



*International Civil Aviation Organization*

**RASG-MID Steering Committee**

**Sixth Meeting (RSC/6)**  
*(Cairo, Egypt, 25-27 June 2018)*

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**Agenda Item 6: Any Other Business**

**SAFE CARGO OPERATION**

*(Presented by the United States)*

**SUMMARY**

The objective of this information paper is to increase the awareness of Member State responsibilities to ensure that cargo operations are loaded and secured in accordance with the aircraft Weight and Balance Manual (WBM) to ensure safe and efficient operations. This is especially important when specialized cargo is loaded.

Action by the meeting is at paragraph 5.

**1. INTRODUCTION**

1.1 Air cargo is any property carried on an aircraft other than mail and accompanied or mishandled baggage. It allows objects of all shapes, sizes, and weights shipped quickly around the world. The International Air Transport Association (IATA) indicates that the amount of goods that travel by air each day is more than \$18.6 billion USD.

1.2 The accident rate of cargo operations is eight times that of airline operations and inappropriately loaded cargo has played a role in multiple, fatal accidents. These air cargo accidents falls into the International Civil Aviation Organization (ICAO) Global Aviation Safety Plan's (GASP) high-risk accident occurrence categories of runway safety and loss of control in flight.

1.3 Specialized cargo is abnormal sized loads and dangerous goods. Specialized cargo requires special loading equipment and requires advanced skills to determine how much cargo restraint is needed based on calculations and unique methods defined in the airplane's weight and balance manuals.

**2. DISCUSSION**

2.1 According to ICAO, today's aircraft move well over \$5 trillion (USD) worth of a cargo by air each year, and this number continues to grow. In 2013, the global aviation industry transported \$6.4 trillion (USD) worth of cargo by air, which is 35 percent of world trade by value. The same year, the IATA

reported that its 240 members moved 42.6 million tons of cargo by air. For 2017, ICAO reported 49.2 million tons of cargo transported by air.

2.2 Transporting cargo provides operators with the potential to grow their revenue streams. Currently over 12 percent of industry revenue is from transporting air cargo. Because of this growth, ICAO has an interest in ensuring that operators align their policies and procedures to ensure the safety of air cargo operations.

### 3. CONCERNS

3.1 Special cargo requires special handling and securing/restraining procedures within the limitations specified in the Airplane Flight Manual (AFM)/ WBM approved by the type certificate/supplemental type certificate (TC/STC). Operators may carry special cargo in a bulk compartment if the WBM has approved limitations. The WBM determines, among other items, the tie down locations and whether inboard seat track tie downs are allowed for each aircraft. The ICAO Document 9284, *Technical Instructions for the Transport of Dangerous Goods by Air*, provides direction for the labeling and carriage of dangerous goods cargo.

3.2 The 2017 ICAO Safety Report identified that 61.3 percent of all aircraft accidents in 2016 fell into three high-risk accident categories: runway safety related events; loss of control inflight; and controlled flight into terrain. It is important to have a thorough understanding of the inspection, certification, oversight, and surveillance responsibilities involved with the safe transport of cargo as air cargo accidents fall into runway safety and loss of control inflight categories.

3.3 The United States has experience related to air cargo accidents. These include the following: 1) the May 11, 1996 ValuJet Flight 592 DC9 crash in the Florida Everglades after takeoff due to a fire in the cargo compartment caused by improperly labeled and stored dangerous goods special cargo, killing all 110 people on board; 2) the August 7, 1997 Fine Air Flight 101 DC8 crash on Miami International Airport after takeoff due to improper lock down of cargo, killing 3 flight crew and 2 people on the ground; and 3) the April 29, 2013 National Airlines Flight 102 Boeing 747-400CB that stalled and crashed just after takeoff from Bagram airfield after the cargo broke loose, killing the seven crew. These accidents were attributed to improper securing of special cargo.

3.4 In response to the ValuJet accident, the FAA prohibited the use of Class D cargo compartments, which are compartments that have no fire suppressant measures, but rely on the lack of oxygen to put out any fires that may occur. A renewed emphasis was also placed on the carriage of dangerous goods throughout the United States. After the Fine Air accident, the FAA created Advisory Circular (AC) 120-85, *Air Cargo Operations*, that provided recommendations for air carrier cargo operations; air carrier cargo operations system elements (e.g., Original Equipment Manufacturers (OEM) Parts Manufacturer Approvals (PMA), Technical Standard Orders (TSO)); and the certification of unit load devices (ULD), restraints, and airplane cargo handling systems.

3.5 After the Bagram accident, the FAA began a review of the weight and balance program of all U.S. operators and no operator was found to have a compliant WBM system. The FAA also placed an emphasis on ramp inspections related to cargo. Through this surveillance, the FAA has noticed both domestic and international carriers with improper loading and securing of cargo, especially special cargo. Examples include: cargo restrained using straps instead of nets, use of ties downs that are not rated for the weight mass of cargo, improperly securing live animals, and dangerous goods that are not appropriately secured.

3.6 The FAA has also noted that often in-source document programs are not derived from approved sources (TC/STC WBMs), operating limitations are exceeded, and or WBMs were not provided or could not be found. Additionally, cargo restraint methods are not defined in approved sources nor validated or controlled. For more information on the FAA experience with air cargo, please contact the FAA Air Cargo Focus team a. For the international community, the FAA is nearing completion of an air cargo course for civil aviation authorities as part of the ICAO Government Safety Inspector training program. For inquiries about FAA training, please contact: [9-awa-aia-intl-training@faa.gov](mailto:9-awa-aia-intl-training@faa.gov).

3.7 ICAO is addressing this growth and the importance of the air cargo industry through a detailed modernization of the global air cargo regulatory framework and by creating strategic partnerships with relevant international State and industry agencies. The ICAO Cargo Safety Subgroup has a focus on hazardous cargo, but is expected to propose risk assessments for all cargo. This risk assessment is expected to be a high-level direction for operators to consider when transporting certain types of cargo.

#### **4. CONCLUSION**

4.1 The FAA is addressing the problems found in loading and securing cargo of U.S. operators. We recommend that the civil aviation authorities in the Middle East region consider taking a similar approach to ensure proper oversight of their air operator cargo programs. Inquiries to the FAA Air Cargo Focus team are welcome and can be made at [9-NATL-Cargo-CFT@faa.gov](mailto:9-NATL-Cargo-CFT@faa.gov).

#### **5. ACTION BY THE MEETING**

5.1 The meeting is invited to note the information contained in this Information Paper.

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