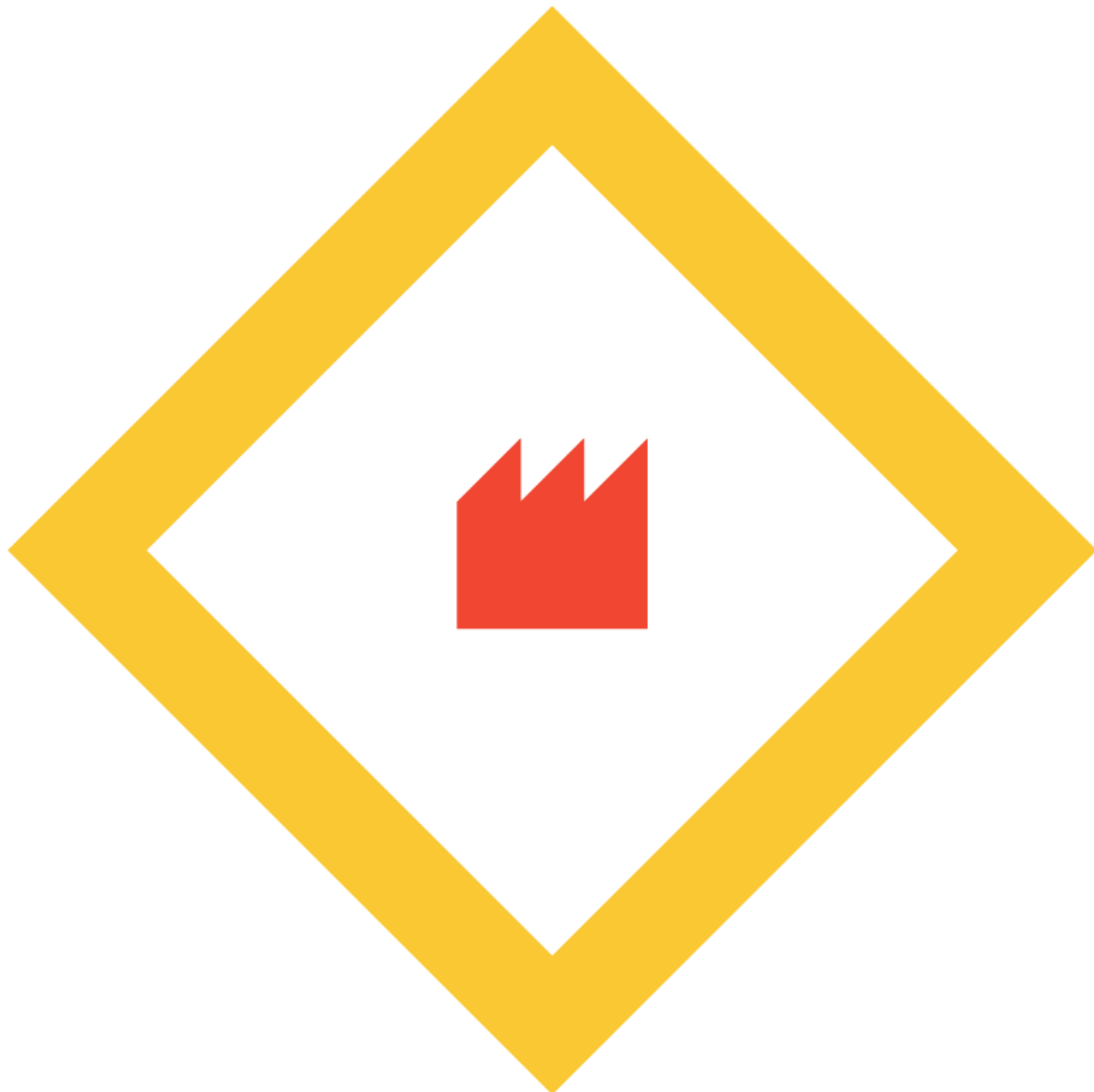




Guidance Material

The Threat of Improvised Incendiary Devices to Aviation
Version 1.0 – 10 February 2025





Contents

Acronyms	3
Glossary of Terms	4
Purpose and Applicability	8
Terminology and Definitions	8
Improvised Incendiary Device – Act of Unlawful Interference	8
What is an Improvised Incendiary Device?	9
Incendiary Material and Civil Aviation	9
The Threat of Improvised Incendiary Devices	9
Security Measures to mitigate the risks posed by IIDs	9
Additional Resources	10
Disclaimer	10
Summary	10
Appendix A	11
Enhanced Security Measures	11
Appendix B	13
Resources, Guidance and Reference Material	13



Acronyms

ACAS	Air Cargo Advance Screening
AOSP	Aircraft Operator Security Program
ASP	Airport Security Program
AUI	Act of Unlawful Interference
AWB	Air Waybill
CCTV	Closed-Circuit Television
DG	Dangerous Goods
DGR	Dangerous Goods Regulation
EC	European Commission
ECAC	European Civil Aviation Conference
EDD	Explosives Detection Dog
EDS	Explosives Detection Systems
ESP	External Service Provider
ETD	Explosive Trace Detection
EU	European Union
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICHM	IATA Cargo Handling Manual
ICS2	Import Control System 2
IDS	Intrusion Detection System
IED	Improvised Explosive Device
IID	Improvised Incendiary Device
IOSA	IATA Operational Safety Audit
IRM	IATA Reference Manual for Audit Programs
ISAGO	IATA Safety Audit for Ground Operations
ISM	IOSA Standards Manual
ISO	International Organization for Standardization
NCASP	National Civil Aviation Security Program
NCASQCP	National Civil Aviation Security Quality Control Program
PHS	Physical Inspection (screening method)
QA	Quality Assurance
QC	Quality Control
SARPs	Standards and Recommended Practices
SeMS	Security Management System
SMS	Safety Management System
SOP	Standard Operating Procedure
SSP	Supplementary Station Procedures
ULD	Unit Load Device
UPU	Universal Postal Union
WCO	World Customs Organization



Glossary of Terms

Act of Unlawful Interference

Acts or attempted acts such as to jeopardize the safety of civil aviation, including but not limited to those acts defined by ICAO Annex 17 or Member States

Airway Bill

Document made out by or on behalf of the shipper which evidences the contract between the shipper and carrier(s) for carriage of goods over routes of the carrier(s)

Appropriate Authority (for aviation security)

The authority designated by a State within its administration to be responsible for the development, implementation and maintenance of the national civil aviation security programme.

Aviation Security

Safeguarding civil aviation against acts of unlawful interference. This objective is achieved by a combination of measures and human and material resources.

Baggage

The personal property of passengers or crew carried on an aircraft by agreement with the operator.

Cargo

Any revenue or non-revenue shipment of goods or property other than mail, stores and accompanied or mishandled baggage that is transported on an aircraft and is not consumed or used during flight.

Revenue cargo—Cargo that is transported on an aircraft for commercial purposes; generates revenue for the operator.

Non-revenue cargo—Cargo that is transported on an aircraft for non-commercial purposes; does not generate revenue for the operator.

Note: *COMAT (Company Material) is non-revenue cargo.*

Note: *In IOSA/ISAGO standards, non-revenue cargo and revenue cargo are identically addressed, for the purposes of handling, loading, securing and transporting.*

Note: *In the IOSA/ISAGO standards 'mail' is considered to be an item of 'cargo': therefore, any reference to cargo also includes mail.*

Cargo Aircraft

An aircraft, other than a passenger aircraft, that is carrying cargo.

Cargo Facility

Any facility where cargo acceptance and/or cargo handling operations are conducted.

Combi (Combined Passenger and Cargo) Aircraft

An aircraft that can be interchangeably configured for simultaneous carriage of cargo and passengers in different proportions on the main floor. Combi aircraft typically feature an oversized cargo door, a strengthened floor, tracks on the cabin floor to allow the seats to be added or removed quickly, and a partition in the aircraft cabin to allow a mixed passenger/freight combination.

Note: *A combi aircraft is defined as a passenger aircraft when it is used to transport passengers.*

Note: *Passenger aircraft with main deck baggage compartments are excluded from this definition*

**Company**

A sole proprietorship, general partnership, limited liability company, corporation or limited partnership that pursues commercial aims

Consignee

The person whose name appears on the Air Waybill or in the shipment record as the party to whom the goods are to be delivered by the carrier

Consignment

(Which is equivalent to the term "Shipment"). One or more pieces of goods accepted by the carrier from one shipper at one time and at one address, receipted for in one lot and moving on one Air Waybill or shipment record to one consignee at one destination address

Consignor

The entity or individual who initiates the movement or transport of the goods.

Dangerous Goods

Articles or substances which are capable of posing a risk to health, safety, property or the environment

Designated Operator

National postal operators tasked by their government to fulfil the government's obligations under the UPU treaties

External Service Provider

An external organization engaged by the operator to perform certain operational functions contracted by the operator

Freight Forwarder

A supply chain entity that receives, coordinates and organizes the movement of shipments for carriage by air on behalf of other companies

Goods

See 'Cargo'

High-risk Cargo or Mail

Cargo or mail that is deemed to pose a threat to civil aviation as a result of specific intelligence; or shows anomalies or signs of tampering which give rise to suspicion.

Individual

A private person tendering goods for shipment who is not pursuing commercial aims on behalf of a company

Known Cargo

A shipment of cargo accepted by a regulated agent, a known consignor or operator directly from a regulated agent, operator or known consignor, to which appropriate security controls (that may include screening) have already been applied, and which is thereafter protected from unlawful interference, **or**

A shipment of unknown cargo that has been subjected to appropriate security controls, made "known", and which is thereafter protected from unlawful interference.

Known Consignor

An originator of shipments for transportation by air who has established business with a regulated agent or an Operator on the basis of having demonstrated satisfaction of specific requirements for safe transportation of cargo.



Logistics Agent

See 'Freight Forwarder'

Mail

Dispatches of correspondence and other items tendered by and intended for delivery to postal services in accordance with the rules of the Universal Postal Union (UPU).

Operational Function

A job, duty or task that is performed by personnel of an operator/provider as part of, or in direct support of the operator's aircraft operations.

Passenger Aircraft

An aircraft that carries passengers.

Screening

The application of technical or other means intended and designed to identify and/or detect weapons, explosives or other dangerous devices, articles or substances, which may be used to commit an act of unlawful interference.

Security (Aviation)

The safeguarding of civil aviation against acts of unlawful interference, achieved by a combination of measures and human and material resources.

***Note:** The term security as used in the ISM and GOSM refers to the safeguarding against acts of unlawful interference that have the potential to affect aircraft operations.*

Secure Cargo

The cargo that has been screened using appropriate methods of screening by a regulated agent, or if it originates from a known consignor approved by the appropriate authorities, and that remains in the custody of the secure supply chain protected from unlawful interference until it is loaded on board the aircraft and thereafter at transfer and transit points.

Secure Supply Chain

The interconnected security procedures that are applied to cargo consignments to maintain the integrity of such a consignment from the point where screening or other security controls are applied until it arrives at its last airport of arrival, including through transit and/or transfer points.

Security Management System (SeMS)

The documented system of an operator and/or a provider that delivers ground handling services for an operator, which is based on threat assessment to ensure security operations:

- Consistently fulfill all requirements mandated in the applicable national civil aviation security program(s);
- Are conducted in the most efficient and cost-effective manner considering the operational environment.

Shipment

One or more packages of cargo accepted by an operator from one shipper at one time and at one address, received in one lot for transport to one receiving entity at one destination address.

Shipper

The entity or individual who initiates the trade in goods.

Transfer cargo and mail

Cargo and mail departing on an aircraft other than that on which it arrived.



Unauthorized Interference

Interference that occurs when:

- Any item for transport on an aircraft (e.g. baggage, cargo, mail, stores, catering equipment) that has been accepted for transport by an operator and subjected to security controls subsequently is in contact with a person who has not been screened and/or does not have authorized access to security restricted/sterile areas where such items are stored and handled.
- There is unauthorized access to passengers, the aircraft and/or property of the operator that are in security restricted/sterile areas by a person who has not been screened and/or does not have authorized access to such restricted/sterile areas.

Unknown Cargo

A shipment of cargo that has not been subjected to the appropriate security controls, that may include screening, or subjected to unlawful interference while in the custody of the secure supply chain.

Unknown Customer

An individual or company that:

- a) initially tenders goods for carriage to an air carrier or supply chain entity (such as a Regulated Agent or Freight Forwarder), and
- b) Is not a Known Consignor or Regulated Agent, and;
- c) Does not have an established business history or documented contractual relationship with the entity accepting the goods

An Unknown Customer is typically a private consignor, private individual or walk-in customer who does not meet the criteria above. A freight forwarder (or equivalent) that consolidates consignments on behalf of another entity or individual would not be classified as an individual or company that initially tenders the goods for carriage.

Unsecure Cargo

Any consignment that have not been secured in accordance to the "Secure Cargo" requirements, meaning not appropriately screened by a regulated agent, nor subjected to appropriate security controls by a known consignor approved by the appropriate authorities, nor protected from unlawful interference throughout the security supply chain from the point where screening or other security controls are applied until it arrives at its last point of arrival, including through transit and transfer points.





Introduction

The threat landscape impacting air cargo, mail and supply chains continues to evolve. In July 2024, Improvised Incendiary Devices (IIDs) were used to target air cargo and supply chain interests with the aim of causing distribution and destruction. The IID incidents revealed gaps and vulnerabilities within the system and existing national and international aviation security framework.

Purpose and Applicability

This guidance material includes a brief synopsis of recent IID incidents, and the general threat posed by incendiary material to aviation. The guidance then summarizes a range of enhanced security measures that air carriers or supply chain partners may consider implementing to reduce the risks posed by IIDs.

This guidance is primarily designed for IATA members engaged in the uplift of air cargo, using dedicated cargo aircraft or as belly-hold cargo on combination/passenger aircraft. The guidance may also be relevant for supply-chain partners (including Regulated Agents, Known Consignors and Freight Forwarders).

This guidance document will be reviewed and adjusted as the threat picture continues to evolve.

Terminology and Definitions

This guidance is designed for an international audience. Every attempt is made to align terminology used throughout this document with international framework and universally accepted best practice. Individual States or regions may use differing terminology within their jurisdiction and national legislation. Air carriers must ensure they understand any potential differences in terminology and definitions within their operating jurisdictions.

Improvised Incendiary Device – Act of Unlawful Interference

In July 2024, reports emerged that air cargo and supply chain interests had been targeted with an Improvised Incendiary Device (IID). The events are summarized below:

- In July 2024, two parcels containing an IID caught fire in Europe. The first parcel ignited inside a logistics facility and the second caught fire on the tarmac during transfer to an aircraft. Both incidents caused contained damage, with no fatalities or damage to aircraft/airports reported.
- The parcels were tendered by unknown individuals (defined as an 'Unknown Customer' by this document) that did not have an established or traceable association with the entity offering the carriage.
- The contents of the parcels contained seemingly innocuous items (liquids and electronic items) that were packed and constructed in a manner so as to conceal an IID inside and to avoid detection through conventional security measures (such as security screening). The IIDs were designed to intentionally ignite and spread fire.
- In the immediate aftermath, several countries imposed additional security requirements on inbound cargo. The matter was later reported to the International Civil Aviation Organization (ICAO) as an Act of Unlawful Interference (AUI).



- The nature of the interference, alleged perpetrators and the exact target/s remains classified at national levels with investigations ongoing. Based on subsequent reactions from regulatory authorities, these acts were deliberate and designed to cause damage and disruption.

What is an Improvised Incendiary Device?

An incendiary substance, as part of an assembled device, or within the consignment itself, is quite simply a substance that is capable of catching fire, causing fire or burning readily. An IID is an incendiary using a combination of substances that are individually innocuous, but in combination, may have a chemical, exothermic reaction, resulting in combustion of either the chemicals involved, or with the packaging material. IIDs are designed to set fire to something and cause damage, destruction, or disruption. An IID should not be confused with an Improvised Explosive Device (IED). An IED is designed to explode, whereas an IID is designed to cause intense heat and spread fire rather than just exploding.

The term "Improvised Incendiary Devices" (IIDs) is used herein to refer to these unconventional incendiary threats.

Incendiary Material and Civil Aviation

Incendiary material can be carried safely in the hold of an aircraft for legitimate trade and business purposes, provided Dangerous Goods Regulations (DGR) are fully complied with. Examples include chemicals, metals, flammable and combustible liquids, and commercially manufactured devices designed for the purposes of illumination. Such material is generally forbidden in the cabin of aircraft and must be declared, labelled, packed, loaded and carried in the aircraft hold in accordance with International Civil Aviation Organization (ICAO), Annex 18-*Safe Transport of Goods by Air provisions*.

If not accurately declared, labeled, packed, and loaded onto an aircraft in accordance with Dangerous Goods (DG) provisions, especially given the exponential proliferation of lithium battery powered devices and e-commerce, the carriage of incendiary substances may pose a significant risk to the safe operation of an aircraft. An onboard fire spread by incendiary material may cause catastrophic damage, resulting in a loss of flight and almost certain destruction.

A significant and novel concern arises should threat actors seek to ship these chemicals with the intent of causing harm or disruption either during the transportation process, or at the destination, by triggering the incendiary properties of certain dangerous goods, assembled into an IID.

The Threat of Improvised Incendiary Devices

Unlike IEDs which are a well-documented threat to civil aviation, the intentional weaponization of incendiary substances into an unconventional IID appears to be a new modus-operandi targeting air cargo and supply chains.

The recent events clearly demonstrate the evolving IID threat impacting air cargo, mail and supply chains and highlight the critical need for new or revised compensatory measures to mitigate the associated risks.

Security Measures to mitigate the risks posed by IIDs

As previously mentioned, the threat of IIDs to air cargo, mail and supply chains is not new. IIDs are broadly covered in existing international Standards and Recommended Practices (SARPs) and guidance material. Nevertheless, there remains a significant focus on IEDs, mainly attributable to historical incidents and attacks against aviation interests involving this modus operandi. Existing SARPs and guidance are mostly reflective of this focus on IEDs.



The July 2024 IID incidents clearly demonstrates the evolving threat landscape impacting air cargo, mail and supply chains which ultimately exposed vulnerabilities within the existing security regime. The vulnerability is potentially global in nature and could be exploited by a range of threat actors. Existing international aviation security SARPs, guidance and framework are not necessarily sufficient in mitigating the potential risks posed by IIDs.

There is now a clear need to consider, develop and implement a series of enhanced compensatory measures to supplement existing framework. The enhanced measures outlined in this document will ideally provide a higher level of protection against the IID threat. Depending on the respective air carrier's operation and risk profile, the enhanced measures may be considered either individually or combined as a suite of measures. The enhanced measures outlined in this guidance are **optional**. They should be considered in context with the respective air carrier's risk profile and operations, supported by appropriate threat, vulnerability, and risk assessment activity. **The enhanced measures are detailed in Appendix A.**

Additional Resources

A range of additional resources, guidance and training material are available and may further assist air carriers in understanding and addressing the threat of IIDs. **These resources are summarized in Appendix B.**

Disclaimer

The security measures outlined in this document are not exhaustive and do not replace or circumvent existing international aviation security SARPS, guidance, or national regulations. Air carriers and supply chain entities are responsible for ensuring they comply with all relevant national and international aviation security requirements.

Some States may have specific or enhanced requirements that differ to or exceed the international baseline requirements. The enhanced security measures listed in this document may be required by certain States. **Air carriers and supply chain entities are responsible for ensuring they comply with all relevant security requirements, including emergency, enhanced, or additional requirements imposed by certain States.**

Air carriers and supply chain entities need to perform their own risk assessments to determine the applicability and suitability of the recommended security measures to their specific operations and the broader threat context.

Summary

Recent events have highlighted the need for extra vigilance and implementation of appropriate security measures to protect against the emerging threat of IIDs. By evaluating and considering the security measures outlined in this document, aircraft operators can help ensure a robust defense against emerging IID threats while maintaining compliance with international security standards, and their IOSA obligations.



Appendix A

Enhanced Security Measures

The following section outlines a range of enhanced security measures that operators may consider implementing to supplement existing aviation security framework.

Implementation of these enhanced measures is **optional**. These measures are based on existing international aviation security guidance material and best practice, combined with enhanced protocols, specifically aimed at mitigating the risks posed by IIDs.

1. **Acceptance:** The entity accepting the cargo (air carrier or other cargo supply chain entity) should consider the below points during cargo acceptance and screening:
 - a. **Unknown Customer:** When accepting goods from an Unknown Customer, ensure identification of the individual or company initially tendering cargo is appropriately checked and recorded, and procedures implemented to detect obvious discrepancies between information declared in accompanying documentation (such as goods description) and the physical appearance and characteristics of the cargo consignment, to the extent practicable and permissible under local laws
 - b. **Payment method:** Prohibition of untraceable payment methods (such as cash transactions)
 - c. **Payment Monitoring:** Identification of suspicious payment methods
 - d. **Payment Traceability:** Ensure details of payment are recorded and traceable
2. **Screening:** For consignments emanating from an Unknown Customer, consider the application of additional screening if:
 - a. during an alarm resolution process, it becomes obvious that the consignment contents do not broadly match the declared goods description.
 - b. It is determined that the consignment contains components such as batteries, wires, Liquids, Aerosols and Gels (LAGs), that are packed in the same package or parcel as electrical devices. Items that, by inherent design or construct, integrate components such as batteries, wires and/or LAGs *and* electrical componentry may be exempted.
3. **Letter Post and Parcels:** Appropriate Authorities should work with Designated Operators (Postal Service) to apply appropriate enhanced security measures and protocols, commensurate with the IID threat, to letter post and parcels at the point of acceptance.¹
4. **Supply-Chain Security:** To prevent potential introduction of an IID into a consignment in the supply chain, and to reduce the risk of potential trusted insider involvement, air carriers or supply chain partners should consider appropriate countermeasures which increase the protection of facilities, conveyances and consignments from unlawful interference. Potential measures for consideration may include any of the following:
 - a. The use of HS (ISO Standard High Security) tamper evident seals on vehicles used to transport secure cargo from Known Consignor or Regulated Agent facilities. Once applied, seal numbers should be documented, assigned to specific points or locations to secure the vehicle doors or

¹ For the definition and size limit of letter post and parcel, refer to the Universal Postal Union (UPU) Convention Manual.

- shipment, and the records transmitted to the authorized receiver. Upon acceptance, seal integrity should be verified, and seal numbers cross-checked against accompanying documentation
- b. The application of tamper evident material or shrink wrap to the exterior of consignments after screening or other security controls have been applied
 - c. The application of security screening to personnel with unescorted access to cargo. If the application of screening is not practical, alternative measures that achieve an equivalent security outcome should be considered
 - d. Appropriate physical security measures, such as electronic access control systems, intrusion detection systems and caged/fenced areas to effectively segregate and protect secure cargo during storage
 - e. Secure cargo should be stored in a designated area, segregated from non-secure cargo
5. **Security and Safety Training:** To the extent possible, Regulators (as applicable) and Air carriers and their External Service Providers (ESPs) should update training curricula for staff involved in cargo security, covering the enhanced security protocols and nature of the IID threat, especially for those personnel handling cargo, performing cargo screening or implementing other security controls.
 6. **Screener Training:** To the extent possible, Regulators (as applicable) and Air Carriers should ensure personnel performing cargo screening functions undergo specific training in the detection, identification and recognition of IID components and combinations. Greater vigilance regarding undeclared or mis-declared dangerous goods of a type and quantity that is inherently dangerous to aviation safety and the personnel involved are needed.
 7. **Additional Operational Measures:** Any other specific operational security measures necessary for addressing the IID threat should be detailed in the Air Operator Security Programme (AOSP) or associated Supplementary Station Procedures (SSPs). These measures should be based on appropriate threat, vulnerability and risk assessments.
 8. **Risk Assessment:** Threat and risk indicators should already be established within the air carrier's Security Management System (SeMS). These indicators should be revised (if necessary, with the new IID threat) to effectively assist in determining whether suspicious cargo can be accepted for carriage, factoring in the different risk profile of air cargo and supply chains when compared with passenger operations. As part of the risk assessment, other existing counter measures should be taken into consideration such as onboard fire suppression systems, fire resistant covers, containers and equipment.
 9. **Security-by-design:** When designing new, or remodelling existing logistics facilities and infrastructure, consideration should be given to design features that limit, contain, resist and deter the impacts of fire and explosions.
 10. **Quality Control:** Air carriers should ensure their air cargo security operations, including those outsourced to ESPs are subjected to continuous oversight and quality control activities, factoring in the IID threat.
 11. **Innovation:** To the extent possible, air carriers in collaboration with Appropriate Authorities and suppliers should explore opportunities for innovation and development, including trial and adoption of new or advanced screening methods, equipment, technology and software to detect IID threats, training opportunities and the enhancement of security culture.

Appendix B

Resources, Guidance and Reference Material

The below table outlines a range of resources, guidance and training material that may further assist air carriers in understanding and addressing IID risks

International Civil Aviation Organization (ICAO)	
Document Title	Purpose
<u>Annex 17-Aviation Security</u>	Internationally agreed set of provisions to prevent and suppress all acts of unlawful interference against civil aviation
<u>Annex 8-Airworthiness of Aircraft</u>	Internationally agreed set of provisions that define the minimum basis for the recognition by States of Certificates of Airworthiness for the purpose of flight of aircraft of other States into and over their territories
<u>Annex 18-Safe Transport of Dangerous Goods by Air</u>	Internationally agreed set of provisions governing the safe transport of dangerous goods by air
<u>Aviation Security Manual (Doc 8973 – Restricted)</u>	Guidance on the implementation of Annex 17 SARPs
<u>Technical Instructions for The Safe Transport of Dangerous Goods by Air (Doc 9284)</u>	Detailed instructions necessary for the safe international transport of dangerous goods by air
<u>Global Aviation Security Plan (GASeP) (Doc 10118)</u>	Strategic document to guide States, industry, and ICAO in their efforts to enhance aviation security, with six Global Priority Areas
Aviation Security Global Risk Context Statement (Doc 10108 – Restricted)	Global aviation security risk assessment, including a global threat picture










International Air Transport Association (IATA)

Document Title	Purpose
Security Management Systems Manual (SeMS)	Manual to support the development and implementation of SeMS and improve overall security performance and communication
IATA Cargo Handling Manual (ICHM)	The ICHM covers the entire shipping process door-to-door, describing the operating procedures standard in every stage of the chain in plain language
IOSA Standards Manual (ISM)	Contains the IOSA standards, recommended practices (ISARPs), and associated guidance material, which make up the assessment criteria for the <u>IOSA Audit</u> , and used by operators to successfully prepare for an audit
Standard Procedures for Preloading Advance Cargo Information (PLACI) Manual	Guidelines for harmonized and standardized procedures for advance cargo information filing
IATA Annual Security Reports	IATA's comprehensive Annual Security Reports (IASR) highlighting key issues within aviation security (2023 and 2024). The IASRs are a comprehensive readout of IATA's efforts, locally, regionally and globally, exploring multiple topics within and across aviation security.

International Air Transport Association (IATA) Training



Training Title	Purpose
Air Cargo Security	Comprehensive air cargo security course for security staff and management
Security Management Systems (SeMS)	Comprehensive course for SeMS development and implementation
Aviation Security Management/Advanced	Aviation security management fundamentals
Aviation Security Awareness	Introduction to security measures and regulations

	Other Resources	
	Document Title	Purpose
 WORLD CUSTOMS ORGANIZATION	World Customs Organization SAFE Framework of Standards	Establishes standards that provide supply chain security and facilitation at a global level to promote certainty and predictability
	ICAO and WCO – Moving Air Cargo Globally	Identifies the roles and responsibilities of these various air cargo entities and highlights how they can work together effectively to secure air cargo and mail within the regulatory framework
	Universal Postal Union – Postal Security – General Security Measures	General security measures that define the minimum physical and process security requirements applicable to critical facilities within the postal network
	Universal Postal Union – Postal Security – Office of exchange and international airmail security	Defines minimum requirements for securing operations relating to the transport of international mail
 U.S. Customs and Border Protection	U.S. Customs and Border Protection – Air Cargo Advance Screening Implementation Guide	Detailed requirements and steps for ACAS filers to file predeparture data with ACAS
	European Commission Import Control System, 2 (ICS2) guidance	ICS2 information and guidance