



WORKING PAPER

AIR NAVIGATION COMMISSION

**MODERNIZATION OF PANELS OF THE AIR NAVIGATION COMMISSION —
ESTABLISHMENT OF CARGO SAFETY PANEL
(Item No. 19834)**

(Presented by the Director of the Air Navigation Bureau)

SUMMARY

This paper presents a proposal for the establishment of a Cargo Safety Panel (CSP) which has been developed by the Secretariat following discussion with the Air Navigation Commission (ANC) Ad hoc Working Group on Panel Modernization (AHWG-PM). A holistic approach to cargo safety requires an overarching management of the different cargo components; this by necessity requires the establishment of a cargo safety panel, of which the dangerous goods working group will be an essential part. Consideration was given to the need to progress the development of dangerous goods provisions within the context of a safe cargo supply chain.

Action by the Air Navigation Commission is in paragraph 4.

COORDINATION

ANB

REFERENCES

- | | |
|---|--|
| * AN-WP/8831 and Blue Rider | AN Min. 82-9 |
| *AN-WP/8828 and DP No.1
Revision 1 | AN Min. 118-2
AN Min. 186-8 |
| *AN Min. 197-9
Circular 333 | AN Min. 191-11
AN Min. 194-8 |
| Doc 10009, <i>Report of the Sixth
Worldwide Air Transport
Conference</i> | AN Min. 196-6
Annex 6
Annex 18 |
| Doc 9106, AIG (1974), <i>Report of
the Accident Investigation and
Prevention Divisional Meeting</i> | Doc 9284, <i>Technical Instructions
for the Safe Transport of
Dangerous Goods by Air, 2015-
2016 Edition</i> |
| Doc 7300, <i>Convention on
International Civil Aviation</i> | |

This working paper relates to the Safety Strategic Objective.

*Principal references

1. INTRODUCTION

1.1 There is a need for ICAO to integrate cargo safety into all components of the aviation transport supply chain, noting that this is a subset of the complete multimodal transportation process. Until now, cargo safety has largely rested with the development of Annex 18 — *The Safe Transport of Dangerous Goods by Air* and associated documents. Provisions related to operations are developed taking into account varying aircraft certification capabilities and it would be reasonable to expect that dangerous goods operations, as a subset of operations, would complement, not contradict, such rules. However, a number of disconnects between various disciplines have become apparent. One example involves airworthiness and dangerous goods requirements. Following a number of fires involving lithium batteries on Boeing 787 aircraft it became evident that knowledge of the hazards posed by these batteries had not been adequately communicated to those responsible for airworthiness. This also has potential considerations for extended diversion time operations. A second example is that of requirements for operators to require approval to transport dangerous goods as part of their air operator certificate (AOC). This deficiency, identified under the Universal Safety Oversight Audit Programme, has only recently been addressed. A third example is the fact that cargo compartments and fire suppression capabilities are not utilized in assessing the risk of cumulative dangerous goods shipments.

2. BACKGROUND

2.1 Importance of air cargo to the global economy

2.1.2 The transport of cargo by air is a significant component of the aviation industry for global commerce and economic prosperity. While accounting for less than 0.5 per cent of the tonnage of global trade, air cargo makes up over a third of the value of international trade, representing over \$6.4 trillion in goods annually (ICAO, Air Transport Action Group, 2014). Additionally, it has been estimated by the International Air Transport Association (IATA) that air cargo provides 12 per cent of the value to airlines (almost equivalent to that provided by business class passengers — 14 per cent). At the Sixth Air Transport Conference (ATConf/6), recommendations were adopted to encourage States to give due regard to the distinctive features of air cargo services, and to grant appropriate rights and operational flexibility to promote air cargo development. With an anticipated increase in the liberalization of market access for air cargo services, it is expected such transport will grow by 5 per cent between 2011 and 2030.

2.1.3 With this increase in growth, it can logically be expected that the probability of accidents and incidents will also rise, especially if one takes into account the hazards posed by new technologies such as energy devices combined with a huge increase in their transport e.g. fire and/or explosion risks related to lithium batteries from their first commercial application in 1991 to an estimated transport by air of billions of lithium cells and batteries annually.

2.1.4 The issue of air cargo industry segmentation has been noted by ICAO in the Global Air Transport Outlook to 2030 (Circ 333) where specific issues linked to shippers, forwarders and types of carriers (including “integrated carriers”) are discussed. Within the Air Transport Bureau (ATB), a holistic approach to cargo has been taken by security and facilitation in the development of a secure supply chain. This effort has been coordinated with external organizations such as the World Customs Organization (WCO), the Universal Postal Union (UPU), IATA, the International Federation of Freight Forwarders Associations (FIATA) and The International Air Cargo Association (TIACA) in an effort to ensure facilitation of air cargo transport whilst maintaining a secure supply chain. However, unlike security, the safety risk cannot be completely mitigated by measures taken before cargo is loaded for transport. Security screening and known shipper requirements address the risk prior to transport, whereas from a safety perspective, dangerous goods are loaded onto an aircraft without a similar framework for screening

for safety. Whilst security screening may be of assistance in locating undeclared dangerous goods, an integrated approach is needed that incorporates airworthiness, to determine if the capabilities of the aircraft are being exceeded, and operations to provide the necessary controls that would fit each diverse operation and aircraft. Finally, cargo logistic measures (including the development of electronic information processes for advance data supply to customs authorities for risk assessment, standardized consignment security declarations, and e-commerce) are being taken into account in this integrated approach.

2.1.5 The establishment by the Secretary General of a Cargo Safety Section within the Secretariat recognized the need for an integrated approach to cargo safety. However, whilst recognizing the work of the Dangerous Goods Panel (DGP) in addressing the specific issues of classifying and packaging dangerous goods, it is believed this is insufficient to address the interdependencies with operations and airworthiness, particularly when keeping in mind the increase in volume, kilometres travelled and the types of hazards presented by new technologies.

2.2 History of legal background

2.2.1 Article 37 of the *Convention on International Civil Aviation* promotes Standards and Recommended Practices concerned with “the safety, regularity, and efficiency of air navigation” under which the transport of cargo was presumed to be included during the discussions by Council during the creation of Annex 18. Specifically, the main reference to cargo is contained in Article 35 b), — Cargo restrictions:

“Each contracting State reserves the right, for reasons of public order and safety, to regulate or prohibit the carriage in or above its territory of articles ... provided that no distinction is made in this respect between its national aircraft engaged in international navigation and the aircraft of other States so engaged; and provided further that no restriction shall be imposed which may interfere with the carriage and use on aircraft of apparatus necessary for the operation or navigation of the aircraft or the safety of the personnel or passengers.”

2.2.2 Prior to 1974, the only pertinent provisions relating to cargo were contained in Annex 6, Part 1, paragraph 3.5:

“Explosives and other dangerous articles other than those necessary for the operation or navigation of the aeroplane or for the safety of the personnel or passengers on board shall not be carried on an aeroplane, unless the carriage of such articles is approved by the States of registry of the aeroplane and they are packaged and labelled in accordance with the regulations approved by that State.”

2.2.3 The issue of cargo safety involving dangerous goods and the consequential development of Annex 18 and the associated Technical Instructions stemmed from Recommendation 7/1 — Carriage of dangerous articles, made by the Fourth Accident Investigation and Prevention Divisional Meeting (1974). ICAO was requested to “undertake, as a matter of urgency, a study of all aspects involved in the transportation of dangerous articles by air, including the means and methods of ensuring notification of air traffic services, search and rescue services and accident investigation authorities and related matters such as packaging of the material.”

3. PROPOSED ESTABLISHMENT OF THE CARGO SAFETY PANEL (CSP)

3.1 In 1974, it was recognized by the AIG Divisional Meeting that “the scope of the problem entailed substantial considerations represented in ICAO, by the fields of air transport, OPS, RAC/SAR, COM, MED as well as AIG.” Recognizing the importance of the need for a multimodal approach, the initial tasks assigned to the DGP were:

“a) the development of SARPs containing provisions relating to at least the classification, limitation of dangerous goods permitted, labelling and handling of dangerous goods plus provisions relating to shippers’ and operators’ general responsibilities, notification of flight crew and other authorities, training of personnel and international compliance. The basis for these SARPs will be Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and the Regulations for the Safe Transport of Radioactive Material of the International Atomic Energy Agency, adapted as necessary to the special requirements of air transport, as outlined in Appendix A to AN-WP/4531; and b) the development of a supporting technical manual containing all the detailed material necessary for uniform international adherence to the SARPs, as outlined in Appendix B to AN-WP/4531.”

3.2 The ANC agreed (118-2), “in light of the continuing nature of the tasks performed by the DGP, that the continued existence of the DGP was justified until such time as a fundamental change was made to the panel’s terms of reference and work programme”. The terms of reference were later simplified in 2006 “to recommend changes to maintain the Technical Instructions for the Safe Transport of Dangerous Goods by Air in an up-to-date condition and to carry out other tasks related to the ICAO dangerous goods programme as directed by the Air Navigation Commission.”

3.3 On 28 November 2013, the Commission (194-8) reviewed AN-WP/8828, including Discussion Paper No. 1, Revision 1, and agreed on the establishment and modernization of several panels. The Commission noted the information regarding on-going consideration by the Secretariat of the viability and possible work programme of a CSP. The Ad-Hoc Working Group (AHWG) on Panel Modernization met on 8 October 2014 with the Secretariat to further evaluate and discuss the proposed panel and its terms of reference. Following thorough discussion, the AHWG agreed that the Secretariat would present a working paper detailing the rationale on the need to establish a CSP and for the current DGP to become a working group of the panel. During the AHWG discussion, reference was made to the possible alternative of establishing cargo working groups for all relevant panels; however, an analysis of the number of Annexes which impact upon cargo make this unworkable and inefficient, especially when one bears in mind the biennial production cycle of the Technical Instructions, an essential element for multi-modal transport of dangerous goods (see Appendix A).

3.4 During the review by the ANC of a proposal to ban lithium metal batteries on passenger aircraft (196-6), the International Coordinating Council of Aerospace Industries Associations (ICCAIA) stated that the fire protection capabilities and certification of original equipment manufacturers (OEMs) airframes and systems were developed based on the carriage of general cargo, and not the unique hazards associated with the carriage of dangerous goods, including lithium batteries. Therefore, it is essential to ensure that the risks posed by dangerous goods, whether declared or non-declared in general cargo, does not exceed the capabilities of the aircraft protective features. At the time the Dangerous Goods Panel was established by the ANC (82-9) in 1976, only 19 billion freight tonne kilometres (FTK) were performed for total air cargo. This must be compared to 185 billion FTK performed in 2013, an almost tenfold increase. Additionally, in the mid-1970s, estimates for the percentage of dangerous goods being carried as

cargo were 3 to 5 per cent whereas now, due to changes in the practices of operators, the development of integrated carriers and the increase in industry requiring just-in-time air transport delivery, some aircraft cargo is composed of more than 80 per cent dangerous goods. The development of small parcel services and just-in-time deliveries for electronic articles has been one of the main drivers of this increase and demand for immediate delivery remains significant. Whilst transporting one laptop may be an acceptable risk, transporting 100,000 cells or batteries to be installed in such laptops present a different risk.

3.5 From a dangerous goods perspective, safety is provided for in the restriction on the quantity and type of dangerous goods *per package*. However, there is no restriction on the total number or location of these packages of dangerous goods *per aircraft*. The absence of a holistic approach to cargo safety means that an overarching management of the different cargo components is required to ensure safety.

3.6 The CSP would, among others, deliberate the following:

- a) the cumulative risks posed by multiple dangerous goods shipments versus the capabilities of aircraft protective features;
- b) the issue of how cargo intersects with all other aspects of aviation safety e.g. cabin and flight crew, passenger baggage, mail, company stores, aerodromes storage, accident investigation, security; and
- c) the diversity in aircraft equipment and capabilities and the resulting problem of how to permit what can be controlled whilst prohibiting what cannot.

3.7 It is proposed to invite nominations from Member States currently participating on the DGP, Flight Operations Panel (FLTOPSP), Airworthiness Panel (AIRP) and Aerodrome Design And Operations Panel (ADOP), and requested additional regional representation and representation from relevant international organizations, including ICCAIA who were not previously members of DGP.

3.8 In accordance with the process for the establishment of a panel, as agreed by the ANC (186-8, 191-11), once the panel composition, terms of reference (ToR) and the work programme for the CSP are agreed, the President of the Council should be advised of the action taken by the Commission to establish a panel under delegated authority after which a State letter should be disseminated requesting nominations for membership. Subsequently, the Secretariat would submit the nominations received to the President of the Air Navigation Commission for approval of the membership on behalf of the Commission.

3.9 The proposed ToR for the CSP is presented in Appendix B. The work programme assigned to the CSP will be developed pursuant to the decision by the ANC on the proposal. A date, tentative agenda and administrative arrangements for CSP/1 are presented in Appendix C.

4. **ACTION BY THE AIR NAVIGATION COMMISSION**

4.1 The Air Navigation Commission is invited to:

- a) approve the establishment of the CSP under the conditions described above;
- b) approve the proposed CSP terms of reference as presented in Appendix B;

- c) request the Secretariat to develop the work programme and forward it to the ANC for approval;
- d) invite nominations from States and international organizations by State letter;
- e) request the Secretariat to establish the CSP in accordance with the ANC procedures;
- f) establish the current DGP as a “specified working group” of the new CSP to operate in accordance with ANC procedures; and
- g) approve the scheduling, tentative agenda and administrative arrangements for CSP/1 as presented in Appendix C.

APPENDIX A

ANALYSIS OF ANNEXES AND SUPPORTING DOCUMENTATION

An analysis of the Annexes and supporting documentation suggests the following current interdependencies related to cargo:

- Annexes 1 and 6
 - Certification — Air Operator's Certificate (AOC) — operators approved to carry dangerous goods vs. those not approved
 - Extended diversion time operations
 - Operations manual
 - Flight/cabin crew training and response
 - Ground handling services – build-up of cargo containers/pallets (Doc 9760) – cargo, mail, stores, passenger baggage
 - Load and mass distribution
 - Securing cargo – constraint systems
 - Ramp activities (Doc 8335)
- Annex 8
 - Cargo compartments protection
 - Cargo container fire suppression systems
 - Halon replacement
 - Aircraft equipment containing dangerous goods e.g. smoke detectors, emergency locator transmitters
 - Cargo container/pallet load configurations
- Annexes 9 and 18
 - Transport of infected corpses or corpses containing radioactive material as a result of medical treatment
- Annex 11
 - Alerting service – notification of cargo
- Annex 13
 - Aircraft accidents and incidents involving cargo
 - Cargo fires
- Annex 14
 - Cargo facilities – storage and location of warehouses — (Doc 9184 Part 1)
 - Cargo clearance
 - Apron safety
 - Emergency plan
 - Emergency services (plus specialised services e.g. radioactive material, infectious substances, high explosives) for firefighting and rescue procedures (Doc 9137, Part 1)
- Annex 17
 - Cargo security
 - Supply chain
- Annex 19
 - Safety management programmes for cargo operations

APPENDIX B

PROPOSED TERMS OF REFERENCE

Background	The Cargo Safety Panel (CSP) is established to enhance the cargo component of flight safety by identifying known and anticipated risks related to cargo and by developing mitigating strategies to address them. The Dangerous Goods Panel becomes a working group of the CSP.
Scope	The Cargo Safety Panel will undertake specific studies with a view to advising the ANC on technically practical and operationally feasible ICAO provisions on cargo safety. A large part of the work will involve the safe transport of dangerous goods by air. The panel will coordinate, when necessary, with other panels including AIRP, FLTOPSP, ADOP, FALP and AVSECP and other relevant international organizations including UNECE, IAEA, IMO, WCO, WHO, UPU, IATA, TIACA and FIATA.
Required Competencies	<p>The CSP shall preferably be composed of experts involved in:</p> <ul style="list-style-type: none"> • Dangerous goods regulations <ul style="list-style-type: none"> ○ Chemical and material properties ○ High risk cargo • Airframe manufacturing • Safety management • Aircraft operations • Aircraft certification • Aircraft fire suppression systems • Cargo compartment capabilities • Cargo constraint systems • Regulatory oversight <p>In addition, some members of this panel should ideally have expertise relating to but not limited to:</p> <ul style="list-style-type: none"> • Intermodal transport • Research and development • Security <ul style="list-style-type: none"> ○ Supply chain • Facilitation • Education, training and personnel competency

<p>Objective(s)</p>	<ol style="list-style-type: none"> 1. Identify risks associated with the transport of existing and emerging commodities 2. Identify environmental conditions on aircraft to which cargo is exposed such as variations in temperature, pressure and vibration 3. Identify risks associated with handling and storage of cargo at aerodrome facilities 4. Identify limitations of fire suppression systems to control a fire involving cargo, including dangerous goods 5. Identify limitations of cargo compartments to control incidents involving cargo such as fire, leakage, corrosion and toxic fumes 6. Develop operational control procedures for shipper traceability, acceptance, stowage, segregation and constraint of cargo, mail and stores and other functions as necessary 7. Develop appropriate limitations for what can and cannot be transported on passenger and/or cargo aircraft 8. Develop packaging performance standards to ensure cargo cannot exceed the capabilities of the aircraft systems 9. Develop procedures for shippers to identify, classify and prepare a consignment of dangerous goods and encourage quality management systems 10. Develop procedures to facilitate intermodal transport (i.e. rail, road, sea, air) while ensuring safety for air transport 11. Evaluate the capability of aircraft materials to perform as designed during fire conditions 12. Evaluate data related to cargo transport, material performance, incidents and accident reports 13. Participate in accident investigations for cargo fires as required 14. Eliminate the identified gap between the dangerous goods regulations, aircraft capabilities and the approval of operations related to cargo safety (ETOPS, OPSpec authorizations). 			
<p>Specific Working Arrangements</p>	<p>The panel will work through correspondence whenever possible and meet every two years in order to maintain the biennial production of the <i>Technical Instructions for the Safe Transport of Dangerous Goods by Air</i>. As a standing working group of the CSP, the Dangerous Goods Working Group will also work through correspondence whenever possible and meet, at a minimum, annually.</p>			
<p>Key Dates</p>	<p><i>Date when these TORs issued:</i></p>	<p><i>Date of assessment:</i></p>	<p><i>SRP Date of Approval by the Panel:</i></p>	<p><i>Date of Approval by ANC:</i></p>

APPENDIX C

CARGO SAFETY PANEL (CSP/1)

FIRST MEETING

DATE, ADMINISTRATIVE ARRANGEMENTS AND TENTATIVE AGENDA

1. DATE AND SITE

4.2 It is proposed that the first meeting of the Cargo Safety Panel (CSP/1) be held in Montréal in the third quarter of 2016 preceding the Dangerous Goods Working Group meeting.

2. ADMINISTRATIVE ARRANGEMENTS

4.3 The working language for the first meeting will be English.

3. TENTATIVE AGENDA

3.1 A tentative agenda has been developed taking into account major items already known for consideration by the panel.

Item 1: Opening of the meeting

- 1.1 Introductions
- 1.2 Administrative notes
- 1.3 Election of Chairperson and Vice-Chairperson

Item 2: Working methods of the panel

- 2.1 Review the agenda and approve the timetable
- 2.2 Review the terms of reference and work programme
- 2.3 Panel coordination activities

Item 3: Consideration of approved work programme items

- 3.1 TBD

Item 4: Future CSP work programme

Item 5: Other business