

DHS Science and Technology Directorate Commercial Aircraft Vulnerability and Mitigation Program

Background

The Commercial Aircraft Vulnerability and Mitigation Program (CAVM) was initiated in 1990 in response to the directives of the President's Commission on Aviation Security and Terrorism and the mandates set forth in the Aviation Security Improvement Act of 1990. Program initiatives were reiterated in the Aviation Security and Transportation Act of 2001 (Public Law 107-71) and transferred program responsibility from the Federal Aviation Administration (FAA) to the Transportation Security Administration (TSA). In 2006, program responsibility was transferred from TSA to the DHS Science and Technology Directorate's Explosives Division (DHS S&T-EXD), with execution of program initiatives supported by subject matter experts from DHS S&T's Transportation Security Laboratory in Atlantic City NJ.

Program Objectives

CAVM projects support multiple TSA components by identifying commercial aircraft vulnerabilities to terrorist-based internal explosive threats and identifying potential countermeasures that can be employed to mitigate the potential for catastrophic structural or critical system failure as a result of in-flight detonation of those threats. Program objectives are accomplished via specific projects designed to determine and identify:

- The minimum explosive weight that would result in catastrophic loss of a commercial aircraft
- The technologies, methods, and techniques that can be applied to commercial transport aircraft to reduce their vulnerability to internal explosive threats
- Vulnerabilities to and methods of countering emerging terrorist-based threats to the existing and future fleet mix of commercial transport aircraft.



Commercial Aircraft Explosive Vulnerability Test

Program Value

Program efforts provide data regarding commercial aircraft vulnerability to terrorist-based explosive threats. This information is being used to support the development of explosive threat detection requirements and countermeasures, including evaluating effectiveness of explosive-resistant materials and technologies for use on commercial aircraft. The data also strengthens the capability to respond to both existing and emerging terrorist-based threats to commercial aircraft targets, with potential application for other transportation and operational modes.

Recent Program Accomplishments

- Reduced Weight/Cost Blast Hardened Unit Load Device (HULD) Prototype, FY14
- Explosive Test Database, FY15
- Least Risk Bomb Location Procedures (LRBL) Live Fire Test Support, FY14-16
- Explosive Threat Mitigation Unit Prototype, FY16



DHS S&T CAVM Explosive Test of HULD Prototype

Program Stakeholders

TSA and its component organizations (Office of Security Capabilities, Office of Law Enforcement/Federal Air Marshal Service, Office of Security Operations-Explosives Operations Branch) are the primary stakeholders for CAVM Program products and services, but indirect customers include; other regulatory agencies (e.g. Federal Aviation Administration), Federal Law Enforcement Organizations (DoJ-FBI), Department of Defense, DHS Components (USSS), and DHS S&T International partners.

