



ICAO

International Civil Aviation Organization  
North American, Central American and Caribbean Office

WORKING PAPER

E/CAR/DCA/26 — WP/23  
13/11/15

**Twenty-sixth Directors of Civil Aviation of the Eastern Caribbean Meeting (E/CAR/DCA/26)  
New Orleans, United States, 1 - 3 December 2015**

**Agenda Item 7: Aviation Security (AVSEC) and Facilitation (FAL)  
7.4 Other Aviation Security and Facilitation Matters**

**ASSESSING INTERNATIONAL INBOUND AVIATION SECURITY RISK**

(Presented by the United States)

<b>EXECUTIVE SUMMARY</b>	
This paper presents an overview of the U.S. approach for mitigating international inbound risk associated with attack methods of concern. The United States utilizes risk analysis techniques to incorporate intelligence-driven, risk-based security procedures and to improve the use of aviation security countermeasures. This approach allows the United States to deliver the most effective security in the most efficient manner, focusing resources on lesser known and higher risk threats.	
<b>Action:</b>	<ul style="list-style-type: none"><li>• Development of a sub-regional risk perspective;</li><li>• Consideration of the current sub-regional risk assessment capability including the information and tools to inform a sub-regional risk context statement; and</li><li>• Discussion of the challenges faced by States in achieving/maintaining compliance with particular aviation security standards.</li></ul>
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"><li>• Security &amp; Facilitation</li></ul>
<i>References:</i>	<ul style="list-style-type: none"><li>• n/a</li></ul>

**1. INTRODUCTION**

1.1 The Transportation Security Administration (TSA) applies risk-based concepts to both domestic and international aviation operations: domestically through passenger differentiation, the deployment of multiple layers of security, and random and unpredictable countermeasures; and internationally through the prioritization of engagement and mitigation activities. Recognizing that risk cannot be fully eliminated without adversely impacting the global transportation system, TSA is evolving its application of intelligence-driven, risk-based security and enhancing the use of aviation security countermeasures through a variety of risk-based security initiatives. These efforts enable TSA to prioritize the allocation of limited resources according to risk in order to mitigate vulnerabilities and enhance aviation security.

## 2. DISCUSSION

2.1 TSA defines risk as the potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and associated consequences. It is a function of threat, vulnerability, and consequence. Threat is an individual, entity, or action that has or indicates the potential to harm life, information, operations, the environment, and/or property. Vulnerability is the likelihood that an adversary will successfully defeat current countermeasures. Within the international aviation security context, TSA evaluates the countermeasures in place at a location that is able to mitigate a specific threat, the frequency at which those countermeasures are deployed, and how well they are implemented. Consequence is the effect of an event, incident, or occurrence.

2.2 Aviation is an interconnected network, overseen by a group of sovereign safety and security regulators that are primarily focused on their domestic networks and those last points of departure to that State. However, if vulnerabilities are exploited at one airport, the effects could be felt across the network. What are the various ways our adversaries attempt to attack aviation? Terrorists have attempted to attack landside, using disruption tactics, small-arms weapons, and rocket-propelled grenades. A number of insiders over the years have provided or attempted to provide valuable information on aviation security to our adversaries. Man-Portable Air Defense System (MANPADS) attacks remain a threat throughout Africa and the Middle East (i.e., Somalia, Egypt, and Afghanistan). However, the United States remains most concerned with the threat of improvised explosive devices (IEDs), particularly those that are chemically initiated, non-metallic in design, and artfully concealed on the body or in accessible property. Artfully concealed weapons are intended to bypass existing aviation security countermeasures, get closer to the target, and cause catastrophic damage.

2.3 Adversaries continue to research and develop advanced methods of construction and concealment of non-metallic IEDs designed to circumvent conventional security measures with a view toward detonating these on board aircraft. The history of the non-metallic threat demonstrates adversaries' intent and capability to modify attack methods and IED use. In 1994 in what is now referred to as the Bojinka plot, al-Qa'ida planned to bomb 11 airliners departing from South East Asia en route to the United States by concealing explosives in contact lens solution bottles. In 2001, al-Qa'ida attempted to blow up an aircraft with explosives hidden inside shoes on a flight from France bound for the United States. In 2006, al-Qa'ida returned to and modified the Bojinka plot, planning to bomb at least 10 airliners with liquid explosives hidden inside a drink mix on flights departing from the United Kingdom to the United States and Canada. In 2009, al-Qa'ida in the Arabian Peninsula (AQAP) attempted to blow up a U.S.-bound flight with explosives hidden inside a pair of underwear. Three years later, an upgraded device was recovered from Yemen believed to be intended for the same purpose. In 2010, AQAP placed explosives inside the toner cartridges of two printers shipped from Sanaa, Yemen, to the United States. Additionally, reports indicate that adversaries have adapted their concealment methods within accessible property through IEDs that would convey explosive materials in toothpaste tubes and in electronic devices. Furthermore, the latest issue of AQAP's online magazine, *Inspire*, shows to what extent the group will go to attack aviation. In the issue, AQAP provides step-by-step instructions for building non-metallic devices, tactics, and techniques for attacking aviation, and articles on breaching airport security, including providing details on countermeasures at airports and ways in which to avoid detection.

2.4 However, it is short-sighted to only look at threats from a reactive stance. In order to protect flights from last points of departure, the United States also strives to take a more proactive role in both identifying additional existing attack scenarios and pre-emptively addressing new and emerging threats. In dealing with the former, it is imperative to identify existing vulnerabilities when dealing with other possible attack families to include cargo concealment and the insider threat. When addressing the latter, there are a number of ways in which a threat can evolve, and different avenues must be considered,

including: changes in weaponry and conveyance, changes in the type of attack, changes in the adversary or adversary's modus operandi, and changes in the adversary's knowledge and capabilities.

2.5 In order to mitigate the risk posed by non-metallic IED attack scenarios and other scenarios with a nexus to aviation security—such as those involving cargo, hold baggage, landside, MANPADS, and insider-facilitated attacks—the international aviation security community must implement risk management processes to identify, analyze, and mitigate aviation security risk. TSA employs a variety of risk analysis and risk mitigation tools to assess risk associated with domestic/outbound flights, international/inbound flights, and airport infrastructure. The use of risk analysis facilitates TSA's prioritization of its risk management efforts and informs the application of appropriate countermeasures. Risk mitigation is an ongoing process aimed at reducing the exposure to risk through the effective deployment of countermeasures. Countermeasures include people, processes, and technology capable of effectively mitigating specific attack scenarios. Developing a risk mitigation plan is the process of monitoring and assessing risks resulting from operational factors and making decisions that balance risk cost with mission benefits.

2.6 In international operations, TSA views risk as it relates to a specific attack method at a specific location. Taking into account threat, vulnerability, and consequence, TSA has developed a quantitative and qualitative risk methodology that can inform the identification and application of security countermeasures at international airports. This risk methodology has the following risk analysis benefits:

- Provides a systematic approach for analyzing risk;
- Informs strategic decision making and the effective allocation of resources; and
- Projects residual risk in order to inform mitigation efforts and engagement.

By understanding risk at an attack method level, TSA is positioned to pinpoint areas of highest risk to the United States. A single location may be well-positioned to address one threat (e.g., air cargo) but may have significant vulnerabilities in a different area of airport operations (e.g., passenger screening). This analysis, when combined with knowledge on threats, political will, and other factors, will assist TSA in efficiently determining the most effective mitigation options to address a specific threat.

### **3. CONCLUSION**

3.1 Risk is inherent in global aviation. As such, risk cannot be eliminated, only mitigated. While individual States can reduce risk by enhancing security at their airports, they are hindered by limited resources to address risk and support mitigation activities in the international arena. As such, optimal effectiveness for increasing global aviation security requires coordinated action among like-minded partners. Such partners may include other States, as well as regional or global multilateral bodies. Regional and multilateral coordination can supplement internal efforts to raise the baseline of transportation security and build sustainable institutions and practices. In order to achieve the most effective results, like-minded donor States should collaborate to:

- Establish a common understanding of threats, vulnerabilities, and root causes of deficiencies;
- Discuss regional priorities and methodologies for determining priorities; and
- Examine methods to measure aviation security effectiveness and support sustainment activities.