

Railway Security Concerns Increasing for Travelers and Military Logistic Planners

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The recent attempted terrorist attack on a French passenger train, which was hindered by the quick and heroic actions of three American servicemen, [1] once again draws the world's attention to rail safety and points out a potential weakness in the United States' critical infrastructure system. Officials at the Department of Defense (DoD) and Department of Homeland Security must re-assess the tactics and countermeasures to prevent an attack on this critical piece of America's infrastructure.

The thwarted attack in France, combined with past attacks in Madrid, London and Mumbai renew U.S. concerns about the vulnerability of rail passengers and whether current security measures can overcome a determined and well planned terrorist attack. Even with an increased awareness, there is fear that not enough can be done.

P.J. Crowley, a homeland security expert at the Center for American Progress said what can be done on passenger rail is limited. [2] Crowley suggests increased police presence at railway stations could diminish the risk of attack, but this could strain the financial resources of local governments. Another option, some suggest, is random and unpredictable police presence, possibly making it more difficult for terrorists to accomplish the goal of a large scale rail attack. [2] Some congressmen express concerns that passenger rail security expenditures lag behind those appropriated for air security, but Homeland Security Secretary Michael Chertoff said, "A bomb in a subway car may kill 30 people, but a commercial airliner has the capacity to kill 3,000



Evolving technologies make trains safer, but railways still cause homeland security concerns. (Photo courtesy of the U.S. Department of Transportation)

people. When you start to think about your priorities, you're going to make sure you don't have a catastrophic event first." [3]

Evolving technology, such as networked remote train signaling systems, makes railways more efficient, but also open new avenues for attack. Electronic threats to passenger railways are as significant a concern as physical attacks by gunmen or explosives, according to Virginie Deniau, the coordinator of the EU funded Project SECRET (SECurity of Railways against Electromagnetic aTacks). [4] Deniau states in the European railway sector the homogenization of network technologies and the increasing use of wireless technology make an electromagnetic (EM) attack very likely. Communication jamming equipment could enable an attacker to re-route and misdirect trains to cause delays that would bring urban traffic to a crawl;

or even worse cause collisions or derailments that claim hundreds of lives. To protect against this threat, SECRET is developing a set of sensors capable of detecting EM attacks as they happen. This would give train operators and supervisors warning time to switch network systems into a "safe mode" that would thwart attempts to interfere with normal operations [4]

While passenger trains may be the most visible target in the United States rail system, an attack on America's vast cargo rail network could have devastating effects as well. The largest vulnerability lies within the sheer amount of cargo-carrying rail lines across the country. There are more than 100,000 miles of rail in the United States, creating an extensive and hard to monitor infrastructure that provides an infinite number of targets for terrorists. It is physically impossible to monitor every inch of railroad track at any given time. [5] With this limitation in

mind, priority must be given to target areas that are the most vulnerable and/or have the potential to do the most damage in a single strike.

In recent years, American freight railroad operators reinvested large sums of capital into infrastructure and technology to help close the gap of vulnerability created by the sheer size of the railway network. The federal government allocates funds to various initiatives to strengthen railroad operators' ability to protect against threats and to maintain the security of critical infrastructure, particularly near bridges and tunnels. [6]

Integrated security systems, which include smart thermal cameras, motion tracking pan, tilt, zoom (PTZ) devices and automated mapping systems, are being deployed to protect some areas deemed most vulnerable to attack. These video-based systems can automatically

detect, locate and verify intrusions to sensitive infrastructure targets in real time. While implementing fixed physical barriers to protect unattended railroad units are usually not a feasible measure, it is possible to create a type of vertical fence using advanced smart video systems to detect intruders entering the designated restricted areas. Upon detection of entry into the area, the system can determine the location of the intruder and track their movements using PTZ cameras. The systems can be set up to use thermal imaging lenses which function in a similar fashion to military issue night vision goggles, eliminating the need for costly and hard to position illumination systems. [6]

References:

[1] [Thwarted train attack in France highlights U.S. rail vulnerability.](#) *Homeland Security Newswire.* (2015, August 24).

[2] Kaplan, E. (2007, March 12). [Rail security and the terrorist threat.](#) *The Council on Foreign Relations.*

[3] [America's rail security: Is the Government doing enough to protect U.S transit systems?](#) *Democracy Now.org.* (2005, July 8).

[4] [Sensors can help railways detect, cope with electromagnetic attacks.](#) *Homeland Security Newswire.* (2015, July 15).

[5] [Major vulnerabilities to railway security.](#) (2015, February 17). *Pennsylvania State University.*

[6] Romanowich, J. (2015, May 19). [How perimeter security is improving rail transportation security.](#) *Security Today.*

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