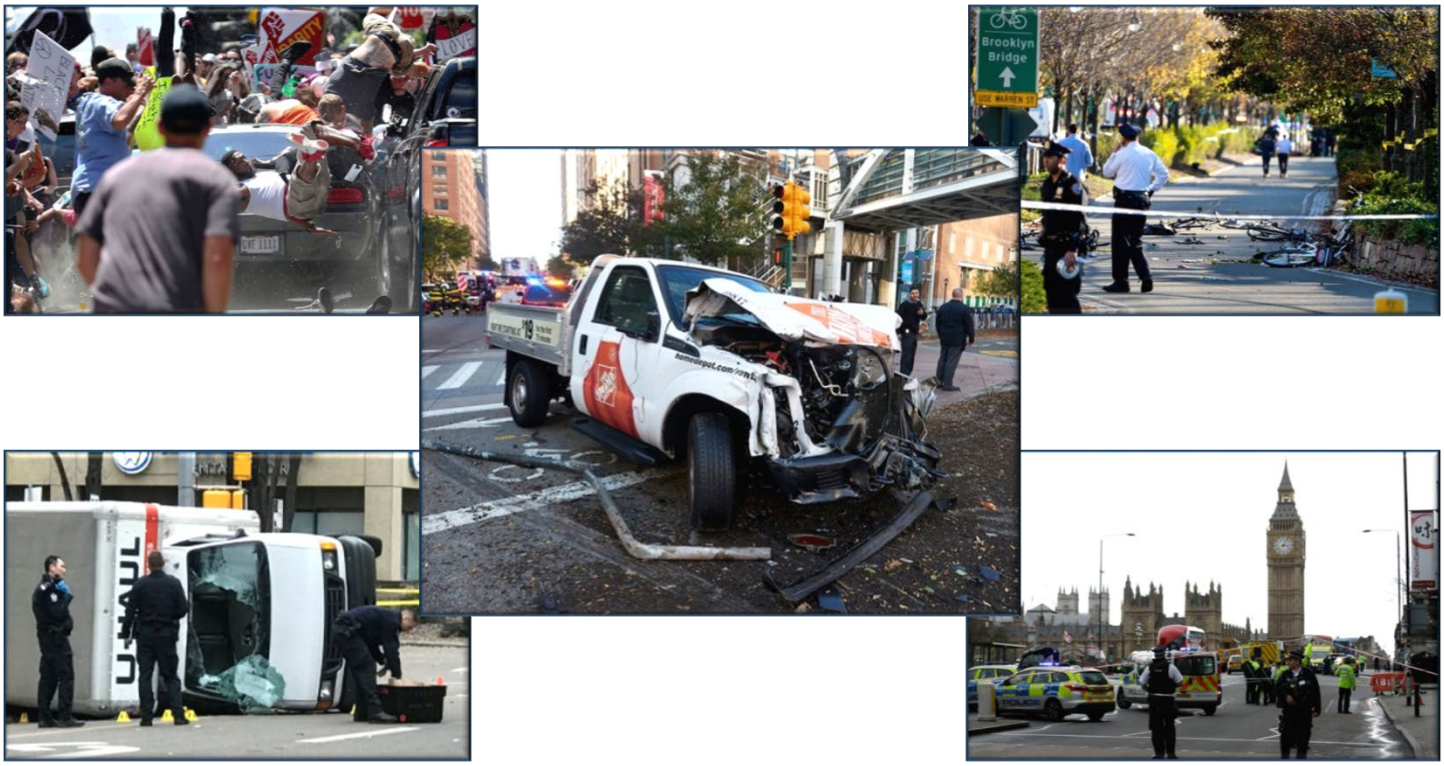

Vehicle Ramming Attacks

Threat Landscape, Indicators, and Best Practices for Countering the Threat

Policy, Plans, and Engagement
Surface Division
Highway and Motor Carrier Section

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Transportation Security Administration

Photo Credits: Ryan M. Kelly, AP (top left), James Keivom, NYDN (center), Craig Ruttle, AP (top right), Candace Elliot, Reuters (bottom left), Matt Dunham, AP (bottom right).

TABLE OF CONTENTS

(U) VEHICLE RAMMING ATTACK

(U) Vehicle ramming is a form of attack in which a perpetrator deliberately uses a motor vehicle to strike a target with the intent to inflict fatal injuries or significant property damage.

(U) THREAT LANDSCAPE

(U) Based on our analysis of terrorist publications such as *Rumiyah* and observations of terrorism-inspired events worldwide, we believe terrorist organizations overseas have advocated conducting vehicle ramming attacks against crowds, buildings, and other vehicles, using modified or unmodified large-capacity vehicles. Such attacks could target locations where large numbers of people congregate, including sporting events, entertainment venues, shopping centers, or celebratory gatherings such as parades.

"Though being an essential part of modern life, very few actually comprehend the deadly and destructive capability of the motor vehicle and its capacity of reaping large numbers of casualties if used in a premeditated manner."

Rumiyah Issue 3, Just Terror Tactics, 2016. [1]

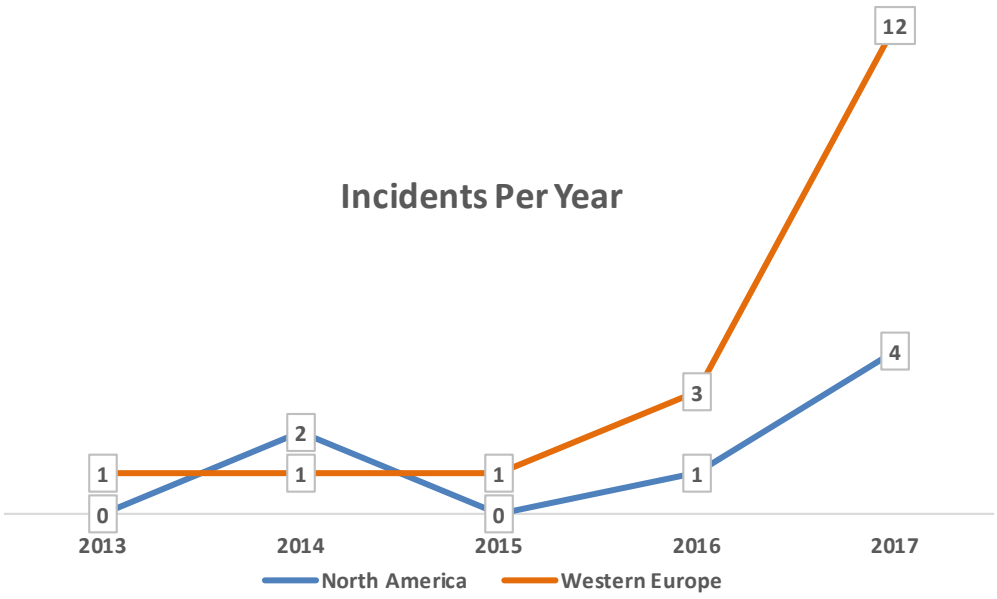
(U//FOUO) Vehicle ramming attacks are often unsophisticated, in that they require minimal planning and training. Terrorist groups continue to encourage aspiring attackers to employ unsophisticated tactics such as vehicle ramming because these types of attacks minimize premature detection and could inflict mass fatalities if successful. [2] Furthermore, events that draw large groups of people—thus presenting an attractive vehicle ramming target—are usually scheduled and announced in advance, which greatly facilitates attack planning and training activities.

(U) In August 2018, a 29-year-old attacker drove into pedestrians and cyclists near London's Houses of Parliament, injuring three persons in an event being investigated as a terrorist act. This apparent terrorist attack, as well as any additional attacks in 2018, will be more closely analyzed in the next issue of this report.

[1] (U) Islamic State of Iraq and the Levant. "Rumiyah Issue 3." 2016. p.10
[2] (U//FOUO) Department of Homeland Security, Transportation Security Administration. "ISIL's Third Edition of Rumiyah Promotes Vehicle Ramming Tactic." 2016. p.2

(U) According to the National Consortium for the Study of Terrorism and Response to Terrorism (START), terrorism-inspired vehicle ramming attacks in the West have increased at an alarming rate. From 2013 through 2017, terrorists carried out twenty-five known vehicle ramming attacks in North America and Western Europe, resulting in 156 fatalities and 790 injuries. Sixteen of these attacks occurred in 2017 alone. Notably, over half of the attacks are considered a complex attack, wherein the perpetrator exits the vehicle and carries out additional attacks using bladed weapons, firearms, and/or explosives.

(U) Figure 1: Vehicle Ramming Incidents Per Year, North America and Western Europe, 2013-2017



(U) Figure 2: Terrorism-Inspired Vehicle Ramming Attacks in North America and Western Europe, 2013-2017[3]

Date	Location	Target	Vehicle Obtainment Method*	Vehicle Type	Deaths	Injuries	Complex Attack Weapon*
10/31/17	New York, NY	Cyclists and pedestrians on a bike path.	Rented	Truck	8	13	Paintball gun and a pellet gun
9/30/17	Edmonton, Canada	Pedestrians at a football stadium police barricade.	Unknown	Car	0	1	Bladed weapon
9/30/17	Edmonton, Canada	Pedestrians in an alley and crosswalks.	Rented	Truck	0	4	N/A
9/20/2017	Leicester, England	Pedestrians on a residential sidewalk.	Personal	Car	0	1	N/A
8/18/17	Cambrils, Spain	Pedestrians on a seaside promenade.	Unknown	Van	6	6	Fake suicide vest and bladed weapon
8/17/17	Barcelona, Spain	Pedestrians in La Rambla.	Rented	Van	14	101	Bladed weapon (used in a later hijacking)
8/12/17	Charlottesville, VA	Counter-protesters at a Unite the Right rally.	Personal	Car	1	19	N/A
8/9/17	Levallois-Perret, Paris, France	Military personnel on patrol.	Personal	Car	0	7	N/A
6/29/17	Paris, France	Crowd outside a mosque.	Personal	SUV	0	0	N/A
6/23/17	London, England	Pedestrians outside a restaurant.	Personal	Van	0	0	N/A
6/19/17	London, England	Pedestrians near Finsbury Park Mosque.	Rented	Van	1	10	N/A
6/11/17	Malmo, Sweden	Protesters outside an immigration agency building.	Personal	Car	0	0	N/A
6/10/17	Malmo, Sweden	Protesters outside an immigration agency building.	Personal	Car	0	0	N/A
6/3/17	London, England	Pedestrians on London Bridge.	Rented	Van	11	48	Fake suicide vest and bladed weapon

[3] (U) National Consortium for the Study of Terrorism and Response to Terrorism (START). Global Terrorism Database [data file]. 2016. Retrieved from https://www.start.umd.edu/gtd.

(U) Figure 2: Terrorism-Inspired Vehicle Ramming Attacks in North America and Western Europe, 2013-2017[3]

Date	Location	Target	Vehicle Obtainment Method*	Vehicle Type	Deaths	Injuries	Complex Attack Weapon*
4/7/17	Stockholm, Sweden	A department store building and pedestrians in a shopping area.	Hijacked/Stolen	Truck	5	14	Improvised explosive device
3/22/17	London, England	Pedestrians on Westminster Bridge.	Rented	SUV	6	50	Bladed weapon
12/19/16	Berlin, Germany	Pedestrians at a Christmas market.	Hijacked/Stolen	Truck	12	48	N/A
11/28/16	Columbus, OH	Pedestrians in an Ohio State University courtyard.	Personal	Car	1	11	Bladed weapon
7/14/16	Nice, France	Pedestrians celebrating Bastille Day on a busy promenade.	Rented	Truck	87	433	Firearm
1/1/16	Valence, France	Military personnel guarding a mosque.	Personal	SUV	0	3	N/A
6/26/15	Lyon, France	Gas-filled warehouse.	Personal	Truck	1	2	Bladed weapon
12/21/14	Dijon, France	Pedestrians in five separate areas.	Personal	Van	0	11	Bladed weapon (not used)
10/20/14	Quebec, Canada	Military personnel in shopping center parking lot.	Personal	Car	2	1	Bladed weapon
5/23/14	Isla Vista, CA	Pedestrians on sidewalks and crosswalks.	Personal	Car	0†	7†	Firearm.
5/22/13	London, England	Off-duty soldier near barracks.	Personal	Car	1	0	Bladed weapon

* (U) TSA analysts used open source research to provide additional analysis on these data points.
† (U) The secondary firearm attack in this incident resulted in additional causalities (4 deaths, 6 injuries).

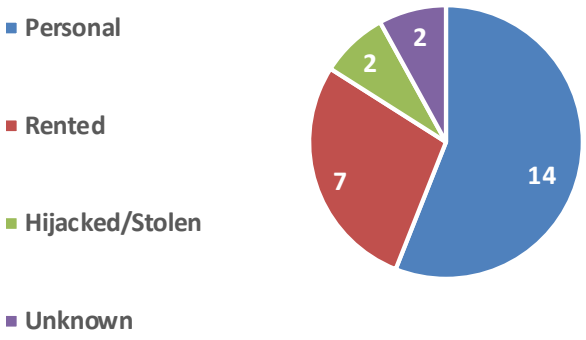
(U) LARGE-CAPACITY VEHICLES USED IN VEHICLE RAMMING ATTACKS

(U//FOUO) Large-capacity vehicles, specifically commercial trucks, rental trucks and vans, and buses, present an especially attractive mechanism for vehicle ramming attacks for several reasons: they are plentiful; arouse little or no suspicion because their presence around and access to structures and activity centers is expected; can easily penetrate security barriers[4]; and can inflict large-scale damage on people and infrastructure.

(U) Large-capacity vehicles may be obtained for terrorist activity in a variety of ways, including:

- (U) Personal – attacker uses their own large-capacity vehicle;
- (U) Rental – attacker rents a large-capacity vehicle;
- (U) Hijacking – attacker gains control of a large-capacity vehicle by force;
- (U) Theft – attacker steals a large-capacity vehicle; or
- (U) Insider threat – authorized commercial vehicle driver carries out or facilitates an attack.

(U) Figure 3: Vehicle Obtainment Method for Attacks that Occurred from 2013 to 2017



(U) POTENTIAL INDICATORS

(U) There are several potential indicators that may suggest terrorists are planning a large-capacity vehicle ramming attack. These potential indicators, which may provide warning of an imminent attack, are based on behaviors and conduct exhibited by previous attackers, but all specific facts and circumstances should be considered when determining if an attack is imminent. The totality of behavioral indicators and other relevant circumstances should be evaluated when considering any law enforcement response or action. However, it is important to note that a vehicle ramming attack can occur with little to no warning.

[4] (U//FOUO) Department of Homeland Security, Transportation Security Administration. "Tactics, Techniques, and Procedures Assessment - Commercial Truck Attacks." 2015. p.9

(U//FOUO) Figure 4: Vehicle Ramming Attack Potential Indicators[5][6]

Vehicle Ramming Attack Potential Indicators	
	(U//FOUO) Vehicle Rental or Purchase: (U//FOUO) Giving vague or unverifiable references or employment information when completing a rental agreement and/or the inability to recall the name used to rent a vehicle. (U//FOUO) Presentation of an altered or potentially fraudulent driver's license, proof of insurance, or other documents required to purchase or rent a vehicle. (U//FOUO) Use of cash for large transactions or a personal credit card in someone else's name. (U//FOUO) Repeat renters who appear to be "practicing" their large-capacity vehicle operating skills. (U//FOUO) Renters with chemical burns or missing appendages. These indicators in and of themselves are not necessarily considered suspicious, but may be suspicious in conjunction with other indicators. (U//FOUO) Purchase, rental, or request to temporarily use a large-capacity vehicle while exhibiting nervousness, vague or apparently secretive behavior, sweating, and/or lack of eye contact. (U//FOUO) Rental vehicles that appear to be abandoned near critical facilities or areas where large crowds are gathered.
	(U//FOUO) Suspicious Behaviors/Insider Threat: (U//FOUO) Unauthorized attempts to bring a large-capacity vehicle into closed areas where crowds are gathered. (U//FOUO) Loitering in unauthorized areas where large-capacity vehicles are parked or serviced. (U//FOUO) Inquiring whether large-capacity vehicles can be modified to handle heavier loads, create additional storage areas, or increase fuel capacity or vehicle speed. (U//FOUO) Attempts to gain information about the operations and security of local critical facilities and/or areas where large crowds are gathered. (U//FOUO) Behavior inconsistent with that of a typical vehicle driver or trainee, such as lack of interest in the type of work they will do, what route they will drive, or how much they will be paid. (U//FOUO) Failure to inform the dispatcher of deviation from planned routes.
	(U//FOUO) Vehicle Modifications: Unusual modifications to large-capacity vehicles, such as the installation of heavy-duty springs to handle heavier loads.

[5] (U//FOUO) Department of Homeland Security, Transportation Security Administration. "Highway and Motor Carrier Counterterrorism Guide, Third Edition." 2016. pp.14-15

[6] (U) Department of Homeland Security, Transportation Security Administration. "Security Guide for Truck Rental Company Employees." 2012. p.2

(U) BEST PRACTICES FOR COUNTERING THE THREAT

(U) Would-be terrorists can be stopped by some of the least-intrusive and lowest-cost means available: meaningful security awareness. Drivers and staff who both remain alert to potential threats and report suspicious activities to appropriate authorities are the most effective means of detecting acts of terrorism by large-capacity vehicle.

(U) TSA has developed the following best practices in partnership with public and private sector transportation security partners with the aim of aiding in preventing, protecting, and mitigating the use of large-capacity vehicles in terrorist attacks within the homeland.

(U) Figure 5: Vehicle Ramming Attack Best Practices for Countering the Threat

Vehicle Security Best Practices	**(U) Route pre-planning:** (U) Prohibit drivers from diverting from authorized routes, making unauthorized pickups, or stopping at unauthorized locations without justification. (U) Identify and pre-plan alternate routes in case the primary routes cannot be used under certain security-related emergencies.
	(U) En route security*:* (U) Require the use of vehicle door and window locks (if not prohibited by state laws) and wheel locks/alarms/kill switches when vehicles are parked and unattended. (U) Require a unique key for each vehicle and an adequate key control program for all vehicles; enhanced technology for entering and/or starting vehicles; and on-board (interior or exterior view) cameras and/or GPS technology for vehicles. (U) Implement overnight, off-site parking restrictions.
	(U*)* Security inspections: (U) Drivers should conduct a security inspection of their vehicle pre- and post-trip, and after a vehicle has been left unattended. (U) Drivers should conduct a passenger count or ticket re-verification whenever passengers are allowed to exit and re-enter the bus. Drivers should also verify, to the extent possible and where applicable, that transported baggage is associated with an onboard passenger, whether the baggage is stored onboard or in an inaccessible location.
	(U) Reinforce the importance of strong vehicle security during any period when the operation or cargo destinations are near sporting events, entertainment venues, shopping centers, and celebratory gatherings such as parades, or other activities that place crowds near roads, streets, or venues accessible by vehicles.

(U) Figure 5: Vehicle Ramming Attack Best Practices for Countering the Threat

Facility/Perimeter Security Best Practices	(U) Ensure that fences, gates, and barriers are appropriately sized and fully functional. (U) Employ an adequate intrusion detection system (burglar alarm); closed circuit TV camera system as deemed necessary; adequate exterior lighting; documented key control procedures for all facilities, gates, and vehicles; secured employee vehicle parking locations; and security personnel. (U) Ensure that exterior doors, windows/skylights, and security-sensitive areas are locked and secured and install advanced physical control locks where appropriate. (U) Require all personnel to display company/district issued photo ID badges and establish a "challenge procedure" for employees to safely confront or report unauthorized persons. (U) Implement adequate visitor control protocols.
Training and Domain Awareness Best Practices	(U) Visit www.tsa.gov/for-industry/firstobserver to view the appropriate security awareness training module. (U) Visit www.dhs.gov/human-resources-or-security-professional to watch the Department of Homeland Security (DHS) Vehicle Ramming Attack Mitigation video. (U) Exercise domain awareness on routes that approach heavily populated venues and potential targets such as government buildings, military facilities, schools, hospitals, national monuments, and houses of worship. (U) Be wary of any suspicious persons or vehicles at pickup and drop-off points and any suspicious vehicle that may follow your vehicle while en route. (U) Drivers should avoid resting in a vehicle parked in a secluded area and should be wary of suspicious persons or vehicles that may be observed outside their parked vehicle. (U) Drivers should never pick up hitchhikers, unticketed passengers, or any other unauthorized riders.
Reporting Best Practices	**(U) In accordance with company policy, report any:** (U) Suspicious activities, behaviors, or approaches by unauthorized persons; (U) Unauthorized vehicle entry attempts or solicitations; (U) Suspicions arising from the unusual and/or inappropriate presence of large-capacity vehicles in or around heavily populated venues; (U) Unauthorized persons loitering where large-capacity vehicles are parked or serviced; and (U) Individuals who may appear to be practicing their large vehicle operating skills in the time leading up to a nearby heavily populated event.

(U) Figure 5: Vehicle Ramming Attack Best Practices for Countering the Threat

Community Partnership Best Practices	(U) Establish an adequate vehicle stand-off distance in relation to heavily populated venues. (U) If vehicles must access heavily populated venues, reduce the ability of a potential assailant to accelerate a vehicle into a crowd by employing vehicle barriers that create a serpentine path of entry. (U) Request increased presence and visibility of security and law enforcement personnel in and around heavily populated venues. (U) Consider offering your vehicles to planners and law enforcement as a secured and monitored barrier to streets, alleys, or parking facilities that lead directly to heavily populated venues.
Immediate Response	(U) Flee the attack by running perpendicular to the path of the attacking vehicle. (U) If unable to safely flee the attack, position a heavy barrier between yourself and the attacking vehicle. (U) Get as far away as possible from the scene of the vehicle ramming attack to avoid becoming victim to a complex attack, wherein the perpetrator exits the vehicle and continues to attack people with a hand-held weapon. (U) Notify law enforcement of the attack as soon as possible.

(U) CONCLUSION

(U) TSA recommends vigilance and preparedness to prevent the use of large-capacity vehicles in terrorist attacks. Large-capacity vehicle owners and operators should alert their staff to possible theft or vehicle hijacking by would-be attackers, and emphasize the importance of reporting suspicious activities to appropriate authorities.

(U) Large-capacity vehicle owners and operators can also help their home communities' business and law enforcement agencies by partnering to discuss the threat of vehicle ramming attacks and the security awareness, planning, and best practices that could mitigate the threat.

(U) Existing and emerging technologies can be used to mitigate and even prevent vehicle ramming incidents. For vehicles equipped with tracking devices, geo-fencing technologies can identify potential threats in proximity to high-value targets and, in some cases, activate vehicle shut-down. In addition, automatic collision-prevention devices are expected to become more prevalent as vehicle fleets gain newer replacement vehicles.

(U) No community, large or small, rural or urban, is immune to large-capacity vehicle ramming attacks by organized or lone offender terrorists. Good security is good business. TSA recommends you to take an active role in protecting your business and your community from this potential threat.

(U) ADDITIONAL RESOURCES

(U) Assessments and Planning

- (U) The *Highway Baseline Assessment for Security Enhancements (BASE)* is a voluntary, risk-based program designed to cooperatively identify security vulnerabilities within the various highway transportation modes and, in turn, offer mitigation options to partners for reducing those vulnerabilities. HighwaySecurity@tsa.dhs.gov
- (U) The *Transportation Security Template and Assessment Review Toolkit (T-START)* provides (1) an overview of security, (2) guidance on conducting a vulnerability assessment, and (3) instructions on completing a security and emergency plan. HighwaySecurity@tsa.dhs.gov

(U) Training and other Resources

- (U) *First Observer Plus* is a security domain awareness training program focused on delivery of a simple message to highway transportation professionals: to "Observe, Assess, and Report" suspicious activities. http://tsa.gov/firstobserver
- (U) The *DHS Vehicle Ramming Attack Mitigation Video* assists with mitigating the evolving threat corresponding to vehicle ramming incidents by providing information and insightful technical analysis from public and private sector subject-matter experts. It leverages real-world events to provide recommendations for protecting organizations and individuals against potential vehicle ramming incidents. https://www.dhs.gov/human-resources-or-security-professional
- (U) The *Partners in Prevention: Vehicle Rentals and Vehicle Ramming Video* is intended to assist vehicle rental corporate security officials facilitate conversations with front-line employees about suspicious activity and behavior that may possibly be associated with someone planning a vehicle ramming attack. https://www.fbi.gov/video-repository/vehicle-rentals-vehicle-ramming-013019.mp4/view
- (U) The *Securing Transportation Assets and Operations: Mitigation Strategies for Highway Mode*s offers useful information, tips, and tools to strengthen the highway industry's resistance to disruption of its critical services. HighwaySecurity@tsa.dhs.gov
- (U) *Counterterrorism Guide*s are intended to provide awareness of specific considerations when developing and implementing your organization's security and emergency plan. HighwaySecurity@tsa.dhs.gov
- (U) *Intermodal Security Training & Exercise Program (I-STEP)* provides exercise, training, and security planning tools and services to the transportation community. tsa.gov/for-industry/intermodal-security-training-and-exercise-program
- (U) *Exercise Information System (EXIS)* is an online exercise tool that provides users with resources to design, document, and evaluate exercises for all transportation modes. http://exis.tsa.dhs.gov
- (U) *TSA Surface Transportation Cybersecurity Resource Toolkit for Small and Midsize Business (SMB)* is a collection of documents designed to provide cyber risk-management information to surface transportation operators. TSA-Surface@tsa.dhs.gov