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SAFE SEAS: PROTECTING AMERICA'S FERRIES AGAINST CRIMINAL MASS-CASUALTY INCIDENTS

by

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December 2018

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The U.S. ferry system is one of the few remaining transportation sectors that has not been hardened for a mass-casualty attack, and the unrestricted ability of passengers to carry firearms onto vessels could enable a lone actor or group to perpetrate an active-shooter event while at sea. The proactive security measures and strategies developed by the government agencies responsible for maritime security are insufficient—inadequate even in responding to an active shooter—and might result in a large number of casualties. An analysis of government studies and current intelligence indicates that there are significant gaps in ferry security, especially concerning the threat of an active-shooter attack. This thesis investigates the exponential improvement in the security posture of the U.S. ferry system through the adaption and implementation of the best practices successfully enacted in other transportation domains as well as the benefits in the mitigation of potential mass-casualty events in this public conveyance. Such a strategy requires transitioning traditional law enforcement and military roles to the maritime civilian workforce.

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SAFE SEAS: PROTECTING AMERICA'S FERRIES AGAINST CRIMINAL MASS-CASUALTY INCIDENTS

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ABSTRACT

The U.S. ferry system is one of the few remaining transportation sectors that has not been hardened for a mass-casualty attack, and the unrestricted ability of passengers to carry firearms onto vessels could enable a lone actor or group to perpetrate an active-shooter event while at sea. The proactive security measures and strategies developed by the government agencies responsible for maritime security are insufficient—inadequate even in responding to an active shooter—and might result in a large number of casualties. An analysis of government studies and current intelligence indicates that there are significant gaps in ferry security, especially concerning the threat of an active-shooter attack. This thesis investigates the exponential improvement in the security posture of the U.S. ferry system through the adaption and implementation of the best practices successfully enacted in other transportation domains as well as the benefits in the mitigation of potential mass-casualty events in this public conveyance. Such a strategy requires transitioning traditional law enforcement and military roles to the maritime civilian workforce.

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LIST OF ACRONYMS AND ABBREVIATIONS

AMSC	Area Maritime Security Committee
ASP	Alternate Security Program
CBP	Customs and Border Protection
CCL	Cancelled Card List
C.F.R.	*Code of Federal Regulations*
COTP	captain of the port
CRS	Congressional Research Service
CSO	company security officer
DHS	Department of Homeland Security
DNDO	Domestic Nuclear Detection Office
FAM	federal air marshal
FAST	Fixing Americas Surface Transportation Act
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FFDO	Federal Flight Deck Officer (Program)
FMO	federal maritime officer
GAO	Government Accountability Office
IED	improvised explosive device
IPAWS	Integrated Public Alert and Warning System
ISPS	International Ship and Port Facility Security (Code)
I-STEP	Intermodal Security Training Exercise Program
LPR	license plate reader
MARSEC	maritime security
MSRAM	Maritime Security Risk Analysis Model
MTS	Maritime Transportation System
MTSA	Maritime Transportation Security Act
NIPP	National Infrastructure Protection Plan
NIS	National Intelligence Strategy

NRC	National Response Center
NTC	National Targeting Center
OSPIE	Office of Security Policy and Industry Engagement
PNR	passenger name record
PRDD	personal radiation detection device
PVA	Passenger Vessel Association
SPO-NX	stand-off explosive detection technology
STC	Secure the Cities
TSA	Transportation Security Administration
TWIC	Transportation Worker Identification Credential
UPS	United Parcel Service
USCG	United States Coast Guard
VIPR	Visible Intermodal Prevention and Response
VSO	vessel security officer
WEA	wireless emergency alert
WMD	weapon of mass destruction

EXECUTIVE SUMMARY

America has entered the era of the active-shooter phenomenon, and empirical evidence supports a rising national trend that creates a risk for all mass-gathering public venues. The Department of Homeland Security (DHS) defines an *active shooter* as "an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms and there is no pattern or method to their selection of victims."[1] The Federal Bureau of Investigation (FBI) reports that active shooters are likely to target public sites where a large number of people are gathered in a crowded space with limited security measures such as transportation centers.[2] The United States has a robust ferry transportation system, composed of over 500 vessels, which transport more than 115 million passengers and 30 million vehicles annually.[3] There are no controls to regulate the transport of firearms on ferries, yet armed law enforcement personnel on ferries cover only a small percentage of trips. This lack of coverage represents a potentially exploitable vulnerability, as a passenger could easily bring a firearm onto a vessel and initiate an active-shooter event.

An attack on a ferry would result in a significant number of casualties and create a considerable disruption in services to the nation's transportation system.[4] The United States would have to allocate considerable resources to enhance national security to restore public confidence and mitigate the potential for additional incidents.[5] In the age of the

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[1] Department of Homeland Security, *Active Shooter: How to Respond* (Washington, DC: DHS, October 2008), 3, https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/flrtc/documents/active_shooter_booklet.pdf.

[2] "Community Outreach," Federal Bureau of Investigation, accessed October 11, 2018, https://www.fbi.gov/about/community-outreach.

[3] "National Census of Ferry Operators (NCFO)," Bureau of Transportation Statistics, last modified October 30, 2018, https://www.bts.dot.gov/surveys/national-census-ferry-operators-ncfo/national-census-ferry-operators-ncfo.

[4] Stephen L. Caldwell, Dawn Hoff, and Jonathan Bachman, *Maritime Security: Ferry Security Measures Have Been Implemented, but Evaluating Existing Studies Could Further Enhance Security*, GAO-11-207 (Washington, DC: Government Accountability Office, December 2010), http://www.gao.gov/products/GAO-11-207.16.

[5] Caldwell, Hoff, and Bachman.

active-shooter phenomenon, where daily attacks occur in mass-population gatherings, the intelligence community has assessed that soft targets and crowded places, such as ferry systems, will remain attractive targets of various threat actors and vulnerable to mass-casualty attacks into the foreseeable future.[6] Despite collaborative efforts by the United States Coast Guard (USCG), the Transportation Security Administration (TSA), Customs and Border Protection (CBP), and law enforcement, ferry companies have been unable to devise a feasible solution to the active-shooter scenario that would not result in a substantial number of casualties.[7] Maintaining the status quo offers inconsistent security protection for a vital maritime transportation system.

Examining public transportation systems in the United States, this thesis identifies security methodologies used in the aviation, rail, and maritime domains that might realistically be applied to ferry security to mitigate an active-shooter event. The essential theme and common denominator among the security alternatives is the focus on transitioning traditional law enforcement and military security roles to the civilian ferry workforce. These initiatives could exponentially bolster and increase the security posture of the U.S. ferry systems by tapping into a previously unrecognized resource—the vast maritime civilian workforce—as a readily available security asset.

The TSA's Federal Flight Deck Officer (FFDO) Program empowers and arms aircrew members with limited police powers to augment law enforcement's role in preventing hijackings.[8] While ferry companies have actively pursued a process for arming their captains and employees through current legal means, they have faced numerous jurisdictional and regulatory challenges, which have proved prohibitive. A viable alternative to counteracting potential active-shooter situations would be to authorize civilian ferry personnel to become deputized as voluntary unpaid federal agents and enable them to carry a firearm and use deadly force to address an immediate threat to the safety

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[6] Department of Homeland Security (DHS), *Soft Targets and Crowded Places Security Plan Overview* (Washington, DC: DHS, May 2018), https://www.dhs.gov/sites/default/files/publications/DHS-Soft-Target-Crowded-Place-Security-Plan-Overview-052018-508_0.pdf.

[7] Scott Graham and Al Hoffman (USCG port security specialists for the Long Island Sound Sector), personal communication, July 17, 2017.

[8] Federal Flight Deck Officer Program, 49 C.F.R. § 44921 (2006).

and security of their vessels. This initiative would utilize the FFDO Program as a conceptual, developmental model for the creation of an equivalent position for ferries.

DHS has concluded that an "informed and empowered public is the greatest ally to enhance the security of soft targets and crowded places."[9] According to DHS's *Soft Targets and Crowded Places Security Plan Overview*, individuals working in these locations are often in the best position to help detect and prevent possible attacks.[10] To truly be effective, these employees must have a basic knowledge and understanding of how to identify baseline behaviors for their environment as well as the ability to recognize characteristics and anomalies that might indicate nefarious intent. These employees would serve as the first line of defense in mitigating potential mass-casualty incidents by identifying individuals in the stages of preparing for an attack. Active shooters often display observable behaviors and physical manifestations of their intent. In an interview with the *Washington Post*, Supervisory Special Agent Andre Simons of the FBI's Behavioral Analysis Unit reported that active shooters spend a week or longer planning the attack.[11] In protecting aviation transportation, the TSA established behavioral recognition training for its civilian workforce to identify indicators that warrant law enforcement engagement. For law enforcement, the TSA provides the Behavioral Detection and Analysis Program, which covers behavioral training, verbal engagements, and resolution conversations.[12] Empowering the civilian workforce with the ability to recognize baseline behaviors in suspicious individuals and to facilitate a police referral could mitigate an active-shooter event by ensuring that persons with nefarious intentions are not given the opportunity to board a vessel until they are cleared by law enforcement. The entire U.S. ferry system would be well served if the USCG and TSA collaborated on a maritime-specific behavioral

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[9] Department of Homeland Security, *Soft Targets and Crowded Places*, 1.

[10] Department of Homeland Security, 2

[11] Mark Berman, "Active Shooters Usually Get Their Guns Legally and Then Target Specific Victims, FBI Says," *Washington Post*, June 20, 2018, https://www.washingtonpost.com/news/post-nation/wp/2018/06/20/active-shooters-usually-get-their-guns-legally-and-then-target-specific-victims-fbi-says/?utm_term=.125cee510369.

[12] Tayla Balkovic (Threat Assessment Division, Transportation Security Administration), personal communication, October 12, 2017.

recognition training program for the civilian workforce that could be incorporated into each port's maritime security plan.

Additionally, the TSA and CBP have processes that identify persons who might pose a threat to transportation, enabling appropriate action to be taken before the passengers access a conveyance.[13] National watch centers have the ability to conduct a check of a passenger's name—almost instantaneously—for a nexus to terrorism or to ascertain whether the individual might present a threat to the public. Ferry operators have no requirements to establish passenger manifest records or conduct checks on the names of persons who will be traveling on their vessels. Under heightened maritime alerts, USCG guidance permits ferry operators to implement indigenous security procedures that do not facilitate scheduling delays or impact the service they provide to the public. This includes, but is not necessarily limited to, examining the identification of vessel passengers. The support structure is already available to conduct a name check on suspicious passengers. It would be operationally prudent from a security perspective to enable ferry owners and operators to have a designated process for reporting suspicious passengers and conducting an assessment. Devising and incorporating a process that enables ferry personnel to conduct a name check on a suspicious passenger through a dedicated watch center would be a proactive maritime security measure that is consistent with those found in other U.S. public transportation domains.

Maritime security strategies have actively engaged in preventing terrorist operatives and persons with nefarious intentions from introducing improvised nuclear explosive devices or radiological disposal devices into America's public transportation systems. These screening activities have been conducted primarily by the U.S. military and law enforcement on infrequent and random operations. Providing the civilian maritime workforce with personal radiation detection devices would exponentially increase the ability of the U.S. ferry system to intercept and prevent radiological materials before they

[13] Stephen L. Caldwell, Dawn Hoff, and Jonathan Bachman, *Maritime Security: Varied Actions Taken to Enhance Cruise Ship Security, but Some Concerns Remain*, GAO-10-400 (Washington, DC: Government Accountability Office, April 2010), htpp://www.gao.gov/products/GAO-10-400.

could be brought onto a vessel, essentially shielding the entire transportation network from this attack matrix.

Many government studies have pointed to the security vulnerabilities on ferries, but the sources focus narrowly on limited response strategies. The proactive security approach taken by this thesis provides a framework that can be applied to the U.S. ferry system in a clear and cohesive manner, which would harden it against an active-shooter event. Developing and implementing proactive security measures that protect people and safeguard infrastructure assets is a matter of good business and shared corporate responsibility.[14] DHS supports a strategic security model that encourages a shared responsibility among agencies with security responsibilities, private entities, and operators that provide public transportation services.[15] The USCG supports the Area Maritime Security Committee (AMSC) in each sector. AMSCs are collaborative teams composed of federal, state, and local emergency response agencies that partner with stakeholders and maritime industry leaders to provide guidance and direction on the security of ports. These unique groups would have the ability to provide oversight and assistance in transitioning certain security responsibilities from law enforcement to civilians. The recommendations in this thesis build on DHS's commitment and demonstrate that a shared responsivity is the best approach toward securing the U.S. ferry system against a mass-casualty attack. They do not rely on new technologies that are untested and untried. This thesis engaged a business model approach toward safeguarding America's ferries by building on the programs and proven strategies that are already in use in other transportation domains, with an emphasis on transitioning traditional law enforcement roles to a civilian workforce. The support structure necessary to implement these recommendations has already been developed, requiring only legislative and procedural changes to adapt these systems for maritime applicability. In this regard, these recommendations are not necessarily unique or visionary, but they are proven, cost-effective, and easily implementable.

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[14] Department of Homeland Security, *Soft Targets and Crowded Places*, 3.

[15] Department of Homeland Security, 2.

As daily shootings in public places become accepted as the norm in America, maintaining the status quo in ferry security is to accept the inevitable—that an active shooter will eventually recognize the vulnerabilities and exploit them to initiate an attack on a vessel. A proactive approach that employs simple measures and actively engages the civilian workforce will not only harden ferries against active shooters but also augment the current U.S. maritime security posture and diminish the potential for a mass-casualty attack.

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I. INTRODUCTION

> Federal agencies—including the Coast Guard, the Transportation Security Administration (TSA), and Customs and Border Protection (CBP)—ferry operators, and law enforcement entities report that they have taken various actions to enhance the security of ferries and facilities and implemented related laws, regulations, and guidance, but the Coast Guard may be missing opportunities to enhance ferry security.
>
> —Stephen J. Caldwell,
> Government Accountability Office[1]

A. PROBLEM STATEMENT

America's ferries are vulnerable to attacks by an active shooter, which could result in numerous casualties. The response time of law enforcement and military to such an event would be exponentially increased if the situation involved a vessel that was underway at sea, further extending the duration of the event. Ferries carry hundreds of passengers. Currently, only two national strategies are consistently applied in every first-response plan to address an active-shooter event on a ferry underway.[2] The first is for the vessel's crew to secure the decks, radio for assistance, steam to shore at the closest proximity to land, and beach the vessel, allowing law enforcement to respond as if it were a land-based incident. The alternative to this is for the United States Coast Guard (USCG) and police with maritime capabilities to form boarding parties, interdict the vessel at sea, and engage the threat.[3] Either method presents an unrealistic timeline that might exponentially increase the loss of life if an armed attacker were on board. Government studies from law enforcement and the military collectively concur that a better methodology is needed to

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[1] Stephen L. Caldwell, Dawn Hoff, and Jonathan Bachman, *Maritime Security: Ferry Security Measures Have Been implemented, but Evaluating Existing Studies Could Further Enhance Security*, GAO-11-207 (Washington, DC: Government Accountability Office, December 2010), http://www.gao.gov/products/GAO-11-207.

[2] Scott Graham and Al Hoffman (USCG port security specialists for the Long Island Sound Sector), personal communication, July 17, 2017.

[3] Graham and Hoffman.

hasten the interdiction of a vessel at sea.[4] In the age of the active-shooter phenomenon, where daily attacks occur in mass-population gatherings, maintaining the status quo is to leave ferries open to criminal mass-casualty attacks.

The USCG is responsible for enforcing maritime law and partners with ferry companies to develop mitigation strategies to address mass-casualty incidents. A primary challenge for the USCG in this endeavor is controlling the transport of firearms on passenger ferries. Many states limit the carrying of firearms to those with a permit or license, but laws and regulations restricting their transport on a ferry are not easily enforceable. Ferry systems in the United States may be considered private property, but they must remain open and unrestrictive to the public as a condition of the service they provide. This potentially dangerous situation for vessel crews presents an opportunity for ferry passengers to carry concealed firearms on their person or secreted in their vehicles. According to Scott Graham and Al Hoffman, USCG port security specialists for the Long Island Sound Sector, each ferry company addresses the transport of firearms as it deems appropriate, which has led to inconsistent processes that vary by company and state.[5]

Maritime security strategies and law enforcement entities have focused primarily on screening initiatives to detect radiological materials and prevent their introduction into this transportation venue.[6] The USCG is the organizational element with primary responsibility for domestic maritime protection under the Department of Homeland Security (DHS). DHS remains actively engaged in preventing terrorist operatives and persons with nefarious intentions from transporting improvised nuclear explosive devices or radiological dispersal devices (more commonly known as "dirty bombs") into the United

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[4] Stephen L. Caldwell, Dawn Hoff, and Jonathan Bachman, *Maritime Security: Varied Actions Taken to Enhance Cruise Ship Security, but Some Concerns Remain*, GAO-10-400 (Washington, DC: Government Accountability Office, April 2010), 16, http://www.gao.gov/products/GAO-10-400.

[5] Graham and Hoffman, personal communication.

[6] Robert A. Robinson, *Nuclear Nonproliferation: U.S. and International Assistance Efforts to Control Sealed Radioactive Sources Need Strengthening*, GAO-03-638 (Washington, DC: Government Accounting Office, May 16, 2003), 65, https://www.gao.gov/products/GAO-03-638; and *Neutralizing the Nuclear and Radiological Threat: Securing the Global Supply Chain (Part Two): Hearing before the Permanent Subcommittee on Investigations, Senate Homeland Security and Governmental Affairs Committee*, 109th Cong., 2d sess., March 30, 2006 (statement of Gary Gilbert, senior vice president of Hutchison Port Holdings).

States from foreign ports. A dirty bomb is not a nuclear device itself, but rather it is a conventional explosive paired with radioactive waste that is dispersed when it is detonated. This type of device achieves its objective by introducing and spreading a radioactive plume into a highly populated area.

High-capacity ferry systems in the United States with an international route have been equipped with radiation detection devices that generate a large field magnitude capable of screening vehicles and trucks as they board ferries. These devices are usually affixed at ingress/egress ramps. Many were purchased with DHS port security grants in the decade after September 11, 2001. Of the few ferry systems that have these static detection devices installed, many are serviceable but are using outdated technology that is approaching the end of its anticipated lifecycle.[7] Additionally, personal, handheld radiation detection devices and portable units are in use by DHS federal law enforcement personnel to conduct screening operations at ferry terminals on randomly scheduled operations.[8] This layer of radiation detection security throughout the system requires a considerable investment of human capital and equipment assets from all participating agencies.

Examining public transportation systems in the United States, this thesis identifies security methodologies used in the aviation, rail, and maritime domains that might realistically be applied to ferry security to mitigate an active-shooter event. For example, the TSA's Federal Flight Deck Officer Program empowers select aircrew members with limited police powers to augment law enforcement's role in preventing hijackings. In addition, the TSA and CBP have processes that identify persons who might pose a threat to transportation, enabling appropriate action to be taken before the passengers board the conveyance.[9] This thesis examines these two proactive security procedures, which provide a comprehensive framework for industry leaders to consider in hardening ferries against an active-shooter event.

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[7] Shelby S. Oakley, *Radiation Portal Monitors, DHS's Fleet Is Lasting Longer Than Expected, and Future Acquisitions Focus on Operational Efficiencies*, GAO-17-57 (Washington, DC: Government Accountability Office, October 2016), 1, htpp://www.gao.gov/products/GAO-17-57.

[8] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 20.

[9] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 25.

B. RESEARCH QUESTION

The first area for study and analysis involves the lack of a consistent process to control passengers bringing firearms onto ferries, either carried on their person or in their vehicles. It seems prudent to have armed law enforcement personnel aboard every ferry to eliminate the threat of an active shooter. This thesis examines whether this proposition is a realistic security practice that could help deter active-shooter incidents and whether other available options could help achieve the same objective. It is necessary to examine public transportation in the United States to ascertain which systems, aside from maritime, have faced similar challenges and whether they have found a way to overcome them. Finally, as there are no requirements that ferries maintain a passenger or vehicular manifest of persons who travel, this thesis explores undertaking a security initiative as a feasible recommendation for implementation.

This thesis thus examines the following questions:

1. How can the U.S. ferry system be hardened against active-shooter threats?

2. What proactive measures have other public transportation venues implemented that might be transferable and applicable to ferry systems?

3. Are there security transportation roles and processes traditionally assigned to law enforcement and military forces that can be transitioned and redirected to the vast U.S. civilian maritime workforce?

This thesis is limited to an examination of existing processes in other transportation venues that are most likely to be incorporated into U.S. ferry security strategies. However, it does not examine complex procedures or methodologies that would be financially unrealistic or logistically and operationally infeasible. Nor does this thesis study processes in development or dependent on forecasted technological developments. Research is limited to examining what is currently working in the U.S. transportation system and what processes can be augmented or modified for ferry system application in a timely manner.

C. LITERATURE REVIEW

The purpose of this literature review is to examine the U.S. ferry transportation system and the rising threat of an active-shooter event as well as to ascertain whether viable measures mitigate the potential for an occurrence. Case studies, laws, media stories, and government reports are examined to gauge the potential threat of an active-shooter mass-casualty situation in this domain. The initial approach is to isolate best practices by agency and to identify and explain each process and the security benefits it provides. Additionally, security patterns that emerged during the research provide the basis for discussion so as to best examine ferry applicability and determine whether there is a potential correlation and application to maritime security.[10]

The first section of this literature review provides an overview of ferry operations in the United States and explains why they present an attractive target for an active shooter, homegrown violent extremist, or terrorist cell. Government-sponsored maritime security studies and reports on exploitable vulnerabilities help to determine whether current security measures and strategies are sufficient to address a gunman opening fire on a ferry that is underway. A study into exercises on large ferry systems helps to determine the anticipated incident duration as well as first-response arrival and containment. The second component of the literature review analyzes intelligence and reports on these types of events in both ferry and similar public transportation domains to devise a threat assessment. The third section of this literature review identifies simple yet effective mechanisms and methodologies in public transportation venues that mitigate active-shooter threats.

1. Ferry Security in the United States

The U.S. ferry fleet is composed of nearly 500 vessels, and many ferries serve a dual purpose—they transport both passengers and vehicles.[11] Many of the vessels can easily accommodate loads of 500 or more persons. According to a 2011 Government

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[10] Lauren Wollman, "Qualitative Research" (transcript of online lecture), accessed May 5, 2018, https://www.chds.us/moodle/mod/resource/view.php?id=9177.

[11] Marin Kress, "Ferry Data to the Public through the US DOT National Census of Ferry Operations" U.S. General Services Administration, April 4, 2017, https://www.data.gov/maritime/ferrying-data-public-usdot-national-census-ferry-operators/.

Accountability Office (GAO) study, an attack on a ferry would result in a significant number of casualties and create a considerable disruption to the nation's transportation system.[12] Financially, port closures would lead to U.S. gross domestic product losses of hundreds of millions of dollars each day.[13] The United States would have to allocate considerable resources and funding to enhance security measures in response to the reduction of passenger ridership—due to the loss of confidence in the safety and security of America's ferry systems.[14]

In a 2010 GAO report, Caldwell, Hoff, and Bachman offer the most comprehensive government study conducted to date on the vulnerabilities of America's ferry systems and terminals to potential attacks by terrorist operatives.[15] Subject-matter experts from the USCG, the TSA, CBP, law enforcement agencies, and ferry operators provided invaluable insight into the security measures that have already been used to mitigate potential attacks, and they have shared their concerns about existing vulnerabilities that remain within the maritime transportation domain. The breadth of the opinions of those interviewed along with statistical data and potential threat matrices for maritime security in the United States remains extremely relevant.

Caldwell, Hoff, and Bachman provide a strong overview of the importance of ferries as a "vital component of the U.S. transportation system."[16] The revelation that U.S. ferries carry millions of passengers and vehicles every year highlights the potential for vessels to become targets of terrorism in the United States. This GAO report encapsulates the findings of several other studies, concluding that the USCG may have missed opportunities such as establishing vehicular screening requirements for ferries. Similarly, in a 2006 RAND Corporation study, Willis and Ortiz promote the idea that ferries are

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[12] Caldwell, Hoff, and Bachman, Varied Actions Taken to Enhance Cruise Ship Security, 1.

[13] Caldwell, Hoff, and Bachman, 1.

[14] Caldwell, Hoff, and Bachman, 16.

[15] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented.*

[16] Caldwell, Hoff, and Bachman, 1.

attractive targets because mass-casualty attacks are easy to execute on them, and they will likely capture significant media attention.[17]

Maritime security measures to date have concentrated primarily on the ability of law enforcement and military entities to thwart efforts by terrorist organizations or lone operatives either to introduce a high-yield improvised explosive device onto a vessel or to use one as a weapon to launch an attack against the U.S. transportation system.[18] Caldwell, Quinlan, and Bachman evaluated the effectiveness of the USCG in detecting, deterring, interdicting, and defeating these threats as well as protecting the U.S. homeland and economy. A key component in this objective includes the Coast Guard's efforts to track vessels. Caldwell, Quinlan, and Bachman provide a detailed accounting of their findings in a GAO report and in testimony before the House of Representatives Committee on Homeland Security.[19] Caldwell, Quinlan, and Bachman examined the ability of the Coast Guard to track ships at sea, reporting the USCG relies on a series of electronic identification signal systems to locate and board vessels underway when necessary.[20]

Jimenez and Rowden explore the vulnerability of ferries and ports through an examination of a practical exercise using maritime improvised explosive devices (IEDs).[21] This exercise analyzed the responses necessary to respond to an incident by law enforcement and the military utilizing interactive war-gaming, computer modeling, and simulation to evaluate the first response capabilities of the participating agencies. The scenarios in the exercise were designed to ensure that military, law enforcement, and civilian agencies were forced to collaborate in response to maritime IEDs that arrived at a

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[17] Henry H. Willis and David S. Ortiz, "Securing America's Ports," *RAND Blog*, March 26, 2006, https://www.rand.org/blog/2006/03/securing-americas-ports.html.

[18] Stephen L. Caldwell, Susan Quinlan, and Jonathan Bachman, *Maritime Security: Ferry Security Maritime Security: Vessel Tracking Systems Provide Key Information, but the Need for Duplicate Data Should Be Reviewed*, GAO-09-337 (Washington, DC: Government Accountability Office, March 17, 2009), https://www.gao.gov/products/GAO-09-337.

[19] Caldwell, Quinlan, and Bachman.

[20] Caldwell, Quinlan, and Bachman, *Vessel Tracking Systems Provide Key Information*.

[21] Richard Jimenez, Bobby Rowden, and Eugene P. Paulo, "Using System Simulation and War Gaming to Examine the Threat of Maritime Improvised Explosive Devices (MIEDS) in US Ports," in *Proceedings of the 2009 Grand Challenges in Modeling & Simulation Conference* (San Diego: Society for Modeling & Simulation International, 2009), http://hdl.handle.net/10945/45707.

U.S. port. The exercise was conducted in Puget Sound, Washington, principally targeting Elliot Bay and Commencement Bay. The war game involved an attack against two of America's larger ferry systems, the Seattle Passenger Ferry System and the Maritime Transportation System. This practical exercise highlighted the challenges faced by first responders to reach a vessel at sea in a timely manner, which could elevate the potential for a high number of casualties.

Following another exercise involving the same systems, Bliss describes a joint agency training exercise involving an active-shooter scenario on the Washington State Ferry's newest vessel, *Chimacum*.[22] Participants included the USCG's Puget Sound Sector, CBP, Washington State Ferry, Washington State Patrol, the Kings County Sheriff's Office, and the Everett Police Department. Bliss interviewed a USCG captain who role-played on the ferry during the exercise, establishing his credentials and authority to evaluate the agency's likely response to such an event. This exercise, involving a response to an active-shooter situation aboard a vessel underway, was the first of its kind and provides keen insight into the behaviors of passengers if confronted by an armed shooter. According to Bliss, the exercise involved the USCG cutter, *Osprey*, which paced alongside *Chimacum*. Bliss provides supporting data and findings to validate the conclusion that a large number of casualties would result from an armed passenger opening fire on a ferry underway. This article supports the assessment of a trained maritime security officer who witnessed firsthand the reaction of passengers to a situation aboard a vessel at sea. Bliss concludes law enforcement would likely have a delayed response to such an event.

2. Risk, Intelligence, Incidents, and Vulnerabilities

In a 2007 Congressional Research Service (CRS) report, Parfomak and Fritelli carefully articulate that ferry terminals and vessels are at risk by presenting a virtually unlimited number of attack scenarios on America's maritime assets.[23] They conclude that

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[22] Thomas Bliss, "Exercise on Washington State Ferry," Northwest Maritime Academy, May 24, 2017, https://northwestmaritimeacademy.com/vessel-safety-response-hostile-actors/.

[23] Paul Parfomak and John Fritelli, *Maritime Security: Potential Terrorist Attacks and Protection Priorities*, CRS Report No. RL33787 (Washington, DC: Congressional Research Service, 2007), 1, https://digital.library.unt.edu/ark:/67531/metadc462262/.

Congress should question the prioritization of maritime response strategies, suggesting that while there is a valid threat, greater clarity into the source of the threat would result in better utilization of security resources. The possibility that a dirty bomb or a radiation dispersal device may be introduced into a U.S. ferry system does not present as urgent a threat as the possibility of a more conventional mode of attack, and response plans should factor in this possibility. Parfomak and Fritelli further recommend improving intelligence gathering and sharing informational methodologies to focus and deploy assets in a way that is likely to mitigate an attack.[24]

In "A Brief Analysis of Threats and Vulnerabilities in the Maritime Domain," Bakir associates maritime security with U.S. border security, demonstrating that crimes such as human trafficking and smuggling represent a porous security system that could facilitate a crippling attack.[25] This unpublished report, prepared to address congressional concerns about maritime security and the overall strategy for securing U.S. ports, examines maritime terrorism concerns along five dimensions: perpetrators, objectives, locations, targets, and tactics. The report includes an overview of the potential threat matrix involving maritime terrorism in the United States and the most likely attack methods. Bakir provides a detailed analysis of the human casualty factor and the potential for mass casualties in an attack on the U.S. maritime transportation system. He examines the realistic scenario of an attack that introduces a weapon of mass destruction (WMD) into the high-volume passenger environment of a ferry or cruise ship and assesses the proactive security actions that homeland security agencies have taken to mitigate the potential for attacks. Bakir surmises that such an attack would kill many people although his analysis is limited to mass-casualty threats from WMDs and IEDs. However, Bakir's report contains invaluable information that can be applied to the likely consequences of an active shooter on a ferry underway and the delayed response by law enforcement.

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[24] Parfomak and Fritelli, 27.

[25] Niyazi Ohur Bakir, "A Brief Analysis of Threats and Vulnerabilities in the Maritime Domain" (unpublished research report, 2007), http://research.create.usc.eu/non-published_reports/5.

In a 2010 CRS report for Congress on threats to the United States, Best delves into DHS's responsibility in maintaining the U.S. border security with Canada and Mexico and preventing illegal entry by potential terrorist operatives.[26] The report discusses and analyzes the role of U.S. intelligence agencies in this effort as well as presents successful programs and challenges to mission success. Several U.S. ferry vessels operate in international waters and between nations including Canada. International ferries pose security concerns because they provide a possible method for terrorists to enter the United States. For example, the so-called millennium bomber traveled into the United States from Canada via ferry with a carload of explosives in 1999. Best's report emphasizes the importance for maritime crews to be familiar with behavioral indicators of persons engaging in possible surveillance, transport of explosive devices or radiological materials, or human trafficking and smuggling.

The *National Intelligence Strategy* (NIS) presents a framework for the intelligence community to confront 21st-century threats and challenges to homeland security.[27] The NIS discusses methodologies to engage stakeholders and partners that anticipate emerging threats and enhance communication and information sharing while dealing with tightening budgets. The NIS has four primary elements: the strategic environment; the mission objective; the enterprise objective, and implementation of the strategy. A section on anticipatory intelligence focuses on sensing, identifying, and warning of emerging conditions, trends, and opportunities that may require a rapid shift in national resources. As this thesis demonstrates, an active shooter engaging passengers on a vessel in the unscreened U.S. ferry system poses an emerging threat to public transportation.

3. Preparedness

Studies of the operations of U.S. passenger vessels share many identical security provisions, but they have a noteworthy difference. For example, Caldwell, Hoff, and

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[26] Richard Best, *Securing America's Borders: The Role of the Intelligence Community*, CRS Report No. R41520 (Washington, DC: Congressional Research Service, December 7, 2010), https://fas.org/sgp/crs/intel/R41520.pdf.

[27] Office of the Director of National Intelligence (ODNI), *National Intelligence Strategy of the United States* (Washington, DC: ODNI, September 2014), https://www.dni.gov/files/2014_NIS_Publication.pdf.

Bachman report that the manifest reporting system required by the USCG and CBP for cruise ships provides an excellent analytical model and reference source for U.S. ferry company operators. Currently, there are no requirements for identifying passengers on a ferry or assessing whether they pose a threat to the safety and security of the vessel using simple name checks. Additionally, Caldwell, Hoff, and Bachman conclude that the challenges for Coast Guard personnel on ships in states of distress are exacerbated if they are underway at sea.[28]

Currie reports that post-9/11 security strategies have focused on screening initiatives directed toward the detection and interdiction of radiological sources covertly transported in cargo arriving from foreign nations and on mitigation training for port workers.[29] Subject-matter experts on transportation security, such as Tzannatos, agree that specifically tailoring security measures to address emerging threats is the most effective strategy to safeguard the homeland against forecasted and unpredictable attacks.[30] These sources emphasize that ferries are at risk due to the emerging threat of active shooters striking public places and that the maritime security enterprise is not prepared for it.

The testimony of Director Gowadia of the Domestic Nuclear Detection Office (DNDO) describes the initiatives of DHS and the DNDO to prevent and respond to radiological devices at America's maritime ports.[31] She emphasizes the impact an attack on a U.S. port would have on the global supply chain. Gowadia discusses in depth the "critical triad of intelligence, law enforcement and technology" initiatives employed to prevent radiological materials from entering ports and summarizes the methodologies

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[28] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*.

[29] Chris Currie, *Critical Infrastructure Protection: DHS Risk Assessments Inform Owner and Operator Protection Efforts and Departmental Strategic Planning*, GAO-18-62 (Washington, DC: Government Accountability Office, October 2017), htpp://www.gao.gov/products/GAO-18-62; and "Special Nuclear Material," Nuclear Regulatory Commission, accessed July 5, 2017, http://www.nrc.gov/materrials/sp-nucmaterials.html.

[30] E. S. Tzannatos, "A Decision Support System for the Promotion of Security in Shipping," *Disaster Prevention and Management* 12, no. 3 (2003): 222–229, https://doi.org/10.1108/09653560310480703.

[31] *Protecting the Homeland from Nuclear and Radiological Threats: Hearing before the House of Representatives Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation*, 113th Cong., 2d sess., July 29, 2014 (statement of Huban Gowadia, director of the Domestic Nuclear Detection Office).

employed by the DNDO's Joint Analysis Center and the intelligence-sharing capabilities of its Collaborative Information System. Gowadia's testimony demonstrates that the use of large-magnitude vehicle radiological detectors and personnel with personal handheld short-range detection devices is a sound security strategy in detecting radiological materials used in dirty bombs.

Atherton discusses a new DHS contract awarded to develop small, wearable radiation detection devices that alert the user to the presence of nuclear or radioactive material.[32] These devices isolate the source of the radioactive material and allow the user to request remote assistance from scientific laboratories to identify whether the radioactive signature is medical or of the type used in terrorism-related explosive devices. The radiation detection devices are issued to law enforcement and military officers in the TSA, CBP, and the USCG, which routinely operate in maritime environments.

Mulholland discusses how European ferries have taken proactive security measures to combat radical extremists and terrorist operatives by placing armed "sea marshals" on vessels operating in French waters.[33] When Brittany ferries enter French jurisdiction, sea marshals board them via winch from helicopters and remain on board for the remainder of the journey, deterring terrorist actions through "surveillance, dissuasion, and if necessary, intervention." Mulholland demonstrates the value of French authorities placing armed agents on every vessel as a deterrent to mass-casualty events and terrorist attacks.

Waldron and Dyer discuss the importance of the USCG and CBP's requirement that all passenger vessel owners and operators, including cruise ships and ferries, electronically file passenger and crew manifest data for assessments of all international arrivals and departures.[34] Waldron and Dyer serve as industry specialists in maritime

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[32] Kelsey Atherton, "The DHS Is Getting a Wearable Radiation Detector," *Popular Science*, November 11, 2015, https://www.popsci.com/dhs-is-getting-wearable-radiation-detector.

[33] Rory Mulholland, "French Sea Marshals Patrol on Board Cross Channel Ferries to Thwart Terror Attacks," *Telegraph*, August 3, 2016, http://www-telegraph.couk/news/2016/08/31/french-sea-marshals-patrol-on-board-cross.

[34] Jonathan K. Waldron and Andrew W. Dyer Jr., "The Electronic Paper Shuffle: New Regulations Require Advance Filing of Passenger, Crew Manifests," *Marine Log*, June 2005, www.marinelog.com.

security, so their combined credentials suggest a high degree of validity in the conclusion that manifest reporting is a necessity.

The shared funding initiatives offered by DHS and the Federal Emergency Management Agency (FEMA)'s Grant Programs Directorate inform various maritime entities about how to apply for security grants under the electronic system for award management.[35] The grants are designed to strengthen prevention, protection, response and recovery capabilities of maritime industry passenger operators and owners. DHS and FEMA support improvements to port and ferry security capabilities to mitigate potential terrorist attacks. Security funding opportunities are available to industry owners and ferry operators, and the process should be examined for scope and applicability by all entities with a stake in maritime security and public safety.

4. Conclusion

The U.S. ferry system is one of the few remaining transportation sectors that has not been hardened against a mass-casualty attack from an active shooter. The object of study for this thesis is an examination of the security measures undertaken in similar transportation venues to protect targets against criminal mass-casualty incidents. The design, implementation, and effectiveness of security measures by the USCG, the TSA, and CBP are examined and applied to ferry security. The best practices identified by these three government agencies could apply to ferry security and are analyzed for challenges, operability, and maritime feasibility.

As explained in the literature review, the various entities and agencies with oversight of U.S. maritime security have acknowledged that current regulations and laws are insufficient to address the increasing threat of active-shooter events. However, in recognizing that the status quo should not be maintained, entities with maritime security responsibilities might accept recommendations that could be further developed and modified to mitigate potential mass-casualty incidents on ferries.

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[35] Department of Homeland Security, *Notice of Funding Opportunity Fiscal Year 2017 Port Security Grant Program* (Washington, DC: DHS, 2017), https://www.fema.gov/media-library-data/1496322792825-14e183f5162625ef399f7b09aa0630ff/FY_2017_EMPG_NOFO_Final508.pdf.

D. CHAPTER OUTLINE

Chapter II analyzes the U.S. ferry system as a public transportation conveyance and shows that it remains vulnerable to an active-shooter or mass-casualty event despite post-9/11 security initiatives. Chapter III presents a review of the roles of different agencies involved in maritime security. It also covers the laws and regulations governing the transportation of firearms on ferries, specifically how they restrict authorities in a way that creates exploitable vulnerabilities. Finally, the chapter addresses the active-shooter threat and draws conclusions based on the results of practical exercises, which reveal the inadequacy of response in such an event. Chapter IV examines the processes and methodologies that other transportation entities and stakeholders have put in place to mitigate active-shooter events. The thesis concludes in Chapter V with a series of realistic and implantable procedural and legislative recommendations as well as areas for future study.

II. AMERICA'S FERRIES AT RISK TO MASS CASUALTY ATTACKS

America's ferry systems exhibit security vulnerabilities that are easily exploitable and leave them open to the modern forms of terrorism and violent extremist attacks, which are trending in the 21st century. The Department of Homeland Security (DHS) has offered numerous grants and security proposals to improve the screening of inboard cargo and freight from international ports for radiological or nuclear signatures. These initiatives have exponentially increased the ability of U.S. law enforcement and military agencies to detect radiological materials and prevent them from being introduced into the country. As beneficial as these programs have been, they have not had a collateral impact that would mitigate an active-shooter situation aboard a vessel underway. This chapter examines the assurgency of the active shooter and discusses why the U.S. ferry system could well be an unprotected target for a criminal mass-casualty event.

A. THE ERA OF THE ACTIVE SHOOTER

America has entered the era of the active-shooter phenomenon, and empirical evidence supports a rising national trend that creates a risk for all mass-gathering public venues. DHS defines an *active shooter* as "an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms and there is no pattern or method to their selection of victims."[36] The Federal Bureau of Investigation (FBI) reports that an active shooter primarily targets public areas such as schools, workplaces, houses of worship, transportation centers, and other public gathering sites.[37] The FBI teamed with Texas State University in 2013 to document and

[36] Department of Homeland Security, *Active Shooter: How to Respond* (Washington, DC: DHS, October 2008), 3, https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/flrtc/documents/active_shooter_booklet.pdf.

[37] "Community Outreach," Federal Bureau of Investigation, accessed October 11, 2018, https://www.fbi.gov/about/community-outreach.

study active-shooter mass-casualty events.[38] The analysis period between 2000 and 2013 indicated that the number of events in the United States was on an increasing upward trend, a condition creating such a national concern that the FBI began to correlate the data on all incidents and release an annual report. As demonstrated in Figure 1, each subsequent annual report verifies the continuation of this alarming trend, from 40 active-shooter events between 2014 and 2015, resulting in 231 casualties with 92 fatalities, to a staggering 50 active-shooter events between 2016 and 2017, resulting in 943 casualties with 221 fatalities.[39] The attacks occurred primarily in public venues where large groups of people gathered, such as the 2017 attack at the Route 91 Harvest Festival in Las Vegas, the 2016 attack at the Pulse Nightclub in Orlando, and the 2017 attack at the First Baptist Church in Sutherland Springs, Texas.[40] As Malcolm Gladwell had predicted in a 2015 column in the *New Yorker*, "We are in the midst of a slow motion riot of mass shootings, with each shooting lowering the threshold for the next."[41]

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[38] Greg Ellifritz, "10 Lessons Learned from the FBI Study on Active Shooters," Active Response Training, September 29, 2014, http://www.activeresponsetraining.net/10-lessons-learned-from-the-new-fbi-study-on-active-shooters.

[39] Federal Bureau of Investigation, *Active Shooter Incidents in the United States in 2016 and 2017* (Washington, DC: Department of Justice, 2018), 3–7, https://www.fbi.gov/file-repository/active-shooter-incidents-us-2016-2017.pdf/view.

[40] Federal Bureau of Investigation, 8.

[41] Malcolm Gladwell, "Threshold of Violence: New School Shootings Catch On," *New Yorker*, October 19, 2015, https://www.newyorker.com/magazine/2015/10/19.

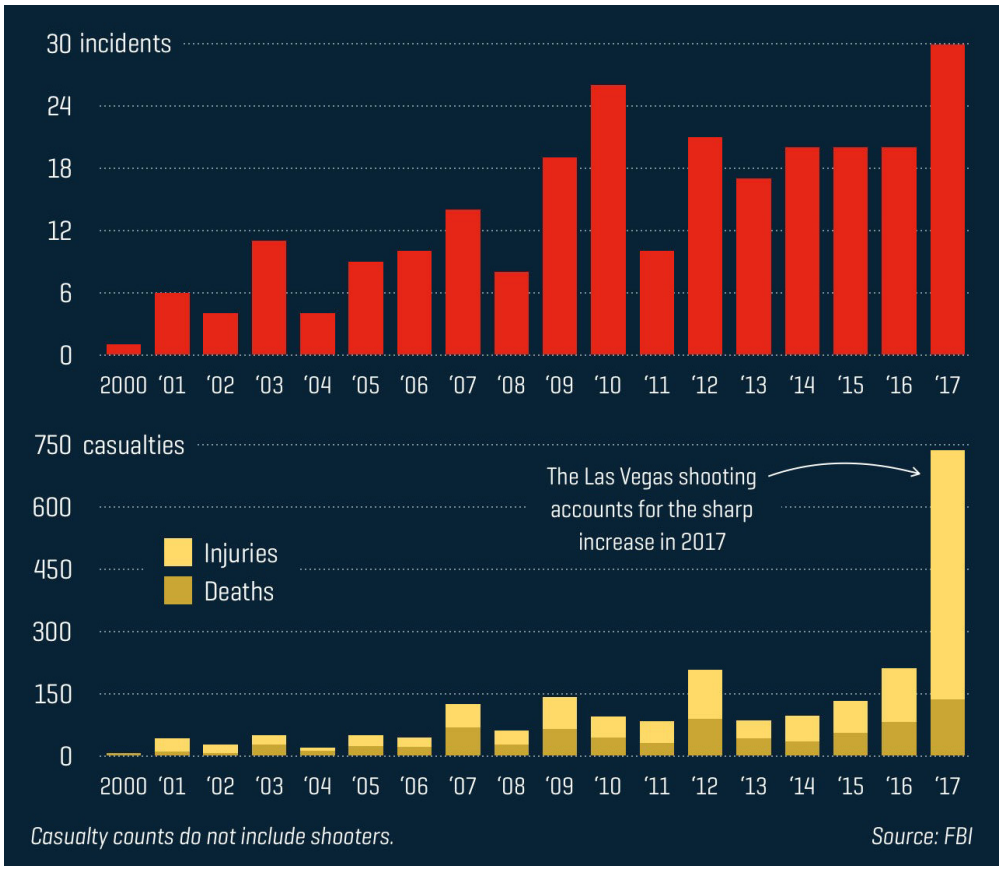

Figure 1. Active-Shooter Incidents in the United States, 2000–2017[42]

Recent active-shooter events have occurred at public events, and there have been noted examples of incidents occurring in public transportation systems. On December 7, 1993, Long Island Rail Road passenger Colin Ferguson pulled out a handgun on a crowded train car and began systemically shooting passengers, killing six and wounding 19, before he was finally subdued by other passengers.[43] In August 2015, Ayoub el Khazzani, a 25-year-old Moroccan citizen, boarded a train packed with 554 passengers traveling between Amsterdam and Paris, armed with an AK-47 rifle and a pistol. Khazzani was tackled by

[42] Source: Daniel Nass, "New FBI Data Shows Active Shooters Caused Nearly 750 Casualties in 2017," Trace, May 11, 2018, https://www.thetrace.org/rounds/fbi-active-shooters-report-las-vegas/.

[43] Francis X. Clines, "Death on the LIRR: The Rampage, Gunman in a Train Aisle Passes Out Death," *New York Times*, December 9, 1993, https://www.nytimes.com/1993/12/09/nyregion/death-on-the-LIRR-the-rampage-gunman-in-a-train-aisle-passes-out-death.html.

three passengers, two of whom were active duty members of the U.S. military, when his gun jammed, preventing him from firing a single shot.[44] In September 2016, Darius Palmer boarded the Amtrak Pacific Surfliner with 200 passengers. He was armed and prepared to target passengers before he was barricaded into an empty car and surrendered to police.[45] These incidents demonstrate the ease with which a firearm may be introduced into the public transportation system and the high number of casualties that an active-shooter event could cause without interdiction by fate or action by other travelers.

Even transportation venues that employ the strictest security control measures may find themselves susceptible to active-shooter incidents. On January 7, 2017, Esteban Santiago-Ruiz flew to Fort Lauderdale–Hollywood International Airport on Delta Airlines, exited the plane, and proceeded to the baggage claim area on the lower level of the terminal. He retrieved a handgun and three magazines that had all been legally checked in his luggage in accordance with Transportation Security Administration (TSA)'s procedures for transporting firearms. After loading his firearm in a restroom, Santiago-Ruiz began shooting passengers, killing five and wounding six. He fired 15 rounds total, shooting passengers in the back or the head, and surrendered only when he ran out of ammunition.[46] The incident was over in 80 seconds.[47] A Broward County Sheriff's Deputy at the TSA checkpoint on the upper level responded immediately but arrived 85 seconds after the first shot was fired.

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[44] Angelique Chrisafis, "France Train Attack: Americans Overpower Gunman on Paris Express," *Guardian*, August 22, 2015, https://www.theguradian.com/world/2015/aug/21/amsterdam-paris-train-gunman-france.

[45] Mark Stevens and Frank Shyong, "Standoff in Chatsworth Ends with Arrest of Armed Man aboard Amtrak Train," *Los Angeles Times*, September 17, 2016, http://www.latimes.com/local/lanow/la-me-ln-chatsworth-amtrak-gunman-20160916-snap-story.html.

[46] James L. Curtis and Craig B. Simonsen, "Airport Active Shooter Incident – What Can Happen in Just 15 Seconds, and What Business Needs to Know," Employment Law Lookout, October 29, 2017, https://www.laborandemploymentlawcounsel.com/2017/10/airport-active-shooter-incident-what-can-happen-in-just-15-seconds-and-what-business-needs-to-know/.

[47] Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Active Shooter Incident and Post-Event Response* (Dania Beach, FL: Broward County Aviation Department, August 15, 2017), 4, http://www.broward.org/Airport/Advisories/Documents/Afteractionreportfll.pdf.

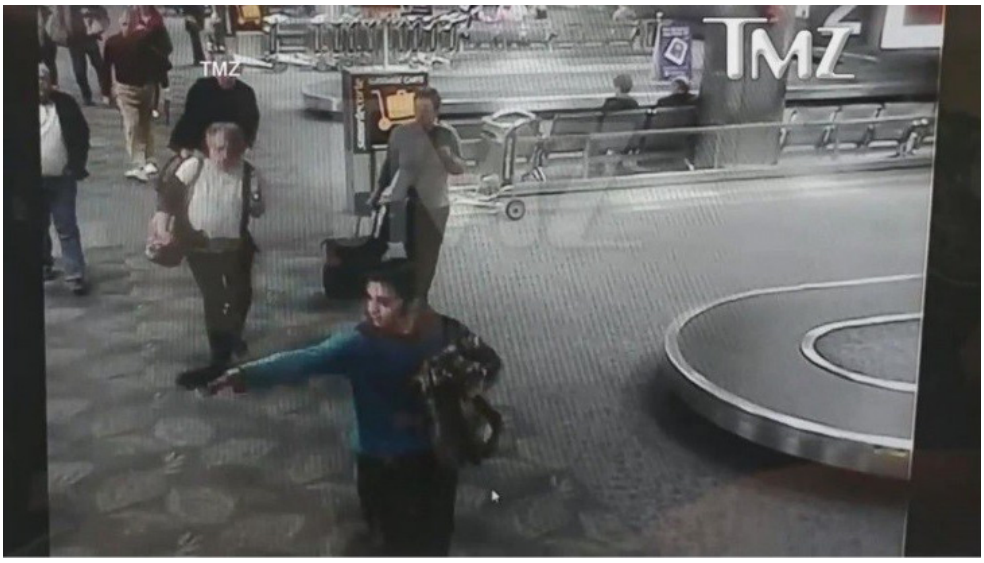

Figure 2. Esteban Santiago-Ruiz at Fort Lauderdale–Hollywood International Airport[48]

According to a 2018 DHS report, public areas most vulnerable to attacks by active shooters are "sports venues, schools, and transportation systems."[49] These locations are attractive to active shooters because they all have large numbers of people who are congregated in a relatively confined space and typically no strict and rigid security measures. DHS has been working in recent years to address the vulnerabilities of soft targets and crowded places by adapting to the changing threat landscape and matrix, reducing vulnerabilities, and enhancing preparedness.[50] However, this is only a recent approach to address a growing trend, and many public facilities, including ferry systems, have not achieved a high enough level of preparedness to respond to these events effectively.

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[48] Source: "Fort Lauderdale Shooting Suspect Esteban Santiago to Appear in Court," January 7, 2017, ABC News, https://abcnews.go.com/GMA/video/fort-lauderdale-shooting-suspect-esteban-santiago-court-44643977.

[49] Department of Homeland Security, *Soft Targets and Crowded Places Security Plan Overview* (Washington, DC: DHS, May 2018), 1, https://www.dhs.gov/sites/default/files/publications/DHS-Soft-Target-Crowded-Place-Security-Plan-Overview-052018-508_0.pdf.

[50] Department of Homeland Security, 1–2.

B. THE U.S. FERRY SYSTEM: A COMPLEX NATIONAL TRANSPORTATION CONVEYANCE

The U.S. ferry system is a vital element of the country's multimodal transportation network. The fundamental objective of a ferry system is to enable passengers and vehicles to cross a body of water, often with the expectation of returning to their point of origin. They operate on fixed point, segmented, and metropolitan routes in lakes, rivers, sounds, and even oceans.[51] The term *ferry* is defined in U.S. law as any vessel that is being used to provide transportation between places no more than 300 miles apart. [52] Many ferries are dual purpose—they can transport both passengers and vehicles—and several are designed to carry rail cars and freight. Most of the larger vessels can easily accommodate loads of 500 or more persons. While cruise ships are considered the largest passenger conveyances in the world, as they can carry passengers and crews in upward of 8,500, ferries are the second largest.[53]

Many Americans rely on ferries for their daily commute to work although ferries also support a tremendous population of passengers who use them for vacation travel and sightseeing.[54] In some rural areas where the geography has made other means of travel improbable, ferries are the only public transit system available to cross large bodies of water.[55] The Alaska Ferry System is part of the National Highway System as it transports cars and trucks within the contiguous United States from one road to another over water.[56] Transportation planners incorporate ferry travel in their analysis of regional public

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[51] John N. Balog, et al, *Public Transportation Emergency Mobilization and Emergency Operations Guide*, TCRP Report 86, vol. 7 (Washington, DC: Transportation Research Board, 2005): 20–25, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_86v7.pdf.

[52] Fees for Certain Customs Services, 19 U.S.C. § 58c (2010), https://www.law.cornell.edu/uscode/text/19/58c.

[53] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 1.

[54] Kress, "Ferry Data to the Public."

[55] Balog et al., *Public Transportation Emergency Mobilization*, 25.

[56] "History of AMHS," Alaska Department of Transportation and Public Facilities, accessed December 6, 2018, http://www.dot.state.ak.us/amhs/history.shtml.

transport plans and incorporate statistical data in their economic forecasts, as ferries are an integral component of America's public transportation system.[57]

The U.S. ferry system is a national public conveyance and transportation infrastructure asset with vessels operating in 43 states and territories and providing services on more than 350 different routes.[58] The most recent data from the Bureau of Transportation Statistics on all U.S. ferry operators confirms a large and diversified ferry transportation system throughout the nation.[59] There are 63 ferry systems that transport passengers, vehicles, and cargo; ten of these systems involve the transport of passengers and cargo between different states while eight involve transport between countries and through international waters. There are 352 ferry routes that have terminals in the United States and 16 routes that have at least one terminal located in another country.[60] Seventeen routes have a terminal in another U.S. territory or state such as in the Virgin Islands or Puerto Rico.[61] In 2015, more than 118 million passengers and 30 million vehicles utilized this mode of transit in 39 states, two U.S. territories, and two non-U.S. locations.[62] In that year, the United States operated a ferry fleet of over 600 vessels—with California boasting the largest fleet of 53 vessels, Massachusetts the second at 49, and Washington, New York, New Jersey, and South Carolina all maintaining more than 30.[63] The densest area of ferry concentration is in the northeast. Figure 3 provides an overview of the U.S. ferry system, indicating where the largest clusters of operations are located.

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[57] Kress, "Ferry Data to the Public."

[58] Balog et al., *Public Transportation Emergency Mobilization*, 25.

[59] "National Census of Ferry Operators (NCFO)," Bureau of Transportation Statistics, last modified October 30, 2018, https://www.bts.dot.gov/surveys/national-census-ferry-operators-ncfo/national-census-ferry-operators-ncfo.

[60] Balog et al., 28.

[61] Balog et al., 29.

[62] "National Census of Ferry Operators Highlights," Bureau of Transportation Statistics, November 3, 2017, https://www.bts.gov/newsroom/national-census-ferry-operators-highlights-0.

[63] Bureau of Transportation Statistics, "National Census of Ferry Operators Highlights."

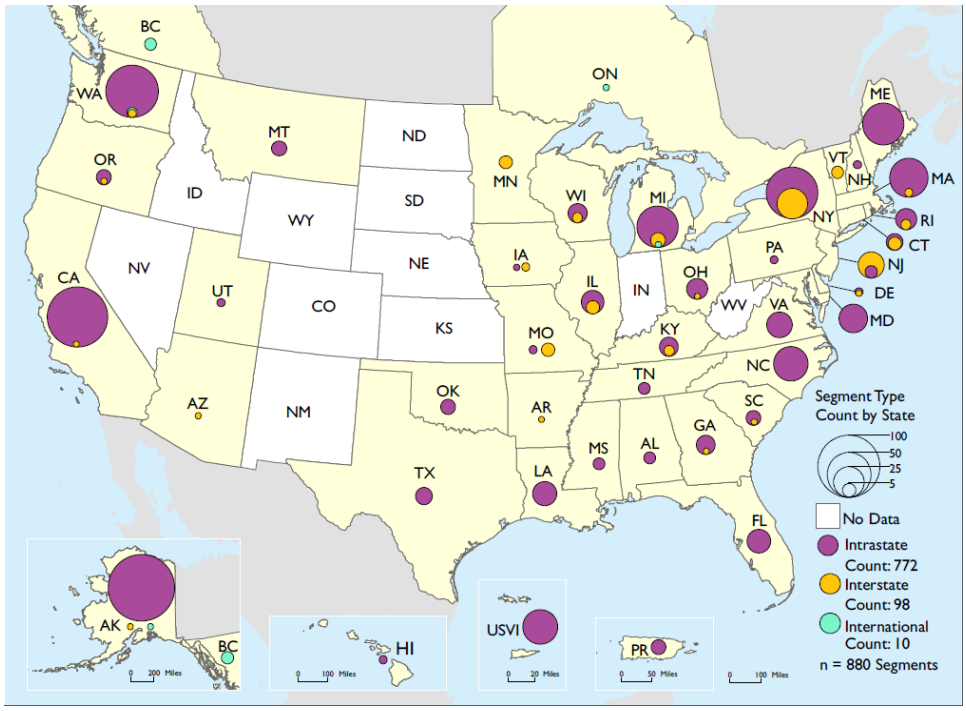

Figure 3. U.S. Ferry Operation Clusters in the United States and Territories, 2015[64]

Ferry systems also serve as an invaluable component in the emergency management preparedness and response plans for large metropolitan areas. They can move mass quantities of people out of disaster areas and facilitate the delivery of emergency supplies and first responders when other transportation modes are disabled.[65] Examples of this include the roles that the San Francisco Bay Ferry System played in response to the 1989 Loma Prieta Earthquake and the New York City and Bridgeport, Connecticut, ferries played in evacuating downtown Manhattan after the September 11, 2001, attacks.[66]

Passengers and vehicles are not required to be screened or searched prior to boarding a ferry in the United States. After embarking from the terminal, passengers are free to move around all public areas throughout the vessel including passenger and cargo

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[64] Source: Bureau of Transportation Statistics, "National Census of Ferry Operators Highlights."

[65] Balog et al., *Public Transportation Emergency Mobilization*, 25.

[66] Balog et al., 25.

areas. They are prohibited only from accessing the pilot house and engine room.[67] This operational aspect actually represents more of a target than is generally reported. By design, ferries must remain open to accommodate the high passenger and vehicular throughput they receive while operating within tight scheduling constraints. According to Greenberg et al., ferries are attractive targets because "attacks are easy to execute and the potential to kill many people is likely to capture significant media attention and can be exploited to demonstrate a terrorist group's salience and visibility."[68] A mass-casualty attack on a ferry system could have serious repercussions on the entire domain that remains relatively unprotected, resulting in a considerable loss of life.[69] Although they account only for less than 4 percent of the U.S. commercial transportation industry, maritime passenger vessels, such as cruise ships and ferries, are more attractive terrorist targets if the objective is to inflict a high number of human casualties in an environment with minimal security controls.[70]

Even a moderately sized system presents the potential for a large number of casualties should an active-shooter event occur uninterrupted. For example, the most current statistics provided by the United States Coast Guard (USCG)'s Long Island Sound Sector for 2016–2017, covering Connecticut and New York ferries, indicate a considerable maritime passenger throughput.[71] The Cross Sound Ferry operates between New London, Connecticut, and Orient Point, New York, with an annual average of 14,000 transits, carrying more than 150 passengers per transit 60 percent of the time. The Bridgeport–Port Jefferson Ferry had an annual average of 9,850 transits between Connecticut and New York in 2016, with 34 percent of them averaging 150–499 passengers.

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[67] Balog et al., 26.

[68] Michael D. Greenberg et al., *Maritime Terrorism: Risk and Liability* (Santa Monica, CA: RAND Center for Terrorism Risk Management Policy, 2006), 31.

[69] Balog et al., *Public Transportation Emergency Mobilization*, 25.

[70] Institute for Water Resources, *Waterborne Transportation Lines of the United States*, vol. 1–3 (Alexandria, VA: Army Corps of Engineers, October 2017), 74, https://usace.contentdm.oclc.org/digital/api/collection/p16021coll2/id/1376/download.

[71] Graham and Hoffman, personal communication.

C. A HISTORY OF MARITIME ATTACKS AND WARNINGS

For the past two decades, U.S. intelligence agencies and security experts have been alerted to the potential vulnerabilities of passenger maritime transit systems.[72] Terrorist groups, operatives, and even individual actors have long posed a credible threat to maritime security, exploiting systemic vulnerabilities such as the unfettered ability to bring weapons or explosives onto a vessel. Recent incidents demonstrate the public's awareness that systemic vulnerabilities are easily exploitable. In 2004, federal investigative agencies reported that the Washington State Ferry System had been under surveillance as a potential target for terrorist attacks from foreign ports and had been used by terrorists before.[73] In December 1999, ferry passenger Ahmed Ressam took the *M.V. Coho* ferry from Victoria, British Columbia, to Port Angeles, Washington, where U.S. customs inspectors discovered a large quantity of highly unstable nitroglycerin-based explosives and timing devices.[74] The so-called millennium bomber may not have been targeting the ferry system specifically, but his ability to transport explosives undetected represents a tremendous vulnerability.

A 2005 USCG risk analysis found that in terms of probability of an attack, ferries were likely targets.[75] In 2006, the U.S. Department of Justice issued a report that found terrorist groups may utilize improvised explosive devices and bombs to target maritime facilities, cruise ships, and ferries.[76] Stephen Caldwell, a U.S. Government Accountability Office (GAO) analyst, testified before Congress in 2006 that ports and passenger ferries

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[72] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 1–4.

[73] Mike Carter, "Why Feds Believe Terrorists Are Probing Ferry Systems," *Seattle Times*, October 12, 2004; and James Hodges, "An Exercise in Disaster: Preparing for the Worst," *Daily Press*, August 19, 2005.

[74] Hal Bernton et al., "The Terrorism Within: The Story behind One Man's Holy War against America," *Seattle Times*, July 7, 2002, https://www.ire.org/resource-center/stories/?q=Hal%20Bernton.

[75] Eric Lipton, "Trying to Keep the Nations Ferries Safe from Terrorists," *New York Times*, March 19, 2005.

[76] Office of Inspector General, *The Federal Bureau of Investigation's Efforts to Protect the Nation's Seaports*, Audit Report 06-26 (Washington, DC: Department of Justice, March 2006), 52.

were attractive targets for terrorists.[77] Parfomak and Fritelli have carefully articulated that ferry terminals and vessels are at risk by presenting a virtually unlimited number of attack scenarios on America's maritime assets. The challenge for U.S. policymakers, they warn, is to prioritize the nation's security activities.[78] Richard Best has alerted Congress that the focus of threats within America's borders is now experiencing a shifting nexus from radical terrorists in a coordinated and planned attack exploiting a security vulnerability to a self-radicalized lone-wolf actor at mass-population gatherings and transportation facilities.[79] In 2018, maritime terrorism remains a concern for U.S. security and intelligence agencies as they come to realize a new generation of terrorists and extremists may resort to unconventional weapons involving hard-to-get radioactive or nuclear materials. They may simply use the resources readily available to them: firearms.[80]

The Institute for the Analysis of Global Security provides a list of international terrorist-related attacks, which shows that terrorist operatives do not discriminate between military and civilian targets, including maritime assets, and have no inhibitions about attacking ports and ferries. Italian-flagged cruise ship *P/V Achille Lauro* was hijacked in 1995 off Port Said, Egypt, by the Palestine Liberation Front, which held 331 passengers and crew hostage. A hi-capacity Turkish ferry in the Black Sea was hijacked in 1996, although the terrorists who took the vessel did not execute any of the passengers or crew. In 2003, terrorists targeted the Turkish Mediterranean port of Antalya with plans of bringing a truck laden with explosives into it although they were not successful. In 2004, two Palestinian suicide bombers killed 18 when they detonated themselves at Port Ashdod, one of Israel's busiest seaports, which coincided with the arrival of a cruise ship.[81] The Abu Sayyaf terrorist group's attack on *Superferry 14* in the Philippines in 2004 is a further

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[77] *Securing Our Ports: Information Sharing is Key to Effective Maritime Security: Hearing before the House Committee on Government Reform, Subcommittee on Government Management, Finance, and Accountability*, 109th Cong., 2d. sess., July 10, 2006 (statement of Stephen L. Caldwell).

[78] Parfomak and Fritelli, *Potential Terrorist Attacks and Protection Priorities*, 6–7.

[79] Best, *Securing America's Borders*.

[80] John Parachini, "Putting WMD Terrorism into Perspective," *Washington Quarterly* 26, no. 4 (Autumn 2003): 47.

[81] Ali M. Köknar, "Maritime Terrorism: A New Challenge for NATO," Institute for the Analysis of Global Security, January 24, 2005, http://www.iags.org/n0124051.htm.

example of actors exploiting the vulnerability of ferry systems.[82] Terrorists successfully exploited the lack of passenger screening to introduce IEDs onto a ferry, bringing a television set loaded with conventional explosives aboard, which they detonated on a vessel underway, killing 116 of the recorded 899 passengers.[83]

D. NUCLEAR AND RADIOLOGICAL PREPAREDNESS

Maritime security strategies in the United States have actively engaged in preventing terrorist operatives and persons with nefarious intentions from introducing improvised nuclear explosive devices or radiological disposal devices into America's public transportation systems. Following September 11, 2001, federal agencies took immediate measures to harden America's ports by concentrating efforts on screening to protect against terrorists trafficking nuclear or radiological material into the homeland. These measures were primarily directed toward protecting against an external threat.

The screening of vessels arriving in the United States from foreign ports for radioactive materials was a systemic, proactive tactical measure required by law after the 9/11 attacks. The Security and Accountability for Every Port Act requires 100 percent screening of all cargo and freight for radiation before they are even loaded on a ship bound for the United States.[84] Screening initiatives also provide identification and mitigation training for port workers on radiological material transport.[85] Radiation screening of maritime passengers arriving on ferries and vessels from foreign ports is now routinely conducted by Customs and Border Protection (CBP) officers. For example, passengers arriving at ferry landings in Port Angeles, Washington, a busy dock that services international vessels arriving from Canada, are now screened for radiological signatures.[86]

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[82] "Abu Sayyaf Group (Philippines, Islamist Separatists)," Council on Foreign Relations, last modified May 27, 2009, https://www.cfr.org/backgrounder/abu-sayyaf-group-philippines-islamist-separatists.

[83] Matthew Harwood, "Piracy and Terrorism up in the High Seas, Says Study," *New York Times*, June 6, 2008, https://nytimes.com/2008/11/25/would/asia/25iht-priates.1.18.133159.html.

[84] Willis and Ortiz, "Securing America's Ports."

[85] Nuclear Regulatory Commission, "Special Nuclear Material."

[86] Tom Callis, "Radiation Sensors Deployed at Washington State Ferry Site," *Peninsula Daily News*, June 12, 2009, http://www.nti.org/gsn/article/radiation-sensors-deployed-at-washington-state-ferry-site/.

Government-sponsored maritime security studies and initiatives have also focused on proactive screening measures to prevent radiological and nuclear materials from being introduced into the maritime transit system. The GAO was tasked with conducting a study to evaluate whether effective security measures have been put in place to protect ferries. A GAO report released in 2010, found that the TSA had implemented several domestic programs to screen cars at ferry terminals for explosives and radiological materials.[87] This includes the deployment of law enforcement and canine teams through the Visible Intermodal Prevention and Response program, which is discussed in greater depth in Chapter III. The TSA also initiated several pilot programs with stakeholders at ferry terminals involving teams that utilized large wide-field scanning devices to check for explosives and radiological signatures on vehicles as they boarded ferries.[88] See Figure 4 for a depiction of the screening device. The GAO's report also determined that CBP officers conduct admissibility inspections of U.S. bound passengers and their luggage and have deployed radiation detection equipment at all international ferry crossings.

[87] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*.

[88] Caldwell, Hoff, and Bachman, 20–21.

Figure 4. TSA's Vehicle Screening Apparatus[89]

One of the most important measures that can be taken to prepare against a terrorist or other security threat against a transportation system is to conduct regular exercises and training drills. Since 2001, security exercises in the U.S. ferry system have focused primarily on counter-terrorism scenarios that have involved an attack on maritime systems using radiological, biological, or chemical devices.[90] All of the participating agencies, including the USCG, TSA, and U.S. Navy among others, have drilled and trained on how to respond to a weapon of mass destruction attack, both domestically and overseas.[91]

At the local and state levels, Securing the Cities (STC) is a competitive grant program operated by the Domestic Nuclear Detection Office with the objective of

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[89] Source: Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 20–21.

[90] Transportation Security Administration, "PortSTEP Program Initiated" (press release, August 18, 2005); and Daniel Mac, "Terror Preparedness Pit to Test," *Boston Globe*, September 20, 2005.

[91] Parfomak and Fritelli, *Potential Terrorist Attacks and Protection Priorities*, 8–11.

providing non-federal first responders with the funding to bolster their radiation detection capabilities.[92] STC's goal is to mitigate the risk of a successful radiological or nuclear terrorist weapon against metropolitan areas by providing a literal ring of detection equipment around areas of mass population such as large cities.[93] STC is similar to a program the Department of Defense has already adopted at military facilities—a series of fixed detectors that can detect radiological signatures in the vicinity of the base and alert personnel.[94] STC, however, expands on this program in that it equips first responders with radiation equipment that can be affixed to vehicles and aircraft or even be carried by personnel. Additionally, STC assists with and encourages large-scale practical exercises and drills among the various entities in the metropolitan areas responsible for the interdiction of nuclear or radiological materials.[95]

E. CONCLUSION

Empirical evidence demonstrates that considerable resources have been engaged to enhance the radiation detection and response capabilities of military and law enforcement entities involved in securing U.S. maritime systems. Until recently, legislators and planners had primarily supported port security exercises and doled out grants for maritime security involving potentially catastrophic scenarios related to radiological devices and nuclear bombs.[96] This approach may not be addressing a more viable threat.

Government studies, which have analyzed attacks against land-based mass transit systems and maritime targets overseas, seem to support the conclusion that an attack involving radiological materials on a ferry is highly unlikely. A GAO report on the

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[92] "Securing the Cities Program," Federal Grants Wire, accessed October 10, 2018, https://www.federalgrantswire.com/securing-the-cities.html.

[93] "Introduction to Securing the Cities," Houston Regional Radiological Detection Program, accessed November 25, 2018, http://www.houstonstc.org/.

[94] Jonah Czerwinski, "Budgets and Spending, Congress and H.L.S, Radiological and Nuclear Threats," Homeland Security Watch, May 17, 2017, https://www.hiswatch.com/2017/05/17/securing-the-cities-qfr/.

[95] "Is that a Nuke in Your Pocket? Or Are You—Well, You Know: Introduction to the Secure the Cities Program," *Medium: Homeland Security* (blog), accessed November 25, 2018, https://medium.com/homeland-security/is-that-a-nuke-in-your-pocket-or-are-you-well-you-know-9c051d2b8a42.

[96] Parfomak and Fritelli, *Potential Terrorist Attacks and Protection Priorities*, 25.

possibility of a radiological attack concludes the difficulties terrorists face in procuring the materials and constructing a dirty bomb render such a threat to ferry systems moot.[97] A 2005 study on maritime security finds that carefully coordinated and complex radiological attacks on ferries might be unrealistic, concluding that "many perceptions of maritime terrorism risks do not align with the reality of threats and vulnerabilities."[98] Similarly, a 2006 RAND study on maritime security finds the perception that vessels are susceptible to an attack using a dirty bomb may not be based on an accurate threat matrix.[99]

Analysts have warned that the real threat to ferry vessels comes from actors using more conventional means, such as firearms, to engage in criminal mass-casualty attacks.[100] This thesis continues by examining the various agencies responsible for U.S. ferry security, potential vulnerabilities that may have been inadequately addressed, the laws and regulations relating to the transportation of firearms, and the potential vulnerabilities to a mass-casualty event caused by an active shooter.

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[97] Robinson, *Efforts to Control Sealed Radioactive Sources Need Strengthening*, 65; and S., *Neutralizing the Nuclear and Radiological Threat*.

[98] "CNN Presents: Nuclear Terror," Vimeo, 1:04, posted by David Lewis Productions, August 19, 2010, https://vimeo.com/14281622.

[99] Greenberg et al., *Maritime Terrorism*, xxi–xxii.

[100] Mark Burgess, "Pascal's New Wager: The Dirty Bomb Threat Heightens," Center for Defense Information, February 4, 2003, http://www.freerepublic.com/focus/news/836418/posts.

III. LAWS, REGULATIONS, AND ENFORCEMENT AGENCIES

On September 11, 2001, the potential threats to the homeland made manifest in transportation vulnerabilities altered the security perspective of all agencies involved in protecting the United States. The Department of Homeland Security (DHS) was created to encapsulate all of those agencies under its collective umbrella and establish a unified mission objective of protecting the United States from future terrorist attacks. As a branch of the armed forces under DHS, the United States Coast Guard (USCG) is charged with the proprietary authority for oversight of domestic maritime security. Several other agencies and organizational elements collaborate with the USCG and have a shared responsibility in ensuring regulatory compliance and devising new methodologies to protect the U.S. ferry system.

Thus far, this thesis has discussed the threat to maritime transport, particularly the ferry industry. The literature suggests there is a significant threat, and one specific threat that deserves more attention is the active shooter. This chapter explores how the United States addresses that threat—in ferry security more generally—by first examining the agencies and organizations involved and then reviewing the laws and policies in place. The chapter concludes by highlighting significant gaps in ferry security organizations and procedures, especially concerning the threat of a mass-casualty attack.

A. THE UNITED STATES COAST GUARD AFTER 9/11

1. The Maritime Transportation Security Act of 2002

The USCG had new and enhanced duties to protect ports and assets from terrorist attacks after September 11, 2001. The Maritime Transportation Security Act of 2002 (MTSA) was signed into law by President George W. Bush and established consistent security regulations and requirements for all vessels and ports. MTSA is a proactive mechanism designed to provide the USCG with the regulatory authority and ability to harden ports, transportation systems, coastal areas, and waterways. The law has direct applicability to the U.S. ferry system and is the primary regulatory authority under which

vessels operate.[101] MTSA provides the USCG and the Transportation Security Administration (TSA) with enforcement and compliance capabilities to ensure that vessel owners and operators meet specific security requirements to mitigate incidents or attacks.[102] The 162-member International Maritime Organization develops standards for port and vessel security.[103] MTSA is the U.S. version of maritime regulations that incorporates elements of the Convention for the Safety of Life at Sea (SOLAS) and the International Ship and Port Facility Security (ISPS) Code.[104] These codes impose mandatory security requirements on all commercial ships of a certain size including a designated security officer, security system installation, and security plans.[105]

A criminal mass-casualty incident is an event with the potential for large-scale injury or death as a result of an intentional action including an active-shooter situation.[106] Under the provisions established in ISPS and MTSA, all maritime industry owners and stakeholders must develop vessel security plans and criminal mass-casualty plans. Each ferry company is directed to delegate vessel security duties to a company security officer (CSO) and a crew member on each ship who serves as the vessel security officer (VSO).[107] The CSO is responsible for ascertaining how the company will screen passengers, vehicles, and cargo and developing security protocols that include establishing restricted areas and access-control mechanisms. The VSO ensures security incidents aboard vessels are addressed in accordance with the approved plans.

The USCG reviews response plans to ensure they account for a mass-casualty incident at ports and aboard vessels while underway as well as the security of the

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[101] Maritime Transportation Security Act of 2002, Pub Law 107-295, *U.S. Statutes at Large* 116 (2002).

[102] "Area Maritime Security Committee," United States Coast Guard, accessed July 13, 2018, https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Office-of-Port-Facility-Compliance/Domestic-Ports-Division/amsc/.

[103] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 8–9.

[104] Köknar, "Maritime Terrorism."

[105] Köknar.

[106] Ellifritz, "10 Lessons Learned."

[107] Maritime Security: Vessels, 33 C.F.R. § 104 (2009).

passengers and crew.[108] Ferry captains have the responsibilities of mitigating the threat aboard their vessels, notifying the municipality where the incident occurs, and assisting with mass maritime rescue operations. Such responsibilities entail neutralizing an immediate threat to the safety and security of the vessel, such as an improvised explosive device (IED) discovered on board, although, presumably, the crew and passengers may have to contain and eliminate an ongoing threat, such as an armed passenger, to prevent further loss of life.[109] Although mass-casualty plans do address active-shooter scenarios aboard a ferry that is underway, their focus is primarily on response and recovery. No guidance or directions are provided to crews regarding how best to manage and mitigate a shipboard incident, aside from beaching the vessel and waiting for law enforcement to arrive.[110]

2. The Maritime Security Risk Analysis Model

The USCG designates the captain of the port (COTP) as the official with authority to enforce all maritime safety and security regulations and laws within his or her area of operation, which includes all waterways, ports, and harbors within the designated region. MTSA grants the COTP with primary responsibility in creating area maritime security plans for their sectors, based on area maritime security assessments.[111] All companies and operators are subject to the final plan in their sector of naval operations.[112] These plans are important proactive measures in establishing the security posture and asset allocation for the sector.

The USCG has devised pertinent programs that assist port captains with MTSA compliance. DHS has taken a centralized and all-encompassing approach toward ensuring the security of all U.S. critical infrastructure strategies by developing the National

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[108] Maritime Security: Vessels; and Graham and Hoffman, personal communication.

[109] Graham and Hoffman, personal communication.

[110] Graham and Hoffman.

[111] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 12.

[112] Area Maritime Security, 33 C.F.R. § 103 (2010); and Balog et al., *Public Transportation Emergency Mobilization*, 28.

Infrastructure Protection Plan (NIPP).[113] NIPP establishes a baseline criterion for risk assessment and incorporates elements including threat potential, vulnerability, and consequence at the national level.[114] Pursuant to MTSA, all DHS organizational elements must incorporate NIPP and use risk management in homeland security evaluations and assessments. The USCG and port security stakeholders are required under MTSA to develop an indigenous marine port and waterway assessment program.[115]

Under the provisions of the Coast Guard Authorization Act of 2010 and in accordance with MTSA, the Maritime Security Risk Analysis Model (MSRAM) serves as the primary tool for evaluating the potential threat to U.S. maritime assets from both terrorist organizations and individual actors.[116] MSRAM assesses risks to ferry vessels and ports in accordance with NIPP. The MSRAM system incorporates a formula that evaluates risk, threat, and consequence to access vulnerability accurately. MSRAM is a comprehensive tool for the COTP in that it incorporates all possible targets in the operating area including ferry vessels and terminals.[117] Each port is assigned a value as a potential target, incorporating several salient factors: the number of casualties likely to result if an attack is successful and the potential economic, environmental, and symbolic impact.[118] MSRAM factors in how close law enforcement or military sources are to potential maritime targets and considers whether their response times for potential incidents increase or reduce the vulnerability.[119] Port captains may also use MSRAM as a tactical planning tool that forecasts emerging trends and escalating threats, so resources can be redirected to better

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[113] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 3.

[114] Caldwell, Hoff, and Bachman, 12.

[115] Currie, *Critical Infrastructure Protection*, 13.

[116] Coast Guard Authorization Act of 2010, Pub. L. No. 111-281, 124 Stat. 2905, 3004–05 (2010); and Currie, *Critical Infrastructure Protection*, 25.

[117] Coast Guard Authorization Act of 2010; and Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 13.

[118] Coast Guard Authorization Act of 2010.

[119] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 13.

protect soft targets against attacks.[120] The most recent national MSRAM assessment data identify significant challenges to ferry security in the case of an active shooter.[121]

3. Boarding Parties and Law Enforcement Functions

Immediately following 9/11, the USCG designated law enforcement officers to serve as sea marshals and assigned them to visible operations on ferries to prevent the vessel from being taken by terrorists and used as a weapon. The sea marshals primarily covered large operations in major ports such as those in New York, California, New Jersey, Florida, and Virginia.[122] After several years of operation, the sea marshal concept was phased out. In 2004, funding was available for 53 sea marshals, after which the duties and responsibilities for the position transferred to the boarding officer.

The USCG reports that it has taken security measures to mitigate the potential for attacks by placing law enforcement teams on ferries.[123] Under 14 U.S.C. § 89,

> The Coast Guard may make inquiries, examinations, inspections, searches, seizures, and arrests on the high seas and waters over which the United States has jurisdiction, for the prevention, detection, and suppression of violations of laws of the United States. For such purposes, commissioned, warrant, and petty officers may at any time go on board of any vessel subject to the jurisdiction, or to the operation of any law, of the United States, address inquiries to those on board, examine the ship's documents and papers, and examine, inspect, and search the vessel and use all necessary force to compel compliance. When from such inquiries, examination, inspection, or search it appears that a breach of the laws of the United States rendering a person liable to arrest is being, or has been committed, by any person, such person shall be arrested.[124]

USCG law enforcement officers conduct occasional high-visibility security operations on ferries in which they interdict a vessel at sea or remain on board a vessel to

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[120] Caldwell, Hoff, and Bachman, 17.

[121] Currie, *Critical Infrastructure Protection*, 25.

[122] Nina Eaglin, "On the Waterfront: U.S. Seaports May Be the Biggest Terrorist Threat," 60 Minutes, July 25, 2003, https://www.cbsnews.com/news/on-the-waterfront-25-07-2003/.

[123] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 10.

[124] Law Enforcement, 14 U.S.C. § 89 (2000).

have a uniformed presence while it transits its scheduled route.[125] When warranted by circumstances or intelligence, these same teams may implement what is known as positive control measures, which involve situating armed agents at critical ferry locations, such as the pilot house or engine room, to mitigate potential attacks or attempts to commandeer or cripple the vessel.[126] The USCG is also required to conduct a certain number of security escorts on high-capacity passenger vessels and boarding operations under MTSA—although the exact numbers and designated metrics are classified.[127] In addition to these unscheduled law enforcement boarding operations, the USCG is required to conduct inspections of ferry facilities and vessels to ensure they are in compliance with approved security plans and threat measures are adequate to address current threat levels.[128]

4. Area Maritime Security Advisory Committees

An Area Maritime Security Committee (AMSC) is a collaborative team composed of federal and state leaders in law enforcement and emergency response agencies that have an interest in the maritime security of the area. Members may also include stakeholders or maritime industry leaders within the area of operation. There are 43 AMSCs throughout the United States.[129] An AMSC has oversight of security in all maritime transportation systems, port areas, adjacent waterways, coastal and shore areas, and other critical infrastructure and key assets in the maritime domain.[130] Through the AMSC, the participating members provide input and guidance to the COTP on perceived and identified vulnerabilities, which are factored into the development of the area maritime security plan.[131]

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[125] Caldwell, Hoff, and Bachman, 19.

[126] Caldwell, Hoff, and Bachman, 18.

[127] Caldwell, Hoff, and Bachman, 10–19.

[128] Caldwell, Hoff, and Bachman, 17.

[129] Robyn A. Kapperman and Ryan F. Owens, *Challenges, Accomplishments, and Best Practices: 2017 Annual Report* (Washington, DC: USCG Area Maritime Security Committees, 2018), http://mariners.coastguard.dodlive.mil/2018/07/27/7-27-2018-area-maritime-security-committees-2017-annual-report-challenges-suggestions-accomplishments-and-best-practices/.

[130] Kapperman and Owens.

[131] United States Coast Guard, "Area Maritime Security Committee."

The implementation of MTSA mandated the establishment of regional AMSCs as collaborative forums for government and industry to work together as partners in maritime security endeavors.[132] This is accomplished through meetings, networking, information sharing, training, joint vulnerability assessments, and the development of unified strategies.[133] One of the primary security focal points of concern has been planning for the detection and interdiction of ships and persons transporting radiological or nuclear materials, accomplished through the support of new technologies and scheduling of joint agency operations among federal, state, and local law enforcement and military entities.[134] These AMSC-endorsed operations have been conducted at ferry terminals and have screened vehicles and passengers for radiological signatures.[135] As the members of the AMSC represent different entities and agencies, each provides indigenous intelligence and information on current threat trends, which allow for a shared perspective in developing maritime security mitigation strategies.[136] AMSCs are an integral part of the maritime security regime, and they are committed to adapting to better prepare for 21st-century threats to marine passengers and commerce.

AMSCs also help manage the DHS Port Security Grant Program.[137] This program allocates funding to first-response agencies and stakeholders for equipment and assets that help improve terminal and vessel security. Such equipment includes cameras, radiation detection equipment, and rescue equipment. The requesting entity submits a justification to purchase the equipment to its AMSC, which ranks the request based on vulnerability and submits it to DHS with an endorsement.[138]

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[132] Kapperman and Owens, *Challenges, Accomplishments, and Best Practices*.

[133] Kapperman and Owens.

[134] Kapperman and Owens.

[135] Kapperman and Owens.

[136] United States Coast Guard, "Area Maritime Security Committee"; and 33 C.F.R. § 103.

[137] Balog et al., *Public Transportation Emergency Mobilization*, 25.

[138] For a more thorough description of the Port Security Grant Program, see Government Accountability Office, *Port Security Grant Program: Risk Model, Grant Management, and Effectiveness Measures Could Be Strengthened*, GAO-12-47 (Washington, DC: GAO, 2011).

B. ADDITIONAL ORGANIZATIONAL ROLES IN MARITIME SECURITY

All vessels that operate in U.S. waters fall under the jurisdiction of the USCG, and it is the lead agency with oversight of public ferry security. Other government agencies, such as the TSA and CBP, have collective responsibilities for safeguarding America's waterways.[139] The Passenger Vessel Association (PVA) is an agency that represents all U.S.-based maritime owners and operators in their actions with the USCG and Congress. In this capacity, the PVA is the voice of ferry operators and ensures that regulatory requirements and proposed legislation do not pose an undue burden on companies. This section examines in greater depth the role these agencies have in U.S. ferry security.

1. The Transportation Security Administration

The TSA was created after 9/11 and has widespread authority in all public transportation domains. As opposed to aviation transportation—in which TSA has almost exclusive jurisdiction to enact security policies—the direct regulatory responsibility for the maritime domain and the U.S. ferry system fall primarily under the USCG. The TSA's role in the maritime domain involves collaborative law enforcement, security operations, and exercises.[140] The TSA works closely with its partners, including the Department of Transportation and the USCG to share best practices and develop programs that enhance homeland security objectives. As part of the DHS-led Critical Infrastructure Partnering Advisory Council, TSA coordinates with the USCG and the Department of Transporation to share information, conduct security assessments, and participate in practical exercises in the various transportation domains, including maritime.[141] Additionally, both the USCG and the TSA conduct outreach activities and assist stakeholders and industry operators with mitigating risk through exercises and the planning of practical exercises. The unique roles that these agencies play in maritime security are discussed more thoroughly in subsequent paragraphs.

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[139] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 20.

[140] *Transportation Security: Protecting Passengers and Freight: Hearing before the Senate Committee on Commerce, Science, and Transportation*, 114th Cong., 2d sess., April 6, 2016 (statement of Peter Neffenger, administrator, Transportation Security Administration).

[141] S., *Transportation Security*.

The TSA supports ferry security by providing a uniformed law enforcement security detachment at maritime terminals that use Visible Intermodal Prevention and Response (VIPR) teams.[142] The Implementing Recommendations of the 9/11 Commission Act of 2007 and 6 U.S.C. §1112 directed the creation of VIPR teams to augment public transportation security methodologies.[143] The TSA uses these teams to deter homegrown violent extremists and discourage persons with nefarious intent from targeting transportation venues.[144] VIPR teams are usually composed of federal air marshals with personal radiation detection equipment, surface inspectors, explosive detection canine specialists, and a myriad of state and local law enforcement and military personnel.[145] During a GAO review, the USCG cited VIPR teams as "a best practice for ensuring the security of high capacity passenger ferries."[146]

The TSA also has the primary responsibility of maintaining the Transportation Worker Identification Credential (TWIC) program. Ports and maritime facilities are vital hubs for U.S. economic health and house a wide variety of critical infrastructure such as the water and food supply, intermodal transportation infrastructure, energy storage, hazardous chemicals and materials, and countless goods involved in global commerce. MTSA authorizes the USCG to issue regulations detailing the security standards required for workers to have unfettered access to these facilities.[147] Restricting access is a major component of facility security, and only those individuals who possess a TWIC may have unescorted access to maritime facilities. To obtain a TWIC, port and maritime workers,

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[142] Department of Homeland Security, *TSA's Administration and Coordination of Mass Transit Security Programs* (Washington, DC: Government Printing Office, June 2008), http://www.oig.dhs/gov/assets/Mgmt/OIG-08-66_jun08.pdf; and Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*.

[143] Implementing Recommendations of the 9/11 Commission Act of 2007, Pub. L. 110-53, 121 Stat. 266 (2007); and Authorization of Visible Intermodal Prevention and Response Teams, 6 U.S.C. § 1112 (2015).

[144] Department of Homeland Security, *TSA's Administration and Coordination*, 6.

[145] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 20.

[146] Caldwell, Hoff, and Bachman, 20.

[147] Maritime Transportation Security Act of 2002; and Security and Accountability for Every Port Act of 2006 (SAFE Port Act), Pub. L. No. 109-347, 120 (2006).

including ferry vessel and facility personnel, must undergo a strict vetting process and background check by the TSA.[148]

TWIC cards contain biometric and biographic data, which are stored in an integrated circuit chip and can be read using a reader.[149] TWIC readers offer dual-factor digital technology that provides real-time verification of an individual's access level by comparing his or her fingerprint against the TWIC Cancelled Card List (CCL). The CCL identifies cards that are lost, stolen, or canceled by disqualifying factors. The TWIC reader and the CCL function in a similar fashion to the TSA's Secure Flight and No Fly List programs whereby the CCL is constantly updated to ensure access is not granted to an individual who no longer has a valid TWIC.

2. Customs and Border Protection

CBP is responsible for securing the U.S. border from dangerous materials.[150] In 2008, CBP began to operate radiation-detecting sensors to screen vehicles and passengers in lanes at the international ferry terminal in Port Angeles, Washington, whose vessels travel to and from Canada. If radiation is detected with larger-yield units, CBP agents use handheld devices to locate the suspect material.[151] As of August 2016, CBP has supplied its workforce approximately 1,400 radiation portal monitors and 2,700 handheld radiation detection devices for screening at U.S. borders and ports of entry.[152] The photograph in Figure 4 shows a typical CBP radiation detector screening trucks as they cross the border.

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[148] "Transportation Worker Identification Credential," Transportation Security Administration, accessed September 5, 2018, https://www.tsa.gov/for-industry/twic.

[149] Transportation Security Administration.

[150] Oakley, *Radiation Portal Monitors*, 1.

[151] "Radiation Sensors Deployed at Washington State Ferry Site," Nuclear Threat Initiative, June 12, 2009, http://www.nti.org/gsn/article/radiation-sensors-deployed-at-washington-state-ferry-site/.

[152] Oakley, *Radiation Portal Monitors*, 8.

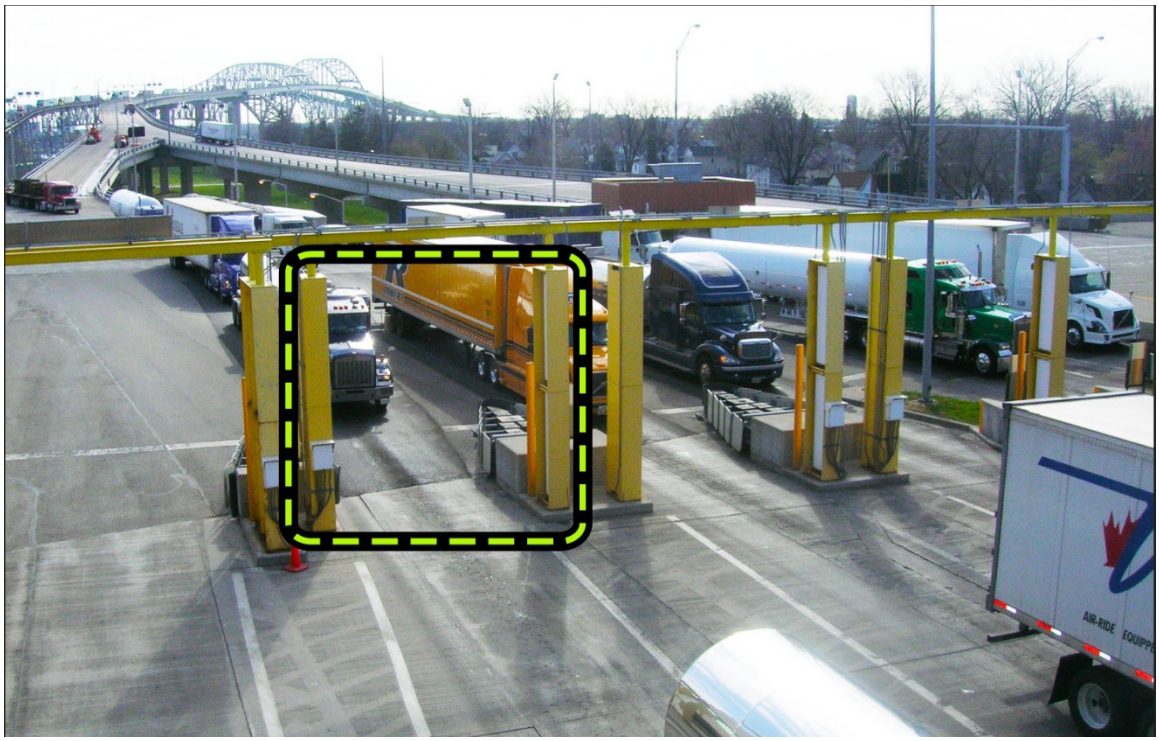

Figure 5. A Typical CBP Radiation Detection Portal at a Land Crossing[153]

CBP assesses persons, baggage, and freight arriving into the country from foreign ports and will deny the admission of individuals or materials that it deems present a threat to homeland security.[154] CBP utilizes its National Targeting Center to check names of persons crossing a border, either by land or sea, against watch lists and warrants. In cases of cruise ships originating at foreign ports, including those in Canada departing for the United States, CBP inspects all of the passengers and crew.[155] This screening process is utilized to determine if the passenger may present a threat to U.S. security because of a noted affiliation with a terrorist organization, but can also ascertain if the person is the subject of an open criminal warrant or has a potential immigration issue.[156] CBP also conducts checks on all persons—crew members and passengers—entering or leaving the country on freight and

[153] Source: Oakley, *Radiation Portal Monitors*, 5.

[154] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 8–9.

[155] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 25–26.

[156] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 25–26.

cruise ships.[157] It often obtains positive results. For example, in 2013, CBP arrested three women and two men on a Carnival Magic cruise ship who had numerous felony arrest warrants for crimes ranging from forgery to tampering with government records, to property damage.[158] This system is examined further in Chapter IV.

3. The Passenger Vessel Association

The PVA represents the interests of the U.S. passenger vessel industry. The PVA liaises regularly with congressional committees and legislators to ensure that its members have a voice in the U.S. government and that applications of laws and regulations are fair, balanced, and relevant to the maritime industry.[159] The PVA's legislative agenda is established by its board of directors based on the briefings and recommendations of a legislative director and committee. The PVA also monitors federal agency activities, proposes rules, and provides detailed briefings to help legislate and dictate public policy.[160] The PVA regularly consults with the USCG to develop security programs and make them available to its membership. Additionally, the PVA's Safety and Security Committee coordinates with the USCG to analyze data from actual maritime incidents and devises practical solutions and programs to protect the crews and passengers of its member agencies. The PVA is actively involved in ferry security program development.[161]

The Alternate Security Program (ASP) is a practice that supplies maritime owners with vessels that have a capacity of 150 passengers or more as well as the option to check the identification of passengers and initiate screening, as necessary, or enhanced

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[157] Caldwell, Hoff, and Bachman, 25.

[158] James Walker, "Are You Cruising with a Wanted Felon? Five Passengers Arrested on Carnival Magic in Galveston," *Houston Chronicle*, April 22, 2013, https://www.cruiselawnews.com/2013/04/articles/crime/are-you-cruising-with-a-wanted-felon-five-passengers-arrested-on-carnival-magic-in-galveston/.

[159] "Home Page," Passenger Vessel Association, accessed September 21, 2018, http://www.passengervessel.com/index.html.

[160] Passenger Vessel Association.

[161] Steven E. Froehlich (industry engagement manager, Maritime TSA's OPSIE Intermodal Security Training and Exercise Program), personal communication, August 4, 2017.

monitoring of public access areas.[162] Vessel and facility operators and owners must demonstrate they are "a member in good standing" of a sponsoring agency—in this case, the PVA—and complete a vulnerability assessment in accordance with regulatory provisions.[163] Plans are submitted to the USCG commandant, who has the sole authority to approve them. Once ASP is authorized and activated, the COTP has the responsibility of ensuring that the ferry operator complies with the program's provisions. One stipulation is that the personnel monitoring the public access areas must be trained according to 33 C.F.R. § 105.210 and, thus, able to recognize suspicious persons and packages.[164] Ferry company employees are required to report unusual or suspicious activities they observe which could be indicative of a potential maritime threat to the National Response Center.[165] Under Policy Letter 08-16, the USCG has outlined criteria and processes for reporting suspicious activity. This regulation requires personnel with specific security responsibilities to demonstrate the abilities to recognize potential threats to the safety and security of the vessel and use screening apparatuses on passengers and freight when warranted by circumstances.[166]

Ever since the 9/11 terrorist attacks, the member companies that comprise the PVA have inquired about the possibility of arming crew members on passenger vessels.[167] In recent years, as concerns about active shooters have intensified and the number of national incidents has increased, the concern has reemerged.[168] The PVA acknowledges that it has never issued guidance on how to respond to an active-shooter situation and has not

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[162] Maritime Security: Vessels; and Maritime Security: General, 33 C.F.R. § 101.

[163] Maritime Security: General; and P. F. Thomas, "Reporting Suspicious Activity and Breaches of Security," USCG Policy Letter No. 08-16, (Washington DC: United States Coast Guard, December 14, 2016), https://homeport.uscg.mil/Lists/Content/Attachments/2676/CG-5P%20Policy%20Letter%2008-16_3.pdf.

[164] Betty McMenemy, "No ID Checks or Screening at the Vessel or the Passenger Terminal? What in the World?," *Waves on the Waterfront* 6, no. 1 (July 2017): 4–5.

[165] Thomas, "Reporting Suspicious Activity and Breaches of Security."

[166] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 24; and Thomas, "Reporting Suspicious Activity and Breaches of Security."

[167] Edmund Welch (legislative director, Passenger Vessel Association), personal communication, April 2017.

[168] Froehlich, personal communication; and Welch, personal communication.

addressed such an incident in ASP.[169] The USCG has no regulation or guidance pertaining to crew members bearing firearms; such authority falls on state laws when the vessel operates within their jurisdictions.[170]

C. UNREGULATED FERRY FIREARM TRANSPORT CONTROLS

Unlike many of the other public transportation systems, no regulations limit the transport of firearms on ferries. The various laws and procedures that other systems use to mitigate potential active-shooter situations on public conveyances are discussed in Chapter IV. In the interim, a comprehensive examination of the laws and regulations governing passenger transit on ferries demonstrates they are not conducive to a security environment that could mitigate an active-shooter event.

1. Transporting a Firearm on a Ferry within or into the United States

According to 18 U.S.C. § 926A, federal permits are neither required nor available for the interstate transportation of firearms.[171] Under federal law, individuals who are convicted felons, persons convicted of crimes related to domestic violence, individuals with a history of mental illness, dishonorably discharged veterans, fugitives, and illegal aliens are all specifically prohibited from bringing a firearm across state lines.[172] Federal laws provide guidance to U.S. citizens on transporting legally owned firearms across state lines in any conveyance.[173] To meet requirements, the firearm must be unloaded and transported in a location on the vehicle or vessel so that the passenger is not able to access it during the course of the interstate travel.

The Firearms Owners Protection Act is a federal law that permits the legal transport of firearms between states provided they are unloaded, secured in a locked container,

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[169] Welch, personal communication.

[170] Froehlich, personal communication; and Welch, personal communication.

[171] Interstate Transportation of Firearms, 18 U.S.C. §926A (2011).

[172] Interstate Transportation of Firearms; and "Guide to the Interstate Transportation of Firearms," National Rifle Association, January 1, 2015, https://www.nraila.org/articles/20150101/guide-to-the-interstate-transportation.

[173] National Rifle Association, "Guide to the Interstate Transportation of Firearms."

transported in checked baggage or in a place not readily accessible, and legal to carry at the destination.[174] In vehicles, firearms must be in checked luggage or in the trunk. As discussed in Chapter II, some U.S. ferry carriers' service international ports for a myriad of reasons including leisure travel for sport hunting. U.S. citizens may legally transport firearms from Canada provided they meet certain provisions, which includes declaring each gun before they arrive at their point of entry to the U.S. and registering them before bringing them into the country.[175] Canada prohibits the transportation of handguns of a certain size that are easily concealable, any altered rifle or shotgun, any automatic rifle, and certain types of semi-automatic rifles. Canada also prohibits large capacity magazines from entering the country.[176]

Unlike Canadian regulations, Mexican law prohibits the transport of any firearms or ammunition into the country unless it is for hunting, in which case certain restrictions and provisions apply.[177] U.S. citizens may bring firearms and ammunition into the United States from Mexico provided they obtain a permit from the Bureau of Alcohol, Tobacco, Firearms, and Explosives.[178] However, American citizens who can provide evidence that they previously owned the guns in the United States must submit CBP Form 4457. The only case in which passengers are required to declare they are transporting firearms is when they encounter CBP agents. At no point are ferry crews required to be notified that a firearm is being transported on board their vessels. Essentially, no provisions safeguard a U.S.-bound ferry from having a passenger carry a gun onto the vessel.

Scott Graham and Al Hoffman, USCG port security specialists for the Long Island Sound Sector, report that each ferry company addresses the transport of firearms in a

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[174] Firearm Owners Protection Act of 1986, Pub. L. No. 99-308; and National Rifle Association, "Guide to the Interstate Transportation of Firearms."

[175] "Canadian Firearm Program," Royal Canadian Mounted Police, accessed September 5, 2018, http://www.rcmp-grc.gc.ca/cfp-pcaf/index-eng.html.

[176] Royal Canadian Mounted Police, "Canadian Firearm Program."

[177] "Consulate General Tijuana," U.S. Embassy and Consulates in Mexico, accessed September 20, 2018, https://mx.usembassy.gov/embassy-consulates/tijuana/.

[178] U.S. Embassy and Consulates in Mexico.

manner it deems appropriate, which has led to processes that vary by company and state.[179] For example, the Massachusetts Steamship Authority requires that all gun carriers secure their firearms in a vessel gun locker. The Port Jefferson Ferry, operating between New York and Connecticut, requires that firearms be secured in a locked vehicle while the operator of the Cross Sound Ferry, operating between Rhode Island and Connecticut, acknowledges it has no legal authority to force passengers to surrender firearms in their possession.[180]

Additionally, compliance with any firearm security policy developed by the ferry companies is unenforceable because it would rely on the firearm-carrying passenger to self-report to the company and voluntarily submit to checking one's guns.[181] With inconsistent and unenforceable firearm regulations and processes, there are no mechanisms to prevent persons from bringing firearms onto ferry vessels. For example, on August 24, 2017, two intoxicated men traveling on the Cross Sound Ferry from Block Island to Connecticut got into an altercation. One man pulled a 9mm Glock pistol and discharged the gun on the stern of the vessel. When the men arrived in New London, they were arrested for a myriad of charges including breach of the peace, reckless endangerment, carrying a firearm without a permit, and unlawful discharge.[182]

2. Regulations Restrict Enhanced Ferry Passenger Screening

Some regulations appear to limit the ability of companies and owners to initiate a higher level of security that might help detect and deter a passenger from carrying a firearm on a ferry. The *Code of Federal Regulations* (33 C.F.R. § 101) allows for operators of serve ferries or passenger vessels carrying more than 150 passengers to have a public access area

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[179] Graham and Hoffman, personal communication.

[180] Graham and Hoffman.

[181] Graham and Hoffman.

[182] "Shot Fired from aboard Ferry, 2 Arrested," CBS Connecticut, August 24, 2017, https://connecticut.cbslocal.com/2017/08/24/shot-fired-aboard-ferry-2-arrested/; and New London Police Department, "Weapons Violations/Shot Fired, Block Island Ferry/Long Island Sound" (preliminary press release, August 23, 2017).

within their terminals that is open to all persons.[183] As previously discussed, ASP allows companies to monitor those areas, but they are not required to screen passengers or subject them to identification checks. This allows facilities serving ferries and passenger vessels to designate public access areas that do not require the screening of persons or baggage, nor must they ask for identification.[184]

Maritime security (MARSEC) levels are designed as an escalating warning system that will elevate based upon intelligence on a potential threat which initiates preplanned scalable responses.[185] The threat levels are set by the USCG in coordination with DHS based on a known or anticipated threat to the maritime transportation system. The components, assets, and infrastructures evaluated to achieve MARSEC levels include waterways, ports, vessels, and facilities. USCG guidance sets the minimum screening requirements at each MARSEC level. At times of elevated levels, each ferry operator is permitted to enact localized security measures.[186]

At all MARSEC levels, the owner and operator of a ferry system are expected to have security protocols and a mechanism to monitor public terminal areas where passengers congregate before boarding a vessel.[187] Betty McMenemy suggests that monitoring is "a very important part of the passenger area designation."[188] She suggests that MARSEC directives may exempt screening and identification requirements in public access areas. This has come to be incorrectly translated as "no security, when in fact it means the use of routine security patrols and closed circuit television to monitor passengers, and secure non-passenger areas."[189] McMenemy argues that ferry company

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[183] Maritime Security: General.

[184] Maritime Security Facilities, 33 C.F.R. § 105 (2010).

[185] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 18.

[186] Caldwell, Hoff, and Bachman, 24.

[187] Maritime Security: General; and Maritime Security Facilities.

[188] McMenemy, "No ID Checks or Screening at the Vessel," 4–5.

[189] McMenemy, 4–5.

personnel should interpret MARSEC as guidance that directs them to enhance their surveillance and detection of common areas at ferry terminals despite the level.[190]

D. CHALLENGES

Many ferry companies have attempted to leverage their authority to harden vessels to active shooters, as authorized by MTSA, by arming crews.[191] Certain companies have expressed interest in arming their captains to protect the passengers and crew against an active-shooter situation but found it operationally prohibitive due to jurisdictional issues.[192] In many states, to carry a firearm openly or concealed on board a ferry, personnel are required to obtain a pistol carry permit. Attempts to acquire these have been met with jurisdictional challenges that have proven prohibitive. Many vessels operate between states with restrictive gun control laws that have denied requests to obtain permits. For example, Chris Anglin, facilities operations manager for the Cross Sound Ferry Company, has been attempting to arm his personnel for years with negative results.[193] His ferries operate between Connecticut, New York, and Rhode Island, crossing into each state's territorial waters. Ferry crews would need three state-issued pistol permits to carry a firearm legally on a Cross Sound Ferry, and this is a matter that the involved state governments have been unwilling to entertain. Additionally, some of the larger ferry systems in the United States, such as the Washington State Ferry system and the Alaska Marine Highway System, operate in foreign (Canadian) waters and dock at foreign ports, again creating jurisdictional issues.

E. EXERCISES

In an April 2018 report, DHS concluded that terrorists and extremist actors might target public areas, such as transportation sectors, and use more conventional methods—

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[190] McMenemy, 4–5.

[191] Maritime Transportation Security Act of 2002.

[192] Chris Anglin (facilities operations manager, Cross Sound Ferry Services), personal communication, July 8, 2017.

[193] Anglin, personal communication.

involving firearms and simple weapons—to initiate their attacks.[194] DHS holds the belief that practical and tabletop exercises are the best mechanisms for assessing and identifying gaps in ferry security capabilities, recognizing that they can be tailored to test a system's strengths and weaknesses, and it has been increasing awareness and interagency participation.[195]

The TSA developed a program that conducts outreach activities and assists stakeholders and industry operators in mitigating risk through planned practical exercises.[196] Through its Intermodal Security Training Exercise Program (I-STEP), the TSA reaches out to maritime conveyance operators and helps with the development of their tactical response plans, which include the best response to an active shooter in their facility or on one of their vessels.[197] I-STEP coordinates with stakeholders and first response agencies to conduct full-scale practical exercises on ferries to ensure they are prepared to address an incident on board a vessel that is underway.[198] According to the testimony of TSA's assistant administrator, Eddie Mayenschein, before Congress, I-STEP's goals include "promoting stakeholder awareness and involvement through an outreach program; encouraging stakeholder participation in program development; aligning with national standards and requirements; conducting exercises relevant to stakeholders' challenges and risks; and refining the program through evaluation and continuous improvement."[199]

The TSA's Office of Security Policy and Industry Engagement oversees I-STEP. In 2016, I-STEP launched the Exercise Information System as an online planning tool to guide governments and industry through the design, implementation, and assessment of

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194 Department of Homeland Security, *Soft Targets and Crowded Places*.

195 Department of Homeland Security, 10.

196 "Intermodal Security Training and Exercise Program," Transportation Security Administration, accessed January 8, 2018, https://www.tsa.gov/for-industry/intermodal-security-training-and-exercise-program.

197 Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented*, 20.

198 Transportation Security Administration, "Intermodal Security Training and Exercise Program."

199 *Safeguarding Our Nation's Surface Transportation Systems against Evolving Terrorist Threats: Hearing before the House Committee on Homeland Security, Subcommittees on Transportation Security and Counterterrorism and Intelligence*, 114th Cong., 1st sess., September 17, 2015 (statement of Eddie Mayenschein, TSA assistant administrator).

practical exercises. The system was developed in response to the November 13, 2015, coordinated attack involving active shooters, IEDs, and suicide bombings in Paris, which resulted in hundreds of casualties and 130 fatalities. This is the only system designed specifically for the public transportation industry.[200]

In recent years, the U.S. Coast Guard has utilized its Maritime Security Risk Analysis Model and Domestic Port Security Assessment Program to provide guidance that identifies vulnerabilities and helps harden ferry terminal and vessels to active-shooter attacks.[201] The relatively few practical exercises conducted on ferries involving an active shooter demonstrates the potential outcome of such an event. In a comprehensive report from the perspective of a role-playing passenger in an active-shooter exercise for the Washington State Ferry System, Thomas Bliss concludes the entire incident might well be over before law enforcement and first responders arrive.[202] Following their participation in a practical exercise for the Seattle Passenger Ferry System and the Maritime Transportation System, Jimenez, Rowden, and Paulo conclude that a lone-wolf shooter attack would result in many casualties. They incorporated an interactive war gaming and computer modeling simulation to analyze the effectiveness of the collaborative law enforcement and military response to support their findings.[203] In totality, the data obtained from these reports on active-shooter exercises demonstrate how vulnerable the system is to an active-shooter event.

Agencies responsible for maritime security, such as the TSA and the USCG, are proactively engaging in active-shooter exercises on ferries to identify the unique challenges in responding to such an incident. Going forward, after-action reports and findings can identify weaknesses and ascertain whether there are meaningful and implementable policy changes that can be incorporated into U.S. maritime security to mitigate potential active-shooter events before they occur.

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[200] "Exercise Information System," Transportation Security Administration, accessed November 27, 2018, https://exis.tsa.dhs.gov/default.aspx.

[201] Department of Homeland Security, *Soft Targets and Crowded Places*, 11.

[202] Bliss, "Exercise on Washington State Ferry."

[203] Jimenez, Rowden, and Paulo, "System Simulation and War Gaming."

F. CONCLUSION

The USCG is responsible for enforcing maritime law and partners with ferry companies to develop mitigation strategies to address mass-casualty incidents. It is extremely difficult for the USCG to control the transport of firearms on passenger ferries. Many states restrict the carrying of firearms to those with a permit or license, but no laws or regulations restrict their transport on a ferry. Ferry systems in the United States may be considered private property, but they must remain open to the public as a condition of the service that they provide. This presents a dangerous situation for vessel crews as it presents an opportunity for a ferry passenger to carry a concealed firearm on one's person or secreted in a vehicle, whether legally licensed to carry it or not.

The increase in armed law enforcement operations at ferry terminals and on vessels may detect firearms and deter individuals from carrying them onto vessels and from engaging in criminal mass-casualty attacks such as active-shooter events. Such operations provide a law enforcement presence at maritime transportation venues, but they are not omnipresent. From the data provided, it appears that the probability of an armed security detachment being on board a vessel underway when an individual initiates an attack with a firearm is unlikely. In every scenario reviewed, empirical evidence suggests considerable time would pass before the threat is eliminated or neutralized, during which there would be considerable casualties and loss of life.

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IV. PUBLIC TRANSPORTATION OVERCOMES SECURITY CHALLENGES

> There is a serious security gap in our ferry systems, and we need to ensure that passengers in our nation's waterways are protected.
>
> —Congressman Frank Pallone[204]

This thesis demonstrates that U.S. law enforcement and security agencies underwent a transformational change following 9/11 and initiated several procedures to prevent terrorist attacks in public transportation systems. This change enhanced security in all domains including aviation, rail, and maritime. The measures have been both reactive and proactive in nature, initiating processes that have called for modifications to the security of the entire venue and employing tactics that focus on the individual as a terrorist threat. Unlike other public transportation domains, the U.S. ferry system has not been hardened to an active-shooter threat through enhanced security procedures. This chapter examines methodologies employed in America's public transportation domains that may have potential applicability and be beneficial to the U.S. ferry system.

A. REGULATING FIREARMS IN PUBLIC TRANSPORTATION

Chapter III revealed that neither the USCG nor the Passenger Vessel Association has introduced regulations or processes designed to control the transporting of guns on ferries. Federal law, namely the Firearm Owners Protection Act, does not prevent U.S. citizens from taking guns across state lines for lawful purposes.[205] Many transportation venues have established processes that offer a level of security and mitigate the potential for a passenger to access and use a firearm while in transit. Ferry companies have not. This

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[204] "Pallone Calls for Increased Funding for Ferry Security," Official Website of Congressman Frank Pallone Jr. (press release, July 15, 2005), https://pallone.house.gov/press-release/pallone-calls-increased-fundingfor-ferry-security.

[205] "Guide to the Interstate Transportation of Firearms," National Rifle Association, June 30, 2014, https://www.nraila.org/articles/20140630/guide-to-the-interstate-transportation.

section examines the processes and methodologies employed by other agencies for the public transport of firearms.

1. TSA and Aviation Requirements to Transport Firearms

Since airport terminals are public places and must remain accessible—and are, therefore, vulnerable to persons carrying guns—the TSA has initiated robust security screening protocols that greatly mitigate the possibility of a firearm being carried onto a plane. Recognizing the inherent threat of hijackings by armed passengers, aviation security laws have prohibited the transport of firearms on passenger and commercial aircraft for decades. Federal law prohibits the transport of a loaded firearm in the accessible area of an aircraft but allows for reasonable exceptions. Law enforcement agents are permitted to fly armed on U.S. commercial aircraft provided they have a bona fide reason, for instance, in transporting a prisoner or on a dignitary security detail.[206] Federal air marshals flying in a covert status may be armed with firearms and ready to engage hijackers or terrorists.[207] Agents of the FBI may also carry firearms on passenger aircraft. Except for these reasons, off-duty officers and members of the military must surrender their firearms and have them secured in checked luggage.[208]

The TSA has devised a process for preventing civilians from accessing guns on aircraft. A passenger may transport a civilian-owned, unloaded firearm in a locked, hard-sided container only as checked baggage, secured in the belly of the aircraft, and it cannot be accessed during the flight. The passenger must declare it to the air carrier and may be subject to inspection by law enforcement.[209] The TSA also allows ammunition and magazines to be transported in the same container as the firearm, provided that neither is in a location that the passenger can access during the flight.[210] The TSA incorporates these

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[206] Civil Aviation Security: General Rules, 49 C.F.R. § 1540 (2010).

[207] Civil Aviation Security: General Rules.

[208] Civil Aviation Security: General Rules.

[209] "Transporting Firearms and Ammunition" Transportation Security Administration, accessed July 12, 2018, https://www.tsa.gov/travel/transporting-firearms-and-ammunition.

[210] 18 U.S.C. §§ 921 et seq. (2011).

requirements into its advisement that "the proper way to travel with a firearm is to make sure it is unloaded and packed inside a hard-sided firearm case. Any ammunition should be kept in its original box and placed inside the firearm case next to the unloaded gun."[211]

The TSA reports that its screening workforce detected an average of 10.8 firearms at checkpoints each day throughout its 440 airports in 2017 for a total of 3,957 firearms discovered in carry-on bags.[212] Of the firearms that TSA discovered through screening, 84 percent, or 3,324, were loaded. This is a significant increase over the 2,653 firearms TSA searches found in 2015 and the 2,212 firearms discovered in 2014.[213] Empirical evidence suggests that this dangerous trend is continuing, with TSA reporting it found a record 104 firearms at airports in just one week in 2018.[214] Involved passengers claim they either were unaware that it was illegal to carry them onto a plane or simply forgot they had them.[215] These data support the conclusion that a large number of firearms are being brought to airports and that passengers are either accidentally or unintentionally attempting to carry them on planes, despite the publication of clear policies for transporting them and TSA's ongoing post-9/11 campaign to make passengers aware of the prohibition.[216]

Preventing loaded firearms from making their way into airports minimizes the potential for loss of life and loss of control. The TSA's proactive screening initiatives have proven highly successful in identifying firearms and preventing them from being introduced into the aviation system. However, commercial aviation is the only such public transportation venue where this level of screening for firearms is conducted. It is possible

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[211] Transportation Security Administration, "Transporting Firearms and Ammunition."

[212] "TSA Year in Review: Record Amount of Firearms Discovered in 2017," Transportation Security Administration, January 29, 2018, https://www.tsa.gov/blog/2018/01/29/tsa-year-review-record-amount-firearms-discovered-2017.

[213] Transportation Security Administration, "TSA Year in Review: Record Amount of Firearms Discovered in 2017."

[214] Anna Giaritelli, "Record High 104 Guns found at Airport Security Checkpoints in One Week by TSA," *Washington Examiner*, February 20, 2018, https://www.washingtonexaminer.com/record-high-104-guns-found-at-airport-security-checkpoints-in-one-week-by-tsa.

[215] Giaritelli.

[216] Frederick Kunkle, "From the TSA: Here's What You Should Know about Guns and Airports," *Washington Post*, February 28, 2018, https://www.washingtonpost.com/news/tripping/wp/2018/02/28/from-the-tsa-heres-what-you-should-know-about-guns-and-airports/?utm_term=.889d980f91c8.

that an even higher number of guns are regularly carried in other venues where processes are less restricted.

2. Riding America's Rails with a Firearm

Amtrak once allowed passengers to check licensed guns on its trains. That came to an end after 9/11, and the ban remained in effect until September 2009 when the U.S. Senate joined the House in voting to allow passengers to carry unloaded and locked handguns under the bipartisan supported Wicker Amendment.[217] Under this provision to a housing and transportation spending bill introduced by Senator Roger Wicker, Amtrak would have lost its federal subsidies had it not removed its firearm ban and put in place a program for passengers to legally transport firearms on trains.[218] "Americans should not have their Second Amendment rights restricted for any reason, particularly if they choose to travel on America's federal subsidized rail line," Wicker said in a statement.[219] However, he also stressed there were guidelines laid out in the provision that would require a passenger to declare the firearm to Amtrak as well as safeguard it, unloaded, in a locked container, a process nearly identical to the one used by airlines. A large factor in the Senate's support of this bill involved the 2004 attack on commuter trains in Madrid and the 2008 train attack in Mumbai, which involved the use of firearms by attackers.[220]

Amtrak developed a policy to allow firearms to be transported on its trains using a checked baggage service. Passengers are required to notify Amtrak no later than 24 hours before their departure that they will be checking in and transporting a firearm and/or ammunition. Firearms must be unloaded and secured in an approved, locked, hard-sided container. These containers can be placed in other luggage that will be checked, and the

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[217] Bernie Becker, "Senate Votes to O.K. Checked Guns on Amtrak," *New York Times*, September 16, 2009, https://thecaucus.blogs.nytimes.com/2009/09/16/senate-votes-to-ok-guns-on-amtrak/.

[218] Evan Glass, "Senate Passes Measure to Allow Gun Transport on Amtrak," CNN, September 16, 2009, http://www.cnn.com/2009/POLITICS/09/16/amtrak.guns/.

[219] Becker, "Senate Votes to O.K. Checked Guns on Amtrak."

[220] Mark Shone, "Congress: Passengers Can Bring Guns on Amtrak Trains," ABC News, December 9, 2009, https://abcnews.go.com/Blotter/congress-passengers-bring-guns-amtrak-trains/story?id=9290167.

passenger must complete a two-part declaration form. Ammunition must be transported separately. Passengers who fail to follow these procedures are denied boarding.[221]

Many state and local rail carriers have enacted laws that allow passengers to carry firearms in their public transportation systems. In June 2008, Georgia passed a law that allows citizens with a concealed firearm permit to carry their guns on trains and buses.[222] The Metropolitan Atlanta Rapid Transit Authority developed procedures to comply with the new law and ensured they were highly publicized to its ridership. "We passed out fliers to notify our customers of the bill on what they can expect to see. We also have messages on our TV station and LCD signs at our train stations," stated Wanda Dunham, chief of police for the organization.[223] Georgia's law requires registered gun owners to bring a concealed carry license on their person when they carry a firearm and present it to law enforcement or railroad personnel on request.[224] The Georgia law mirrors many enacted across the nation in response to the Wicker Amendment, some permitting firearms the person and others requiring that firearms be checked in baggage such as Amtrak's policy.[225] This demonstrates that U.S. rail carriers recognize their responsibility in providing clear guidance for transporting firearms on their conveyances.

3. Alternatives for Transporting Firearms

Although transporting firearms and ammunition is a permitted and accepted practice, there are other options for passengers who do not wish to comply with established procedures. According to the Bureau of Alcohol, Tobacco, Firearms, and Explosives, most major shipping companies, such as Federal Express and the United Parcel Service, as well

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221 "Firearms in Checked Baggage," Amtrak, accessed August 20, 2018, https://www.amtrak.com/firearms-in-checked-baggage.

222 "Firearms Allowed aboard Georgia's Transit System," *Metro Magazine*, August 25, 2008, http://www.metro-magazine.com/management-operations/article/211189/firearms-allowed-aboard-georgias-transit-system.

223 "Firearms Allowed aboard Georgia's Transit System."

224 "Firearms Allowed aboard Georgia's Transit System."

225 "Firearms Allowed aboard Georgia's Transit System."

as the United States Postal Service, are authorized to transport firearms.[226] These shipping providers will transport firearms or disassembled parts only between citizens and federal firearm licensees, licensed manufacturers, licensed dealers, manufacturers, importers, and law enforcement entities in accordance with federal laws.[227] Despite restrictions on firearms, these rules do not apply to ammunition, which shippers can transport to private citizens. Unlike the TSA, carriers do not allow firearms and ammunition to be transported together; they must be shipped in separate packages, and the carrier must be notified that the transported item is an unloaded gun. This restriction is not applicable to transporting ammunition.

B. UTILIZING A CIVILIAN WORKFORCE TO ENHANCE SECURITY

The TSA has successfully implemented the Federal Flight Deck Officer (FFDO) Program, which deputizes pilots to serve as unpaid armed federal agents to protect the flight deck.[228] This program does not rely on increasing law enforcement ranks to protect an aircraft but rather taps into its substantial aviation workforce by authorizing commercial transportation operators to arm their civilian population. Following the 9/11 aircraft hijackings, the TSA was authorized by the Aviation Transportation Security Act to deputize volunteer commercial pilots as unpaid federal law enforcement officers to protect the cockpit from hijackings.[229] Under regulatory authority granted by 49 U.S.C. § 44921, the TSA trains and certifies civilian pilots to serve as unpaid armed federal agents acting in a limited capacity.[230]

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[226] Bureau of Alcohol, Tobacco, Firearms, and Explosives, "Most Frequently Asked Firearms Questions and Answers" (fact sheet, 2013), https://www.atf.gov/resource-center/docs/0813-firearms-top-12-qaspdf/download; and Shipping Easy, "Shipping resources," accessed September 12, 2018, https://shippingeasy.com/.

[227] Bureau of Alcohol, Tobacco, Firearms, and Explosives, "Most Frequently Asked Firearms Questions and Answers."

[228] Federal Flight Deck Officer Program, 49 C.F.R. § 44921 (2006).

[229] "Federal Flight Deck Office," Transportation Security Administration, June 8, 2018, https://www.tsa.gov/for-industry/training.

[230] Federal Flight Deck Officer Program.

By law, an FFDO must be a pilot or a member of the cockpit crew who is specifically assigned to work the flight in which he is armed. These agents must also be U.S. citizens, have and maintain a current Federal Aviation Administration Airman's Certificate, maintain a current class-one or class-two medical certificate, and undergo a background check. Adjudication and telephonic interviews are required by the TSA before acceptance and participation in the FFDO qualification program. The initial FFDO training is conducted at the Federal Law Enforcement Training Center in Artesia, New Mexico, and candidates undergo 56 hours of intense training.[231] On successful completion, the TSA issues the pilot or flight engineer a firearm, equipment, and credentials, which must be returned on removal or withdrawal from the program. All current FFDOs must attend a two-day recurring training program between their third and fifth years of deputation as well as pass a bi-annual firearms requalification at one of 26 different locations across the country. There is no fee to participate in the Federal Flight Deck Officer Program, and flight crew members receive no form of payment or compensation for their service.[232]

FFDOs are authorized by the TSA to carry firearms on their person aboard an aircraft only in the cockpit. The FFDO program authorizes pilots to defend against a cockpit penetration and protect unauthorized access to the flight deck and requires that they remain covert in their status as armed agents, disclosing their status only to those with an operational need to know.[233] This layer of anonymity is designed to deter potential hijackers or terrorists as they will be unable to predict in advance which flights have an armed member of the flight crew on board, authorized to use deadly force.

The FFDO is unable to leave the cockpit with the firearm in his or her possession during the flight for any reason, even for personal reasons or to address a disturbance on the plane.[234] Ensuring that the firearm stays in the cockpit guarantees a level of security to

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[231] "Federal Flight Deck Officer Training," Transportation Security Administration, December 14, 2015, https://www.tsa.gov/house/responses/2015/12/14/federal-flight-deck-officer-training.

[232] Transportation Security Administration, "Federal Flight Deck Officer Training."

[233] Department of Homeland Security, *Privacy Impact Assessment for the Federal Flight Deck Officer Program* (Washington, DC: DHS, January 10, 2008), https://www.dhs.gov/publications/federal-flight-deck-officer-program-FFDO.

[234] Department of Homeland Security.

prevent an unauthorized person or a hijacker from getting a gun on a U.S. commercial aircraft. Additionally, some procedures allow for the storage and transportation of firearms between flights, including international flights, at a TSA or law enforcement facility. TSA-issued FFDO firearms are to be maintained in a trigger-locked, non-descript bag or an alternate transport device, provided by the TSA.[235] These transport devices ensure that the firearms and magazines cannot be accessed or utilized by anyone but the authorized agent. Once they are in the cockpit of the aircraft, FFDOs are authorized to unlock the firearms. Even as the FFDOs transition through an airport or travel in their vehicles, the firearms remain locked in non-descript bags or alternate transport devices. The power to utilize the TSA-issued firearms is limited to the cockpit, and indemnification starts and ends at the cockpit door.[236] At all other times, the firearm must be locked and in "transport" mode and must not be used in any situation.[237]

The United States is the only nation that has a program to arm commercial flight crews. Every year since the program's inception in 2003, hundreds of American pilots have volunteered for the training, and there are now thousands in the program. The U.S. government does not reveal the actual number or the names of the armed pilots.[238] However, Marcus Flagg, president of the FFDO Association, estimated in 2012 that there were nearly 14,000 armed pilots, more than five times the number of air marshals.[239] This cost-effective program has greatly increased aviation security in the United States.[240] In *Chasing Ghosts: The Policing of Terrorism*, Mueller and Stewart present a cost analysis of the financial benefits of deputizing and arming civilian personnel in the aviation domain. They have determined that the cost to the federal government to have an FFDO on a flight

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[235] Department of Homeland Security.

[236] Jesse Laye (branch manager, Federal Flight Deck Officer Program, Aviation Programs Branch, Transportation Security Administration), personal communication April 2017.

[237] Laye.

[238] Owen Amos, "Federal Flight Deck Officers: The Airline Pilots Trained to Shoot Hijackers," BBC, March 26, 2018, https://www.bbc.com/news/world-us-canada-43377461.

[239] Jason Paur, "Armed Airline Pilots Want Authority beyond Cockpit," *Wired*, January 27, 2012, https://www.wired.com/2012/01/armed-airline-pilots-want-authority-beyond-cockpit/.

[240] Department of Transportation, "Federal Flight Deck Officer Program."

is about $15.00 per deployment based on several factors. For instance, the employee is on the plane regardless of program participation, not to mention absorbs most of the cost of firearm certification and training. In comparison, the cost of putting an armed federal agent or air marshal on a plane is about $3,300 per flight, per agent.[241] The U.S. pilots' union concurred with this cost analysis in 2018, estimating that the expense to the government to put an FFDO on a flight is $17.00 while placing a federal air marshal is $3,000 for the same flight.[242] Essentially, the cost of 440 FFDO-equipped flights is equivalent to the cost of assigning one armed federal agent to one flight.[243]

C. TRANSPORTATION SECURITY: A FOCUS ON THE INDIVIDUAL

America's ferry operators have not used 21st-century technologies to collect and retain accurate data on passengers and cargo. Most of the larger ferry commuter companies that transport vehicles have an electronic reservation system that accumulates data and issues boarding passes.[244] However, no regulations require companies to account for the identification of each passenger, and late-arriving pedestrian passengers are usually able to pay cash for tickets and board vessels anonymously.[245] Essentially, no entities with regulatory oversight over ferries require that any sort of passenger manifest be created or evaluated for threats. Thus, the maritime domain is unlike other public transportation domains, whose manifest and identification requirements offer a layer of security that help mitigate the potential for known terrorists or dangerous persons to board.

1. Terrorist Watch Lists and No Fly Lists

Bjelopera, Elias, and Siskin examined the methodologies in which U.S. intelligence and transportation agencies track known or suspected terrorists, reporting that the Terrorist

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[241] John Mueller, and Mark Stewart, *Chasing Ghosts: The Policing of Terrorism* (New York: Oxford University Press, 2015), 208.

[242] Amos, "Airline Pilots trained to Shoot Hijackers."

[243] Robert Poole, "Airport Policy and Security Newsletter #73," Reason Foundation, November 4, 2011, https://reason.org/airport-policy/airport-policy-and-security-news-73/. This figure assumes two air marshals per flight.

[244] Balog et al., *Public Transportation Emergency Mobilization*, 26.

[245] Balog et al., 26.

Screening Center (TSC) is a multi-agency hub that was created by a presidential directive in 2003 to complete this essential task.[246] The TSC maintains the U.S. government's consolidated terrorist watch list and serves as a point of contact for law enforcement and security agencies to positively identify known or suspected terrorists. The term "watch list" is somewhat of a misnomer, as there are several government watch lists that are used to protect the United States, and they are all consolidated under the Terrorist Screening Database (TSDB). The TSDB is the centerpiece of federal efforts to maintain a central intelligence network that can provide information to frontline law enforcement on persons who may be engaged in terrorist activities.[247] Individuals appear on one of these lists for a multitude of reasons such as having a criminal record, associating with known terrorists, or being actively involved in an extremist group.[248] These lists also include "suspected terrorists," individuals who have been engaged in or are reasonably suspected of having involvement in terrorist activities.[249] The TSDB is a single database that consolidates the various lists and supports law enforcement in identifying known or suspected terrorists who are attempting to enter the United States, board an aircraft, or engage in other activities.[250]

The premise behind the TSC is to provide law enforcement in the field information that an individual may have a connection to terrorism.[251] Mike Ross, watch commander for the TSC, stated during a rare interview, "We pretty much are the one-stop-shop mechanism for any type of encounter."[252] When an individual is stopped by police, Ross describes, law enforcement runs the individual's name through a computer database that

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[246] Jerome P. Bjelopera, Bart Elias, and Alison Siskin, *The Terrorist Screening Database and Preventing Terrorist Travel*, CRS Report No. R44678 (Washington, DC: Congressional Research Service, 2017), 1.

[247] Bjelopera, Elias, and Siskin, 1.

[248] Bjelopera, Elias, and Siskin, 4.

[249] Bjelopera, Elias, and Siskin, 4.

[250] "Terrorist Screening Center," Federal Bureau of Investigation, accessed September 4, 2018, https://www.fbi.gov/about/leadership-and-structure/national-security-branch/tsc.

[251] Dina Temple-Raston, "Inside the Terrorist Screening Center," National Public Radio, August 30, 2007, htpps://www.npr.org/templates/story/story.php?storyId=14045581.

[252] Temple-Raston.

routes to the TSC as a standard check for a valid driver's license. A positive TSDB return generates a notification to the agent in the field. This database is obviously an important counter-terrorism tool for law enforcement. Additionally, TSDB-generated lookout reports are disseminated to state, local, and tribal law enforcement officers through the National Crime Information Center.

The No Fly List, the Selectee List, and the Expanded Selectee List include the names of individuals who may "pose a threat to civil aviation and national security due to ties with terrorism or criminal conduct."[253] An individual who appears on the No-Fly List is prohibited from boarding a commercial aircraft that crosses the United States or from a foreign origin that transports the individual across U.S. borders.[254] This prohibition includes point-to-point international flights operated by U.S. carriers. The Selectee List identifies persons traveling who may have a connection to terrorism and who must be subjected to secondary screening at airports.[255] The Expanded Selectee List is an extra security measure developed in response to the "underwear bomber," who boarded a flight on December 25, 2009, and may be utilized at times of heightened terrorism threats to require additional screening of individuals who appear on one of the lists.[256] TSA relies on the TSC to conduct these checks.

2. The TSA, CBP, and Passenger Manifest Checks

One of the methods TSA has used to ensure airline safety is electronic background checks for travelers. All airline passengers who fly internationally or domestically are required to submit identification, and all names and reservations are automatically checked against various watch lists by the TSA.[257] When a passenger makes a reservation to fly on a commercial aircraft, a passenger name record (PNR) is automatically generated. A PNR

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[253] Bjelopera, Elias, and Siskin, *Terrorist Screening Database*, 7.

[254] Department of Homeland Security, *Role of the No-Fly and Selectee lists in Securing Commercial Aviation (Redacted)* (Washington, DC: Office of Inspector General, July 2009), 9.

[255] Bjelopera, Elias and Siskin, *Terrorist Screening Database*, 8.

[256] Bjelopera, Elias, and Siskin, 8.

[257] Intelligence Reform and Terrorism Prevention Act of 2004, Pub. L. 108-457, § 4012, 118 Stat. 3638 (2004).

contains personal information that airlines gather and utilize in their reservation process. Air carriers maintain a computer reservation system that books the passenger on the flight—although there are several interactive programs used by travel companies that accomplish the same objective.[258] These include Amadeus, SABRE, Apollo, Galileo, and Worldspan. The computer reservation system uploads the PNR and reserves the passenger's seat on the plane. The PNR is submitted to the TSA, and an automated process compares the passenger data against the TSDB.[259] If a name returns a positive reading, a TSA intelligence analyst reviews the information and confers with the watch list's originator for confirmation. Depending on the verification and the particular watch list, the passenger may be denied boarding or subjected to secondary screening.[260]

The TSA uses Secure Flight, an indigenous aviation security program that runs the names of passengers through the TSC and identifies when a person on a watch list attempts to fly on commercial aviation in the United States.[261] CBP also has a role in aviation travel, screening the crew and passenger manifests whenever an international flight departs the United States.[262] It has a similar role in maritime departures. CBP utilizes the Advanced Passenger Information System to capture personal information from the manifest systems of air carriers and vessel operators and to check them against various watch lists.[263] Much like the TSA's PNR system, CBP's National Targeting Center confers with the TSC via the Advanced Passenger Information System to verify a positive name return on one of the myriad watch lists and ascertains whether additional passenger scrutiny is required. CBP conducts checks on all persons leaving the country on freight and cruise ships.

The United States requires that all vessels entering ports from foreign nations electronically transmit passenger and crew manifests prior to arrival. CBP requires that

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[258] William J. Krouse and Bart Elias, *Terrorist Watchlist Checks and Air Passenger Prescreening*, CRS Report No. RL33645 (Washington, DC: Congressional Research Service, 2009), 11.

[259] Krouse and Elias, 19.

[260] Krouse and Elias, 19.

[261] Krouse and Elias, 15.

[262] Bjelopera, Elias, and Siskin, Terrorist Screening Database, 8–9.

[263] Krouse and Elias, *Terrorist Watchlist Checks and Air Passenger Prescreening*, 6–7.

vessel operators utilize the Coast Guard's Electronic Notice of Arrival/Departure format obtained through the National Vessel Movement Center, enabling the vetting of foreigners entering U.S. territory.[264] Federal regulations specifically require the electronic filing of passenger and crew manifests for all vessels arriving from a foreign port.[265] This enables cruise line operators to identify arriving individuals who may have warrants or have been identified as supporting terrorism.[266] Although electronic manifest reporting for cruise and freight vessels is required by the regulatory authority, the provisions of Title 19 specifically exempt ferries transitioning between countries from this process and level of scrutiny.[267]

3. The Science of Behavioral Recognition

Tel Aviv's Ben Gurion International Airport is often considered one of the safest in the world, primarily because of its enhanced security practices and procedures.[268] The airport has relied on a host of fundamental security processes with a multi-layered approach, which has proven enormously effective. However, the capstone of Israel's aviation security program is the profiling system and behavioral recognition assessment that each passenger is subjected to before a flight to identify "characteristics" of nefarious intent.[269] Faces, body language, and speech are studied by trained analysts in a scientifically proven technique called "behavioral detection" or "behavioral recognition." All passengers are subjected to an individual security threat assessment at the queue for the check-in desk, where suspicious or abnormal behavior results in additional screening or

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[264] Waldron and Dyer, "Electronic Paper Shuffle."

[265] Electronic Passenger and Crew Arrival Manifests, 19 C.F.R. § 4.7b (2012), Krouse and Elias, *Terrorist Watchlist Checks and Air Passenger Prescreening*; and Waldron and Dyer, "Electronic Paper Shuffle."

[266] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*.

[267] Waldron and Dyer, "Electronic Paper Shuffle."

[268] Oren Liebermann, "In Airport Security, Many Say Ben Gurion in Israel Is the Safest," CNN, May 28, 2016, https://www.cnn.com/travel/article/ben-guron-worlds=dsafest-airport-tel-aviv/index.html.

[269] Arie Egozi, "How Israel Deals with Threats to Aviation Security," Flight Global, September 6, 2011, https://www.flightglobal.com/news/articles/how-israel-deals-with-threats-to-aviation-security-361572/.

scrutiny.[270] Travelers are split into two groups before they even see an X-ray machine. All passengers speak to a polyglot (multi-lingual) agent, the majority of whom are female. The agent asks questions and inquires about why the passenger is traveling, noting behaviors indicative of nefarious intent or activity nervousness, inconsistent statements, or deceptive responses.[271]

Additionally, trained personnel walk randomly through the terminal and question any persons who appear nervous or suspicious or who exhibit non-baseline behavior. The agents and their techniques are on the front lines of Israel's aviation security program, and they need to be. According to Shmuel Zakay, the managing director of Ben Gurion, "This airport is under constant threat."[272] Agents must be prepared to address it, and studying human behavior has proven to be the most effective process. Rolf Ron, former director of security at Ben Gurion, suggests that the strength of Israeli security protocols is the focus on individual mannerisms and characteristics that can be identified in individuals with nefarious intent: "There is a lot to be said for emphasizing eye contact, behavioral cues, and instinct when addressing the subject of airport security."[273] Behavioral recognition is proven science, utilized by Israeli aviation security forces for decades to identify persons with possible nefarious intent through characteristics that physically manifest in their actions and conversations. The Israeli system strikes a balance between screening people and screening things by concentrating on the human element.

For nearly 10 years, the TSA has utilized a form of behavioral recognition at U.S. airports, patterned after the Israeli system. At the time of its integration into the TSA's security protocols, Representative John Mica, chairman of the House Aviation Subcommittee, suggested there is value in human behavior pattern recognition in

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[270] David Blair, "Israel's Risk Based Approach to Airport Security Impossible for European Airports," *Telegraph*, May 26, 2016, https://www.telegraph.co.uk/news/2016/05/20/israels-risk-based-approach-to-airport-security-impossible-for-e/.

[271] Brian Palmer, "What's So Great about Israeli Security?" Slate, November 18, 2011, http://www.slate.com/articles/news_and_politics/explainer/2011/01/whats_so_great_about_israeli_security.html.

[272] Blair, "Israel's Risk Based Approach to Airport Security."

[273] David Wagner, "What Israeli Airport Security Can Teach the World," *HuffPost* (blog), March 17, 2014, https://www.huffingtonpost.com/daniel-wagner/what-israeli-airport-secu_b_4978149.html.

augmenting aviation security. In his opinion, "Too much attention has been focused on keeping items, rather than potentially dangerous people, off of planes."[274] However, between the time of inception and 2018, there appears to have been a complete loss in confidence in the program, and the TSA behavioral detection officer (BDO) workforce has dwindled. Between 2013 and 2015, the TSA employed 3,130 BDOs, but by 2016, there were only 2,660 at 87 airports. By April 2017, the TSA reported it had converted its BDOs back to the screening workforce, labeling them transportation security officers with behavioral detection capabilities.[275]

Why did the TSA adopt behavioral recognition, incorporate it, and abandon it, all within a decade? The American Civil Liberties Union (ACLU) was the catalyst for the abandoning of the TSA's behavioral recognition program. Even from its inception in 2004, Barry Steinhardt, director of the ACLU's Technology and Privacy Program, questioned behavioral recognition as it was unveiled at Boston Logan: "Not every police or security officer who is going to be heading up a local operation is going to be sensitive to the racial implications of the project, especially as you roll it out nationwide."[276] When a member of the ACLU who was black was stopped and questioned by a BDO officer, the ACLU immediately claimed it was racial profiling.

As the TSA attempted to embrace and adapt its workforce to accepting behavioral recognition, it continued to be criticized and critiqued by the public. But it was the ACLU that remained the TSA's hardest and consistent adversary. Although it had opposed behavioral recognition since the beginning as a tool for racial profiling, only within the past few years did the ACLU fully dismantle the program before the public's eyes. The ACLU obtained thousands of documents from the TSA through a Freedom of Information Act request submitted in conjunction with a June 2015 civil lawsuit. The ACLU took the information and used it to "expose" the program to the public, generating considerable

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[274] Leslie Miller, "Airport Marshals Eye Odd Behaviors," CBS News, April 26, 2004, https://www.cbsnews.com/news/airport-mrashals-eye-od-behaviors/.

[275] Anne Richard, *Aviation Security: TSA Does Not Have Valid Evidence Supporting Most of the Required Behavioral Indicators Used in Its Behavioral Detection Activities*, GAO-17-608R (Washington, DC: Government Accountability Office, 2017), 12, https://www.gao.gov/products/GAO-17-608R.

[276] Miller, "Airport Marshals Eye Odd Behaviors."

negative publicity. The ACLU submitted a 28-page report based on the 12,000 documents it had received, which painted a negative and disparaging picture of the behavioral recognition program, concluding that "the TSA repeatedly overstated the scientific validity of behavior detection in communications with members of Congress and the Government Accountability Office."[277] The report concludes, "The chances of spotting deceptive behavior was about in line with flipping a coin," and behavioral recognition had led to racial profiling. The ACLU also widely reported that the expense to train and deploy 3,000 detection officers at 176 airports nationwide over a 10-year period was $1.5 billion.[278] The TSA has very few arrests related to terrorism to show for it as the BDOs primarily identified persons with weapons or narcotics or the occasional victim of human trafficking. "It doesn't seem like a lot of arrests, given how easy it is to arrest someone. It's a waste of law enforcement resources on a completely unproven program," stated Barry Steinhardt, head of the ACLU's Technology and Liberty Program.[279]

In his first state of the TSA address, Administrator David Pekoske directed the agency to adapt its methodologies to reflect shifts in terrorist tactics: "We face ambitious adversaries who are continually looking for a point of attack and waiting for their opportunity. Our job is to make sure they never have that opportunity."[280] Pekoske is shifting the security focus toward the less-secure areas of the airport to address changing threats such as active shooters or vehicles being used as ramming weapons to conduct terrorist attacks. Moreover, airports have begun installing automated security lanes to expedite the screening process, which further minimizes the contact that TSA agents have with passengers and their ability to conduct behavioral recognition.[281]

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[277] David Kravets, "TSA Knows Its Airport Behavior Detection Program Is Ineffective," Ars Technica, February 9, 2017, https://arstechnica.com/tech-policy/2017/02/tsa-knows-its-airport-behavior-detection-program-is-ineffective/.

[278] Kravets.

[279] Kravets.

[280] Jessica Davis, "TSA chief Says Agency Must Adapt to Changing Security Threats," *Security Today*, March 9, 2018, https://securitytoday.com/articles/2018/03/09/tsa-adapts.aspx?admgarea=ht.airport.

[281] Jessica Davis, "Automated Screening Lanes Installed at Some LAX Security Checkpoints," *Security Today*, April 5, 2018, https://securitytoday.com/articles/2018/04/05/automated-screening-lanes-installed-at-some-lax-security-checkpoints.aspx.

4. Federal Air Marshals and Quiet Skies

Federal air marshals (FAMs) are armed, plain-clothed TSA law enforcement agents who are assigned to U.S.-based commercial aircraft. Their mission is to protect the safety of the crew and passengers from criminal and terrorist acts.[282] FAMs accomplish this by blending in with other passengers aboard airplanes. They rely heavily on their training, which includes standard and enhanced law enforcement and covert operation techniques.[283] In recent months, a TSA initiative called the Quiet Skies Program has come to light, revealing that FAMs have been participating in a covert program to glean intelligence from passengers. Quiet Skies involves air marshals following U.S. citizens and collecting information in airports and on planes.[284] All U.S. citizens who enter the country after foreign travel or passengers who meet certain investigative criteria or who affiliate with someone on a watch list are all considered for surveillance under Quiet Skies.[285]

According to the TSA, the Quiet Skies program may also identify potential terrorists through interactions with persons under surveillance. Passengers entering the United States through CBP are analyzed with the use of an algorithm that examines specific criteria such as travel patterns, associations, and current intelligence.[286] DHS lawyers and analysts examine those identified for consideration and determine whether their behaviors qualify them for inclusion.[287] The TSA then places FAMs on flights that Quiet Skies selectees are on, so they can watch for behaviors and physical manifestations that otherwise

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[282] Shane Croucher, "Minneapolis Flight Crew Declared Emergency Because a Passenger Had a Gun. He Was an Air Marshal," *Newsweek*, August 21, 2018, https://www.newsweek.com/minneapolis-airport-flight-emergency-passenger-gun-air-marshal-1083285.

[283] "Federal Air Marshal Service and Law Enforcement," Transportation Security Administration, accessed December 6, 2018, https://www.tsa.gov/about/jobs-at-tsa/federal-air-marshal-service-and-law-enforcement.

[284] Jana Winter, "What You Need to Know about the 'Quiet Skies' Program," *Boston Globe*, August 3, 2018, https://www.bostonglobe.com/news/nation/2018/08/03/what-you-need-know-about-quiet-skies-program/XnFsW50Xh8lsAVdIqzqE1H/story.html.

[285] Winter.

[286] "Don't Ground TSA's Quiet Skies Program," *USA Today*, August 12, 2018, https://www.usatoday.com/story/opinion/2018/08/12/dont-ground-tsa-quiet-skies-airport-security-program-editorials-debates/966800002/.

[287] "Don't Ground TSA's Quiet Skies Program."

would be considered "innocuous."[288] FAMs are required to submit reports on their observations, which are examined by analysts.[289] The concept behind this program is to develop a comprehensive database of persons who might be engaged in nefarious activity and to ensure that air marshals are on their flights, keeping them under close watch.

Supporters of Quiet Skies have suggested that this is not an unusual law enforcement tactic, comparing it to a police officer completing a suspicious activity report and submitting it to the FBI or a fusion center for investigation and analysis.[290] In the past, the TSA traditionally placed air marshals on flights that intelligence indicated might be at a higher risk of attack or on a plane when a person on a terrorist watch list or the subject of an FBI investigation is on board.[291] Quiet Skies is an extension of an existing program that relies on intelligence and behavioral detection indices to ensure that individuals believed to be more prone to participate in dangerous acts receive extra scrutiny to protect the traveling public.

Quiet Skies is not without critics. When the program became public following a report by the *Boston Globe* in July 2018, there were concerns about its effectiveness and necessity.[292] Air marshals who spoke with the *Globe* expressed their frustration at having to conduct surveillance on air travelers because of their mannerisms. "What we are doing is troubling and raising some serious questions as to the validity and legality of what we are doing and how we are doing it," an air marshal informed the *Globe*.[293] Hugh Handeyside, a senior staff attorney with the ACLU, told the *Globe* that "these revelations raised profound concerns about whether TSA is conducting pervasive surveillance of

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[288] James Puckett, "Homeland Security Is Reviewing TSA's 'Quiet Skies' Surveillance Program," Points Guy, August 15, 2018, https://thepointsguy.com/news/homeland-security-reviewing-quiet-skies/.

[289] Winter, "What You Need to Know."

[290] John Mueller and Mark Stewart, "The TSA Has a New Program That Could Spy on You. It's a Massive Waste of Money," Vox, August 6, 2018, https://www.vox.com/first-person/2018/8/4/17649222/tsa-quiet-skies-program.

[291] Puckett, "Reviewing TSA's 'Quiet Skies' Surveillance Program."

[292] Erik Mack, "Boston Globe: TSA's 'Quiet Skies' Tracks US Citizens Like Terrorists," Newsmax, July 29, 2018, https://www.newsmax.com/newsfront/tsa-quiet-skies-track-u-s-citizens/2018/07/29/id/874370/.

[293] Mack.

traveler's without any suspicion of actual wrongdoing." TSA Administrator Pekoske defends the program and praises the merits of Quiet Skies, stating that it helps protect passengers from terrorist attacks: "I think it's very important to add to in flight security. Essentially, what Quiet Skies does is it allows us to look at the patterns of travel and, based on patterns of travel, assess . . . what kind of risk that passenger might present."[294] Pekoske has also stated that while the TSA has long required passengers with suspicious travel patterns to undergo secondary screening at airports, Quiet Skies introduces an extra level of security by placing air marshals on flights to mitigate the potential for an attack.[295]

D. CONCLUSION

The U.S. ferry system has not initiated processes that control the transport of firearms while other systems have. This has demonstrated that conveyance operators that carry the public recognize the importance of taking measures to minimize passenger access to firearms while in transit. Many proactive security measures have been implemented throughout the various public transportation domains. These processes have focused on the individual, whether it be a traveler or a member of the workforce, not on a systemic operational change. The results have been a more engaged workforce who takes greater ownership and commitment to the security of their venues.

This thesis concludes in the next chapter with a series of recommendations to further examine and modify these programs, so they may be applied to maritime ferry security, and provides a framework that transfers traditional law enforcement and military roles to a civilian workforce.

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[294] Puckett, "Reviewing TSA's 'Quiet Skies' Surveillance Program."

[295] Puckett.

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V. RECOMMENDATIONS AND CONCLUSIONS

> Overall, the United States Ferry System is regarded as a relatively high-risk and high-probability target facing unspecified threats of unknown intensity and timing. In the words of a New York City ferry system employee, "Ferries are perfect targets and perfect security challenges."
>
> —John Balog et al.[296]

The U.S. ferry system is one of the few remaining transportation sectors that has not been hardened against a mass-casualty attack caused by an active-shooter event. As discussed in this thesis, U.S. maritime security practices appear to be insufficient to address the increasing trend of mass-casualty situations created by lone armed assailants on a vessel. Recognizing there are potential vulnerabilities should this status quo be maintained, this thesis offers recommendations that could be further developed and modified to address mass-casualty incidents. This thesis examined in detail the design, implementation, and effectiveness of security measures by the USCG, the TSA, and CBP that could be realistically applied to bolster ferry security. Applicable best practices from these three government agencies were analyzed for challenges, costs, and maritime feasibility.

A recurring theme identified in all of the security measures is that DHS employs a strategic security model that primarily uses federal, state, and local law enforcement and military assets. The data and information studied in this thesis support the position that unexplored alternatives could mitigate potential attacks that result in substantial loss of life. Maritime security dealing specifically with ferry transit is narrow and limited in scope in that it ignores an obvious force multiplier through its failure to engage and utilize the large maritime civilian workforce. Therefore, this thesis presents for consideration the recommendation that certain traditional law enforcement and military roles be transferred to the civilian ferry workforce through a controlled and collaborative strategy, which would greatly enhance the security of the United States.

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[296] Balog et al., *Public Transportation Emergency Mobilization*, 20–25.

A. DISCUSSION AND RECOMMENDATIONS

Ferries present a situation in which a large concentration of unscreened people in a confined space could easily possess firearms on a vessel at sea, thereby providing a potential shooter an opportunity to inflict the maximum number of casualties within a short period. Of the three major public transportation domains in the United States, only ferry systems have yet to establish a dedicated process for transporting firearms. For a myriad assortment of reasons, as discussed in this thesis, it is neither prudent nor viable to require that passengers secure their firearms in locked carrying cases while traveling on ferries. This situation seems to indicate a vulnerability. The intelligence community has assessed that soft targets and crowded places, such as ferry systems, will remain attractive targets to various threat actors and vulnerable to mass-casualty attacks into the foreseeable future unless security strategies change to address the current threat landscape and mass-casualty attack matrix.[297] DHS has identified public places of mass gatherings such as transportation systems as those most vulnerable to active-shooter events.[298] This is based on factors that include access to large numbers of people, limited security measures, and the capability of persons with nefarious intent to exploit the inherent vulnerabilities of the U.S. public transportation system.[299] Taken in totality, these circumstances clearly present a potentially dangerous condition for the U.S. ferry system.

DHS supports a strategic security model that encourages a shared responsibility among agencies with security responsibilities, private entities, and operators that provide public transportation services. DHS has taken the approach that this objective can only be achieved if all entities—owners and operators; private industry; state, local, and tribal partners; and the federal government—share mission responsibilities including grant funding.[300] As threats to public transportation continue to emerge and adapt to changing security processes, agencies and stakeholders must also be prepared to modify their

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[297] Department of Homeland Security, *Soft Targets and Crowded Places*.

[298] Department of Homeland Security.

[299] Department of Homeland Security, 4.

[300] Department of Homeland Security, iv, 2.

methodologies and strategies to mitigate their vulnerabilities.[301] To truly embrace the tenets of protection and preparedness, each transportation agency should devise tactics that allow them to respond to incidents involving sole actors utilizing conventional attack methods such as introducing firearms into terminals or on vessels that are underway.

As discussed in Chapter III, under the provisions of the Maritime Transportation Security Act (MTSA), U.S. vessels and facilities are required to have viable security plans. Under MTSA, owners and operators of ferry systems establish security processes that include identifying employees from their civilian workforce who have access to federal officials and agencies and who can oversee the security of vessels and facilities. Each ferry company delegates vessel security duties to a company security officer (CSO) and to a crewmember serving on each ship designated as the vessel security officer (VSO).[302] The CSO is responsible for ascertaining how the company will screen passengers, vehicles, and cargo and developing security protocols that include establishing restricted areas and access-control mechanisms. The VSO ensures security incidents aboard vessels are addressed in accordance with the approved plans. Each USCG sector sponsors an Area Maritime Security Committee (AMSG), which assists the port captains with the implementation of the area maritime security plan. AMSCs also manage the DHS Port Security Grant Program. As established entities with subject-matter expertise and vast liaison capabilities, AMSCs could oversee a transition of roles to the civilian workforce.

By modifying MTSA to expand the VSO position from a singular to a plural role and marrying it with regulatory requirements and tactics that have been successfully initiated in other domains, the maritime transportation could employ the collective might of its vast workforce to increase security exponentially on vessels and at ferry terminals. Operating under the oversight of the AMSCs to ensure compliance with the roll-out of new regulations, this recommendation could both deter and mitigate the potential impact loss of a mass-casualty situation by utilizing a readily available resource—the maritime

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[301] Balog et al., *Public Transportation Emergency Mobilization*.

[302] Maritime Security: Vessels.

industry's civilian population. This section identifies viable alternatives that could be incorporated into ferry security based on existing programs.

1. Create Legislation that Authorizes a Federal Maritime Officer Position.

A viable option to counteract potential active-shooter situations would be to authorize civilian ferry personnel to become deputized as voluntary unpaid federal agents and enable them to carry firearms and utilize deadly force to address immediate threats to the safety and security of their vessels. Such an alternative could mitigate the unrestricted transporting of guns by passengers. It builds on the provisions established in MTSA for civilian personnel to serve as VSOs or CSOs but requires the creation of legislation. For clarity and discussion purposes, this position shall be identified as the *federal maritime officer*.

The following tenets, which have been identified in this thesis, serve as a strong argument for the creation of the federal maritime officer (FMO) position.

- The existing legislation for the TSA Federal Flight Deck Program provides legal guidance and precedence for the federal maritime officer position.

Legislation authorizing the deputizing and arming of civilian transportation operators in the United States has already been successfully enacted in the aviation community. Following 9/11, the Arming Pilots against Terrorism Act, part of the Homeland Security Act of 2002, directed the TSA to develop a program that armed pilots to protect the flight deck.[303] The FFDO program represents a unique approach to aviation security that does not rely on law enforcement ranks to protect an aircraft but rather taps into its substantial aviation workforce by authorizing commercial transportation operators to arm their civilian population. TSA trains and equips civilian pilots to serve as unpaid

[303] Department of Homeland Security, *Privacy Impact Assessment*; and "Federal Flight Deck Officer," Transportation Security Administration, accessed December 6, 2018, https://www.tsa.gov/about/federal-flight-deck-officer.

armed federal agents acting in a limited capacity.[304] This legislation, as written and enacted, could serve as guidance and establish precedence for the creation of FMO legislation that grants the authority to arm the maritime civilian workforce.

- TSA's existing FFDO program would serve as a strategic model for the federal maritime officer proposal.

Federal flight deck officers are sworn and deputized federal law enforcement officers who are authorized to be armed while in the normal course of operating commercial aircraft, providing an additional layer of security that mitigates the potential of hijackings at no additional cost.[305] The TSA operates the program to conduct a background check and to train and certify civilian pilots as FFDOs as well as issues their equipment. Once certified, individuals must pass a bi-annual firearms requalification and adhere to certain statutory limitations regarding their authority to transport and carry firearms. The possibility exists that the USCG could leverage the FFDO program as a conceptual model to develop a sea-based equivalent that arms certain positions within the vast maritime civilian workforce, hardening ferries to an extended active-shooter engagement while underway.

The proposal to arm ferry personnel as a method to mitigate potential active shooters under a federal maritime officer program would require a unique approach. Despite the similarities in addressing active-shooter situations on a plane in the sky and a boat on the sea, the TSA's FFDO program warns that they present very different scenarios and that any initiative would have to include a detailed conceptual model that clearly defines the rules of engagement on boats. Any training program prepared for ferries would have to be carefully tailored and crafted to incorporate the legal powers authorized. For example, FFDOs are not permitted to leave the cockpit and engage an active shooter because if they became incapacitated, control of the aircraft would be in question. Clearly, such a scenario must be considered in any water based application. Would the armed

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[304] Federal Flight Deck Officer Program.

[305] Transportation Security Administration, "Federal Flight Deck Officers."

federal maritime officer be authorized or encouraged to leave the pilot house, signal a distress call, shut down the engines, and engage an active shooter? Or would the federal maritime officer's duties dictate that he or she maintain command and control of the ferry without incapacitating an active shooter?

The Passenger Vessel Association (PVA) has identified concerns that would distance this organization from supporting legislation—such as the imposed requirement that FFDOs carry firearms on the aircraft. The PVA believes its member entities should have the legal option to apply for registration and participation in a federal maritime officer program.[306] As Edmund Welch, legislative director for the PVA has stated, not all passenger ferries would require this level of security, and this might not be suitable for all routes. The ferry owners and operators would be in the best position to decide whether arming their civilian workforce would be an option suitable for their operations.[307] Welch has suggested that the PVA would support legislation in which a company has the discretion to request participation in the FMO program but not if it were mandatorily imposed on them.[308]

The TSA's Office of Security Policy and Industry Engagement (OSPIE) regularly liaises with the PVA and has discussed the federal maritime officer proposal with the legislative director.[309] OSPIE management considers the FMO concept a unique proposal, worthy of consideration, but one for which the TSA has no jurisdictional authority to implement—nor would it be suited to serve as the lead entity for program development. Steven E. Froehlich, the industry engagement maritime manager for OSPIE, has suggested that the TSA could assist the USCG in leveraging the FFDO program as a conceptual model in developing the FMO position and its pilot program.

The TSA's approach to protecting aviation by arming a civilian workforce appears to be a suitable model for study due to the similarities in operations, program structure,

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[306] Welch, personal communication.

[307] Welch.

[308] Welch.

[309] Froehlich, personal communication.

financial feasibility, and relative ease of implementation. A government-approved comparative analysis would need to be conducted to determine whether the TSA's approach represents viable alternatives for maritime application for ferry security.

- The federal maritime officer program would address transit through different jurisdictional waters.

To overcome the jurisdictional challenges and ensure the protection of the ferry's passengers and crew, the proposed FMO program would appropriately be overseen by the USCG and could utilize the FFDO program operated by the TSA as an analytical model to develop a similar program for the maritime domain. Any state law regarding the possession of firearms that may be inconsistent with the FFDO program is preempted by federal law. The FMO initiative proposes creating new legislation that would establish training and background standards for civilian ferry personnel, authorizing them to be armed with a handgun while on the ferry and in the routine performance of their duties and responsibilities. Establishing a national proposal would render moot the current challenges involving the transition between multiple jurisdictional regions and states by armed ferry personnel as well as alleviate issues related to unintentional concerns over territorial interdictions. A deputized federal agent would be authorized to carry a firearm while on a vessel in any U.S. state or territory.

The one legal challenge that might require resolution beyond the scope of this thesis pertains to some of the larger ferry systems in the United States that involve the transition of passengers and cargo between countries and through international waters.[310] For example, the Washington State Ferry System and the Alaska Marine Highway System operate in foreign (Canadian) waters and dock at foreign ports. Could a civilian citizen deputized by the U.S. government to carry a firearm remain in that capacity legally if he or she remains on the ferry, which is considered U.S. territory, while in foreign waters and docking at foreign ports? These scenarios represent issues that must be examined prior to the development of legislation. A study into international treatise considerations would

[310] Welch, personal communication.

have to be conducted to ascertain whether this is viable and whether agreements with these nations would need to be established.

2. The Safe Seas Screening Watch Program for U.S. Ferry Systems

The Transportation Research Board of the National Academies reports that after conducting an assessment of the Washington State Ferry System and the various agencies with security responsibilities, the most broadly applicable and prudent measures to mitigate potential attacks were human observations and video monitoring.[311] Employees are the first line of defense against a criminal mass-casualty attack, and as such, they must be well-trained professionals and held to a standard of excellence.[312] DHS has concluded that an "informed and empowered public is the greatest ally to enhance the security of soft targets and crowded places."[313] According to DHS's *Soft Targets and Crowded Places Security Plan Overview*, individuals working in these locations are often in the best position to help detect and prevent possible attacks by an active shooter.[314]

DHS manages a number of public awareness campaigns and outreach efforts, which include the widely known and utilized "If you see something, say something" slogan. This popular phrase has its origins in New York City's transit system. According to O'Haver, this was one of many phrases used by the Metropolitan Transportation Authority (MTA), designed to expand its security awareness posture by encouraging employees and passengers to report observations they considered unusual or suspicious.[315] Other MTA slogans have included "be suspicious of things that look suspicious" and "if you see a package without a person, don't keep it to yourself."[316] After these phrases went into use

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[311] Balog et al., *Public Transportation Emergency Mobilization*, 3.

[312] Department of Homeland Security, *Soft Targets and Crowded Places*, 3.

[313] Department of Homeland Security, 1.

[314] Department of Homeland Security, 2.

[315] Hanson O'Haver, "How 'If You See Something, Say Something' Became Our National Motto," *Washington Post*, September 23, 2016, https://www.washingtonpost.com/posteverything/wp/2016/09/23/how-if-you-see-something-say-something-became-our-national-motto/?utm_term=.7ce17ce9c818.

[316] O'Haver.

in 2002, the MTA experienced a rise in suspicious incident reporting, from 814 in 2002 to 37,614 in 2006.[317]

Clearly, "If you see something, say something" has resonated with the national conscience and has staying power, as it has since been adopted for use by DHS, the TSA, Amtrak, and cities like Chicago, San Francisco, and Melbourne, Australia.[318] This simple phrase is more than a motto, but it has become a mindset, encouraging people to report suspicious behavior to state and local officials and law enforcement.[319] DHS strongly encourages this practice, and the USCG provides direct guidance to maritime civilian employees to look for and report suspicious behavior in and around passenger terminals, ferries, and day cruise lines.[320] The USCG defines suspicious behavior as "displayed behavior that is out of place or out of character with the environment. Behavior is the key enabler. What activity is the person (s) engaging in that is out of place with the immediate environment (their surroundings)? If the activity is out of character, then that activity may be considered suspicious."[321] The USCG directs the maritime civilian workforce to "trust your intuition."[322] It then directs maritime employees to report suspicious activity to the National Response Center or local police.

To truly be effective in identifying suspicious behavior, these employees must have a basic knowledge, an understanding of how to identify baseline behaviors for their environment, and the ability to recognize characteristics and anomalies that might indicate nefarious intent. These employees serve as the first line of defense in mitigating potential mass-casualty incidents by identifying those who might be in the stages of preparing for an attack. This thesis has discussed the benefits of behavioral recognition in protecting

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317 O'Haver.

318 O'Haver.

319 Department of Homeland Security, *Soft Targets and Crowded Places*, 7.

320 "America's Waterway Watch: Suspicious Activity," United States Coast Guard, accessed October 22, 2018, https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Port-and-Facility-Compliance-CG-FAC/Americas-Waterway-Watch/Suspicious-Activity/.

321 United States Coast Guard, "America's Waterway Watch."

322 United States Coast Guard.

aviation transportation and the training provided to the TSA workforce. Although these TSA employees were not sworn law enforcement officers, they received training on behavioral indicators that, if observed, would warrant law enforcement engagement. Chapter IV examined the various intelligence databases available to law enforcement to help identify individuals who might pose a threat to a transportation conveyance. These methodologies serve as the basis for the recommendation to create the *Safe Seas Screening Watch Program*.

The Safe Seas Screening Watch Program initiative takes a two-pronged approach toward providing the maritime civilian workforce the tools it needs to identify and isolate passengers that might present a threat to a ferry.

- DHS should train the civilian maritime workforce in behavioral recognition techniques.

Active shooters may display discernable behaviors and physical manifestations if one knows what to look for. In an interview with the *Washington Post*, Supervisory Special Agent Andre Simons of the FBI's Behavioral Analysis Unit reported that active shooters spend a week or longer planning an attack.[323] According to the USCG, ferry personnel and crew members with security-related duties on the vessel have the most important role in that they serve as the "eyes and ears" of a ferry because they are expected to detect a potential security incident and take appropriate action to prevent it from escalating.[324] The USCG directs the civilian maritime population to utilize its "expertise in recognizing suspicious activity" as derived from a familiarity with the workplace environment.[325] As

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[323] Mark Berman, "Active Shooters Usually Get Their Guns Legally and Then Target Specific Victims, FBI Says," *Washington Post*, June 20, 2018, https://www.washingtonpost.com/news/post-nation/wp/2018/ 06/20/active-shooters-usually-get-their-guns-legally-and-then-target-specific-victims-fbi-says/?utm_term=.125cee510369.

[324] Maritime Security: Vessels; and United States Coast Guard, *Guidance for Verification of Vessel Security Plans on Domestic Vessels in Accordance with the Regulations Mandated by the Maritime Transportation Security Act (MTSA) of 2002 and International Ship & Port Facility Security (ISPS) Code*, NVIC 04-03 (Washington, DC: DHS, December 2003), http://www.dco.uscg.mil/Our-Organization/NVIC/ Year/2000/.

[325] United States Coast Guard, "America's Waterway Watch."

discussed in this thesis, ferry passengers may purchase boarding passes at ticket windows, vending machines, or on board the vessels themselves. Ferry personnel are required to monitor the public areas where passengers congregate prior to boarding.[326] If active shooters or persons engaged in criminal actions are known to display certain behaviors and physical manifestations in the planning phases of an attack, it would be prudent to provide the maritime civilian population with the training to identify and recognize these signs before an event is initiated, either on the vessel or at the terminal.

Governments have a role in providing the industry with the means and support to meet the highest security standards necessary to prevent an active-shooter situation.[327] DHS provides pre-event training to stakeholders involved with a high volume of persons in transportation modes on a range of topics from incident management to active-shooter prevention and response.[328] The TSA reports that its objectives include creating and distributing security courses for civilian passenger vessel employees, with topics that focus on improving employees' security awareness and increasing the effectiveness of their ability to identify and report suspicious items and persons.[329] The TSA established its behavioral recognition program in 2006 with a nationwide deployment of dedicated behavioral detection officers. As indicated in Chapter IV, the TSA has phased out sections of this program in favor of new technological scanning devices that are available at airports but not yet utilized for ferry travel. The TSA's Specialized Screening Operations Branch, the Threat Assessment Division, offers a behavioral detection and analysis program for law enforcement.[330] This two-day course provides basic and behavioral recognition training to foreign governments and security stakeholders to build a behavioral detection capability and strengthen domestic programs. The program provides training on baseline and

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[326] Balog et al., *Public Transportation Emergency Mobilization*, 36.

[327] Department of Homeland Security, *Soft Targets and Crowded Places*, 3.

[328] Department of Homeland Security, 7.

[329] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 27.

[330] Tayla Balkovic, (Threat Assessment Division, Transportation Security Administration), personal communication, October 12, 2017.

behavior training, verbal engagement, and resolution conversations.[331] The USCG and the TSA should collaborate on the creation of a specific program that provides behavioral recognition training for maritime personnel and incorporates it into each port's maritime security plan.

4. Enable the maritime civilian workforce to check passenger's names direct against watch lists.

Building on the recommendation that would provide ferry personnel with the necessary training to recognize suspicious behaviors, the Safe Seas Screening Watch Program recommends that civilian ferry personnel be provided with the capability of verifying a passenger's name and watch list status through direct contact with the Terrorist Screening Center and requesting a check on unclassified records in the Terrorist Screening Database.

Currently, when ferry personnel observe suspicious behavior, they are directed to call the National Response Center (NRC) at 1-877-24WATCH or 9-1-1 or to radio the Coast Guard on Channel 16. [332] However, the NRC was not designed with the objective of addressing suspicious persons. The NRC is staffed 24 hours per day by the USCG with the objective of coordinating a large-scale federal response to an environmental accident or incident anywhere in the United States.[333] The NRC is not designated to address suspicious incident reports involving a potential security threat by an individual to a vessel or facility.[334] Of additional note, employees who call the NRC about suspicious activities or persons often do not provide names, as they are not required to maintain passenger manifests, nor or they authorized to challenge passengers or request their identification except under certain circumstances. This process is insufficient and unlikely to offer ferry

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[331] Balkovic.

[332] United States Coast Guard, "America's Waterway Watch."

[333] "National Response Center," Environmental Protection Agency, accessed October 25, 2018, https://www.epa.gov/emergency-response/national-response-center.

[334] "National Response Center Coast Guard in Washington, DC," Military Bases, accessed October 25, 2018, https://militarybases.com/washington-dc/response-center/.

personnel the ability to make timely decisions about whether they should restrict a passenger from boarding.

USCG guidance permits ferry operators to enact measures that protect passengers with the provision that they do not unduly burden the public in its use of the conveyance.[335] When under the heightened conditions of MARSEC Level 1, ferry facility owners and operators are authorized under 33 C.F.R. § 105.255 (f) to examine the identification of vessel passengers. Under all other MARSEC levels, screening methods approved by the USCG must be sufficient so as to mitigate risk.[336] This directive does not specify that civilian ferry personnel can verify the identification of passengers boarding their vessel, so many companies do not. Ferry operators have the stated authority under MTSA to conduct screenings of passengers, but the ability to verify passenger identification is not clearly defined in any code. The USCG should clearly expand and provide clarification on the directions for civilian maritime personnel, so their "screening" of passengers constitutes an authorized document inspection to verify the identification of the person boarding the vessel.

Enabling ferry owners and operators to verify the identification of passengers whose actions and behaviors appear suspicious and then to follow up by conducting a name check with a designated law enforcement watch center represents the second prong of the Safe Seas Screening Watch Program recommendation. As discussed in Chapter IV, Section C, there already are watch centers in place that have the ability to conduct an instantaneous check of a passenger's name for a nexus to terrorism or a threat to the public. CBP's reservation systems, the National Targeting Center (NTC), and the reservation systems used by the TSA are examples that offer the same benefits to maritime operators. Ferry operators have no requirements to establish passenger manifest records or conduct checks of the names of the persons who will be traveling on their vessels. The support structure is already available through the NTC or the Terrorist Screening Center (TSC) to conduct a name check on suspicious passengers. It would be operationally prudent from a security

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[335] Area Maritime Security; and Thomas, "Reporting Suspicious Activity and Breaches of Security."

[336] Caldwell, Hoff, and Bachman, *Ferry Security Measures Have Been Implemented.*

perspective to enable ferry owners and operators to have a designated process for suspicious incident and anomaly reporting. A consistent process that enables this reporting to a law enforcement center such as the NTC or the TSC incorporates a proactive maritime security measure currently conducted in other public transportation domains.

It is interesting to note that under the provisions of MTSA and the Security and Accountability for Every Port Act of 2006, DHS is required to check newly hired port employees to ascertain whether their names appear on one of the watch lists.[337] Additionally, under MTSA, ferry operators must arrange security activities including access control and security training for employees to prevent an attack through threat identification and mitigation.[338] It could be beneficial to establish a process whereby U.S. ferry operators submit the names of their passengers to a dedicated watch center to ascertain whether they appear on federal watch lists. This could be a routine process, or it could even be considered for a pilot program in which passenger ferry manifests are checked on an unpredictable, random basis to evaluate its effectiveness in identifying persons of interest on vessels. Even CBP program officials have suggested there could be a screening security benefit if the identities of cruise line passengers could be checked in a manner similar to passengers on airlines.[339]

There is precedence to marry the reservation system of a civilian-operated carrier with a federal agency's watch-listing capabilities. Before the TSA assumed the responsibility of checking the names of aviation passengers, the Federal Aviation Administration had been developing a name check system in partnership with air carriers, a process that transitioned to full federal control after the 9/11 attacks.[340] Krouse and Elias report in a Congressional Research Service study that the Terrorist Screening Center is a

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[337] Government Accountability Office, *Maritime Security: Federal Efforts Needed to Address Challenges in Preventing and Responding to Terrorist Attacks on Energy Commodity Tankers*, GAO 08-141 (Washington, DC: GAO, December 2007), 24; and SAFE Act of 2006, Pub. L. No. 109-347, 120 Stat. 1884 (2006).

[338] Government Accountability Office, *Maritime Security: Coast Guard Inspectors Identify and Correct Facility Deficiencies, but More Analysis Needed of Program Staffing, Practices, and Data*, GAO 08-12 (Washington, DC: GAO, February 2008), 7.

[339] Caldwell, Hoff, and Bachman, *Varied Actions Taken to Enhance Cruise Ship Security*, 36.

[340] Krouse and Elias, *Terrorist Watchlist Checks and Air Passenger Prescreening*, 13.

readily available resource for many entities and offers assistance in identifying known or suspected terrorist operatives or supporters.[341] The air marshal service ensures that persons of interest receive additional covert attention during their trips on planes through the Quiet Skies Program, as discussed in Chapter IV. A version of this process, a "Quiet Seas" program—whereby USCG law enforcement personnel serve as boarding parties when passengers are identified on watch lists, but denial of boarding is inappropriate—could be examined for further discussion. However, the first step must be to develop a process that provides ferry operators with the capability of submitting reservations and passenger manifests to a designated watch-listing entity for assessment, either as a regular operational function or on a random basis. Right now, this capability does not exist.

The nationwide suspicious activity reporting initiative offers the service of providing both law enforcement and private sector security partners with information gleaned from suspicious activity reports through a shared collaborative strategy that greatly enhances intelligence.[342] An expansion of this program could ensure an additional layer of protection for the safety and security of a ferry vessel, its passengers, and crew. Establishing a recognized behavioral recognition program and providing maritime employees with the capability of submitting the names of passengers or a vessel manifest for assessment would be a natural progression in ferry security.

3. DHS must equip the maritime workforce with a radiation detection capability.

Maritime security strategies have actively engaged in preventing terrorist operatives and persons with nefarious intentions from introducing improvised nuclear explosive devices or radiological disposal devices, or dirty bombs, into highly populated areas, which include transportation systems.[343] Since September 11, 2001, federal agencies have taken proactive measures and implemented many programs to secure America's ports from dirty bombs by concentrating efforts on the screening of high-volume

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[341] Krouse and Elias, 4.

[342] Department of Homeland Security, *Soft Targets and Crowded Places*, 8.

[343] Nuclear Regulatory Commission, "Special Nuclear Material."

cargo and freight to protect against terrorists introducing nuclear or radiological material to the homeland.

Some of the larger ferry systems have installed high-yield monitoring devices to scan vehicles. For example, in 2008, CBP began to operate radiation-detecting sensors to screen vehicles and passengers in lanes at the international ferry terminal in Port Angeles, Washington, whose vessels travel to and from Canada. If the larger-yield units detect radiation, CBP agents use handheld units to find the exact location of the suspect material.[344] While this allows for a high level of screening at ferry ports with an international venue, domestic terminals do not receive a similar level of radiation screening. A 2010 Government Accountability Office (GAO) study by Caldwell, Quinlan, and Bachman validates many of the recommendations that have been included in this thesis, particularly focusing on the identified vulnerabilities of the U.S. maritime domain to weapons of mass destruction and improvised explosive devices.[345] The conclusions of several other studies by the GAO establish the finding that the USCG may have missed opportunities, including establishing vehicular screening requirements, for ferries. Ferry transportation screening tactics are limited to random and inconsistent law enforcement and military operations in which personnel equipped with detection equipment attempt to detect and mitigate the transportation of radiological material. This approach is narrow and limited in scope in that it accounts for the screening of a very small percentage of domestic ferry operations. However, there are alternatives that could be examined that involve utilizing the vast untapped resource in the maritime civilian population.

- Ferry terminals should have fixed radiation monitoring device capabilities.

With the new radiation sensor devices that are currently in development, it would be prudent to equip ferry operations with advanced screening apparatuses. The latest technological advancements in development would greatly augment radiation detection capabilities and serve as a force multiplier for maritime security. For example, Radiation

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[344] Nuclear Threat Initiative, "Radiation Sensors Deployed."

[345] Caldwell, Quinlan, and Bachman, *Vessel Tracking Systems Provide Key Information*.

Solutions, Incorporated, has developed a device that can scan all of the passengers and vehicles boarding a ferry for radiation signatures and ascertain whether a positive reading is caused by a person receiving medical treatments, an industrial device, or plutonium or uranium emissions associated with dirty bombs.[346] A screen can be set up in an off-site location for discrete monitoring, enabling an operator to notify authorities or request that a passenger be prohibited from boarding and divested of their property for inspection.

- DHS must equip all maritime personal with personal handheld radiation detection devices.

DHS has initiated a new nationwide program to provide all its employees who work in public transportation with the capability to detect radiological materials.[347] Law enforcement personnel routinely use these personal detectors to screen vehicles and passengers. This thesis recommends equipping all persons in both public service and private entities that operate in the maritime venue with personal radiation detection devices. Training and equipping civilian ferry personnel with some form of personal radiation detection devices (PRDDs) would greatly enhance America's capabilities in detecting and preventing radiological explosive devices from being introduced into maritime transportation systems. PRDDs are small, handheld devices that are capable of detecting and isolating gamma radiation sources, which indicate the presence of special nuclear material, the primary ingredient used in dirty bomb devices. PRDDs could take the form of a dedicated device or an app installed on a phone. They could augment radiation detection capabilities and serve as a force multiplier for maritime security, allowing law enforcement and military entities to concentrate their collective efforts on active-shooter mitigation strategies.

As with other DHS proposals to equip a civilian workforce with PRDDs, procedures would have to be devised to enable employees to seek technical assistance from

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[346] Radiation Solutions, "RS-700: Mobile Radiation Monitoring System" (fact sheet, 2007), http://www.radiationsolutions.ca/fileadmin/pdf/RS700_%28Final%29.pdf.

[347] Atherton, "A Wearable Radiation Detector."

subject-matter experts and summon law enforcement assistance.[348] It is expected that all DHS employees will eventually be equipped with devices, enabling them to ensure that nuclear devices are not secretly transported in areas like marine vessels, metro systems, or other public areas.[349] Establishing a procedure and civilian workforce to utilize PRDDs is merely a precursor to a practice that is due for implementation in the immediate future. Providing the vast maritime civilian workforce with personal radiation detection devices and establishing rules of engagement and alarm resolution would add an extra layer of transportation security to protect America's transportations systems from nuclear and radiological attacks.

Although there may be several options available for PRDDs, the current program for U.S. law enforcement might well have applicability to maritime personnel who hold a Transportation Worker Identification Credential (TWIC). Trooper First Class P. J. Conway is the Emergency Services Unit's radiation program manager for Connecticut, and he explained that as of 2018, several large-population police departments have been equipping law enforcement officers and public safety officials with PRDD through the Secure the Cities (STC) program.[350] Originally started in 2005 under a grant by DHS and the Domestic Nuclear Detection Office, STC started with the New York City Police Department. It has trained and equipped officers in the New York–New Jersey–Connecticut tristate region and has quickly expanded as a national program. Participants receive the same training and are issued identical models of PRDDs for uniformity of operations and approaches. TSA civilian employees are included in the STC program as participants for PRDD certification and training. An expansion of the STC program to TWIC-certified civilian employees, who would be issued personal radiation detectors, would incur no expense for operators.[351]

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[348] Mohana Raundranath, "DHS Prototypes Wearable Nuclear Detection Devices," Next Gov, August 22, 2016, http://www.nextgov.com/defense/2016/08/dhs-prototyping-wearable-nucleaur-detection-devices.

[349] Atherton, "A Wearable Radiation Detector."

[350] Patrick Conway (program manager, Emergency Services Unit, CT Mass Transit Unit), personal communication, July 7, 2017.

[351] "Counter Terrorism Initiatives," NYPD Shield, accessed July 8, 2017. http://www.nypdshoield.org.

B. AREAS FOR FUTURE STUDIES

This thesis has examined and recommended processes that are essentially already in use and adaptable for the maritime domain. Primarily, the recommendations call for the transition of certain law enforcement roles to a civilian workforce, which would allow for an expansion of protective security processes. However, this thesis acknowledges there are other methodologies and processes that could augment ferry security. Some of these areas for future study rely on technological advancements or require drastic improvements to infrastructure to represent viable recommendations. It would be prudent to briefly recognize these proposals as recommendations requiring future attention, study, and consideration.

1. License-Plate Scanning Equipment

Cameras throughout the world are currently used to scan, read, and record vehicle license plates on public roads and at private facilities and send this information to electronic storage. Fixed scanners and cameras are regularly used for purposes such as traffic control, law enforcement, and toll collection, access control in ports, parking lots, and entry to secured facilities controlled by automatic barrier vehicular gates.[352] Other purposes include freight truck weight screening and vehicular toll collection.[353]

License plate reader (LPR) technology has been in use since the 1990s, when new devices such as geographic information systems, global positioning systems, and cellular telephones were considered cutting-edge methods for collecting data.[354] These developed technologies have been incorporated into daily use and have a wide range of applications. Automatic license plate readers were common in England and became popular for use in U.S. law enforcement after 9/11.[355] Federal grants were offered to large law enforcement

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[352] Johanna Zmud et al., "License Plate Reader Technology: Transportation Uses and Privacy Risks" (Texas A&M Law School, 2016), 20, https://scholarship.law.tamu.edu/cgi/viewcontent.cgi?article=1920&context=facscholar.

[353] Zmud et al., 9.

[354] Zmud et al.

[355] Brian M. Rosenthal, "Police Cameras Busy Snapping License Plates," *Seattle Times*, August 3, 2013, https://www.seattletimes.com/seattle-news/police-cameras-busy-snapping-license-plates/.

agencies to test the technology for adoption in America, and the Seattle Police Department piloted the LPR system in 2006.[356] The program was such a success that it continued to expand, with seven million license plates recorded in 2012, identifying 426 stolen cars and 3,768 scofflaw vehicles.[357] Since the introduction of LPRs in the United States, the National Highway Traffic Safety Administration has provided hundreds of thousands of dollars to local and state law enforcement agencies to purchase LPR equipment for the purposes of enforcing highway and road safety.[358] Most states have now equipped their police fleets with mobile LPR technologies and scanners that are affixed to cruisers and can capture images while vehicles are in motion.[359] Under an expanded DHS grant program, many local police departments have now also equipped their fleets with automatic LPR systems.[360] A 2014 RAND report found that the incorporation of LPR technology by law enforcement agencies rose from 19 percent in 2007 to 71 percent in 2012.[361]

LPR systems use high-speed cameras to collect the image of license plates, thereby creating a digitized record that can be electronically stored and disseminated.[362] LPRs use analytical image software to collect and capture plate registration numbers, transfer them into code, and send the records to electronic databases, where they can be used for a host of purposes including toll billing as well as traffic and vehicular law enforcement.[363] The use of LPR technology by police departments and law enforcement has seen expansion beyond city streets and highways for traffic enforcement in recent years; it now lends an invaluable tool in criminal investigations.[364] These systems are used to expeditiously

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[356] Rosenthal.

[357] Rosenthal.

[358] Bennet Stein, "U.S. Department of Transportation Funding License Plate Readers, Documents Reveal," *Free Future* (blog), July 20, 2015, https://www.aclu.org/blog/privacy-technology/location-tracking/us-department-transportation.

[359] Stein.

[360] George Joseph, "What Are License-Plate Readers Good For?," City Lab, August 5, 2016, https://www.citylab.com/equity/2016/08/what-are-license-plate-readers-good-for/492083/.

[361] Joseph.

[362] Zmud et al., "License Plate Reader Technology."

[363] Zmud et al.

[364] Zmud et al.

compare legally captured plate numbers against those listed in a series of law enforcement "hot list" databases.[365] In addition to identifying stolen vehicles, DHS's LPR programs have the capability of identifying plate numbers associated with known or suspected terrorists, wanted persons, violent gang members or associates, sex offenders, and persons wanted on warrants.[366] Very recently, Immigration and Customs Enforcement (ICE) has obtained access to a nationwide license plate recognition database and used LPRs to support its investigations. ICE has the ability to enter the plates of wanted individuals and almost instantaneously receive an e-mail alert when law enforcement or other camera systems in the network capture the plate's image and trip the alert.[367]

LPR databases used for transportation are now commonly used by law enforcement to augment its public transportation security responsibilities.[368] The Washington State Police Department uses them on the Seattle–Bainbridge Island Ferry as an additional layer of security.[369] It has also incorporated the technology to assist with checking trucks at weigh stations and identifying cars with alerts on them.[370] These plate images, whether they are "hits" or not, are captured and often maintained for a period. Transportation agencies, such as the Seattle Police Department, not only regularly capture thousands of images of plates using LPRs but also store and maintain them in a secure database for three months in the event that they are needed to augment criminal investigations.[371]

2. Wireless Emergency Alerts

On Friday, January 7, 2017, Esteban Santiago-Ruiz retrieved a handgun and began shooting passengers at the Fort Lauderdale–Hollywood International Airport. Within 85

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[365] Joseph, "What Are License-Plate Readers Good For?"

[366] Joseph.

[367] Melissa Locker, "Big Brother ICE Is Going to Start Tracking License Plates," *Fast Company*, January 26, 2018, https://www.fastcompany.com/40522365/big-brother-ice-is-going-to-start-tracking-license-plates.

[368] Zmud et al.

[369] Rosenthal, "Police Cameras Busy Snapping License Plates."

[370] Rosenthal.

[371] Rosenthal.

seconds, he had fired 15 rounds, killing five passengers and wounding six, and surrendered to police when his gun was empty.[372] While the initial incident was resolved relatively quickly, in under two minutes, the airport itself was shut down for the entire day, impacting more than 500 employees and 10,000 customers—not to mention 20,000 items of property reported lost or stolen. [373]

According to a comprehensive after-action report prepared by Broward County, the actual active-shooter mass-casualty event occurred at 12:54 p.m. in Terminal 2.[374] The situation was resolved quickly, and Terminal 2 was closed for an investigation. The airport itself remained open and in operation, with the situation having been contained. At 2:22 p.m., radio transmissions reported that there was a second active shooter, a report later turned out to be false. Almost immediately, passengers and airport employees who heard the radio transmission began reporting on social media that there was a second shooter. Panic ensued. Passengers fled all three open terminals, running onto active runways and onto access roads. Many injuries occurred in the ensuing stampede to exit the buildings.[375] In this case, social media not only incited rioting and panic; it caused it by reporting blatantly false information. Even worse, news organizations picked up on the social media posts and repeated the misinformation.[376]

Given that the general population of passengers at an airport is transient, and to prevent a recurrence of the confusion and chaos at the Fort Lauderdale–Hollywood Airport, passenger airports have been using wireless emergency alerts (WEAs) as part of their public alert and warning strategies. WEAs are a component of the Federal Emergency Management Agency (FEMA)'s national alert and warning infrastructure known as the Integrated Public Alert and Warning System (IPAWS). WEAs are "emergency messages

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[372] Curtis and Simonsen, "Airport Active Shooter Incident."

[373] Curtis and Simonsen.

[374] Broward County Aviation Department, *Active Shooter Incident and Post-Event Response*.

[375] Broward County Aviation Department.

[376] Broward County Aviation Department.

sent by authorized government alerting authorities through your mobile carrier."[377] These alerts are most commonly used for severe weather warnings and Amber Alerts. WEA messages are transmitted to all mobile devices within a defined geographic region without requiring users to subscribe to receive the alerts. Beginning in November 2017, FEMA approved the use of IPAWS technology to allow WEAs to be sent to a more refined geographic area, which would allow it to be adapted for use by airports. Prior to this change, messages would go out to an entire county at a minimum. Depending on the geography and location of cell towers, there is the potential for an individual airport to send a message only to mobile phones within the area encompassing the terminal and airport grounds. FEMA, in partnership with the Federal Communications Commission, provides numerous resources for authorities seeking to utilize IPAWS during emergencies. The process to become an authorized user of the IPAWS system is well defined in FEMA's IPAWS adoption checklist for alerting authorities.[378]

Given the untimely response of law enforcement to an incident on board a ferry underway, the communication benefits of a system such as IPAWS to provide information to both the passengers of a ferry and first responders would be of tremendous benefit. Due to infrastructure requirements necessary to initiate a national maritime signal, and the fact that this technology is still in development, a maritime version of IPAWS—while prudent—is recommended for future study.

3. Distance Scanning at Rail Stations

The TSA is deploying a new type of portable scanning technology that detects persons carrying firearms and explosives for widespread use in the public rail transportation system. The TSA has partnered with Amtrak and the Los Angeles County

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377 "Frequently Asked Questions: Wireless Emergency Alerts," Federal Emergency Management Agency, accessed March 22, 2018, https://www.fema.gov/frequently-asked-questions-wireless-emergency-alerts.

378 "Integrated Public Alert System," Federal Emergency Management Agency, accessed March 22, 2018, https://www.fema.gov/media-library-data/1450723848143-0d667b51ddbab1e522ae6fac88b08733/IPAWS_Adoption_Checklist_20150331_Refresh.pdf.

Metropolitan Authority to test this new technology.[379] After lengthy testing at high passenger volume stations such as New York's Penn Station and Union Station in Washington, D.C., it is now deployed throughout the Los Angeles subway system.[380] The scanning devices are designed to quickly and unobtrusively screen people from a distance, can detect suspicious items from 30 feet away, and have the capability to scan over 2,000 passengers an hour.[381] The Los Angeles County Metropolitan Transportation System has one of the largest ridership populations in the United States with 93 stations and 170 bus routes.[382] The devices will be deployed in a pattern that is unpredictable at major hubs. "We're looking specifically for weapons that have the ability to cause a mass casualty event. We're looking for explosive vests, we're looking for assault rifles," says Alex Wiggins, chief security and law enforcement officer for the Los Angeles system.

The technology being introduced into the transit systems is called stand-off explosive detection technology (SPO-NX).[383] These are portable systems resembling a camera on a tripod with an operator station.[384] The scanning devices project waves at transitioning passengers and conduct analysis without requiring them to walk through a scanner. Unlike at airports, which use radiation waves to screen passengers, the SPO-NX machines use millimeter wave technology.[385] The "passive" millimeter wave technology works by detecting heat emanating from a human body. Objects hidden on a person's body block the heat, thereby indicating a "cold" signature, which indicates a suicide vest,

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[379] Michael Balsamo, "LA to Become First in US to Install Subway Body Scanners," Associated Press News, August 14, 2018, https://www.apnews.com/0277303b776445c5948a2be33de5af8e.

[380] Matthew Haag, Matt Stevens, and Sarah Mervosh, "Starting in Los Angeles, Body Scanners Come to Subways and Buses," *New York Times*, August 15, 2018, https://www.nytimes.com/2018/08/15/us/los-angeles-metro-body-scanners.html.

[381] Balsamo, "First in US to Install Subway Body Scanners."

[382] Haag, Stevens, and Mervosh, "Body Scanners Come to Subways and Buses."

[383] Derrick Broze, "TSA Expands Body Scanner Searches to NYC, L.A. Train Stations," Active Post, March 8, 2018, https://www.activepost.com/2018/03/tsa-body-scanner-seraches-nyc-la-train-stations.html.

[384] "TSA Tests Explosive Detection Units at Penn Station," CBS New York, February 27, 2018, https://newyork.cbslocal.com/2018/02/27/penn-station-tsa-explosives-scanners-testing/.

[385] CBS New York, "TSA Tests Explosive Detection Units."

explosive, or firearm.[386] Once an anomaly is detected, a visual or audible alarm is sent to the operator's laptop to indicate that an item has been identified, which indicates the likelihood of a prohibited item or weapon.[387] A computer algorithm determines whether the abnormality presents a green, yellow, or red risk level, and an operator determines whether additional law enforcement investigation is necessary.[388] This all occurs without inconveniencing the passenger or having anyone lay a hand on him or her. The machines cost about $100,000 each and are on wheels to increase their mobility and portability. They require little time to be set up and calibrated. The operator has only to point the scanner in the direction of passengers as they come down an escalator or enter a station to initiate a discrete and covert scan.[389]

The TSA has ascertained that this scanner would have successfully detected a suicide bomber who detonated a pipe bomb on his body when he entered a port authority station in December 2017.[390] Amtrak remains impressed with this technology. "We're going to do everything that we can to look at it, analyze it and make sure it's the best thing for us and our customers," Amtrak spokesman Jason Abrams says.[391] While these systems are still in development, they clearly represent a technology that may one day have application to the U.S. ferry system.

C. FUNDING AND GRANT PROGRAM OPPORTUNITIES

Funding security improvements to transportation systems is usually a costly endeavor. There is a $30 billion transportation initiative known as the gateway program, which would fund the construction of new tunnels under the Hudson River for Amtrak and

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[386] Rashida Richardson and Jay Stanley, "TSA Tests See-through Scanners on Public in New York's Penn Station," *Free Future* (blog) March 2, 2018, https://www.aclu.org/blog/privacy-technology/privacy-borders-and-checkpoints/tsa-tests-see-through-scanners-public-new.

[387] Associated Press, "Bomb-Detection Units Coming to New York's Penn Station," *Washington Times*, February 26, 2018, https://www.washingtontimes.com/news/2018/feb/26/bomb-detection-units-coming-to-new-york-citys-penn/.

[388] Richardson and Stanley, "TSA Tests See-through Scanners."

[389] Haag, Stevens, and Mervosh, "Body Scanners Come to Subways and Buses."

[390] CBS New York, "TSA Tests Explosive Detection Units."

[391] CBS New York.

commuter trains to carry passengers into Manhattan. It is a necessary project to maintain a commuter rail system in one of America's busiest corridors, but it is having difficulty obtaining support.[392] With crumbling infrastructure, security recommendations that include costly and unfunded studies and development in a venue that has not been attacked are unlikely to be considered. For this reason, this thesis took a proactive approach toward maritime security, building on those processes or systems that have already proven effective and have an operational support base that can transition for further application. Additionally, this thesis acknowledges there is existing funding that presents opportunities to support pilot program initiatives.

There are shared funding initiatives offered by DHS and FEMA's Grant Programs Directorate that provide information to various maritime entities on how to apply for security grants under the electronic system for award management.[393] This program is authorized by the Maritime Transportation Security Act of 2002 and supports the National Preparedness System. The objectives of the program are to enhance maritime domain awareness of the threats presented by the introduction of improvised explosive devices and chemical, biological, radiological, nuclear, and explosive materials into the maritime transportation domain. The grants are designed to strengthen prevention, protection, response, and recovery capabilities of maritime industry passenger operators and owners. DHS and FEMA awards enhance port and ferry security capabilities in mitigating potential terrorist attacks. Industry owners and ferry operators have security funding opportunities available to them, and DHS distributes approximately $1 billion in homeland security preparedness grant funds each year, which includes the Port Security Grant program and the Securing the Cities program.[394]

In recent years, the United States has invested in America's transportation systems. In 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act, the first federal act in over a decade to provide funding to develop safety programs for

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[392] Vincent Baron, "Cuomo Prepared Video for Trump," *Newsday*, October 19, 2018, A28.

[393] Department of Homeland Security, *Notice of Funding Opportunity*.

[394] Department of Homeland Security, *Soft Targets and Crowded Places*, 13.

railroads and highways.[395] This act provides $305 billion between 2016 and 2020 to help improve maritime transportation. The Department of Transportation has embraced the provisions of the FAST Act to help reform and expedite the approval process for critical transportation projects and development.[396] Additionally, FEMA's Transit Security Grant program supports the National Preparedness System by protecting the traveling public and critical surface transportation infrastructure against acts of terrorism.[397] This program, while not normally used on the scale of a national security program, may be a source for funding for a collaborative public and private agency study regarding this proposal.

As discussed in Chapter II, the U.S. ferry system is unique in that it provides maritime transportation, but several routes are considered integral to the U.S. national road infrastructure, and they receive federal highway funding.[398] Ferries also transport train freight cars between rail lines. Their applicability and vitality cross several transportation domains, thus demonstrating their importance and relevancy. Therefore, owners and operators have several different funding opportunities available to them for consideration.

D. CONCLUSION

The national preparedness goal calls for "a secure and resilient nation with the capabilities required across the whole community to prevent, protect, against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk."[399] DHS is committed to mitigating security threats against transportation venues as soft targets by providing guidance, standards, training, and grants.[400] The national planning framework shares an understanding of how the entire community can work to mitigate the threat to soft targets and critical infrastructure. The community must "tailor its support to

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395 "Fixing America's Surface Transportation Act," Federal Highway Administration, last modified February 14, 2017, https://www.fhwa.dot.gov/fastact/.

396 Fixing America's Surface Transportation Act, H.J. Res. 22, 114th Cong. (2015).

397 Federal Emergency Management Agency, "Fiscal Year 2018 Transit Security Grant Program," accessed December 6, 2008, https://www.fema.gov/transit-security-grant-program.

398 Alaska Department of Transportation and Public Facilities, "History of AMHS."

399 Department of Homeland Security, *Soft Targets and Crowded Places*, 9.

400 Department of Homeland Security, 9.

complement the ways that each partner approaches the soft targets–crowded places security challenges so that the resources the Department provides reinforces existing capabilities, creates new capabilities, or increases capacity."[401]

The intelligence community has assessed that soft targets and crowded places, such as ferry systems, will remain attractive targets to various threat actors and vulnerable to mass-casualty attacks into the foreseeable future unless security strategies are changed to address the current threat landscape and mass-casualty attack matrix.[402] DHS has identified public places of mass gatherings such as transportation systems as those most vulnerable to active-shooter events.[403] This is based on factors that include access to large numbers of people and limited security measures.[404] From schools to airports to houses of worship, America is taking a proactive approach toward protecting public places from mass-casualty attacks. Ferries are one of the few public places that have yet to be hardened against the very real threat of an active shooter, relying on the status quo of having the USCG respond to such an event. Coast Guard personnel are tasked with ferry security responsibilities, but they also have a diverse range of duties related to maritime safety, which dilutes their ability to provide omnipresent law enforcement on vessels to prevent an active shooter from initiating a mass-casualty event.[405] The evidence presented in this thesis demonstrates that law enforcement, military, or USCG response to a vessel underway or even to a facility creates an unreasonable timeline that could escalate the number of people killed in such an event.

There appears to be a collective mindset among the many government studies regarding ferry security; they conclude that vulnerabilities exist but have traditionally focused proactive security measures on law enforcement. This is despite empirical evidence that the civilian workforce has demonstrated its capabilities and dedication to

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[401] Department of Homeland Security, 9.

[402] Department of Homeland Security.

[403] Department of Homeland Security.

[404] Department of Homeland Security, iii.

[405] Government Accountability Office, *Inspections Identify and Correct Facility Deficiencies*, 23.

security. The GAO found in a study on maritime facility operators that over 80 percent of security deficiencies were identified and self-corrected without the intervention or direction of the USCG.[406] The GAO also concluded that while groups such as the 9/11 Commission have found no amount of funding can insulate a maritime port or vessel from an attack, a risk-based strategy that makes cost-effective use of resources is the best approach to mitigate an attack.[407] By building on existing processes and legislation that apply to other transportation venues, ferry security could be greatly enhanced by tapping into a previously under-utilized resource, the vast maritime civilian workforce population.

The recommendations contained in this thesis do not rely on new technologies that are untested and untried. This thesis engaged a business model approach to safeguard America's ferries by building on the programs and proven strategies that are already in use in other transportation domains—with an emphasis on transitioning traditional law enforcement roles to a civilian workforce. The support structure necessary to implement these recommendations has already been developed, requiring legislative and procedural changes to adapt these systems for maritime applicability. In this regard, these recommendations are not necessarily unique or visionary, but they are proven, cost-effective, and easily implementable.

As daily shootings in public places become accepted as the norm in America, to maintain the status quo in ferry security is to accept the inevitable—that an active shooter will eventually recognize the vulnerabilities and exploit them to initiate an attack on a vessel. A proactive approach employing simple measures that actively engage the civilian workforce serves not only to harden ferries against active shooters but also to augment the current U.S. maritime security posture and diminish the likelihood of a mass-casualty attack.

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[406] Government Accountability Office, *Inspections Identify and Correct Facility Deficiencies*, 4.

[407] Government Accountability Office, *Federal Efforts Needed to Address Challenges*, 5.

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