether they have the training and guidance documents that they need to be successful. The main research question was whether there was a need for a practical handbook to guide the development of transit system exercises.

**Exploring the Effectiveness of Transit Security Awareness Campaigns in the San Francisco Bay Area**

**Project #2914** (this project was funded with DOT Grant dollars and was completed in this fiscal year)

Publication #09-19

Investigators: Nina Rohlich, Frances Edwards, Ph.D. and Peter Haas, Ph.D.

Public transit has been and will likely continue to be a target of terrorist attacks. The terrorist attacks of September 11, 2001 against the Pentagon and the World Trade Center using airplanes highlighted the need for increased security in the United States transportation sector overall, and prompted additional security efforts for many public transit agencies across the US. The March 11, 2004 Madrid commuter train bombings, the July 7, 2005 London transit system bombings, and the March 29, 2010 Moscow metro attacks are more recent reminders of the need for vigilance. Due to its openness and accessibility, public transit is considerably more vulnerable than airports, seaports, and other transportation modes organized around limited access points that can institute widespread security screening measures. In addition to relatively open access points, transit systems often have large numbers of passengers during commute hours, accessible schedules and timetables, are in close proximity to other potential targets, and are critical pieces of infrastructure for urban areas.

Public involvement in alerting officials to suspicious and potentially harmful activity is critical to the overall security of a transit system. As part of an effort to get passengers and the public involved, many transit agencies have created security awareness campaigns. The objective of this research project was to (1) determine how transit agencies seek to make security awareness campaigns effective and (2) explore ways in which to measure the effectiveness of such campaigns. This project focused on understanding the types of security awareness campaigns that a select group of transit agencies in the San Francisco, California Bay Area region have implemented, the goals of the campaigns, and whether the agencies are achieving those goals. Further-
more, have campaigns increased security awareness and passenger engagement? If so, how do agencies evaluate the effectiveness of the campaigns? The case study data are comprised of descriptions of the types of security awareness campaigns the agencies have implemented, the goals of the campaigns, and how they attempt to make their campaigns effective, as well as whether and how these agencies measure and determine the effectiveness of their campaigns.

A positive finding of this research is the consistency with which Bay Area transit organizations address the need for passenger awareness as part of their overall security program. However, none of the five agencies analyzed for this study measures the effectiveness of their campaigns. Whereas they all have a similar goal— to increase passenger awareness about security issues— little evidence therefore exists confirming whether they are achieving this goal.

In order to capture the public’s response to the campaign and to understand whether they are achieving their campaign goals of increasing awareness, providing tools for action, and encouraging passenger involvement, agencies should implement a combination of output and outcome measurements. At a minimum, agencies should track the level of marketing activities and strive to capture at least one set of meaningful data that captures passenger behavior and comprehension by using internal tracking mechanisms or surveys.

**Potential Terrorist Uses of Highway-Borne Hazardous Materials**

**Project #2981** (this project was funded and completed in this fiscal year)

Publication #09-03

Investigators: Brian Michael Jenkins, Bruce Butterworth, William Poe, Douglas Reeves, Karl Shrum and Joseph Edward Trella, III

Potential Terrorist Uses of Highway-Borne Hazardous Materials presents the results of a detailed examination by a diverse team of experts in hazardous materials, explosives, terrorism, and security of truck-borne hazardous material that might be used as weapons by terrorists and the targets against which such materials could be used. The study analyzed the characteristics of each commodity, hazmat commodity flows, accident and criminal theft histories from which terrorists might draw lessons, and the effectiveness of federal and state security regulations. It then reviewed the objectives of terrorist groups to determine how violent radical jihadists might consider the various hazardous materials available to them, in terms of the qualities of each material, the ease with which it might be acquired and delivered, and the targets against which it might be used. The report concluded that terrorists most often seek soft targets that yield significant casualties, such as public buildings and assemblies, and they often choose simple operations promising modest results rather than complex and uncertain operations promising catastrophic results. Terrorists have also discussed substituting fire for harder-to-acquire explosives. Gasoline tankers have particular appeal as weapons because they can easily produce intense fires, they operate in target-rich environments with predictable routes, and they pose few security challenges. The report urges government, which has focused primarily on hazmat that can cause catastrophic losses, to also focus—as terrorists tend to—on the most readily available, least protected hazmat. It calls for creation of a clear strategy for increasing and sustaining security, for resolving significant jurisdictional issues between federal and state authorities, and for strengthening hazmat security measures in the field. The report also proposes that careful
consideration be given, where appropriate, to implementing vehicle tracking technologies, panic alarms, and immobilization capabilities for vehicles carrying specific hazmat, including gasoline; such measures can also offer safety and anti-crime benefits

**Terrorist Attacks On Public Bus Transportation: A Preliminary Empirical Analysis**

**Project #2982**

Publication #WP 09-01

Investigators: Brian Michael Jenkins, Bruce Butterworth and Karl Shrum

This report provides data on terrorist attacks against public bus transportation targets and serious crimes committed against such targets throughout the world. The data are drawn from the MTI database of attacks on public surface transportation, which is expanded and updated as information becomes available. This analysis is based on the database as of December 17, 2009. Data include the frequency and lethality with which buses, bus stations, and bus stops are attacked; the relationship between fatalities and attacks against bus targets and the relationship between injuries and attacks against those targets; how often, relative to other surface transportation targets, buses are attacked, first with all weapons and then with only explosive and incendiary devices; the relative lethality of attacks; and the distribution of attacks. It then presents some preliminary observations drawn from those data that can help stakeholders governments, transit managers, and employees to focus on the ways the most frequent and/or most lethal attacks are carried out as they consider measures to prevent or mitigate attacks that may be considered likely to happen in the United States.

**Implementation and Development of Vehicle Tracking and Immobilization Technologies**

**Project #2983** (this project was funded and completed in this fiscal year)

Publication #09-04

Investigators: Brian Michael Jenkins, Bruce Butterworth and Frances Edwards, Ph.D.

Since the mid-1980s, limited use has been made of vehicle tracking using satellite communications to mitigate the security and safety risks created by the highway transportation of certain types of hazardous materials. However, vehicle-tracking technology applied to safety and security is increasingly being researched and piloted, and it has been the subject of several government reports and legislative mandates.

At the same time, the motor carrier industry has been investing in and implementing vehicle tracking, for a number of reasons, particularly the increase in efficiency achieved through better management of both personnel (drivers) and assets (trucks or, as they are known, tractors, cargo loads, and trailers).

While vehicle tracking and immobilization technologies can play a significant role in preventing truck-borne hazardous materials from being used as weapons against key targets, they are not a "silver bullet." However, the experience of DTTS and the FMCSA and TSA pilot projects indicates that when these technologies are combined with other security measures, and when the information they provide is used in conjunction with information supplied outside of the tracking system, they can provide defensive value to any effort to protect assets from attacks using hazmat as a weapon. This publication details how vehicle tracking and immobilization technologies have been developed by the federal government, specifically DHS and DOD, and identifies the key issues any mandatory form of implementation would have to address, along with benefits and costs. The report points out certain technologies that would provide the greatest security and safety impact for the lowest cost.
Ongoing Research Projects

Threat Analysis And Policy Research Support For The Department Of Homeland Security/Port Authority For New York And New Jersey (DHS/ PANYNJ) Counter-IED Working Group
Project #2875
Principal Investigator: Brian Michael Jenkins

The objective of this project is to provide up-to-date analyses of improvised explosive device (IED) threats to public surface transportation systems for the Port Authority of New York and New Jersey (PANYNJ) to use in developing security measures to protect the PATH train and other surface transportation systems. The project also provides analyses of terrorist bombings that will assist other members of the Counter-IED Working Group in developing new technology and other countermeasures. MTI staff who are working on this project attend all meetings and briefings of the Counter IED working group in Washington and New Jersey, and they provide update briefings on their research.

This project overlaps MTI’s Case Studies, Trend Analysis, and Chronologies projects. Participation in the Counter-IED Working Group enables MTI to identify the relevant research needs of transportation system operators, as well as those involved in related research and development, while briefings by MTI offer members of the Working Group direct access to ongoing analyses of the latest trends in terrorism. These encounters have led to a number of specific requests for MTI assistance not directly connected with PANYNJ.

The original project description called for MTI to assist PANYNJ in developing a tabletop exercise (or several exercises) that will explore responses to terrorist scenarios involving IEDs, focusing on issues raised by new technology that is being deployed. This exercise, with minor modification, will also be available for use by other transportation operators.
New Projects

MTI NTSCOE: NIMS/COOP/COG Applications and Implementation for State Transportation Agencies: Best Practices
Project #2976
Investigators: Frances Edwards, Ph.D. and Daniel Goodrich

MTI and the California Department of Transportation (Caltrans) are partnering to develop a National Incident Management System (NIMS) compliant Continuity of Operations (COOP)/Continuity of Government (COG) review. This will enable the revisions necessary to ensure NIMS compliance, facilitate the development of a meaningful vulnerability assessment leading to mitigation actions, and the creation of a training and exercise program to ensure executive level capability to respond to catastrophes related to transportation systems and infrastructure.

The team – including MTI research associates Dan Goodrich, Waseem Iqbal, and Bill Medigovich – will collaborate with Caltrans senior and executive staff to review the existing COOP/COG plan set for compliance with NIMS and the state’s Standardized Emergency Management System (SEMS). A thorough review of the existing Caltrans COOP/COG materials will include an evaluation of the existing threat and vulnerability assessment, and the inclusion of lessons from MTI’s on-going research into terrorist attacks against transportation systems, and their unique vulnerabilities. Plan revisions will be developed in concert with Caltrans emergency management staff.

MTI research associates also will review the revised Caltrans plans for national applicability. The plan sets will be turned into generic templates with additional guidance for use by state-level transportation agencies nationwide in evaluating their own NIMS-compliant COOP/COG plan to meet DHS requirements and directives. These planning templates and guidance documents will include a full generic plan template, a narrative and a PowerPoint set delineating the relationship between NIMS, COOP/COG and state-level transportation agency functions.

MTI research associates will customize a NIMS Basic class and NIMS Executive class for transportation agencies, including creating a PowerPoint with Notes page for self-study or to guide trainers in their presentations. MTI will then create seminar outlines and a tabletop exercise based around terrorism scenarios that are adaptable to any state transportation agency. These documents will be based on existing best practices and will be nationally applicable. All elements of the project will be piloted in California with Caltrans senior and executive staff members. After-action meetings will be held with them to receive their feedback and suggestions for improvement. The final products will be peer reviewed by at least three CEM emergency managers familiar with the national planning, training and exercise requirements.

Those final products will be a NIMS-compliant plan set for Caltrans, a training program, an exercise program, and a generic plan template that can be used nationwide by state transportation agencies to develop appropriate NIMS-compliant plan sets for their state agencies, and a best practices training and exercise program piloted with Caltrans that can be adopted by state-level transportation agencies.

Mineta Transportation Institute Data Base of Terrorists Attacks against Public Surface Transportation: Chronologies
Project #2978
Investigators: Brian Michael Jenkins and Bruce Butterworth

The Chronologies project significantly enhances MTI’s ability to provide insightful and timely trend analyses for legislators, makers of government policy and regulations, and transportation operators, indicating ways to mitigate the risks of terrorist and criminal attacks against public surface transportation. This is a high-impact project yielding significant benefits now, with the promise of more in the future. The Chronologies project is one of the main engines feeding the MTI Trend Analysis project (2979, discussed below), among others. The primary task of the Chronologies project is the enhancement of the MTI Database on Terrorist and Serious Criminal Attacks Against Public Surface Transpor-
Mr. Jenkins is the Principal Investigator. Research Associate Bruce Butterworth is the research lead, and MTI independent contractors are also involved.

The methodology is straightforward: Collect into a single database all information on attacks; ensure that the information is accurate; design a database that can cost-effectively generate analyses at an increasingly detailed and useful level; and generate products for the use of DHS and other stakeholders.

The MTI database is unique. No other database is specifically focused on transportation, and therefore no other source can provide the level of detail provided by MTI. The MTI database also fills an important public need. Decision making on public surface transportation must be based on risk, and risk analysis requires a clear understanding of where, how, and why attacks have been carried out, the targets of those attacks, and where and how they have been most lethal. The MTI database now enables such analysis and, due to its recent conversion from an Excel® flat file to a server-based and secure Microsoft Access® platform, it does so with increasing agility, focusing on an increasing number of specific questions from stakeholders. In fact, because the findings of such analyses are so operationally relevant, public access to the data and public dissemination of all results would be inappropriate because they could provide practical—even tactical—knowledge to terrorists.

However, the MTI database has produced many significant findings appropriate for public dissemination. Among them:

- Sixty-eight percent of all surface transportation attacks result in no casualties, but a few attacks have yielded 50 to 100 casualties, which are sufficiently high body counts for terrorists.

- The number of surface transportation attacks and the associated casualties far exceed the number of airline attacks and casualties. Since 9/11, 1,190 surface transportation attacks have killed 3,300 people, while 74 air attacks have killed only 121.

- Bus targets are attacked more often than train targets, but train targets are attacked with much more lethality, particularly when explosives are used.

- There have been more suicide bombings on buses, but suicide bombers have been more lethal in train attacks; single-bomb attacks are more common than multiple-bomb attacks and are often more lethal per device.

- Bombs are used more often than any other attack method and are most deadly in enclosed environments, such as subway trains and underground subway stations.

- However, non-explosive attacks can achieve even higher lethality.

- Certain sizes of bombs tend to be more lethal than others.

- Nineteen percent of attacks are stopped by alert passengers, citizens, security guards, and others.

These findings have significant implications for securing public surface transportation. Findings with greater detail have even more significance for risk and security management.

The Chronologies project has had many accomplishments this year, including:

- The number of attacks in the database grew from 1,049, when it was first briefed to the FTA/TSA Safety and Security Roundtable on July 14, 2009, to the current 2,368. Approximately 110 attacks were added each month through a painstaking review of data in the University of Maryland START database (UM-START)—data that were often coded inconsistently and incorrectly—and the RAND Corporation terrorism database.
• The MTI database has been kept fresh by a daily review of new attacks.

• The database platform was transferred to a Microsoft Access® platform in early June 2010, with the assistance of a NASA software vendor, allowing standard graphs and charts to be automatically updated and special ad hoc reports to be more easily generated.

The MTI database has been used throughout this year to produce insightful reports and briefings to key stakeholders. For example:

• The database was used to produce three published MTI reports: Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis (MTI Report WP-09-02); Terrorist Attacks on Public Bus Transportation: A Preliminary Empirical Analysis (MTI Report WP 09-01); and The 1995 Attempted Derailing of the French TGV (High-Speed Train) and a Quantitative Analysis of 181 Rail Sabotage Attempts (MTI Report 09-12).

• Information from the database has been used to shape the TSA Bus Security Operator Awareness Training (BOARD) project.

  a. The data and analyses were formally briefed to a GAO panel evaluating DHS R&D priorities for public transit in August 2009; to the Counter-IED Working Group on in November 2009; and to a wide assortment of UK officials in June 2010.

  b. The data were briefed, at TSA’s request, to field Bomb Appraisal Officers in Chicago and New Orleans. Many more briefings are to follow.

  c. The data were used to produce a written report for Chairman James Oberstar of the House Transportation and Infrastructure Committee to inform Congressional testimony by Amtrak, and to answer specific tactical questions by the transit police chief of a major East Coast city.
In the coming year, MTI will (1) increase the tempo of providing trends and data to stakeholders and the relevance of the information; (2) increase the facility and ease with which the database can produce these trends and data; and (3) become known as the unique source of reliable data analysis on public surface transportation.

**Terrorist Attack Annual Trends Analysis**
**Project #2979**

Investigators: Brian Michael Jenkins and Bruce Butterworth

The objective of the Trend Analysis project is to deliver to governmental authorities and transportation operators—both US and international—comprehensive and focused trend analyses of the terrorist threat against public surface transportation, as revealed through qualitative analyses of attacks and plots. The analyses will help government officials make better risk-based decisions on policy, regulation, and R&D and will enable transportation system managers to operate and invest in their systems, equipment, and personnel in a way that yields the greatest reduction in risk. MTI seeks to increase the awareness of both front-line government and transportation employees. The Trend Analysis project is a high-impact project yielding significant benefits now and promising more in the future. The project uses information from the Chronologies project, and its products often support or are combined with those of the Case Studies project (Project # 2977).

Mr. Jenkins is the Principal Investigator, Research Associate Bruce Butterworth is the research lead, and MTI independent contractors also contribute to the project.

The methodology is straightforward and effective: First, data from the MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation are analyzed in ways that reveal valid statistical trends concerning where (e.g., region and country), against what (55 different targets), and how (51 methods) attacks have been conducted. The database analyses show which of 11 explosives or incendiary devices have been used and 25 ways in which they can be delivered or concealed, along with 5 different outcomes for each device. Eleven new fields have been added to the database, including whether multiple devices have been aimed at responders, the size of the explosives, the detonation and timing mechanisms used, whether devices were found before attacks, whether attacks take place in large or small locations, and whether they occur near iconic targets. The data are culled to determine trends not only in distribution, but also in lethality, measured in terms of average and median fatalities and injuries per attack, per device, and per device exploded on target. The graphs and charts produced provide the quantitative raw material for MTI's trend analyses. As these analyses become more operationally precise, it becomes even more important to ensure appropriate controls over information. For this reason, public access to the MTI database is not planned and not all of its trend analyses will be publicly available as they could offer operational value to potential adversaries.

The qualitative material for trend analysis comes from the in-depth experience and knowledge resident in MTI's senior staff, particularly Mr. Jenkins. The understanding of evolving worldviews, objectives, and tactics—in combination with the results of MTI's Chronologies project—enables trend analysis that offers both qualitative information and quantitative wisdom. Finally, these factors are combined with information from the Attack Case Studies project to provide the most useful products to stakeholders.

MTI's unique database and staff experience provide results with considerable impact, as did its earlier work on selective screening in passenger rail transportation, which directly influenced decisions of mass transit operators and Amtrak. Another example of the impact of the trend analyses is MTI's participation in TSA's Bomb Squad Response to Transportation Systems (BSRTS) program.

Initiated by TSA's Operation Division in conjunction with the Security Network Management Office, the BSRTS project, which began in the first quarter of FY2010, includes
over 30 two-day training seminars, roughly half of which will be conducted later in FY2010, and the remainder in FY2011. In each of the seminars, MTI researchers will present current trends, focusing on explosives attacks, using updated data and case studies.

MTI NTSCOE research associates have already assisted in three seminars (Chicago - May 26; New Orleans - June 28; and San Antonio - July 21) and their participation is also scheduled for upcoming seminars in Boston, Miami, Los Angeles and Seattle. MTI has received positive feedback yielding requests by other parties for more briefings, and its analyses are providing TSA Bomb Appraisal Officers with a solid foundation on which to conduct vulnerability assessments for surface transportation. The analyses may also assist in responses to bomb threats and explosives devices.

MTI trend analysis has been used in three published reports: *Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis* (MTI Report WP-09-02); *Terrorist Attacks On Public Bus Transportation: A Preliminary Empirical Analysis* (MTI Report WP 09-01); and *The 1995 Attempted Derailing of the French TGV (High-Speed Train) and a Quantitative Analysis of 181 Rail Sabotage Attempts* (MTI Report 09-12). Each report combines the features of qualitative and quantitative analysis, and the report on train derailment attempts in France also presents case studies.

Continuing trend analysis—including analysis addressing specific questions asked by stakeholders—has shaped the TSA Bus Security Operator Awareness Training (BOARD) project. Trend analysis has been provided to UK and Japanese authorities, and it is already being used to provide quantitative background for the analysis of high-speed rail projects (a special data field has been added in the database for this purpose). Trends determined from MTI analyses have also been communicated to the General Accountability Office (GAO) and other agencies that take a broad view of R&D priorities.

In the coming year, MTI will increase the variety and the focus of its trend analyses and will publish additional reports for the general public; additional details (which, if released to the public, could provide terrorist roadmaps) will be provided for key government and industry stakeholders.
Mass Transit Bus Operator Behavioral Awareness Training Program
Project #2982

Investigators: Brian Michael Jenkins, Bruce Butterworth, Karl Shrum and Shalom Dolev

The Transportation Safety Administration (TSA) Bus Operator’s Project, which has been renamed the Bus Operator Behavior Awareness Research and Development (BOARD) program, is designed to provide training that will enable bus operators in the United States to “quickly and effectively evaluate individual behavior before that person has a chance to attack, and take actions that can be considered by the bus driver to protect passengers when he/she feels they are at risk.” This important program is managed by DHS’s Science and Technology Directorate, with funding, input, and direction from TSNM’s Mass Transit Division. MTI’s contribution to the program falls into three general categories: (1) shaping the training program and its interim and final reports; (2) providing empirical data; and (3) providing case studies to help focus the training on areas where the greatest risk reduction can take place; and creating material that will make the training realistic for the participants and illustrate the risks they may face, as well as effective countermeasures. MTI’s objective, in short, is to make the BOARD training program effective at reducing risk.

TSA’s goal is to be responsive in general to customer direction and to provide a wide range of fast-turnaround assistance for product development. Its task methodology for the BOARD program involves using the MTI Database on Terrorist and Serious Criminal Attacks against Public Surface Transportation (see the Chronologies project) to develop statistical trends that identify where attacks against buses are most frequent and most lethal and to statistically illuminate countermeasures that have been most effective. MTI’s methodology involves developing case studies from countries where attacks have been frequent (e.g., Israel and the United Kingdom), using its own data and information secured from governmental and associated authorities, for use in the training program.
Mr. Jenkins, the Principal Investigator, and Research Associate Bruce Butterworth, the working lead, are working in close cooperation with all NTSCOE staff, particularly Chris Kozub and Renee Haider (who continue to work on the project for Rutgers University, although they have recently become MTI Research Associates).

While it appears that the primary threat to public surface transportation in the United States is against the heavy-rail mass transit systems of major cities, bus targets share the characteristics of jihadist targets around the world, particularly but not exclusively in major urban areas. Buses are open, valuable targets, both primary and secondary. Their vulnerability is increased by the fact that while behavioral assessment courses and tools are available for rail transportation employees, there are as yet none for bus operators.

The BOARD program and MTI’s contribution to it therefore could reduce a serious risk before it becomes critical. Its potential impact is significant, given the number of times bus targets have been hit elsewhere and the lethality with which they have been attacked. It is even more significant because of the mutually supportive benefits of such a program for operators who confront common crime and many other safety issues.

MTI has accomplished much since this project was initiated in this reporting period.

First, MTI has produced ground-breaking empirical analyses. Research Associate Bruce Butterworth presented data to bus operator focus groups in Houston, Texas, in November and December 2009. MTI also generated an interim report published in January 2010, Terrorist Attacks on Public Bus Transportation: A Preliminary Empirical Analysis (MTI Report WP 09-01). A subsequent report, Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis (MTI Report WP-09-02), provided more detailed analyses on bus attacks. MTI met its deliverables deadlines for empirical analysis and has continued to produce data for the developers of the BOARD training outline and materials.

Second, MTI secured groundbreaking case studies on DHS’s behalf from Israeli counterparts. MTI has used its own database for cases, and in addition, ten detailed case studies were produced by Israeli explosives and security expert Shalom Dolev. These case studies provide information never seen before. They will be made widely available as an MTI publication, but in the meantime, they have been provided to the course developers. MTI has also secured a copy of the Israeli Bus Driver Training Course sought by the BOARD course designers.

Third, MTI has been a reliable and conscientious team member on the project, providing assistance to improve the overall quality of the training course. For example, it played a key role in generating useful results from the January 2010 trips to Israel and the United Kingdom as part of a DHS delegation.

In the coming reporting period, MTI will publish a peer-reviewed final report on bus attacks that will present the latest findings from the MTI database, its own case studies, and the detailed case studies from its Israeli contactor. The cases will illustrate instances in which (1) particularly lethal tactics and weapons have been employed, including the use of suicide and non-suicide bombers; (2) actions by on-scene security personnel, operators, or passengers would likely not have stopped or mitigated the attack without significant advance warning; (3) enhanced awareness and actions by security personnel, operators, or passengers did in fact prevent or mitigate attacks; (4) bombs or incendiary devices were particularly lethal; (5) bombs or incendiary devices malfunctioned or were ineffective; and (6) multiple bombs were involved and were timed to detonate when they would cause casualties among emergency responders.

This groundbreaking work will contribute to continuing awareness of the need for appropriate bus security measures in the United States and in other countries as well.

MTI will also actively participate in efforts to secure stakeholder input to the design of the course and to understand the operational constraints the training must take into account. It will assist in the final production of the course and will help in its roll-out.
World Trade Center Commerce and Security Study (WTC-CAST)
Project #2985
Principal Investigator: Brian Michael Jenkins

The World Trade Center Commerce and Security (WTC-CAST) project will conduct a risk-based analysis to assess, within a cost-benefit-analysis framework, varying combinations of security measures, policies, and procedures that can be put into place at the WTC. Working with CCICADA at Rutgers University, the Department of Homeland Security Center of Excellence University of Southern California’s CREATE, and officials of the Port Authority of New York and New Jersey, MTI will examine (1) the terrorist threats to the WTC site, including the WTC acreage and surrounding properties that comprise New York’s lower Manhattan financial district; (2) the major potential direct and indirect economic consequences of possible terrorist actions; (3) the portfolio of security measures that can be developed against the threats; and (4) the costs and benefits that can be derived from these security measures.

MTI’s NTSCOE will assume the lead in this consortium for threat analysis and attack-scenario generation and will also participate in identifying and evaluating possible security countermeasures. MTI will also assist DHS and other researchers in liaison with the New York Police Department (NYPD) and other public and private sector officials who will be key factors to the project’s successful execution.

As an initial step in this effort, MTI will prepare a white paper that outlines terrorist motives, reviews current methodologies for assessing and ranking terrorist threats, identifies and establishes contact with NYPD and other key public and private sector officials, and lays out a plan of action for further threat analysis.

Specifically, MTI will:

- Examine possible terrorist motives that could drive their objectives, selection of targets, and choice of tactics.

- Review various approaches used to generate terrorist scenarios, elicit expert opinion, assess threats, identify key experts, and indicate how they might contribute to the research.

- Conduct an initial reconnaissance of the WTC and surrounding properties, review currently envisioned security measures (location of perimeters, deployment, procedures, etc.), and initiate discussions with NYPD and other key individuals who may assist in the effort.
• Participate in the planning sessions of the consortium.

• Lay out a more detailed plan of action for the analysis of the terrorist threat, production of attack scenarios, and determining how these may interact with security.

In the overall project, MTI will:

• Define the terrorist threat.

• Identify and describe relevant historical cases (London, Mumbai, Tokyo, etc.)

• Review existing databases and design and construct a set of data specifically tailored to this project (including significant terrorist attacks on nationally important commercial centers) from which MTI will be able to extract terrorist motives, attack modes, intended and actual consequences, and security countermeasures.

• Using historical analysis, a review of previous analyses of the terrorist threat to New York, and “red team” exercises, develop a playbook of detailed, plausible attack scenarios.

• Review current methods of ranking or quantifying terrorist scenarios and apply these to the identified threats.

• Catalogue previous security responses, current security measures, and recent and projected technological developments. (For security reasons, formal documentation will not identify or evaluate what New York currently has in place or contemplates doing.)

• Again, through red team analysis, consider how terrorists might attempt to overcome or obviate these security measures.

• Attempt to estimate risk reduction (scenario-by-scenario and overall).

• Identify additional security countermeasures.

Efforts in the overall project have thus far focused on project organization, defining more precisely the roles that will be played by the participants, and dealing with local authorities in New York. During this period, MTI, which joined the effort after the others, participated in discussions in Washington, Los Angeles, and New York. MTI prepared a detailed briefing and presented it at the organizational meeting hosted by CREATE on May 17. This briefing, which was considered to be highly informative by the participants and influenced the direction of the project, has been changed to incorporate comments made at the meeting and has been expanded to an outline of the White Paper. MTI also conducted a search of the literature on threat and risk assessment methods. MTI NTSCOE Director Jenkins made two trips to New York to discuss the project with NYPD’s Police Commissioner and Deputy Commissioner and review the details of the NYPD’s existing Lower Manhattan Security Initiative. During these trips, he also met with private sector stakeholders to elicit their support. The white paper will be completed and submitted in November 2010.

The project has recently been expanded to look at potential terrorist topics in both New York and California.
Overview

The Communications and ITT function at MTI has become a valuable resource for transportation researchers, policy makers, and professionals around the world, providing:

- Symposia and other events to collaborate with transportation leaders about key topics such as transportation security, workforce development, transportation finance, sustainable vehicles, high-speed rail, and other issues. These are typically organized as stand-alone events sponsored by MTI or in cooperation with other transportation organizations, or they are incorporated as part of larger transportation conferences and professional gatherings.

- Summaries and reports from those meetings, along with promotions for MTI NTSCOE research reports, are published as hard copy, PDF and HTML documents. These may be downloaded at no cost from the MTI web site.

- Information resources for surface transportation security topics – available on our web site, at libraries, or through our network of other transportation sites. These resources include periodicals, news articles, video clips, databases, research reports, and other materials.

- Educational resources to help future transportation leaders learn about MTI’s accredited Master of Science in Transportation Management program, with an emphasis in transportation security. These include classroom materials and workbooks, registration materials for MTI’s Summer Transportation Institute, the Garrett Morgan Sustainable Transportation Competition for middle-school students, and more.

- The latest news about MTI’s research and information about transportation security issues.
Forums and Summits

Each year MTI presents regional forums and state or national summits, either as stand-alone events or as part of larger gatherings of transportation professionals. These events accomplish multiple purposes, such as sharing recent research with practicing professionals, policy makers, other academics, and the larger community; exploring issues that may require further research (part of needs assessment); providing opportunities for networking and collaboration; and creating a record of proceedings that can be shared with a wider audience online and/or in print.

Protecting Our Rail Infrastructure: What Are Our Risk Exposures?

MTI Transportation Security Research Director Brian Michael Jenkins led a panel discussion on strategies to protect the nation’s rail infrastructure. The session was part of the annual APTA Rail Conference, held June 6-9 in Vancouver, BC. Panelists discussed why the ability to deter and detect activity is critical for passenger rail given its inherent openness. Therefore, it is imperative to consider design aspects, risk trends, crime and terrorist activity patterns, technology applications, personnel deployment, rail’s impact on public safety, and other factors as part of a comprehensive approach to preventing everything from vandalism to terrorism.

**MTI Web Site**

Information and Technology Transfer also manages MTI’s web site, TransWeb (www.transweb.sjsu.edu), a transportation information site widely used by people and organizations outside of the Institute. The site provides information about MTI’s purpose, research reports (including downloadable publications in PDF and HTML formats), education programs from middle-school to graduate level, symposia and forums, news coverage, and links to national and international sites related to surface transportation security and policy.

The MTI website has become increasingly popular as a resource for cutting edge transportation research. On average there were 247,666 visits per month to the website, with over 50,000 reports downloaded.


The MTI brochure on its Master of Science in Transportation Management and Certificate in Transportation Security also proved popular, typically showing in the top downloads each month.

Graduate Transportation Management Program (GTMP) students benefit from additional TransWeb content and functions. The GTMP pages are designed especially for current students, who can view upcoming class schedules, register for classes on an interactive form, and request information about the program. The new web design has helped MTI to streamline the process. Video recordings of all classes are also maintained. It allows students to keep up with any missed lessons, review important sessions, and take advantage of guest speakers from past sessions.
Media Coverage

By way of active media pitching, MTI has established a growing reputation as a resource for expert opinions about surface transportation safety and security issues. During this last fiscal year, MTI was an important part of many news stories in print, online, and broadcast media. NTSCOE Director Brian Michael Jenkins was often solicited for opinions on selective screening of rail passengers, terrorist threat, and designing and operating safe and secure transit systems among many other compelling issues. The media also picked up stories about the Institute’s symposia and other events.

Based on actual interview placements, direct story placements, and media inquiries, MTI improved its media coverage over the last fiscal year by averaging four broadcast placements (radio and TV) and 17 print placements per month. It is impossible to calculate actual metrics for every placement because news stories are customarily picked up by several other media, including blogs and local news services, and repeated into their own markets. Therefore, when all multiplying factors are taken into account, actual news coverage is reasonably assumed to be significantly higher.

Social Media

This year, MTI established a Facebook fan page named Mineta Transportation Institute. The Facebook site includes all copies of MTI news releases; daily commentary from industry events such as the APTA Rail Conference; links to outside resources such as relevant books and articles; photo albums; direct links to MTI research reports; fan comments; and other material. We expect to focus more attention on the Facebook site, perhaps including interviews, along with updates on MTI’s education programs.

Other Successes

NTSCOE Director Brian Michael Jenkins has appeared in person and in broadcast interviews discussing counter-terrorism measures. He also has testified before Congress and has written articles for industry publications. In April of 2010, Director Jenkins had the pleasure of appearing briefly on ABC’s Good Morning America where he discussed transportation security. Recognized as one of the world’s leading authorities on terrorism, Director Jenkins was also interviewed by Wolf Blitzer on the topic of home-grown terrorists and how big of a threat they pose to the United States. Jenkins was also personally invited to the White House to meet with John Brennan, the White House Counter Terrorism Czar, to discuss changes in U.S. counter-terrorism strategy.

Transportation Security Deputy Director Frances Edwards was a key organizer for the American Society for Public Administration (ASPA) Annual Conference in San Jose CA, appearing also as a speaker. She also presented at the FEMA Higher Education Conference in Emmitsburg MD and at the 35th Annual Natural Hazards Conference at the University of Colorado, Boulder.

After reading the MTI report titled “Explosives and Incendiaries Used in Terrorist Attacks on Public Surface Transportation: A Preliminary Empirical Analysis”, MTI was contacted by Amtrak’s Office of Government Affairs and asked to provide data on the number of attacks against rail transport, and public transport more generally, since 2007. This request was promptly honored and the data provided was used in Congressional testimony by AMTRAK’s Chief of Police.
Education Program Goal

The Graduate Transportation Management Program was created to develop and administer a multidisciplinary, state-of-the-art program via videoconferencing and Internet technologies. It consists of coursework and experiential learning that provides students the skills and knowledge to manage and lead transportation systems.

Summer Transportation Institute

During July 2009, the Education Program again offered the “Summer Transportation Institute” (STI). The program, which is funded by the FHWA via the California Department of Transportation (Caltrans), is a national effort to provide career orientation and educational experiences to motivate secondary school students toward professions in the field of transportation. The transportation industry will continue to need individuals who are prepared to provide the leadership to build the nation’s transportation system for the next century. The primary aim of STI is to encourage high school students – particularly from traditionally underrepresented backgrounds – to seek professional careers in transportation through obtaining a college education. Participants were engaged in a variety of activities including emergency preparedness, a college-level environmental science class with an emphasis on transportation issues, field trips to a variety of area transportation centers, guest speakers from the industry, hands-on projects, and related enrichment activities.
Education Program Accomplishments

MTI’s Graduate and Certificate Programs
The College of Business at San José State University, with support from the Mineta Transportation Institute, offers a Master of Science degree and two graduate Certificate programs.

The Certificate in Transportation Security (CTS) includes two required courses – Emergency Management for Transportation Professionals and Security Issues for Transportation Professionals – along with two core courses from the MSTM curriculum. Students may apply six credits earned from the Certificate program toward the MSTM, should they later wish to continue. The emergency management course is taught by MTI Research Associate Dr. Frances L. Edwards, a renowned disaster response expert. Dan Goodrich, a specialist in planning, training, and exercises for weapons of mass destruction, teaches the security class. The Certificate includes an option for SEMS certification.

MTM 226A: Emergency Management Issues for Transportation Professionals
This course emphasizes the role of emergency management within transportation agencies and the role of transportation and resources in the larger community-wide response to emergencies and disasters.

MTM 226B: Security Issues for Transportation Professionals
The purpose of this course is to enable the participant to critically analyze surface transportation security plans. Course reading is taken from a variety of sources to introduce concepts ranging from opposing force and theft to public confidence. DHS courses Incident Response to Terrorist Bombing, and Prevention and Response to Suicide Bombing Incidents will be presented as part of the curriculum.

For details about MTI’s education program, please contact Dr. Peter Haas, MTI Education Director at 408-924-5691 or haas@mti.sjsu.edu.

Student Achievements

MSTM students invited to participate in safety and security workshops:

- Sarah Swensson was selected to participate in the Green Field Future of Aviation Security Workshop. DHS Science & Technology and the Research Council of the United Kingdom sponsored this 2½ day event. Young transportation professionals from the US and the UK were chosen to attend the workshop. It was held at the Stevens Institute of Technology (SIT) in Castle Point, New Jersey. The workshop sought unconstrained inputs from brilliant young minds that represented a range of science and engineering disciplines to identify what aviation security could and should be in the year 2027. It was an honor for Sarah to be selected to participate in this important event. Sarah is a community relations specialist for the Orange County Transportation Authority (OCTA) and is the project manager for a multi-million dollar railroad safety public awareness campaign and infrastructure enhancement construction program, one of the first in the nation.

- MTI student Cedric Novenario was selected to participate in the “Picture This: Engineering” event in Washington, DC, at the invitation of the Department of Homeland Security. This event was created to “facilitate collaboration between the engineering community and the media to produce positive, accurate and exciting messaging strategies.” Cedric is enrolled in MTI’s Certificate in Transportation Security Management Program and currently works for the City of Livermore as an Associate Transportation Engineer where he is a member of the City’s Disaster Council. The council focuses on ensuring that the City is prepared for any emergencies, natural and man-made.
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