



International Civil Aviation Organization

DANGEROUS GOODS PANEL (DGP)

THIRTIETH MEETING

Montréal, 6 – 10 October 2025

REPORT FOLDER

The material in this report has not been considered by the Air Navigation Commission. The views expressed therein should be taken as advice of a panel of experts to the Air Navigation Commission but not as representing the views of the Organization. After the Air Navigation Commission has reviewed this report, a supplement setting forth the action taken by the Air Navigation Commission thereon will be issued to this report.

**THIRTIETH MEETING OF THE
DANGEROUS GOODS PANEL (DGP) (2025)**

LETTER OF TRANSMITTAL

To: President, Air Navigation Commission

From: Chairperson, Dangerous Goods Panel (DGP) (2025)

I have the honour to submit the report of the thirtieth meeting of the Dangerous Goods Panel (DGP) which was held in Montréal, from 6 to 10 October 2025.

A handwritten signature in blue ink, appearing to read 'Teun Muller', with a large, stylized initial 'T' and a horizontal line extending to the right.

Teun Muller
Chairperson

Montréal, 10 October 2025

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* Recommendations annotated "RSPP" relate to proposals for amendment of Standards, Recommended Practices and Procedures for Air Navigation Services or guidance material in an Annex.

DANGEROUS GOODS PANEL (DGP)**THIRTIETH MEETING****Montréal, Canada, 6 to 10 October 2025****HISTORY OF THE MEETING****1. DURATION**

1.1 The thirtieth meeting of the Dangerous Goods Panel (DGP) was opened by Mr. Junrong Liang, President of the Air Navigation Commission in Montréal, at 1000 hours on 6 October 2025. He was joined by Ms. Michele Merkle, Director of the Air Navigation Bureau, who welcomed participants to ICAO, Mr. Pascale Luciani, Deputy Director, Air Navigation and Aviation Safety and Captain Carys Knowles, Chief, Operational Safety Section. The meeting ended on 10 October 2025.

2. ATTENDANCE

2.1 The meeting was attended by members and observers nominated by twenty Contracting States and six international organizations, as well as by advisers and others as shown in the list below.

Members	Advisers	Nominated By
S. Bitossi		Australia
L. Cascardo		Brazil
D. Sylvestre	F. Bernier D. Bolton S. Ellsworth L. Tellier	Canada
Peng Guo	Sin Yi Cynthia Choi Yang Qiang Zhenhua Qiu	China
P. Tatin	M. Cosset	France
N. Kumar		India
M. Seddighi		Iran
E. Toriello	C. Chiodi	Italy

T. Tabata	T. Kazuhide K. Nakano H. Oda T. Okamoto K. Yanagawa	Japan
T. Muller	E. Boon R. Dardenne T. Groffen K. Vermeersch	Netherlands
J. Finlayson		New Zealand
	N. Jaejoon	Republic of Korea
A. Eboigbe		Nigeria
N. Smit		South Africa
M. A. de Castro		Spain
G. Kiliç	S. Cebi K. Al Belooshi M. Ebrahim T. Howard Ahmed Wagih	Turkey United Arab Emirates
H. North		United Kingdom
S. Kelley	K. Leary	United States
B. Firkins		International Air Transport Association (IATA)
D. Schlichting	M. Phaneuf	International Federation of Air Line Pilots' Associations (IFALPA)
Advisers		
A. Altemos G. Leach E. Wilson		Dangerous Goods Advisory Council (DGAC)
I. Elek		European Chemical Industry Council (CEFIC)
Observers		
I. Alsayer		Saudi Arabia
L. Calleja-Barcena		European Aviation Safety Agency (EASA)

T. Rogers	Global Express Association (GEA)
C. Litus-Koza	North Atlantic Treaty Organization (NATO)
J. Bojnansky	Universal Postal Union (UPU)

3. OFFICERS AND SECRETARIAT

3.1 Mr. Teun Muller (Netherlands) and Mr. Shane Kelly (United States) were nominated for the role of Chairperson of the meeting and Mr. Mr. Leonardo Cascardo (Brazil) for the role of Vice-Chairperson. Mr. Teun Muller was elected Chairman and Mr. Leonardo Cascardo was elected Vice-Chairperson.

3.2 The Secretary of the meeting was Ms. Lynn McGuigan, Technical Officer, Cargo Safety Section, who was assisted by Mr. Virgilio Alegria, Technical Officer, Cargo Safety of the same section.

4. AGENDA OF THE MEETING

4.1 The agenda for the meeting shown hereunder was approved by the Air Navigation Commission on 19 May 2025.

Agenda Item 1: **Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)**

- 1.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*
- 1.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition
- 1.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2027-2028 Edition

Agenda Item 2: **Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**

- 2.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*
- 2.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition

2.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2027-2028 Edition

2.4: Development of proposals, if necessary, for amendments to the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) for incorporation in the 2027-2028 Edition

Agenda Item 3: Facilitating safe transport of dangerous goods by air (*Ref: REC-A-DGS-2027*)

Agenda Item 4: Managing safety risks posed by the carriage of energy storage devices by air (*Ref: Job Card DGP.003.05*)

Agenda Item 5: Clarifying State oversight responsibilities in Annex 18 (*Ref: Job Card DGP.005.05*)

Agenda Item 6: Dangerous goods provisions to support RPAS operations (*Ref: Job Card DGP.007.02*)

Agenda Item 7: Aviation security/dangerous goods coordination

Agenda Item 8: Coordination with other Air Navigation Commission panels

Agenda Item 9: Harmonization of *Guidance Material for the Dangerous Goods Panel (DGP) to Aid in the Preparation of the Technical Instructions and Supporting Documents* with revised dangerous goods provisions

Agenda Item 10: Other business

5. WORKING ARRANGEMENTS

5.1 The panel met as a single body, with ad hoc working groups as required. Discussions in the main meeting were conducted in Arabic, Chinese, English, French, Russian and Spanish. Some working papers were presented in English only. The narrative part of the report was issued in Arabic, Chinese, English, French, Russian and Spanish. Amendments to *Technical Instructions for the Safe Transport of Dangerous Goods by Air* and its *Supplement* (Doc 9284SU) were issued in Chinese, English, French, Russian and Spanish.

6. OPENING REMARKS BY THE PRESIDENT OF THE AIR NAVIGATION COMMISSION

6.1 Good morning, Members and Observers of the Dangerous Goods Panel, ladies and gentlemen. Welcome to ICAO Headquarters for the thirtieth meeting of the Dangerous Goods Panel. I am

Junrong Liang, the President of the Air Navigation Commission. On behalf of the ANC, I would like to begin by expressing our sincere appreciation for your dedication and expertise, which continue to allow dangerous goods to be transported safely by air. Your work is critical to ensuring that ICAO's dangerous goods provisions remain practical and adaptive to the evolving safety challenges we face.

6.2 I extend a special welcome to new members who have joined the panel. Since DGP/29, the Commission approved two new nominations and five nominations to replace outgoing members:

- 1) Mr. Mohammadmehdi Seddighi nominated by Iran;
- 2) Mr. Augustine Eboigbe nominated by Nigeria;
- 3) Ms. Eliana Toriello nominated by Italy who replaces Mr. Paulo Privitera;
- 4) Mr. Nico Smit nominated by South Africa who replaces Mr. Luvuyo Gqeke;
- 5) Ms. Helen North nominated by the United Kingdom who replaces Mr. Mario Ranito;
- 6) Mr. Shane Kelley nominated by the United States who replaces Mr. Duane Pfund;
- and
- 7) Mr. David Schlichting nominated by IFALPA who replaces Mr. Scott Schwartz.

6.3 Your fresh perspectives and expertise will be invaluable to the panel. At the same time, we recognize the service of outgoing members, whose dedication has shaped the panel's achievements over the years. The membership changes result in the panel being composed of twenty-seven members nominated by twenty-four States and three international organizations. The work of all members is highly appreciated.

6.4 I would like to highlight three key responsibilities associated with your role as a panel member:

6.4.1 First, please remember that while you are nominated by your State or international organization, you are participating in your personal expert capacity to assist the ANC in studying and resolving international aviation issues to benefit all States.

6.4.2 Second, the importance of each of you contributing to the panel's work. The Directives for Panels of the Air Navigation Commission states that "if a panel member fails to contribute to the work of the panel or fails to attend two consecutive meetings, ICAO may ask the State or international organization concerned whether it wishes to maintain its nominee on the panel. If no reply is received within three months, it will be assumed that the State or organization wishes to withdraw its nominee." I remind you of this because the panel is becoming quite large, and we want to ensure it remains effective.

6.4.3 Finally, please remember that the success of any ICAO panel meeting is determined by the ability of participants to settle technical issues in a cooperative manner and that consensus-driven solutions are key to success. This will help ensure that amendments are globally suitable and implemented consistently among Member States.

6.5 I am aware that you will elect new panel leadership during this meeting. I would like to thank the chair and the vice-chair for their leadership and dedication to the work of the panel over the past two years. Best wishes to all candidates participating in the election.

6.6 I particularly want to congratulate the panel on your achievements at the twenty-ninth meeting held in November 2023. The Commission reviewed your report during its 225th session and

subsequently the Council approved your proposed amendments, subject to some minor revisions made by the Commission. All amendments were incorporated in the 2025-2026 Editions of the documents.

6.7 The Commission also reviewed your proposed amendments to Annex 18 regarding clarification of States' responsibilities with respect to the safe transport of dangerous goods by air in March of this year. The amendments received broad support from the Commission. Specific comments were provided to the panel through the Secretariat, with the recognition that a more mature amendment to Annex 18 would be recommended from this meeting. The Commission also highlighted the importance of coordination between DGP, the Flight Operations Panel, the Safety Management Panel, the Safe Carriage of Goods Specific Working Group of the Flight Operations Panel and the Aviation Security Panel. It highlighted in particular the specific working group on the safe carriage of goods, as this group had job cards on topic relevant to the DGP. I look forward to seeing the final amendment, fully coordinated with the relevant expert groups, coming out of this meeting.

6.8 Cross-panel coordination is of paramount importance in order to maintain alignment and integrity of SARPs and PANS across ICAO. You have three approved job cards in your work programme. Your job cards are supported by nine other expert groups and, at the same time, the DGP is supporting sixteen job cards of eight other expert groups. When providing your input, please bear in mind the priority and timelines for delivery of job cards you are supporting and job cards from other panels that may be of high priority. It is important to help the relevant panels deliver their work in time to meet the ANC's expectations.

6.9 In your work programme, DGP.003.05: Mitigating safety risks posed by the carriage of lithium batteries by air, is a high priority, which means the ANC expects that the job card should be actively progressed and monitored, with action plans developed that ensure they are well resourced. It should be processed in accordance with the timeframes established by the ANC, or the timeframes reassessed by the ANC based on an impact assessment from the primary panel or working group that provides the rationale and any consequences of the proposed delay. Early indications should be provided to the ANC when risks to the timely delivery of high priority job cards are anticipated.

6.10 You have an extensive agenda to complete this week. Evolving challenges, such as those related to energy storage devices and remotely piloted aircraft, require ongoing dialogue among experts from various fields. I encourage you to share your experiences and insights openly, so we may continue to strengthen aviation safety together. If you should require any advice or assistance in your work, I trust your chairperson will not hesitate to call upon the Secretariat, myself, or any member of the ANC.

6.11 It remains for me to declare open the thirtieth meeting of the Dangerous Goods Panel. The Commissioners and I look forward to meeting with you on Friday for a debriefing. I wish you a successful and productive meeting.

7. OPENING REMARKS BY THE DIRECTOR OF THE AIR NAVIGATION BUREAU

7.1 The Director of the Air Navigation Bureau, Ms. Michele Merkle, welcomed participants to ICAO and expressed gratitude for the panel's dedication and hard work. She acknowledged that panel work was often in addition to regular jobs and could impact personal lives, emphasizing how valued and important their contributions were to ICAO's mission.

7.2 Special thanks were given to those who had taken on leadership roles within the panel and working groups, noting that their extra effort was essential for advancing panel work through the ANC and Council processes. She thanked panel members from the United Arab Emirates, Qatar, and India for organizing face-to-face working group meetings and supporting the Secretariat's attendance.

7.3 She mentioned the record-breaking 42nd Assembly, which was attended by the highest number of delegates ever. Over 500 working and information papers were presented, several related to dangerous goods. Most issues raised were already part of the panel's work programme. A paper from the Republic of Korea highlighted the increasing risk of lithium batteries in aircraft cabins, a topic the panel would be addressing during the week.

7.4 She noted that the Assembly had endorsed the Global Aviation Safety Plan for 2026–2028, which guides regional and national safety planning. It reaffirmed ICAO's commitment to aviation safety and the aspirational goal of zero fatalities in international civil aviation due to accidents or unlawful acts, aligning with the ICAO strategic plan for 2026–2050.

7.5 She stressed the need for a positive safety culture throughout the cargo transport supply chain. She referenced the first Air Cargo Summit in Turkey, held in April 2025, where this was emphasized.

7.6 She encouraged attendees to enjoy Montreal's beautiful weather and scenery, and reiterated appreciation for their hard work and the value of their contributions.

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- Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)**
- 1.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air***

The panel did not identify any amendments to Annex 18 necessary to maintain alignment with the UN Recommendations on the Transport of Dangerous Goods.

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- Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)**
- 1.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition**

1.2.1 DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS

Background

The meeting reviewed amendments to the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals (subsequently referred to in the report, for the sake of brevity, as “UNCOE”) at its twelfth session (Geneva, 6 December 2024). The amendments were developed by the DGP Working Group on UN Harmonization (DGP-WG/UN Harmonization) and initially reviewed at the Dangerous Goods Panel Working Group Meeting in 2025 (DGP-WG/25, 21 to 25 April 2025, Delhi, India) (see paragraph 4.1.2.1 of the DGP-WG/25 Report). DGP-WG/UN Harmonization continued its review after DGP-WG/25 and recommended additional revisions. These are described in the report of the DGP/30 discussions below.

1.2.1.1 Amendments to Part 1 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/11)

1.2.1.1.1 The amendments to Part 1 presented to DGP-WG/25 were agreed, subject to an editorial amendment to correct a reference in 1;1.1.5.1 i) 2).

1.2.1.2 Amendments to Part 2 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/12)

1.2.1.2.1 The amendments to Part 2 presented to DGP-WG/25 were agreed, subject to:

- a) revisions to new provisions for classification of energetic samples to address the fact that some of the substances referred to in the UN Model Regulations were forbidden for air transport; and
- b) editorial amendments to 2;2.5.1, 2;9.3 and 2;9.4.

1.2.1.3 Amendments to Part 3 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/13)

1.2.1.3.1 The amendments to Part 3 presented to DGP-WG/25 were agreed, subject to:

- a) not adopting the amendment in the UN Model Regulations to assign a special provision requiring UN 2029 – **Hydrazine, anhydrous** to be protected from heat, as cylinders were not allowed for UN 2029 when transported by air;
- b) the removal of the assignment of Special Provision A235 (for hybrid batteries with lithium ion and sodium ion cells to be assigned to the appropriate lithium ion entry in Table 3-1) from UN 3536 – **Lithium ion batteries installed in cargo transport unit**, 3563 – **Lithium metal batteries installed in cargo transport unit** and UN 3564 – **Sodium ion batteries installed in cargo transport unit**, as these were forbidden for transport by air and the assignment of a new special provision for these entries in the Supplement (see paragraph 1.3.1.1 a) of this report);
- c) editorial amendments to Special Provisions A107 and A237;
- d) the movement of criteria for excepting mixtures assigned to UN 3082 – **Environmentally hazardous substance, liquid, n.o.s*** from package performance tests for plastic drums with removable heads from a new special provision to the existing packing instruction for UN 3082 (Packing Instruction 964); and
- e) replacing cross-references to UN 2941 – **Fluoroanilines** in Table 3-1, which was removed from the table, with generic entries.

1.2.1.4 Amendments to Part 4 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/14)

1.2.1.4.1 The amendments to Part 4 presented to DGP-WG/25 were agreed, subject to:

- a) the removal of an additional packing requirement for single packagings for UN 2029 – **Hydrazine, anhydrous** in Packing Instruction 854, given that single packagings are not permitted for this substance; and
- b) the replacement of applicable provisions allowing for UN 3363 – **Dangerous goods in apparatus** or **Dangerous goods in machinery** or **Dangerous goods in articles** to contain lithium cells or batteries or sodium ion cells or batteries that were copied from Section II of Packing Instructions 967, 970 and 978 into Packing Instruction 962 with a reference to these packing instructions.

1.2.1.4.2 The need to address the following issues over the next biennium was identified to address inconsistencies in packing instructions:

- a) the development of criteria for determining whether particular provisions should be included in a packing instruction or in a special provision and amendments to the

Technical Instructions and consequential amendments to ensure provisions align with this criteria;

- b) consideration of a consistent and effective approach for including provisions allowing articles containing dangerous goods to also contain lithium or sodium ion batteries and cells and consequential amendments to ensure provisions align with this approach; and
- c) reviewing potential misalignment between the Technical Instructions and the UN Model Regulations for provisions for UN 2990 – **Life-saving appliances, self-inflating** and UN 3072 – **Life-saving appliances, not self-inflating**.

1.2.1.5 Amendments to Part 5 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/15)

1.2.1.5.1 The amendments to Part 5 presented to DGP-WG/25 were agreed, subject to:

- a) editorial amendments to correct an incorrect reference in 4.1.5.1.1;
- b) a revision to abbreviations for units of measurement permitted on the dangerous goods transport document for explosive articles of Class 1 to align with a revised definition for net explosive mass in Part 1;3;
- c) a consequential amendment to the list of special provisions to be referred to on the dangerous goods transport document resulting from the decision to move criteria for exceptions for UN 3082 from a special provision to the packing instructions (see paragraph 1.2.1.3.1 d) of this report).

1.2.1.6 Amendments to Part 6 of the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/16)

1.2.1.6.1 The amendments to Part 6 presented to DGP-WG/25 were agreed.

1.2.1.7 Amendments to Attachment 1 to the Technical Instructions developed by DGP WG/24 and DGP-WG/25 (DGP//30-WP/19)

1.2.1.7.1 The amendments to Attachment 1 presented to DGP-WG/25 were agreed.

1.2.1.8 Packing Instruction 603 (DGP//30-WP/24)

1.2.1.8.1 An editorial amendment to correct a referencing error in Packing Instruction 603, which applied to UN 3507 – **Uranium hexafluoride, radioactive material, excepted package**, non-fissile or fissile-excepted, along with an editorial amendment to correct missing text were agreed.

1.2.1.9 Required Information on the Air Transport Document for Excepted Packages (Air Waybill (AWB)) (DGP//30-WP/25)

1.2.1.10 Editorial amendments to the general provisions and documentation requirements for the transport of excepted packages containing radioactive material in Parts 1;6.1.5.1 and 5;1.2.4.2 to correct outdated references that were inadvertently introduced in the 2025–2026 Edition due to the addition of new sub-paragraphs were agreed. The Secretary was requested to correct the errors through a corrigendum to the 2025-2026 Edition of the Technical Instructions.

1.2.2 RECOMMENDATION

1.2.2.1 In light of the foregoing discussions, the meeting developed the following recommendation:

Recommendation 1/1 — Amendment to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) proposed for the sake of alignment with the UN Recommendations on the Transport of Dangerous Goods for incorporation in the 2027-2028 Edition

That the amendments identified as “UN harmonization amendments” in Appendix A to the report be incorporated in the Technical Instructions.

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- Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods (REC-A-DGS-2027)**
- 1.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2027-2028 Edition}**

**1.3.1 AMENDMENTS TO THE SUPPLEMENT TO THE
TECHNICAL INSTRUCTIONS DEVELOPED BY DGP
WG/24 AND DGP-WG/25 (DGP/30-WP/20)**

1.3.1.1 Draft amendments to the Supplement to the Technical Instructions were developed by DGP-WG/UN Harmonization to reflect the decisions taken by the UNCOE. The output from DGP-WG/UN Harmonization was initially reviewed at DGP-WG/25. DGP-WG/UN Harmonization continued its review after DGP-WG/25 and recommended the following:

- a) the addition of a new special provision based on Special Provision A235 in the Technical Instructions for hybrid batteries installed in cargo transport units and assigned to UN 3536 — **Lithium ion batteries installed in cargo transport unit**, 3563 — **Lithium metal batteries installed in cargo transport unit** and UN 3564 — **Sodium ion batteries installed in cargo transport unit**; and
- b) editorial amendments to replace references to 2; 6.0 with 2, Introductory Chapter, 6.0 in packing instructions for articles containing dangerous goods.

1.3.1.2 The amendments were agreed.

1.3.2 RECOMMENDATION

1.3.2.1 In light of the foregoing discussions, the meeting developed the following recommendation:

Recommendation 1/2 — Amendment to the *Supplement to Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) proposed for the sake of alignment with the UN Recommendations on the Transport of Dangerous Goods for incorporation in the 2027-2028 Edition

That the amendments identified as “UN harmonization amendments” in Appendix B to the report be incorporated in the Supplement to the Technical Instructions.

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Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)

2.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*

2.1.1 The panel did not develop any amendments to Annex 18 under this agenda item.

- Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**
- 2.2: Develop proposals, if necessary, for amendments to the Technical Instructions for the *Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2027-2028 Edition**

2.2.1 HARMONIZATION OF TERMINOLOGY: STOWAGE VERSUS STORAGE (DGP/30-WP/8)

2.2.1.1 Amendments aimed at ensuring consistent use of the terms “storage”, “loading” and “stowage” in Part 7 of the Technical Instructions and Part S-7 of its Supplement were agreed. This was in follow-up to discussions at DGP-WG/25 (see paragraph 4.2.2.4 of the DGP-WG/25 report). The panel agreed that the term “storage” applied to long-term safekeeping of goods, usually in a warehouse, and that stowage applied to the arrangement and handling of goods aboard the aircraft, despite how the term was described in the DGP-WG/25 report. The panel also agreed that “loading” and “stowage” were synonymous within the context of the Technical Instructions, but that reference to both terms in the headings of Part 7 and Part S-7 should be maintained as they were often used together, and this would provide greater clarity and alignment with related provisions. The panel identified a need for further work to ensure alignment in the training provisions in Part 1;4 and in *Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment* (Doc 10147). It tasked the DGP Working Group on Training (DGP-WG/Training) with conducting a review over the next biennium.

2.2.2 HARMONIZATION OF TERMINOLOGY: APPROVAL OR SPECIFIC APPROVAL (DGP/30-WP/9)

2.2.2.1 The panel followed up on discussions at DGP-WG/25 regarding whether referring to a designated postal operator receiving a “specific approval” from the civil aviation administration before the DPO could introduce the acceptance of lithium batteries contained in equipment in the mail in accordance with Part 1;2.3 was appropriate. The Chief of the Operational Safety Section explained that a specific approval was defined within Annex 6 as an approval documented in the operations specifications for commercial air transport and that it was therefore inappropriate to use this terminology with respect to DPOs. The panel agreed to replace the term with “authorization” in Part 1;2.3.4, which was a broader term that captured all types of approvals and acceptances.

2.2.3 AMENDMENTS TO PART 7 OF THE TECHNICAL INSTRUCTIONS DEVELOPED BY DGP WG/24 AND DGP-WG/25 (DGP/30-WP/17)

2.2.3.1.1 The meeting reviewed amendments to the Technical Instructions that were agreed at DGP-WG/24 and DGP-WG/25. The amendments included:

- a) the correction of a discrepancy between the Technical Instructions and the Supplement with respect to tables identifying explosive substances and articles required to be separated during transport (Table 7-2 in the Technical Instructions and S-7-1 in the Supplement); and

b) editorial amendments to correct incorrect references.

2.2.3.1.2 The amendments were agreed.

2.2.4 PROCEDURES FOR THE CLASSIFICATION OF EXPLOSIVES (DGP/30-WP/27)

2.2.4.1.1 Amendments to Part 2;1.5 aimed at clarifying the role manufacturers and national authorities played in the classification of explosives and ensuring compliance with packaging conditions tied to a classification when explosives were repacked for subsequent distribution were developed. They took into consideration comments raised during discussions at DGP-WG/24 and DGP-WG/25 (see paragraph 4.1.2.3 of the DGP-WG/24 report and paragraph 4.2.2.1 of the DGP-WG/25 report). The panel agreed that involvement of an appropriate national authority was necessary and that this was the intent of the UN Model Regulations and the Technical Instructions. Accordingly, the amendment made it clear that classification must have been conducted, approved or accepted by an appropriate national authority. It was drafted in such a way to not require the authority to be from the same State as the manufacturer or shipper and to not imply that a physical classification document was required, based on comments raised at the working group meetings. It provided flexibility for States based on their capabilities and assessment of the risks involved.

2.2.4.1.2 The importance of subsequent shippers and distributors of explosives having adequate information about classification, given its relationship with the type of packaging used, was also discussed at the two working group meetings. Text was added to the existing note under 2;1.5.1.3 c) emphasizing the need for the shipper to verify that proposed packaging for repackaged explosives was permitted by the original classification

2.2.4.1.3 The amendments were agreed.

2.2.5 UN 3552 AND SPECIAL PROVISION A48 (DGP/30-WP/37)

2.2.5.1 Special Provision A48, which specified that packaging tests were not considered necessary, was incorrectly assigned to UN 3552 – **Sodium ion batteries packed with equipment** in the 2025-2026 Edition of the Technical Instructions. Packaging tests were in fact required for UN 3552 when packed in equipment in accordance with Section I of Packing Instruction 977. An amendment removing the assignment was agreed. The Secretary was requested to correct the error in the 2025-2026 Edition through a corrigendum.

2.2.6 SALVAGE PACKAGINGS (DGP/30-WP/38)

2.2.6.1.1 The panel was invited to consider amending Part 5;4.3 of the Technical Instructions to require that dangerous goods shipped in salvage packaging be accompanied by a copy of the documents of approval. The amendment was developed with the intent of facilitating inspection and ensuring compliance, suggesting that operators were often unaware of the need for national authority approval for salvage packaging. While sympathetic to the objective of the proposed amendment, there was little support for it. Salvage packaging was rarely used for air transport. It was typically stored in warehouses for emergencies when original packaging was damaged. While approvals existed, they were not always

traceable and locating them during an emergency would cause delays. Panel members believed the existing requirements and required marks were sufficient. The proposal was withdrawn.

2.2.7 TRANSPORT OF FUELS BY AIR IN CONTAINERS WITH A CAPACITY GREATER THAN PROVIDED FOR IN THE ICAO TECHNICAL INSTRUCTIONS (DGP/30.IP/6)

2.2.7.1 Challenges with transporting fuels by air in containers larger than those permitted under the Technical Instructions were raised at the Fourteenth Air Navigation Conference (AN-Conf/14) in 2024 and subsequently discussed at DGP-WG/24. Panel members were not supportive of including provisions in the Technical Instructions for the containers because of the many safety considerations that would need to be considered. While the exemption process provided a pathway, the lack of clear technical guidance posed challenges. Collaboration among States and the development of standardized guidance material were recommended to address safety, operational, and humanitarian needs.

2.2.7.2 Further information emerged since DGP-WG/24 regarding the operational and socio-economic necessity for transporting larger quantities of fuel in remote areas, especially where aviation fuel is critical for supporting isolated populations and safe return flights. Exemptions for larger containers could alleviate logistical and humanitarian challenges but would need to maintain safety standards equivalent to those in the Technical Instructions and consistent with the applicable packaging instruction in the UN Model Regulations.

2.2.7.3 The panel could then consider developing clear, standardized guidance to support safe and consistent fuel transport under the exemption process, ensuring a balance between safety and operational needs.

2.2.7.4 There was a strong willingness to collaborate among panel members with shared experiences and to develop harmonized guidance material. The author would engage with interested members over the next biennium.

2.2.8 RECOMMENDATION

2.2.8.1 In light of the foregoing discussions, the meeting developed the following recommendation:

Recommendation 2/1 — Amendment to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) to address air-specific safety risks and identified anomalies for incorporation in the 2027-2028 Edition

That the amendments identified as “Amendments to manage aviation specific risks and address anomalies” in Appendix A to the report be incorporated in the Technical Instructions.

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- Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**
- 2.3: Develop proposals, if necessary, for amendments to the Supplement to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2027-2028 Edition**

**2.3.1 FUTURE WORK OF THE DANGEROUS GOODS PANEL
WORKING GROUP ON THE SUPPLEMENT
(DGP-WG/SUPPLEMENT) (DGP/30-WP/6)**

2.3.1.1 The panel was invited to prioritize the future work of the DGP Working Group on the Supplement (DGP-WG/Supplement) and to agree on general principles underlining this work. DGP-WG/Supplement had developed amendments to existing guidance material on the processing of exemptions and approvals at previous meetings (see paragraph 2.3.2 of this report), but work had been paused since then pending the outcome of the work to develop a proposed amendment to Annex 18 and recommendations from the DGP Working Group on Annex 18 (DGP-WG/Annex 18) on the structure of supporting guidance material.

2.3.1.2 The panel agreed that the Supplement should continue to cover the list of dangerous goods, packing instructions, and processes related to approvals and exemptions. Other guidance that was contained in the Supplement, including approving training programmes and operations manuals, would be more appropriate in a new document under development to support implementation of Annex 18 (see paragraph 5.1.4 of this report).

2.3.1.3 The panel agreed that DGP-WG/Supplement should focus on:

- a) restructuring of the Supplement, keeping in mind the need to ensure a clear distinction between the contents of the Supplement and the new guidance material to support implementation of Annex 18; and
- b) developing a mechanism to ensure that the Supplement remains aligned with the UN Model Regulations and the Technical Instructions.

**2.3.2 DRAFT AMENDMENTS TO GUIDANCE FOR
PROCESSING EXEMPTIONS AND APPROVALS
CONTAINED IN THE SUPPLEMENT TO THE
TECHNICAL INSTRUCTIONS (DGP/30-WP/7)**

2.3.2.1 The panel was invited to consider proposed amendments to guidance for processing exemptions and approvals contained in Part S-1, Chapter 1, Attachment I to the Supplement to the Technical Instructions based on amendments that were initially presented at the DGP's 2022 Working Group Meeting (DGP-WG/22, Montreal, 21 to 25 November 2022). The original proposal was revised to incorporate feedback received during and after DGP-WG/22 and input from the DGP Working Group on the Supplement (DGP WG/Supplement).

2.3.2.2 The panel considered it premature to incorporate the amendment into the Supplement, given that there were still inconsistencies and contradictions throughout the document that could not be

addressed until the panel concluded a debate on whether the Supplement was purely guidance or if some parts were mandatory provisions (see paragraph 4.2.3.3 of the DGP-WG/25 report). It was agreed that the work was urgent and should be completed over the next biennium. It would be included as part of the work to develop guidance material for implementation of Annex 18 tasked to the panel through ANC job card DGP.005 (see paragraph 5.1.4 of this report).

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- Agenda Item 2: Managing air-specific safety risks and identifying anomalies (REC-A-DGS-2027)**
- 2.4: Development of proposals, if necessary, for amendments to the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) for incorporation in the 2027-2028 Edition**

2.4.1 DRAFT AMENDMENTS TO THE EMERGENCY RESPONSE GUIDANCE (DGP/30-WP/5)

2.4.1.1 The panel was invited to review proposed amendments to the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481). They included enhancements to amendments to cabin crew procedures for dangerous goods incidents that were developed with the advice and expertise of the ICAO Cabin Safety Group (ICSG). These were recommended for inclusion in the 2025-2026 Edition of the document by DGP/29, subject to minor revisions to address issues raised that would be made following the meeting through correspondence (see paragraph 9.1 of the DGP/29 report). However, a need for more substantial revisions was identified following DGP/29, and they could not be completed within the established publication deadlines. It was therefore recommended to delay amending Doc 9481 until the 2027-2028 Edition. Interested DGP members and advisers were invited to complete the work with members of the Safe Carriage of Goods Specific Working Group of the Flight Operations Panel (FLTOSP-SCGSWG), which had been tasked by the Air Navigation Commission to develop procedures for preventing and responding to incidents involving lithium batteries carried by crew, passengers and the operator, and through coordination with ICSG. The amendments included:

- a) reminders that the procedures were guidance for operators to develop their own emergency response programmes;
- b) enhanced cabin crew procedures for dealing with battery/portable electronic device (PED) fires, including in overhead bins, seats, and the flight deck;
- c) an emphasis on the importance of using protective equipment and the removal of text that previously discouraged their use if it would delay emergency response;
- d) the need to validate fire containment device performance claims;
- e) a definition for “fire-fighting gloves” and the addition of references to them for cabin and flight deck fires, particularly those involving lithium batteries;
- f) clarification regarding the intended use of the word “fire”, to include smoke, flames or fumes, versus specific use of the words smoke, flames or fumes;
- g) streamlining of steps and clarification of actions, especially regarding lithium battery fires and portable electronic device incidents;
- h) eliminating recommendations for leaving portable electronic devices in place a certain amount of time before placing them in a container; and

- i) updates to cargo compartment classification and location guidance to align with current airworthiness requirements and *Guidance for Safe Operations Involving Aeroplane Cargo Compartments* (Doc 10102).

2.4.1.2 The amendments were broadly supported and the hard work in developing them was acknowledged. The importance of training on passenger handling was emphasized, noting that passenger behaviour may have impacted emergency response in recent incidents. The secretary of the Cabin Safety Specific Working Group of FLTOPSP (FLTOPSP-CSSWG) noted that this group had been established to address risks such as this. The need for on-going maintenance of the guidance to ensure it aligned with real-world scenarios was also emphasized. This would need to be achieved through collaboration between the various expert groups.

2.4.1.3 The panel recommended that the proposed amendments, subject to endorsement by FLTOPSP-SCGSWG and FLTOPSP-CSSWG, be incorporated in the 2027-2028 Edition of Doc 9481.

2.4.2 AMENDMENTS TO THE DRILL CODES IN THE EMERGENCY RESPONSE GUIDANCE DEVELOPED BY DGP-WG/25 (DGP/30-WP/21)

2.4.2.1 The meeting reviewed amendments to the drill codes in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) consequential to the decisions taken by UNCOE. The amendments were agreed.

2.4.3 TYPES AND LOCATIONS OF CARGO COMPARTMENTS (DGP/30-WP/39), REVISION TO REFERENCES IN THE TECHNICAL INSTRUCTIONS TO PROVISIONS FOR TYPES AND LOCATIONS OF CARGO COMPARTMENTS (DGP/30-WP/40) AND REVISION TO REFERENCE IN THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS TO PROVISIONS FOR TYPES AND LOCATIONS OF CARGO COMPARTMENTS (DGP/30-WP/41)

2.4.3.1 An amendment to correct a misalignment between cargo classification and location descriptions contained in Doc 9481 and *Safe Operations Involving Aeroplane Cargo Compartments* (Doc 10102) by replacing outdated provisions in Doc 9481 with a reference to the up-to-date provisions in Doc 10102 was proposed. The provisions in Doc 9481 were updated through the larger amendment (see paragraph 2.4.1), so the panel considered which approach was better, i.e. to duplicate the provisions in Doc 9481 and Doc 10102 or to include them only in Doc 10102 and to refer to Doc 10102 from Doc 9481 or any other document, thus preventing any further misalignments. There was broad support for the latter, but also sympathy for the cost to users of Doc 9481 who might need to purchase Doc 10102 for these provisions. One suggestion was to remove the provisions from both documents and to provide them on the ICAO public website. But there would also be maintenance issues with this approach, and it might be even more difficult to ensure the provisions were up-to-date given the lack of a defined publication cycle. Another approach would be to not publish the provisions in any ICAO document, given that the descriptions were based on national airworthiness requirements that were available through other mediums. However, it was questioned whether any mechanisms were in place to ensure the national

requirements from major aircraft manufacturing States were aligned. It was decided to hold off on making any decisions until more information was available and to invite the FLTOPSP-SCGSWG to consider which approach was best, given that they would also be reviewing the larger amendment to Doc 9481 (see paragraph 2.4.1).

2.4.3.2 Consequential amendments to notes in the Technical Instructions and the Supplement referring to the cargo compartment classification and location provisions in Doc 9481 would need to be made should the decision be to maintain the provisions in Doc 10102 only. These would also be forwarded to FLTOPSP-SCGSWG.

2.4.4 RECOMMENDATION

2.4.4.1 In light of the foregoing discussions, the meeting developed the following recommendations:

Recommendation 2/2 — Amendment to the *Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc 9481) to address air-specific safety risks and identified anomalies for incorporation in the 2027-2028 Edition

That the *Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc 9481) be amended as indicated in Appendix C to the report.

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Agenda Item 3: Facilitating safe transport of dangerous goods by air (*Ref: REC-A-DGS-2027*)**3.1 AMENDMENTS TO PART 8 OF THE TECHNICAL INSTRUCTIONS DEVELOPED BY DGP WG/24 AND DGP-WG/25 (PRESENTED BY DGP-WG/UN HARMONIZATION) (DGP/30-WP/18)**

3.1.1 An amendment to Part 8 of the Technical Instructions developed by DGP-WG/25 was agreed. The amendment added a note under Part 8;1.1.1 to clarify the intent of “personal use only”. It was made to address a concern that requiring dangerous goods permitted to be carried by passengers and crew be for personal use only might result in an operator not permitting medical personnel to carry devices containing dangerous goods for urgent medical care. There was general agreement that a medical specialist should be able to carry the device, provided they were not carrying multiple devices for commercial or sales purposes. The notes were developed with this principle in mind.

3.2 PACKING INSTRUCTION TO BE USED FOR ARTICLES CLASSIFIED AS “ARTICLES CONTAINING DANGEROUS GOODS N.O.S.” (DGP/30-WP/26)

3.2.1 The meeting discussed a proposal aimed at clarifying which packing instruction and conditions for issuing an approval applied to the various entries in Table 3-1 for articles containing dangerous goods, not otherwise specified (n.o.s.) assigned to UN numbers 3537 through 3548. These articles were prohibited for transport under normal circumstances, but some could be approved for transport through specific special provisions. Multiple special provisions and packing instructions could apply to a single article, creating confusion. It was noted that while one packing instruction needed to be assigned depending on the assigned UN number, the additional requirements of all other applicable packing instructions also needed to be met.

3.2.2 Various options aimed at prioritizing which packing instruction applied and a suggestion to consolidate provisions for the approval process were proposed. The discussion revealed additional issues and inconsistencies within the Supplement that were not addressed by the proposed solutions. The panel agreed that a comprehensive solution would require more time. It requested DGP-WG/Supplement to incorporate this task into its ongoing work to update the Supplement.

3.3 PRESSURE DIFFERENTIAL REQUIREMENTS APPLICABLE TO PACKAGINGS CONTAINING RADIOACTIVE MATERIAL (DGP/30-WP/31)

3.3.1 The panel agreed to guidance supporting implementation of Part 6;7.2.3 of the Technical Instructions in the form of a note under the provision and guidance material for publication on the ICAO public website. Part 6;7.2.3 required packages containing radioactive material to withstand an internal pressure producing a differential of at least the maximum normal operating pressure (MNOP) plus 95 kPa, without loss or dispersal of contents. The requirement could be difficult to achieve, and it was considered excessively severe for low activity materials, with little risk even in case of dispersion.

3.3.2 The note allowed for an alternate means of compliance for packages containing solid radioactive material which aligned with provisions in International Atomic Energy Agency (IAEA) advisory material. The proposal considered comments raised during discussions on the topic at DGP-WG/24 (see paragraph 4.3.1 of the DGP-WG/24 report) and during discussions on the topic at previous DGP meetings.

3.4 **AMENDMENT TO SPECIAL PROVISIONS (DGP/30-WP/35)**

3.4.1 Most special provisions that excepted dangerous goods from the Technical Instructions, provided certain conditions were met, included a requirement for the words “not restricted” and the special provision number to be provided on the air waybill, when an air waybill was issued. For consistency, it was proposed to add this requirement to those that did not already have it. While some supported the proposal’s intent to provide consistency, others highlighted significant financial and operational burdens on the supply chain that would result without any enhancements to safety or compliance. The amendment was not agreed. There was, however, sympathy for undertaking future work to review each special provision to determine whether there was justification for requiring inclusion of the statement and the special provision number on the air waybill on a case-by-case basis.

3.5 **NEW SPECIAL PROVISION FOR UN 1544 ALKALOIDS, SOLID, N.O.S.* UN 1544 ALKALOID SALTS, SOLID, N.O.S.* UN 3140 ALKALOIDS, LIQUID, N.O.S.* UN 3140 ALKALOID SALTS, LIQUID, N.O.S.* (DGP/30-WP/36)**

3.5.1 The Technical Instructions provided an exception from the requirement for generic or not otherwise specified (n.o.s.) proper shipping names to be supplemented with a technical or chemical group name for controlled substances when a national law or international convention prohibited their disclosure. The panel was invited to consider adding a new special provision to Part 3;2 explaining this exception for the benefit of acceptance staff and to assign it to UN 1544 – **Alkaloids, solid, n.o.s.**, UN 1544 – **Alkaloid salts, solid, n.o.s.**, UN 3140 – **Alkaloids, liquid, n.o.s.** and UN 3140 – **Alkaloid salts, liquid, n.o.s.** The proposed special provision included a requirement for the dangerous goods transport document to include the name and telephone number of a responsible person when the technical name was omitted. The panel considered this redundant, as it was already required through the dangerous goods transport document. The amendment, subject to the deletion of this requirement, was agreed.

3.6 **RECOMMENDATION**

3.6.1 In light of the foregoing discussions, the meeting developed the following recommendation:

Recommendation 3/1 — Amendment to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) to facilitate transport for incorporation in the 2027-2028 Edition

That the amendments identified as “Amendments to facilitate transport” in Appendix A to the report be incorporated in the Technical Instructions.

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Agenda Item 4: Managing safety risks posed by the carriage of energy storage devices by air
(Ref: Job Card DGP.003.05)

**4.1 LOW PRODUCTION RUN CELLS AND BATTERIES:
HARMONIZATION OF TEXT BETWEEN 2;0.6.2 AND
SPECIAL PROVISION A88 (DGP/30-WP/10)**

4.1.1 Amendments were proposed to address a misalignment between Special Provision A88, allowing pre-production prototypes and “low production run” cells and batteries to be shipped through a State approval under certain conditions, and Part 2;0.6.2 of the Technical Instructions, allowing articles classified as articles containing dangerous goods to also contain cells or batteries. While Part 2;0.6.2 referred to Special Provision A88, it omitted the clarification that the production limit of 100 cells or batteries was on an annual basis, as stated in Special Provision A88. The amendments were first considered at DGP-WG/25 and agreed in principle, but panel members wanted time to ensure that the term “low” with respect to production runs in the current special provision, which was more specific than the text in the UN Model Regulations, was not intentionally used before agreeing to delete it and to have justification for maintaining the word “annual” when it was not used in the UN Model Regulations. DGP-WG/25 also identified a need to align the terminology in packing instructions containing provisions for pre-production prototypes and “low production run” cells.

4.1.2 Research did not immediately uncover any documented rationale for using the terms “low” and “annual” in the Technical Instructions with respect to production runs. An amendment had been proposed at the 2022 DGP Working Group meeting (DGP-WG/22, Montreal, 21 to 25 November 2022) (see 4.1.2.3 of the DGP-WG/22 report) to remove “annual” for the sake of alignment with the UN Model Regulations, but this was not agreed for fear of unintended consequences.

4.1.3 The panel agreed to the amendment proposed, but it requested the Secretary to submit a paper to the UN Sub-Committee seeking its interpretation of its special provision 310 with respect to production runs of not more than 100 cells or batteries and whether there was an intention for the number of shipments from a specific shipper to be limited in any way.

4.1.4 Amendments to Part 2; Introductory chapter, paragraph 6.2, Part 3;3, Special Provision A88 and Part 4, Packing Instructions 220, 378, 950, 951 and 952 are presented with the consolidated amendments to the Technical Instructions recommended by DGP/30 in Appendix A to this report.

4.2 REPORT OF THE ICAO DGP TASK FORCE ON MOBILITY AIDS (DGP/30-WP/30); BOWTIE (DGP/30-IP/1); SYSTEMS THEORETIC PROCESS ANALYSIS (STPA) REPORT (DGP/30-IP/2) AND EXTRACT FROM REPORT OF THE EXECUTIVE COMMITTEE ON AGENDA ITEM 12 TO THE 42ND SESSION OF THE ASSEMBLY RELATED TO ACCESSIBILITY IN INTERNATIONAL CIVIL AVIATION (DGP/30-IP/10)

4.2.1 Identification of safety risk and establishment of task force

4.2.2 The panel reviewed the findings of the DGP Task Force on Mobility Aids, formed at DGP-WG/24 to address safety concerns related to lithium battery-powered mobility aids on aircraft. The increasing energy capacity of lithium-ion batteries and the limited ability to manage thermal events were identified as significant risks. While the operator was responsible for ensuring the safety of the aircraft and those onboard, it was a challenge for them to balance this responsibility with the accessibility rights of passengers. Passengers with reduced mobility also faced challenges because they were subject to different policies from different operators.

4.2.3 The Technical Instructions imposed a Watt-hour rating limit of 300 Wh for batteries removed from the mobility aid and carried in the cabin, but no limit for those installed and protected in the mobility aid and stowed in the cargo compartment. The lack of a limit for the latter was intended to prevent impediments to the movement of persons with reduced mobility with the belief that the risks could be mitigated by the protection the mobility aid provided the battery and the operator's risk management activities. However, battery technology was advancing rapidly, allowing mobility aids to be installed with increasingly higher-capacity batteries. The escalation in energy capacity increased the potential severity of thermal events. Operators were seeking a limit to prevent exponential growth in energy capacity of batteries powering mobility aids carried on aircraft, with the understanding that this would have little impact on present-day passengers with reduced mobility because of the low percentage carrying batteries exceeding a Watt-hour rating of 300 Wh. However, the number was expected to increase without an established limit. DGP-TF/Mobility Aids was established to assess the safety risk associated with carrying the mobility aids, to develop policy options for addressing them, and to recommend any amendments to the Technical Instructions it deemed necessary.

4.2.4 Safety risk assessment

4.2.5 The task force assessed the safety risk through a bowtie analysis and a system-theoretic process analysis (STPA). The bowties and a report of the STPA are provided in Appendices A and B to the report on this agenda item, respectively. The STPA was facilitated by a systems safety specialist arranged through coordination with the Secretariat's Safety Management Section and involved broad regulatory and industry participation from more than 30 people. The task force coordinated its work with the FLTOSP-SCGSWG, with the recognition that it had been tasked with developing procedures for preventing and responding to incidents involving lithium batteries carried by crew, passengers and the operator aboard the aircraft through ANC job card SCGSWG.003.01.

4.2.6 The assessment identified several weaknesses in the current system that impacted the safe carriage of battery-powered mobility aids on aircraft, including:

- a) **Acceptance and inspection procedures.** These offered some protection, but they were often reactive and limited in their ability to detect underlying hazards. Damaged or poorly designed batteries could easily slip through these checks, exposing passengers and crew to risks.
- b) **Communication and operator inspection limitations.** Passengers were often unaware of the condition or specifications of their devices, leading to situations where critical information was missing at the point of acceptance. Ground handling and check-in staff did not have the expertise to inspect mobility aids for hidden damage and were often pressed for time.
- c) **The design of the mobility aid.** Robust design and testing standards were the foundation of true safety, ensuring mitigation from the outset rather than relying on last-minute interventions. The likelihood of incidents occurring would be dramatically reduced if mobility aids were engineered with safety and compatibility with air transport environments in mind, yet such standards were limited or not fully implemented for mobility aids.
- d) **Handling and stowage.** These controls focused on protecting the device during transit, loading, and stowage. However, they did little to prevent the acceptance and stowage of a mobility aid that was already damaged or unsafe before loading.
- e) **Fire detection, suppression and protection limitations.** Fire detection and suppression systems in aircraft cargo compartments provided a layer of defence, but their effectiveness against lithium battery thermal events was limited. Unit load devices helped protect mobility aids, but they might not be capable of containing battery fires or allow early detection. Fire-resistant containers and containment covers offered enhanced protection, but there were no recognized performance standards to evaluate their effectiveness, and they were not widely used.

4.2.7 Task force recommendations

4.2.8 The task force determined that strong design and testing standards throughout the product life cycle was the most effective way to proactively mitigate safety risks. It also identified that sharing of information and implementing procedures that helped operators assess the quality of the mobility aids and detect damage were critical for proactive risk mitigation activities. Reactive measures, such as standardized containment solutions, could reduce the severity of a runaway event. However, none of these measures could be implemented immediately, which left airline operators exposed to ongoing risks. A thermal event involving high-capacity lithium ion batteries could result in a catastrophic loss of an airframe with everyone on board. Members agreed measures that could be implemented in the short-term as a first step were needed to reduce the risk of a thermal event and to minimize the severity of an event should it occur. The most pressing concern for airline operators was the absence of limits on the energy capacity of batteries installed in mobility aids and not receiving information from passengers necessary to support their risk management activities in a timely manner. Accordingly, the task force proposed amendments to the Technical Instructions to address these immediate concerns.

4.2.9 Panel discussion

4.2.10 The panel supported the outcome of the STPA and the task force's recommended approach for addressing the weaknesses identified through it. The STPA was an effective tool that helped the task force systematically identify vulnerabilities in the system, allowing the panel to focus on solutions. The discussion on the proposed amendments focused on concerns related to balancing safety, practicality, and passenger accessibility rights. An amended version was eventually agreed with the understanding that the proposed amendments would be vetted with stakeholders, particularly representatives of persons with reduced mobility and mobility aid manufacturers. The amendment is presented in Appendix D to the report on this agenda item. A more detailed overview of the discussion and justification for revisions to the original proposal are provided in Appendix C to the report on this agenda item.

4.2.11 The panel acknowledged that the amendments addressed immediate concerns, but more work was needed over the next biennium to address weaknesses identified through the STPA holistically. This could only be achieved through coordination with the Facilitation Panel (FALP), given that Annex 9 — *Facilitation* contained Standards and Recommended Practices (SARPs) related to access to air transport by persons with disabilities. This need was further emphasized by Assembly Resolution 12/3: Accessibility in International Civil Aviation, developed at the 42nd Session of the ICAO Assembly. The resolution affirmed that dignity and non-discrimination were universal rights for all, including persons with disabilities and reduced mobility traveling by air. It acknowledged ongoing barriers faced by persons with disabilities and reduced mobility, including obstacles to free movement. It recognized the importance of government and industry working together to support the travel needs of persons with disabilities and reduced mobility. It stressed that all measures to improve accessibility for persons with disabilities and reduced mobility must be implemented without compromising safety, and that regulations should harmonize both objectives. Accordingly, the Secretary would work with Facilitation experts within the Secretariat to determine an effective mechanism for coordination between the DGP and FALP and how best to bring stakeholders together to address the safety risks associated with the carriage of lithium battery powered mobility aids on aircraft and the travel needs of persons with disabilities and reduced ability. The panel expressed its hope that an amendment to the Technical Instructions could be agreed following stakeholder engagement in the near term and incorporated in the 2027-2028 Edition of the Technical Instructions through an addendum. It emphasized that this was a first step, with more work expected over the next biennium.

4.2.12 Recommendation

4.2.12.1 In light of the foregoing discussions, the meeting developed the following recommendation:

Recommendation 4/1 — Managing risks associated with the carriage of lithium battery powered mobility aids on aircraft

That ICAO:

- a) establish an inter-panel working group between the Dangerous Goods Panel (DGP), Safe Carriage of Goods Specific Working Group of the Flight Operations Panel (FLTOPSP-SCGSWG), Cabin Safety Specific Working Group of FLTOPSP (FLTOPSP-CSSWG) and the Facilitation Panel (FALP) to address vulnerabilities identified through the safety risk assessment described in paragraph 4.2.3 of this report and the needs of passengers with reduced mobility;
- b) establish measures to proactively engage with representatives of persons with reduced mobility, mobility aid manufacturers, airline operators, and regulatory authorities to:
 - 1) review and refine, as necessary, proposed amendments to the Technical Instructions presented in Appendix D to the report on this agenda with a view to incorporating them in the 2027-2028 Edition of the Technical Instructions through an addendum; and
 - 2) address vulnerabilities identified through the safety risk assessment described in paragraph 4.2.3 of this report while ensuring harmonization with passenger accessibility provisions.

4.3 CARRIAGE OF POWER BANKS AND LITHIUM BATTERY POWERED ELECTRONIC DEVICES BY PASSENGERS AND CREW (DGP/30-WP/34), WORKING PAPER PRESENTED TO THE 42ND SESSION OF THE ICAO ASSEMBLY RELATED TO FIRE RISKS IN AIRCRAFT CABINS (DGP/30-IP/9) AND DGP-WG/17 PROPOSAL RELATED TO POWER BANKS (DGP/30-IP/11)

4.3.1 Amendments to provisions for passengers, crew and the operator to carry lithium battery powered devices on aircraft were proposed. They were developed in follow-up to discussions on the need to manage increasing fire risks associated with lithium batteries in aircraft cabins held at DGP-WG/25 and at the 42nd session of the ICAO Assembly (see paragraph 4.4.7 of the DGP-WG/25 report and 24.21 of the report of the Technical Commission to the 42nd Session of the Assembly). The need was evidenced by a growing number of cabin fires involving lithium batteries and heightened by an accident in January 2025 when a fire, likely initiated by a short circuit in a lithium ion battery stored in an overhead compartment, destroyed an aircraft. The accident led several States, organizations and individual airline

operators to implement additional restrictions. The panel acknowledged the need for prompt action to address safety risks. However, the restrictions resulted in a lack of global harmonization. The proposed amendment was developed with the intent of mitigating safety risks while promoting global harmonization.

4.3.2 The panel focused its work on the adequacy of the provisions in the Technical Instruction under the panel's recurrent work to maintain Annex 18 SARPs and other supporting provisions (work programme package REC-A-DGS-2027), with the knowledge that the risk was being addressed more holistically by FLTOPSP-SCGSWG through ANC job card SCGSWG.003.01 (Procedures for preventing and responding to incidents involving lithium batteries carried by crew, passengers and the operator aboard the aircraft).

4.3.3 The proposal to amend the Technical Instructions that was presented to the panel was developed based on an analysis and an evaluation of the measures already implemented by some States, organizations and individual airline operators. The panel reviewed the analysis and developed some revisions to the proposed amendment to prevent unintended consequences. While data indicated that portable electronic devices were more often the cause of fire in aircraft cabins than power banks were, the latter were a significant concern due to their increased use and a prevalence of lower-quality products with defects or vulnerabilities that were more likely to lead to thermal events. Power banks were also not offered the same level of protection that batteries installed in portable electronic devices were provided. The amendments therefore focused on power banks.

4.3.4 The amendment included revisions to the passenger provisions in Part 8 that prohibited recharging of power banks, recommended that power banks not be used to charge a portable electronic device, and limited the number that could be carried to two per person. A similar amendment to Part 8 was developed by the 2017 DGP Working Group Meeting (DGP-WG/17, Montreal, 24 to 28 April 2017) but later withdrawn when it was realized that a reference to the passenger provisions from the exceptions for dangerous goods of the operator made the exceptions subject to the same restrictions placed on passengers and crew. It would therefore impact the operator's ability to charge essential devices during flight. The amendment to the exceptions for dangerous goods of the operator developed by DGP/30 ensured that crew members could recharge power banks despite the restrictions in Part 8.

4.3.5 A detailed overview of the major discussion points is provided in Appendix E and the proposed amendment is provided in Appendix F to the report on this agenda item.

4.3.6 The original proposal to amend the Technical Instructions was accompanied by recommendations for future work and for consideration by other appropriate expert groups. These, along with concerns raised during the discussion on issues that were outside the scope of the panel's work programme, are described in Appendix E to this report. They included:

- a) incidents on the flight deck;
- b) crew training;
- c) passenger management;
- d) the need for guidance material and effective safety promotion; and
- e) regulating airside retail sales of power banks.

The panel requested the secretary to bring this report and the comments of the panel to the attention of relevant expert groups, including FLTOPSP-SCGSWG and the FLTOPSP-CSSWG.

4.3.7 The panel recommended that the amendments be incorporated into the 2025–2026 Edition of the Technical Instructions by way of an addendum to address an urgent safety risk in a consistent manner worldwide and to prevent further inconsistencies. Panel members acknowledged that safety improvements were incremental and that ongoing monitoring of lithium battery requirements was necessary. They agreed that future revisions might be needed as more data and experience became available.

4.4 RECOMMENDATION

4.4.1 In light of the foregoing discussions, the meeting developed the following recommendations:

Recommendation 4/2 — Managing safety risks associated with the carriage of power banks by passengers, crew and the operator

That:

- a) the amendments to the exceptions for dangerous goods of the operator and provisions for passengers and crew to carry power banks presented in Appendix F to the report on this agenda item be incorporated in the 2025-2026 Edition of the Technical Instructions through an addendum; and
- b) ICAO inform States of the amendment and the panel's concerns described in this report while encouraging them to conduct effective safety promotion activities to increase awareness of the safety risks.

Recommendation 4/3 — Coordination with relevant expert groups to manage increasing fire risks associated with lithium batteries in aircraft cabins

That:

- a) the panel's concerns related to crew training, passenger management, and thermal events on the flight deck be brought to the attention of relevant expert groups, including the Safe Carriage of Goods Specific Working Group of the Flight Operations Panel (FLTOPSP-SCGSWG) and the Cabin Safety Specific Working Group of FLTOPSP (FLTOPSP-CSSWG), as appropriate; and
- b) the panel continue monitoring the effectiveness of provisions for passengers and crew to carry lithium batteries in coordination with relevant expert groups based on emerging data and experience.

4.5 UPDATE ON EASA RESEARCH (DGP/30-IP/12)

4.5.1 The meeting was presented with an update on a research project on portable electronic device (PED) fire and smoke hazards in aircraft sponsored by the European Aviation Safety Agency (EASA). The objective of the research was to:

- a) characterize the main hazards posed by PEDs;
- b) assess smoke and fire consequences in the cockpit and cabin;
- c) assess impact from the number and energy content of PEDs;
- d) assess emergency procedures
- e) assess additional mitigation measures; and
- f) identify regulatory gaps.

4.5.2 All testing and data collection was completed. Conclusions and a final report were pending. The following is an overview of the findings:

- a) gas and smoke release is proportional to battery energy;
- b) cabin smoke dissipates in one to three minutes, cockpit visibility is impaired longer requiring rapid removal of burning PEDs;
- c) containment bags and fire extinguishers testing reveals that current standards are insufficient, new standards are recommended;
- d) crew training and emergency procedures need improvement including defining of clear roles, development of pictograms, and better equipment access; and
- e) risk assessment identified increasing PED numbers or battery energy could move risk from 'green' (acceptable) to 'red' (hazardous).

4.5.3 The meeting expressed its appreciation for the research and the valuable data it provided. The panel would be advised when the final report was published. The information would be provided to FLTOPSP-SCGSWG and FLTOPSP-CSSWG.

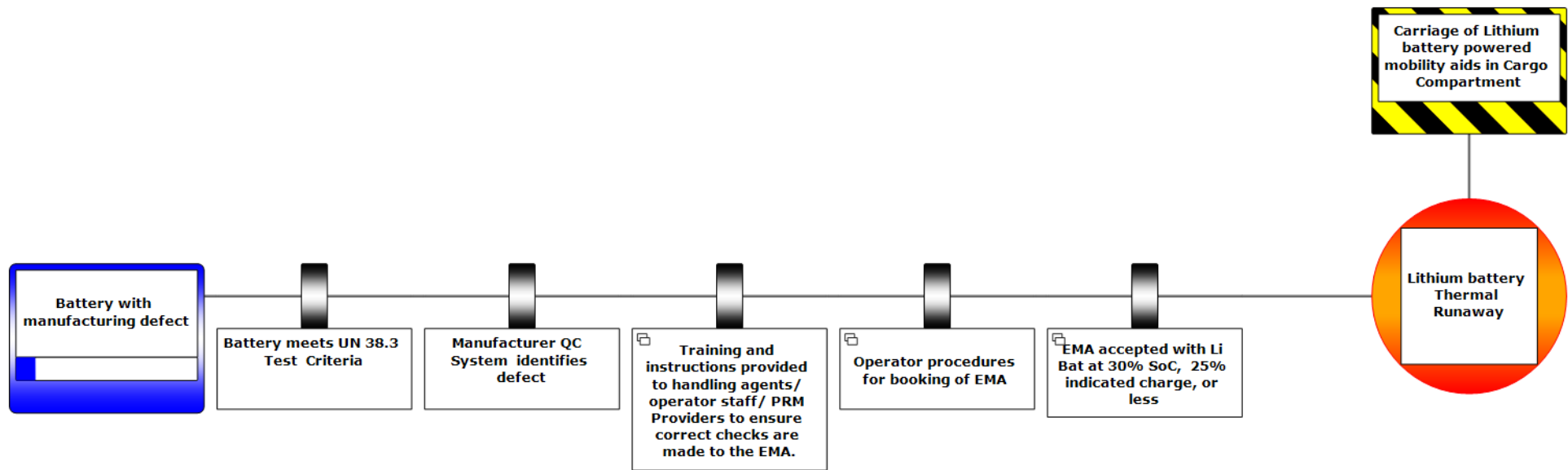
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APPENDIX A TO THE REPORT ON AGENDA ITEM 4

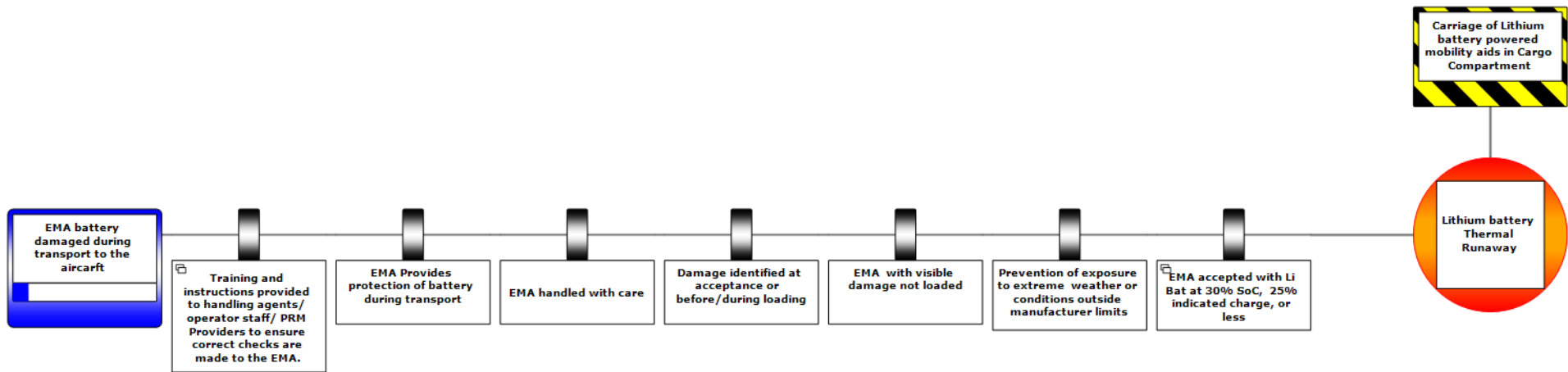
BOW TIE DIAGRAMS
(English only)

**CARRIAGE OF LITHIUM BATTERY POWERED MOBILITY AIDS IN
CARGO COMPARTMENT / LITHIUM BATTERY THERMAL
RUNAWAY**

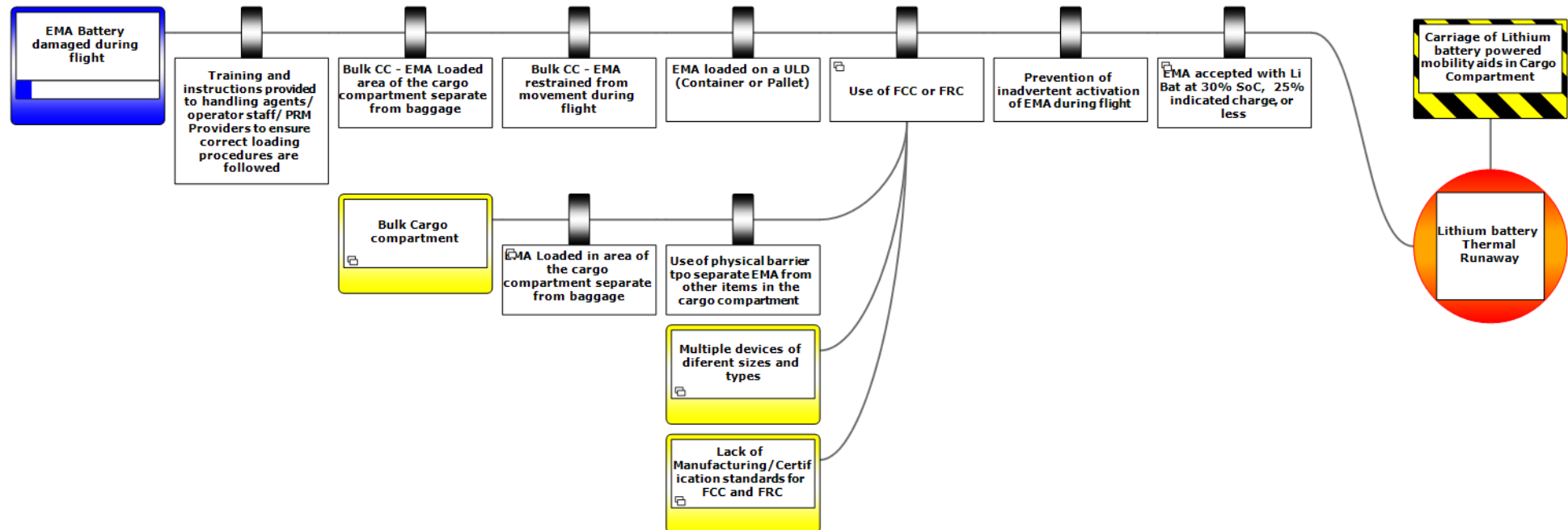
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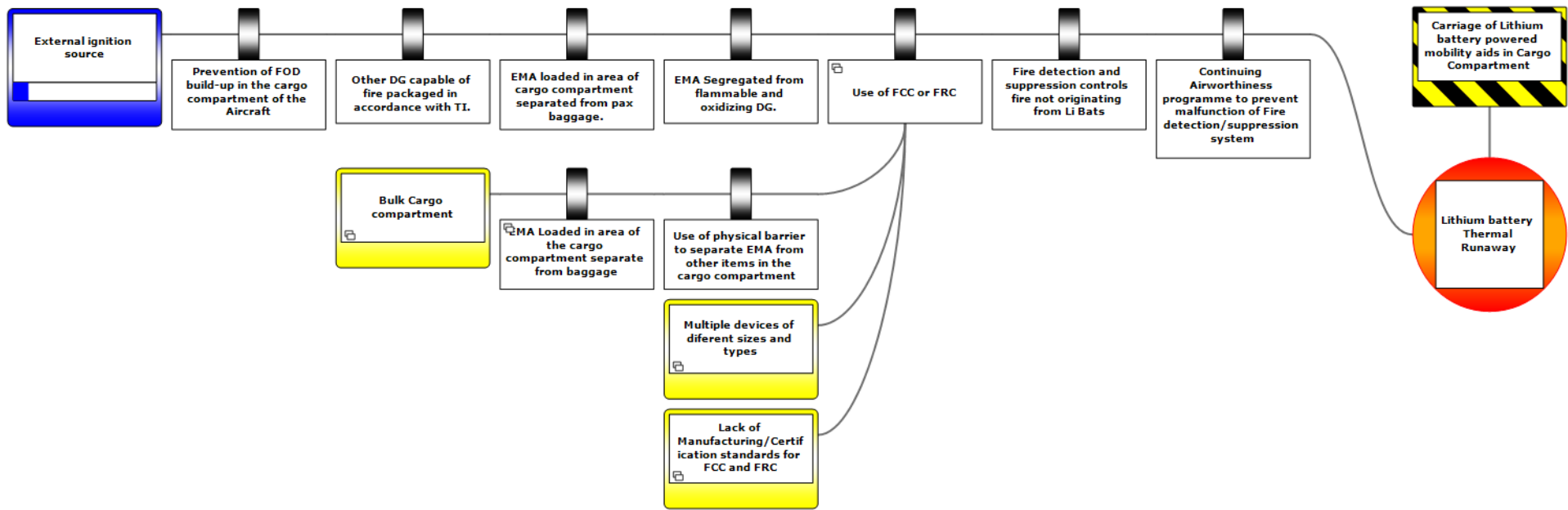
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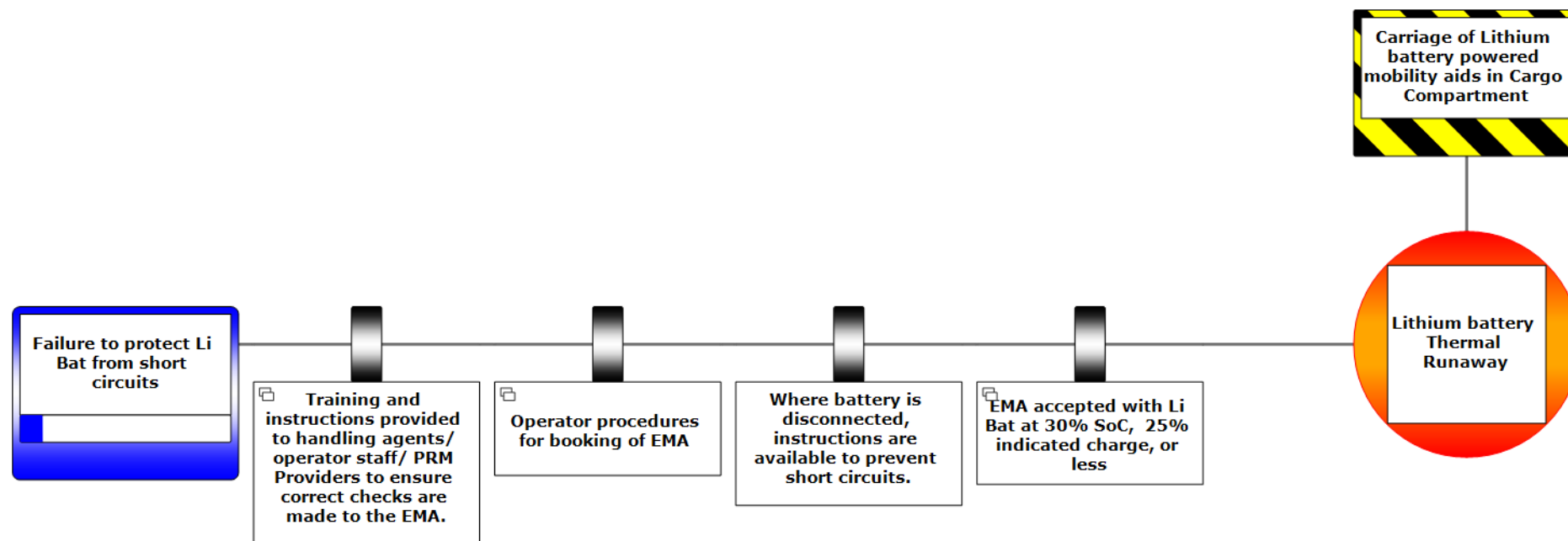


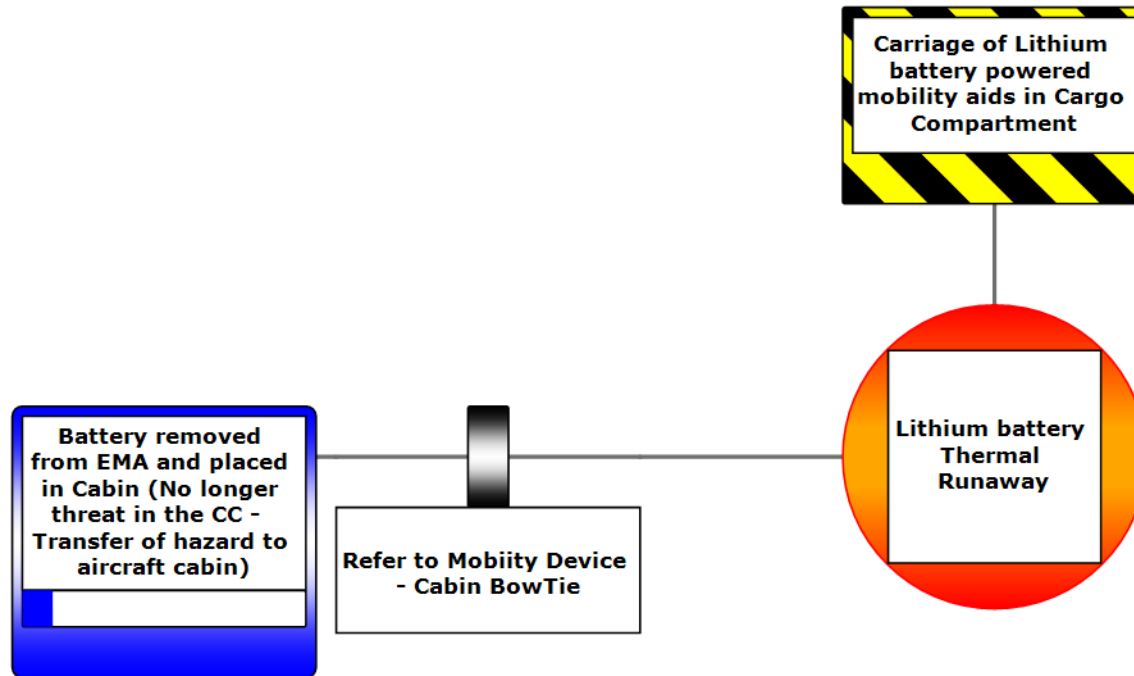
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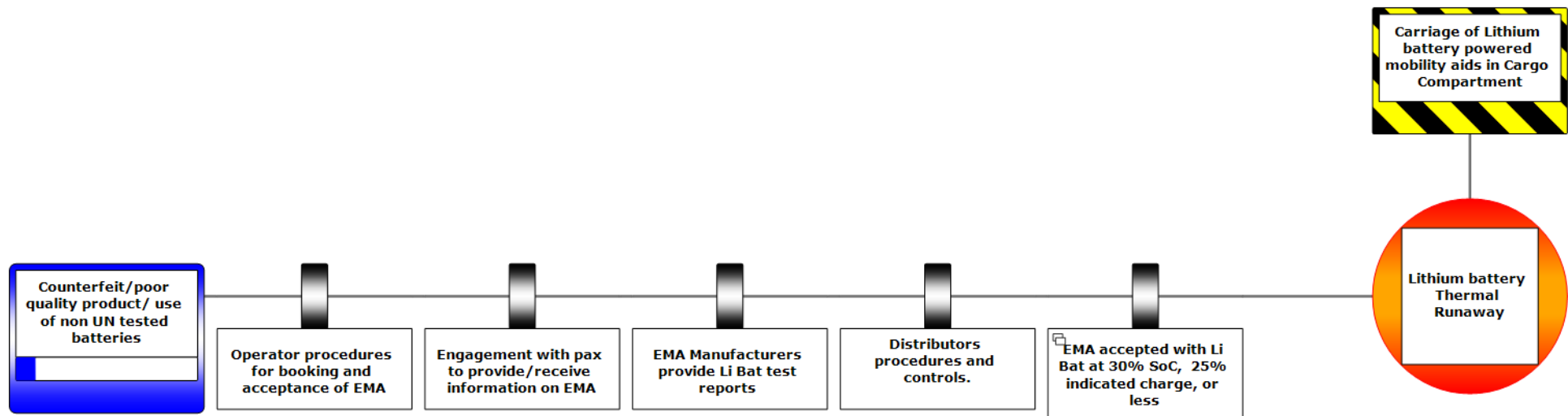
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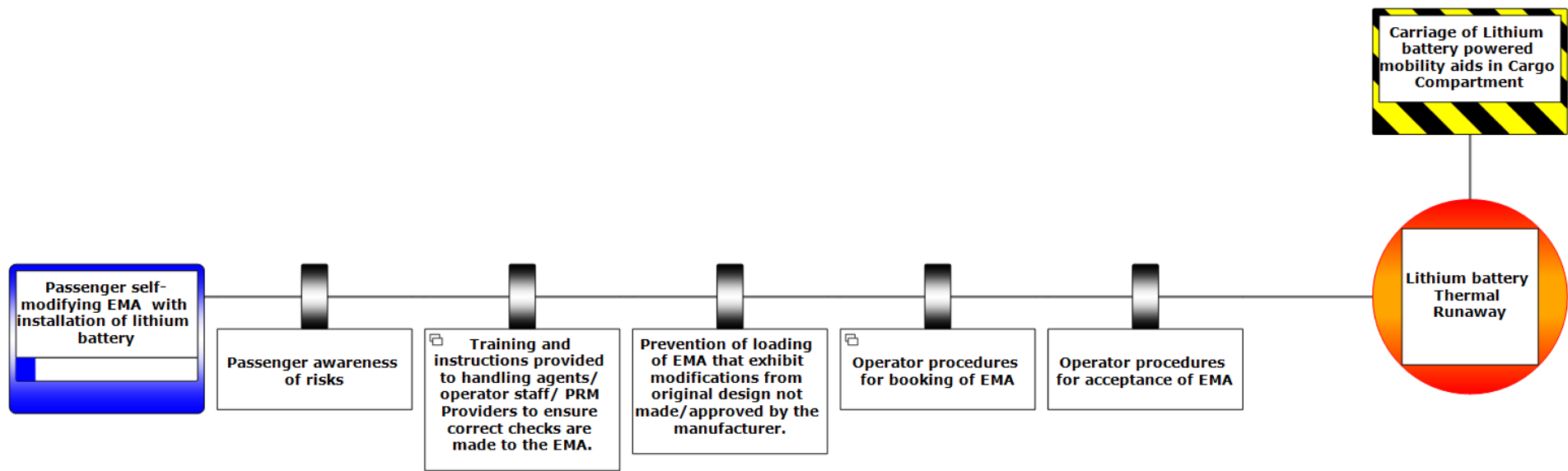
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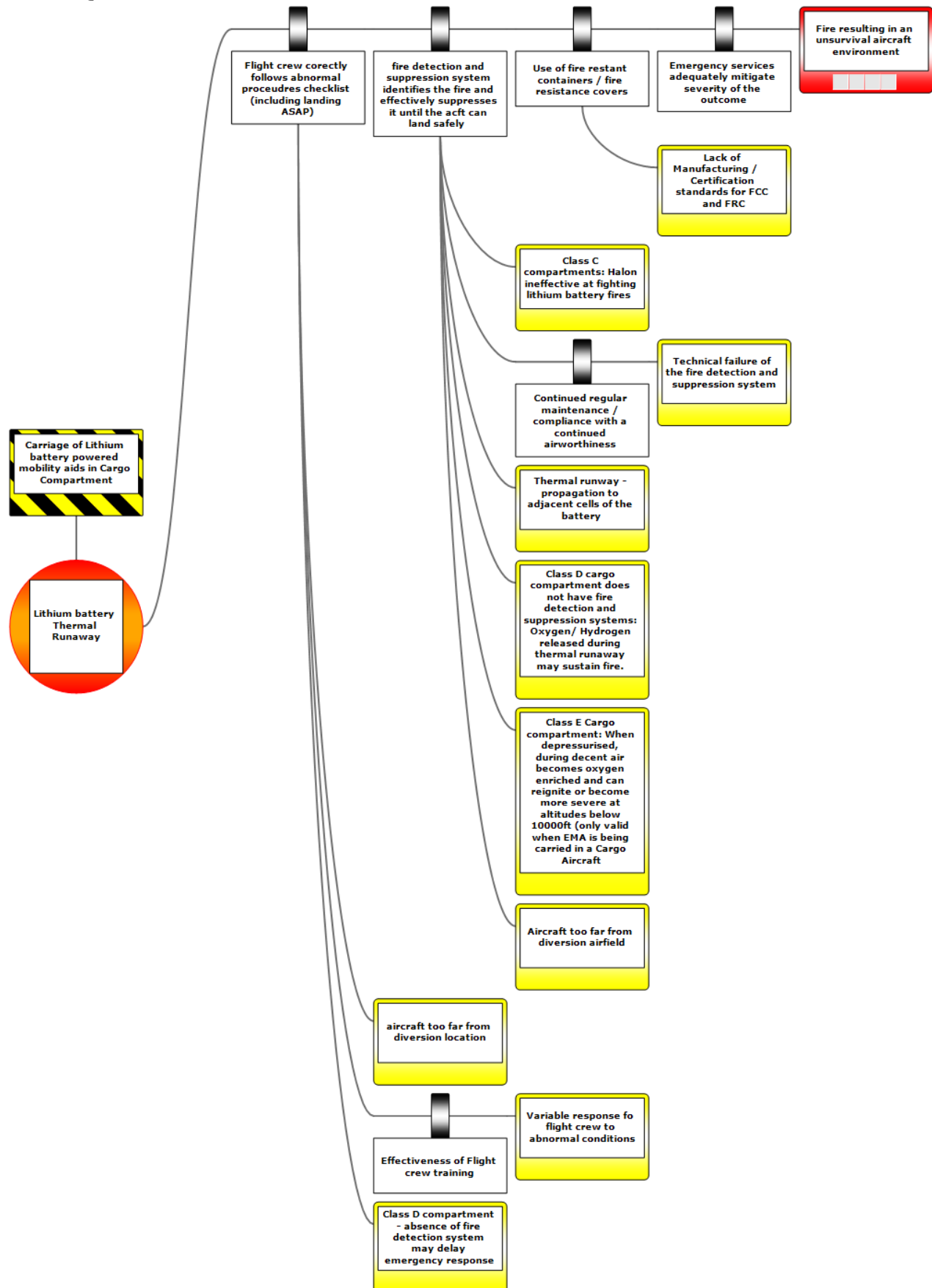
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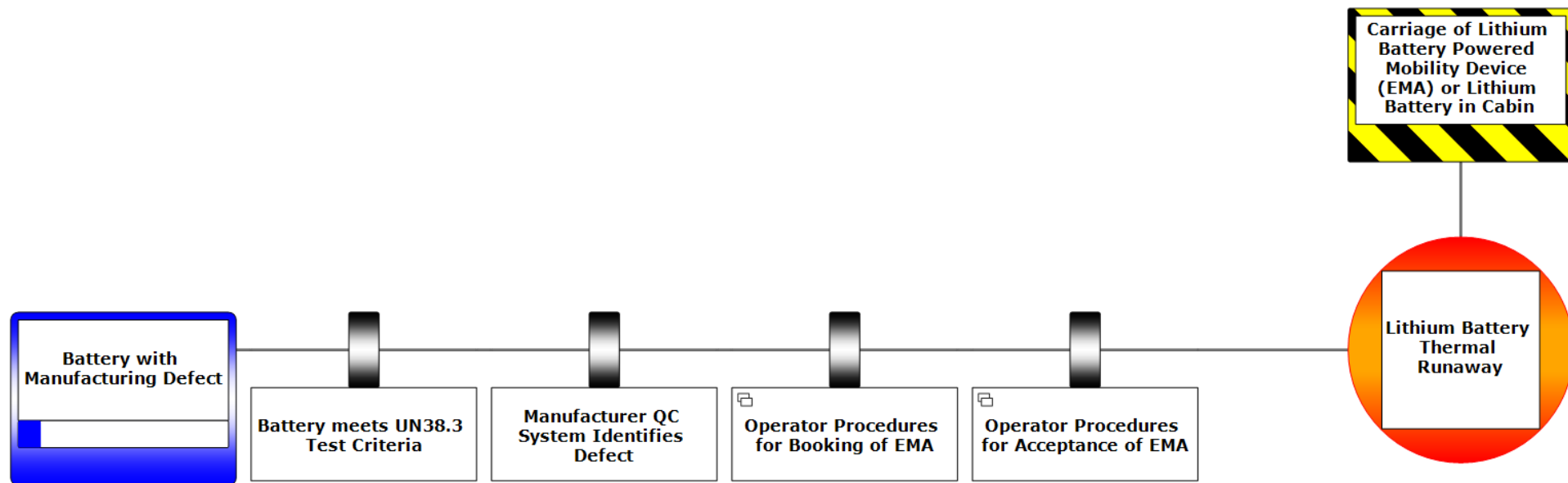
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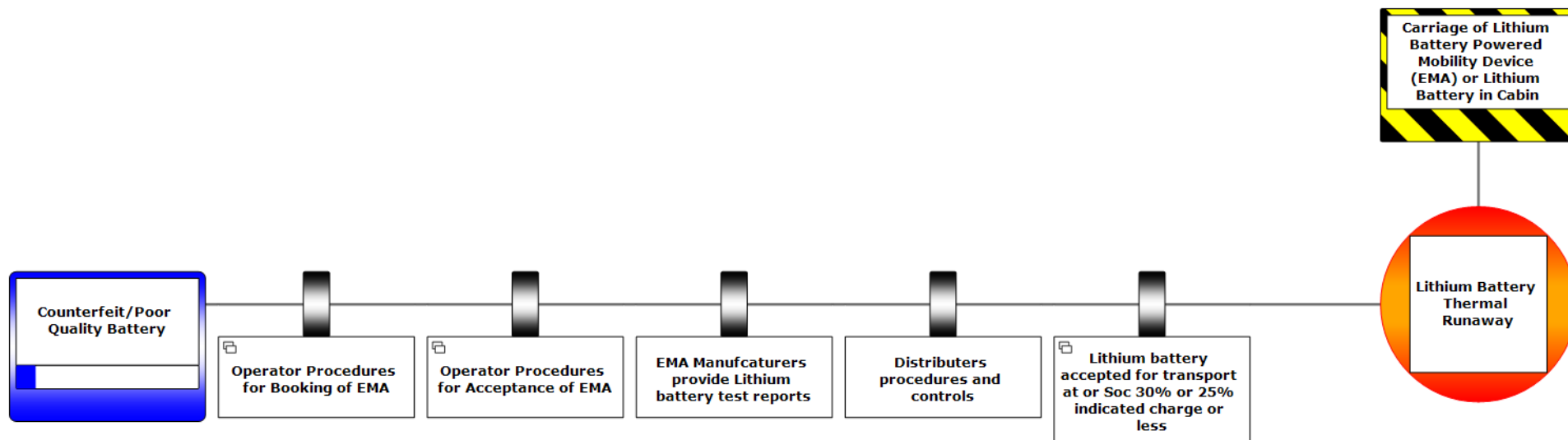


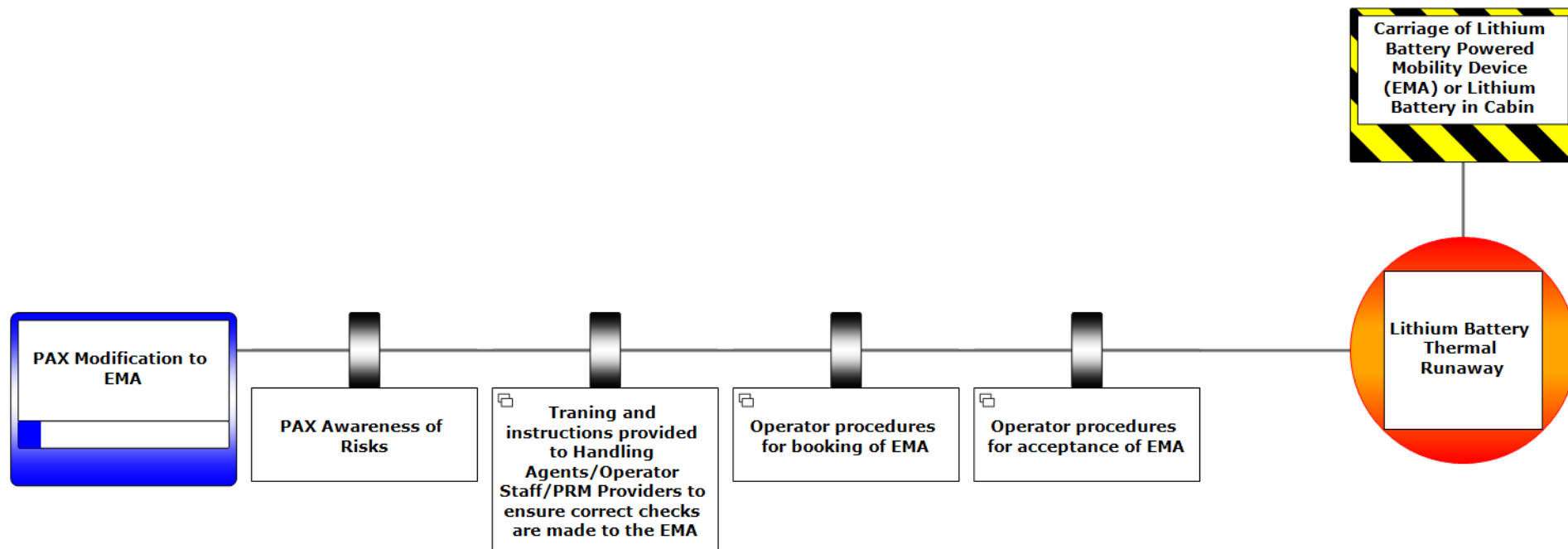
CONSEQUENCE

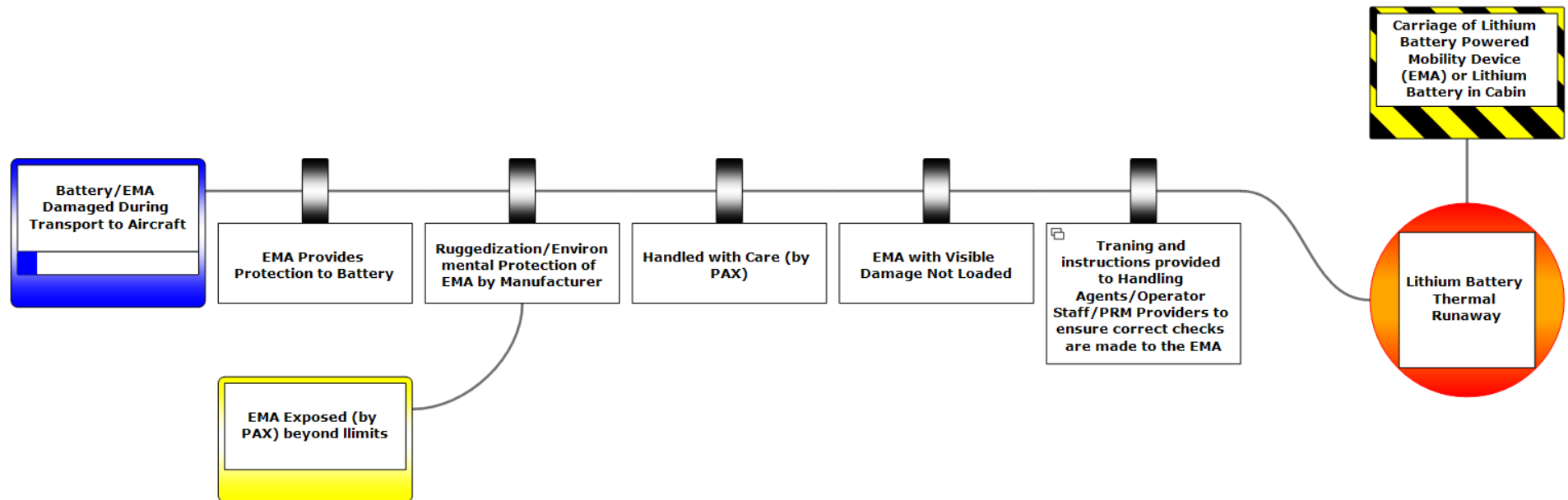


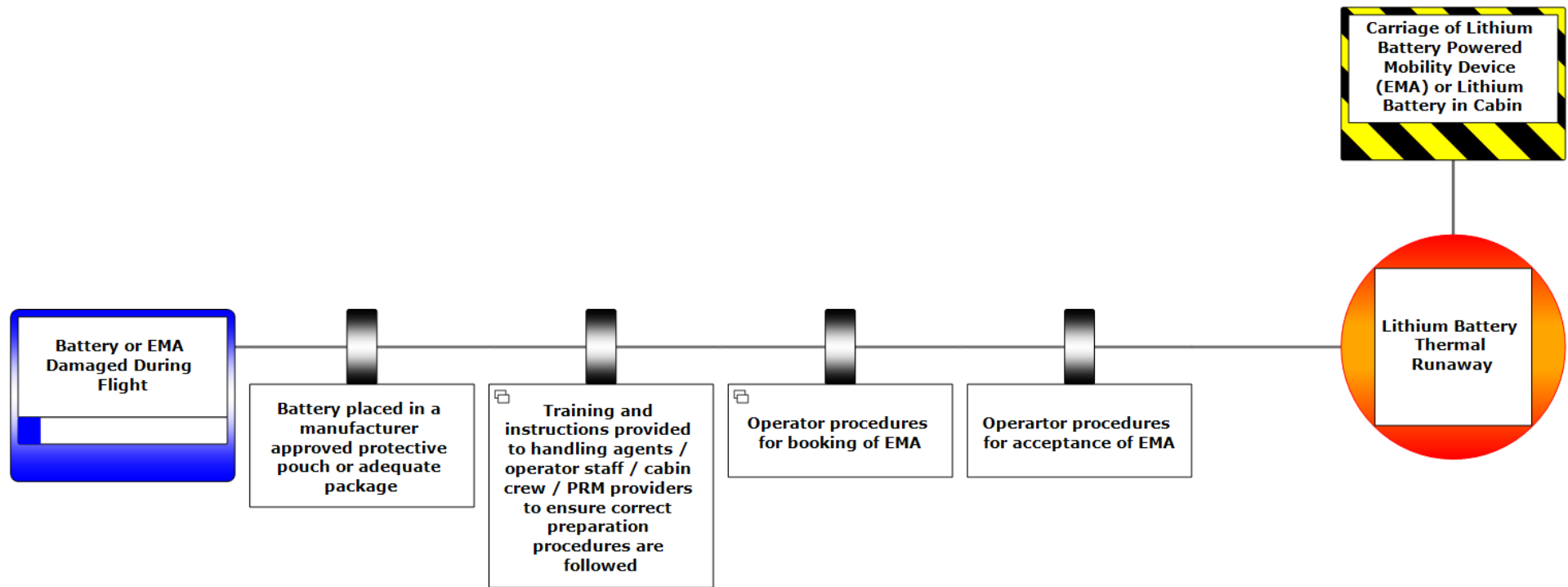
**CARRIAGE OF LITHIUM BATTERY FOR MOBILITY AID IN CABIN / LITHIUM BATTERY
THERMAL RUNAWAY**

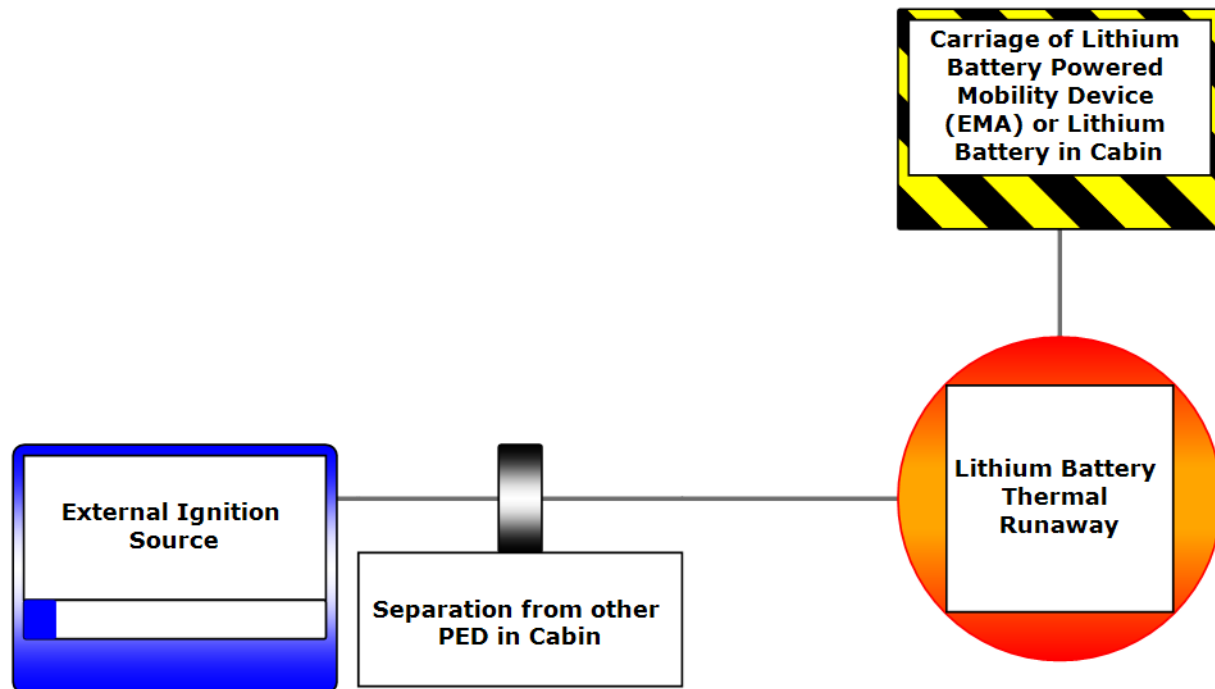
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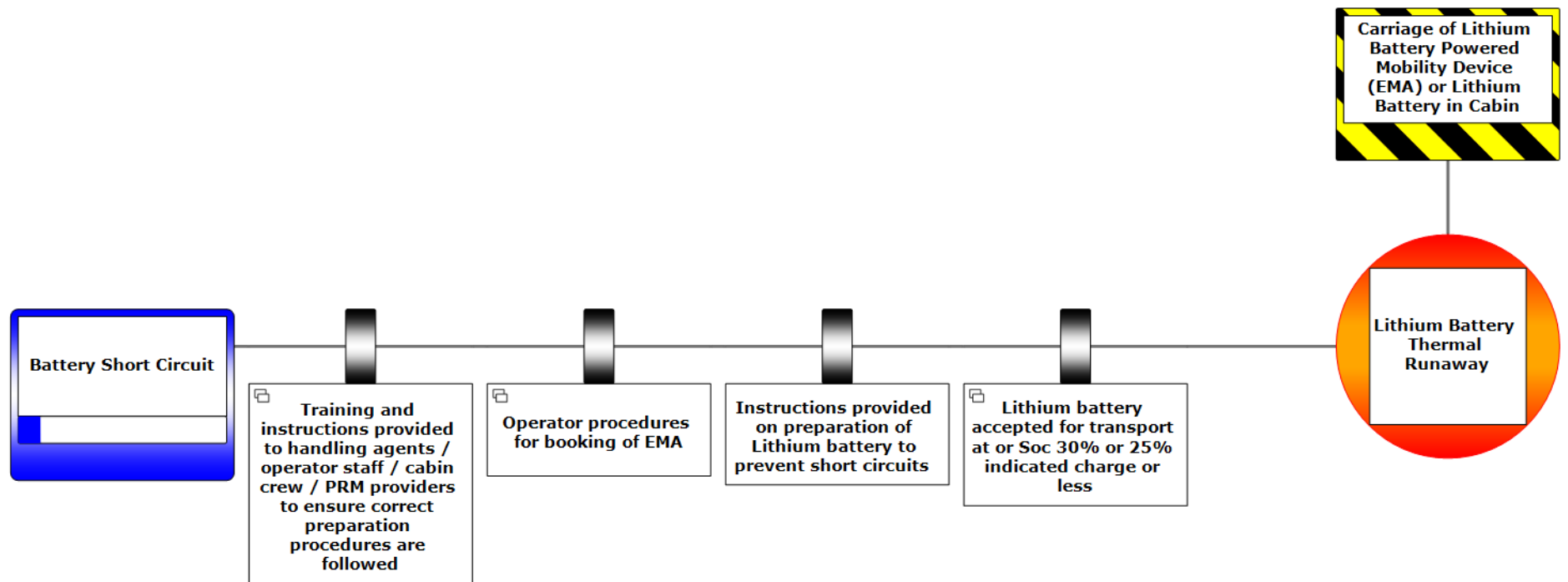
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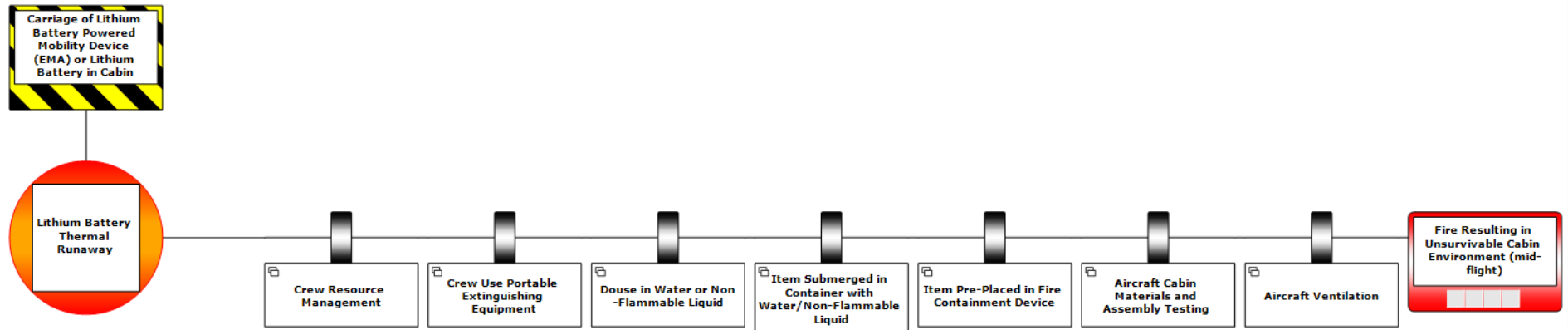
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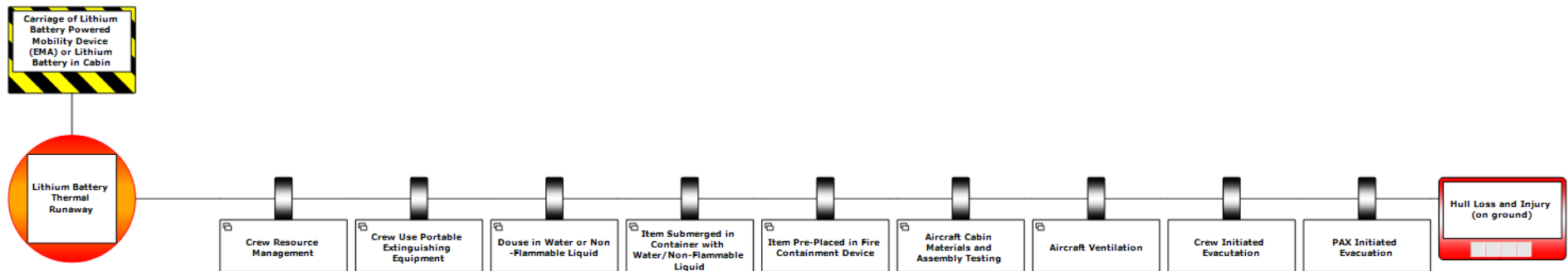
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CONSEQUENCE 1



CONSEQUENCE 2



APPENDIX B TO THE REPORT ON AGENDA ITEM 4**REPORT OF THE SYSTEMS THEORETIC PROCESS ANALYSIS OF
THE CARRIAGE OF BATTERY-POWERED MOBILITY AIDS
(English only)****1. INTRODUCTION**

1.1 The Dangerous Goods Panel (DGP) established a DGP Task Force on Mobility Aids (DGP-TF/MA) to conduct a safety risk assessment, identify possible mitigations, and develop policy options related to the carriage of lithium ion battery powered mobility aids on aircraft. The group undertook an analysis utilizing the Systems Theoretic Process Analysis (STPA) method. The STPA method is a structured approach that assumes accidents are caused by unsafe interactions among system components. Unsafe actions can arise from a lack of control and missing or inadequate feedback among system components. These unsafe actions can lead to hazards that, if left uncontrolled, lead to losses such as injuries and damage to aircraft.

1.2 The STPA method involves four basic steps. The process starts from a stakeholder prioritized list of system losses and identifying high level hazards (system states) that can lead to those losses. The second step involves modelling the system as a set of control and feedback loops to identify functional relationships and interactions. The third step analyses the control structure to identify control actions and examine how they could lead to one or more of the losses. The fourth step involves constructing scenarios that describe why unsafe control actions could occur.

1.3 The working group assembled subject matter experts from air operations, aircraft design and manufacturing, and dangerous goods. The facilitator was a systems safety specialist from the ICAO Secretariat. Subject matter experts participated in a series of focused workshop sessions where they were asked to identify relevant interactions and scenarios that lead to unsafe actions. These scenarios ultimately informed the development of requirements. These requirements represent controls that manage unsafe behaviours. These controls were then plotted onto a 5x5 matrix that identified the relative strength of the control and the severity of the impact if the requirement was not met.

2. FINDINGS

2.1 The assessment identified several factors that impact the safe transport of passenger owned mobility aids, including weak communication controls between the passenger and the air operator, a lack of strong device design controls, inadequate diagnostic feedback from the mobility aid that limits the ability of a mobility aid user or air operator to determine whether the battery has been damaged, or whether the mobility aid is otherwise unsafe for transport. Inspections completed by air operators are generally cursory in nature and rely on information provided by passengers and sensory feedback. Further, many of the requirements identified in the Technical Instructions rely on physical inspections that are largely ineffective at identifying damage to the mobility aid battery. Additional controls regarding the stowage and handling of mobility aids are aimed at preventing external damage to the mobility aid and its battery(ies) once loaded on board the aircraft but do little to prevent stowing a damaged mobility aid.

2.2 Notably operator acceptance personnel lack the ability to identify the safety condition of a mobility aid or the battery(ies). While operators request information from passengers regarding the type

of battery and the particulars of the mobility aid, workshop participants reported instances of missing information or passengers arriving at the airport without prior notification or approval by the operator.

2.3 Lithium ion battery powered mobility aids contain high energy batteries with relatively few controls governing product quality or compatibility in the air transport environment. The Technical Instructions require the lithium ion battery to meet certain requirements, however the airline passenger is often not able to obtain this information and the level of knowledge a passenger possesses about their mobility aid and its battery varies greatly. Workshop participants identified realistic scenarios in which a battery, while originally meeting the required tests and criteria, could have become damaged for example, from off nominal charging or operating the mobility aid outside of its designed parameters or replacing the battery with a different battery or one not originally intended for that device.

2.4 Operator acceptance procedures, while providing a potential opportunity to verify the safety of the battery or device, are largely inadequate to identify underlying damage since mobility aid designs often preclude a thorough physical examination of the battery. Passenger check-in staff and ground handling service personnel are often the last persons who see and handle a mobility aid, but they are not required or trained to inspect mobility aids for potential damage. Time pressures to load aircraft and facilitate passenger journeys were identified as factors that could lead to inadvertently accepting a damaged mobility aid / battery or a mobility aid with an unknown safety condition. Some workshop participants identified escalation procedures for visibly damaged mobility aids or mobility aids of an unknown condition, but specific training to identify and report damage is not typical.

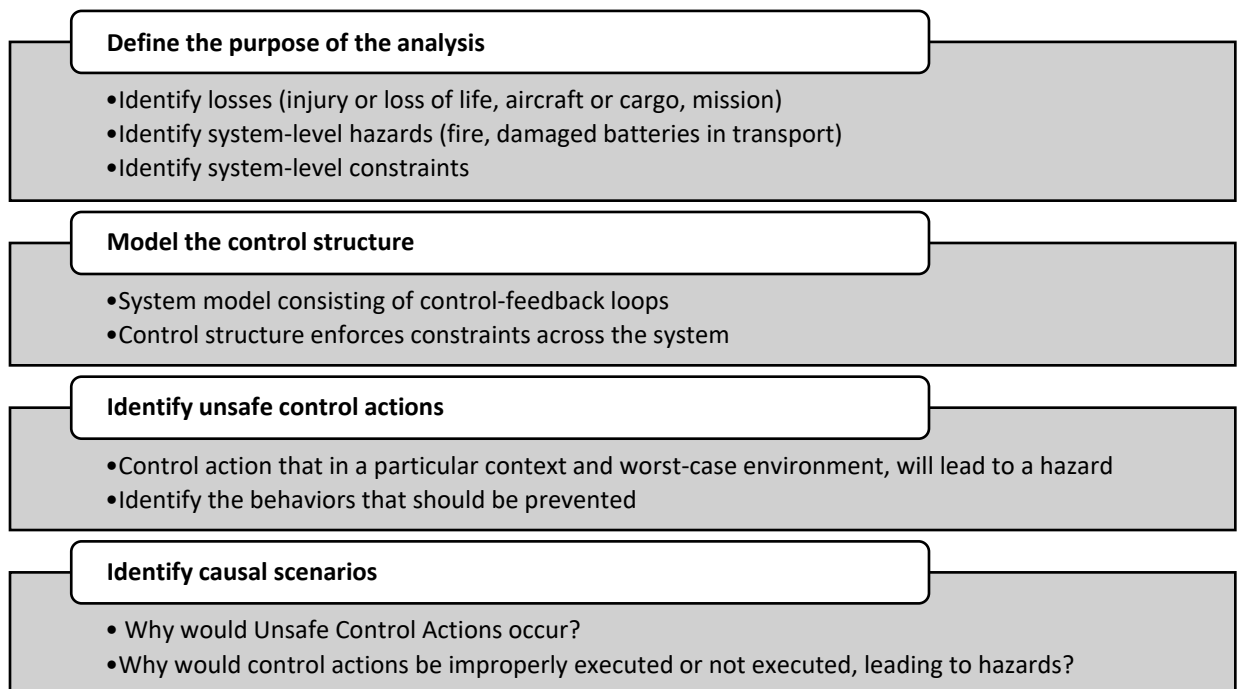
2.5 Aircraft cargo compartments are equipped with smoke detectors or fire detection systems that give warning to the pilot or flight engineer who activate fire suppression systems in the cargo compartment. These mitigations rely on detection of a smoke or fire, and fire suppression systems currently utilized in aircraft cargo compartments have limited effectiveness against thermal events involving lithium batteries. Aircraft unit load devices provide protection and ease of handling, reducing the likelihood that the mobility aid is damaged during handling, stowage and transit; however some may not be capable of containing a thermal event should one occur and could impair early smoke and fire detection. Fire resistant containers and fire containment covers offer protection well above the capability of a typical aircraft unit load device. Some containers are available on the market now; however, there is no recognized performance standard for evaluation, and industry use of such containment devices is currently limited. Flight crews have access to fire extinguishers and are trained to respond to smoke and fire events in the aircraft cabin. Some workshop participants indicated they also use containment devices in the cabin such as specially designed boxes or bags to enhance fire-fighting/containment capabilities. The effectiveness of the equipment available to cabin crew to respond to a thermal event involving a battery powered mobility aid is however unknown.

2.6 Many of the existing controls rely on mitigations including inspection and verification at the point of acceptance, but these can fail to detect a damaged or poorly designed product. Inevitably these types of mitigations will have limited effect at controlling hazards. Robust design and testing standards that create safety through design throughout the product life are most effective at mitigating hazards. Enhancing the ability to identify a poorly designed or damaged product and thereby prevent its acceptance in air transport can partially mitigate known hazards. Finally, robust fire response and containment capabilities would lessen the severity of fire hazards.

ATTACHMENT TO THE REPORT OF THE SYSTEMS THEORETIC PROCESS ANALYSIS OF THE CARRAIGE OF BATTERY-POWERED MOBILITY AIDS

1. STPA FRAMEWORK

Using the STPA framework the group analysed the air transport system of passenger owned battery powered mobility aids. The basic STPA method involves (4) four steps.



3. DEFINE THE PURPOSE OF THE ANALYSIS

3.1 Identifying losses

3.1.1 For the purposes of this analysis, a loss involves something of value to stakeholders. The table below identifies the losses considered in this analysis and include injury and loss of human life property damage, damage to the environment, a loss of mission, and loss of reputation.

Loss ID	Loss description
L1	Loss or damage to the aircraft
L2	Loss of human life or injury
L3	Loss of cargo/mobility aid

Loss ID	Loss description
L4	Damage to environment or objects outside of the aircraft
L5	Loss of transportation i.e. inability to start or complete a scheduled flight or transport a passenger
L6	Loss of customer loyalty/loss of confidence in air travel

3.2 System Hazards

3.2.1 Hazards are developed by linking losses to a set of conditions that combined with a worst-case environmental condition could lead to a loss. This does not necessarily guarantee that a hazard will always result in a loss. System level hazards here are restricted to those which can be controlled or managed by controllers within the system. The goal of the analysis is to eliminate or mitigate hazards that can lead to losses.

System hazard ID	Hazard description	Loss link
H1	Aircraft integrity is lost	L1-L6
H2	Aircraft environment unsuitable for persons	L1, L2, L3, L5, L6
H3	Aircraft cargo/baggage exposed to hazardous conditions (excessive heat, fire, smoke)	L3, L5, L6
H4	Aircraft improperly loaded i.e. unauthorized cargo, improper weight, or balance	L3, L5, L6
H5	Aircraft unable to accommodate passenger	L5, L6

4. MODELLING THE SYSTEM

4.1 An analysis of the whole air transport system inclusive of international organizations, national aviation authorities, air operators, airports, aircraft manufacturers, airline passengers, mobility aids (and the associated batteries) is needed for a comprehensive analysis. For the purposes of this analysis the air transport system for battery powered mobility aids was limited to the air operators (inclusive of management, pilots, ground handling agents, passenger handling staff, flight crew), airline passengers, mobility aids, and the aircraft itself.

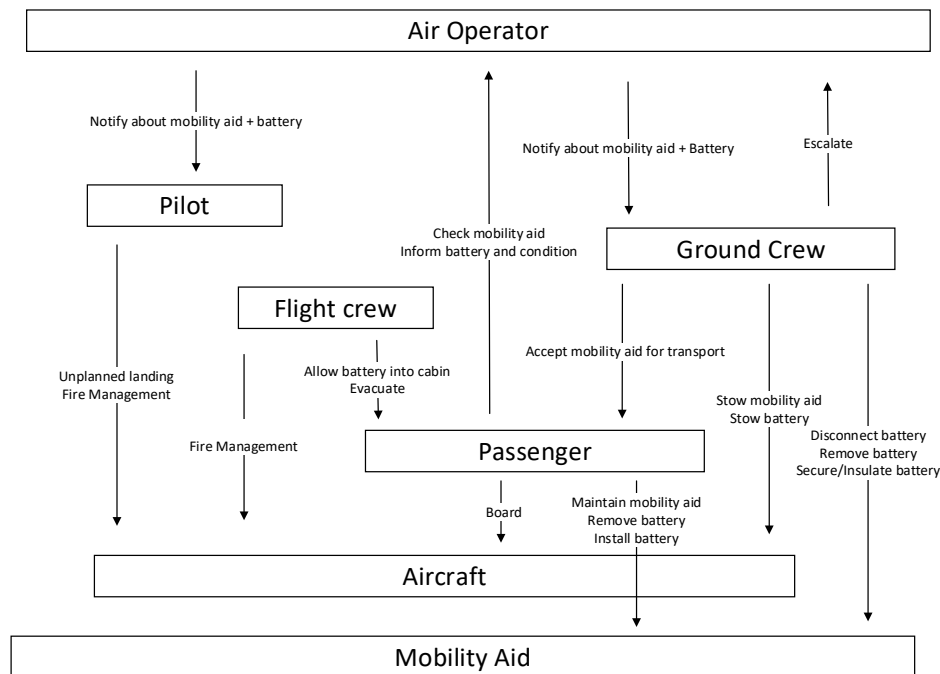
4.2 The group constructed several models to of the transport system composed of a control structure that identify control and feedback loops. Each control structure contains the following elements:

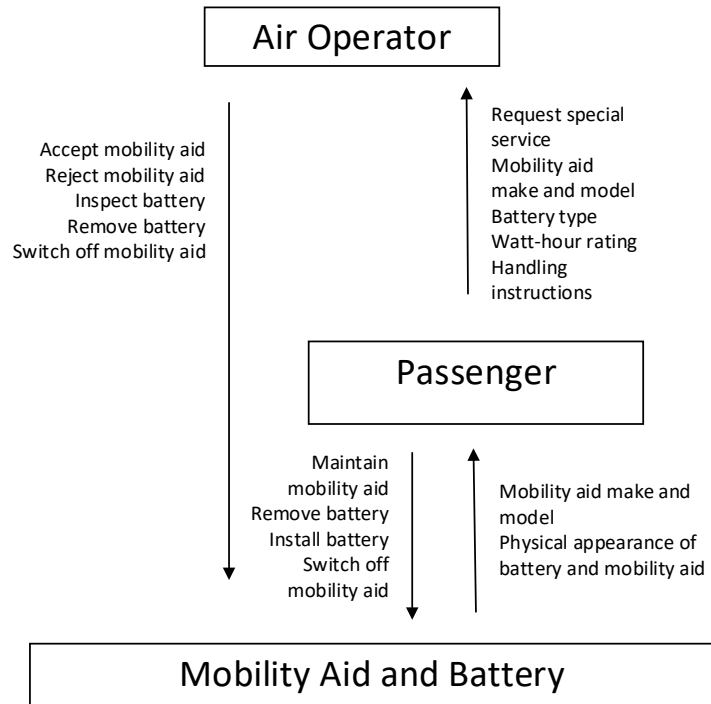
- a) controllers;
- b) control actions;
- c) feedback;
- d) other inputs to and outputs from components (neither control nor feedback); and

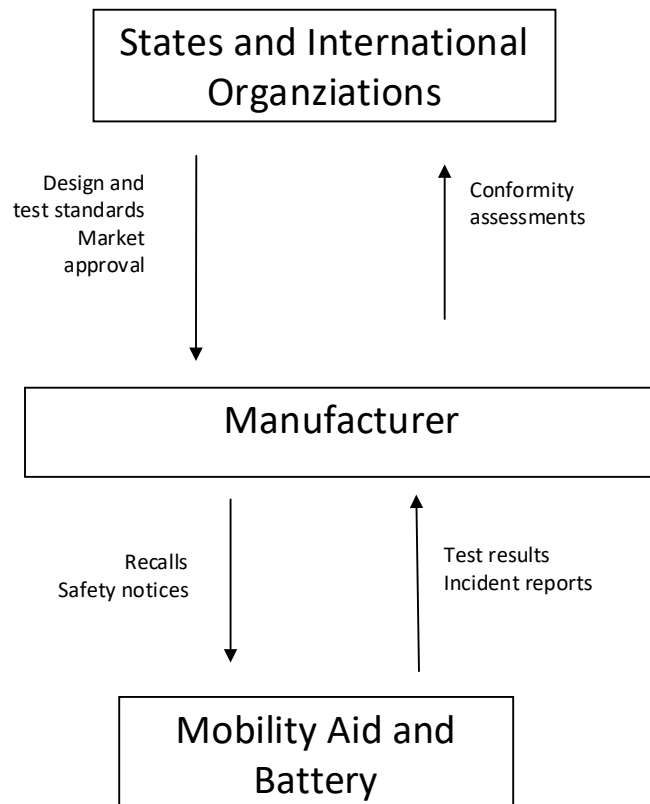
e) controlled processes.

4.3 Each controller in the system has certain responsibilities depicted as downward facing arrows. These responsibilities enforce safety constraints to prevent system level hazards. Feedback from the system is depicted as upward facing arrows. Air operators, airline passengers and mobility aids are the primary system components. Operators have control over personnel including the handling and placement of mobility aids, baggage, cargo, and mail on the aircraft within the constraints of regulation and procedures. Airline passengers exert control over the mobility aid through use, handling, maintenance, and modification. Both airline passengers and the mobility aids provide feedback to the air operator to enable them to complete control actions. The following figures illustrate a high-level control structure, and the various interactions examined by working group participants.

Air Operators



Passenger and Air Operator Interactions

Manufacturing**5. IDENTIFYING UNSAFE CONTROL ACTIONS (UCA)**

5.1 Now that the actions and feedback through the control loops are defined, it is possible to identify potentially unsafe control actions. Unsafe control actions are linked to hazards. There are four ways a control action can be unsafe:

- a) not providing the control action leads to a hazard;
- b) providing the control action leads to a hazard;
- c) providing a potentially safe control action but too early, too late, or in the wrong order; and
- d) the control action lasts too long or is stopped too soon (for continuous control actions, not discrete ones).

It must be noted that an unsafe control action by itself does not always lead to a hazardous state. It may in fact require multiple unsafe control actions to occur to result in a hazardous state that in the worst case set of circumstances leads to a loss. The following table includes several examples of unsafe control actions reviewed by working group participants. The items in red were selected for addition review due to the safety critical nature of these unsafe control actions.

Control Action	Not providing causes a hazard	Providing causes a hazard	Too early, too late, out of order	Stopped too soon, applied too long
Accept Mobility Aid	GHSP/passenger handling staff does not accept mobility aid for transport (H6)	GHSP/passenger handling staff accepts a mobility aid with a high-risk energy source with an unknown safety condition (H1-H6) GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source (H1-H6) GHSP/passenger handling staff accepts a mobility aid with an energy source different from the mobility aid identified during the booking (H4-H6) GHSP/passenger handling staff accepts a mobility aid energy source for carriage in the cabin that exceeds fire capabilities	GHSP/passenger handling staff accepts a mobility aid too late after aircraft has departed (H6)	

Control Action	Not providing causes a hazard	Providing causes a hazard	Too early, too late, out of order	Stopped too soon, applied too long
Stow Mobility Aid	GHSP does not stow mobility aid when the mobility aid was accepted for transport (H5, H7)	GHSP stows the mobility aid in a manner that violates aircraft weight and balance requirements (H1, H5, H6) GHSP stows the mobility aid with a high-risk energy source with an unknown safety condition (H1, H4, H6) GHSP stows the mobility aid with a high-risk energy source that exceeds (or is not compatible with) the capabilities of fire suppression systems (H1, H4, H6) GHSP stows the mobility aid in a manner that risks damage (H1, H2, H4)		

Control Action	Not providing causes a hazard	Providing causes a hazard	Too early, too late, out of order	Stopped too soon, applied too long
Maintain mobility aid	Airline passenger does not properly maintain mobility aid creating an unknown safety condition (H1-H6)	Airline passenger maintains the mobility aid with an energy source from a source other than the original equipment manufacturer i.e. OEM spec. (H1-H6) Airline passenger maintains the mobility aid in a manner that creates an unknown safety condition (H1-H6) Airline passenger maintains a mobility aid in a condition in which the battery is not suitable for transport (H1-H6)		

6. IDENTIFYING CAUSAL SCENARIOS ASSOCIATED WITH UNSAFE CONTROL ACTIONS

6.1 The following table includes various contextualized scenarios that help explain why a particular controller provided or did not provide a control action. Generally, causal scenarios explain how incorrect or inadequate feedback, information exchange, and other factors create conditions that lead to hazardous states. The scenarios also explain how control actions when provided might not be received or improperly executed. Following development of causal scenarios, mitigation measures can be identified and discussed in view of whether measure(s) prevent, reduce, or mitigate unsafe control actions (UCAs) or the occurrence of unsafe causal scenarios that lead to system hazards. In this case the strength of mitigation measures could be ranked based on a hierarchy where controls that prevent the occurrence of an unsafe action through system design are especially powerful while those that rely on detection and warnings are less impactful.

Unsafe Control Action (UCA)	Causal Scenario Description	Potential Mitigation
GHSP/passenger handling staff accepts a	GHSP loads a mobility aid onto an aircraft that has visible damage but incorrectly interprets the visible evidence of damage.	Establish visual inspection procedures to identify and report damage.

Unsafe Control Action (UCA)	Causal Scenario Description	Potential Mitigation
mobility aid with a high-risk energy source with an unknown safety condition (H1-H6)	GHSP loads a mobility aid onto an aircraft that has visible damage due to previous benign experience loading a mobility aid with similar damage.	Train GHSP to identify and report suspected damage to a mobility aid.
	GHSP loads a mobility aid onto an aircraft that has visible damage due to the threat of financial consequences (fines, delays etc.)	Incentivize the identification and reporting of safety related damage or modifications to mobility aids by acceptance staff and ground handling service providers
	GHSP loads a mobility aid onto an aircraft that has visible damage because it was assumed the mobility aid was determined acceptable for transport by another entity	Incentivize the identification and reporting of safety related damage or modifications to mobility aids by acceptance staff and ground handling service providers
	GHSP loads a mobility aid onto an aircraft that has visible damage due to task overload or inattention.	Train GHSP to identify and report suspected damage to a mobility aid.
	GHSP loads a mobility aid onto an aircraft that has visible damage because the GHSP did not believe it was necessary to inspect the mobility aid for damage.	Train GHSP to identify and report suspected damage to a mobility aid.
	GHSP loads a mobility aid that has visible tampering because the GHSP assumed this was an acceptable modification	Incentivize the identification and reporting of safety related damage or modifications to mobility aids by acceptance staff and ground handling service providers
GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source	GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source because the damage to the energy source was only visible when the mobility aid is collapsed, and the battery is visible.	Establish visual inspection procedures to identify and report damage.
	GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source because the GHSP misinterprets the special service request information	
	GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source because the GHSP misinterprets the STOP code because there are multiple reasons for the STOP code	
	GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source because inputs indicating the mobility aid is unsafe are conflicting or not obvious to the acceptance staff.	

Unsafe Control Action (UCA)	Causal Scenario Description	Potential Mitigation
	GHSP/passenger handling staff accepts a mobility aid containing an unstable energy source because the booking agent did not request information on the mobility aid due to a lack of awareness, training, or procedure to request information about the mobility aid or energy source.	
GHSP stows the mobility aid in a manner that risks damage (H1, H2, H4)	GHSP uses baggage to secure the mobility aid.	
	GHSP secures the mobility aid before loading other baggage, cargo, and mail.	
	Mobility aid securing points were inaccessible after baggage was loaded.	
	Securement straps were overtightened.	
	Securement damages mobility aid controls.	
GHSP does not remove an unprotected battery (H1, H2, H4)	GHSP does not remove a battery because the GHSP does not know the battery needed to be removed (e.g. the mobility aid tag fell off)	
	The battery declared at ticketing and identified on the booking record is different than the mobility aid physically brought to the airport	
	Customer provided incomplete or misleading information at the time of booking due to a misunderstanding of the operator requirements	
	Booking agent misinterpreted information provided by passengers or incorrectly transmitted information to the passenger name record	
	Acceptance personnel received conflicting information on the mobility aid	
Passenger or GHSP does not switch off the mobility aid before the mobility aid is stowed	Passenger or GHSP does not switch off the mobility aid before the mobility aid is stowed because the passenger thought the aid was switched off	
	Passenger or GHSP does not switch off the mobility aid before the mobility aid is stowed because the passenger or GHSP misinterpreted or incorrectly performed the deactivation procedure.	

Unsafe Control Action (UCA)	Causal Scenario Description	Potential Mitigation
GHSP/passenger handling staff accepts a mobility aid energy source for carriage in the cabin that exceeds fire suppression capabilities	GHSP/passenger handling staff accepts a mobility aid energy source for carriage in the cabin that exceeds the response capabilities due to stowage adjacent to other lithium batteries	
	GHSP/passenger handling staff accepts a mobility aid energy source for carriage in the cabin that exceeds the response capabilities due to an alteration of the fire suppression capabilities or response equipment	
	GHSP/passenger handling staff accepts a mobility aid energy source for carriage in the cabin that exceeds the response capabilities because the fire suppression capabilities in the cabin were believed to be superior.	
	Airline passenger installed a battery with a non-OEM replacement.	Manufacturers take steps to minimize the likelihood that users will replace batteries with unapproved batteries or use chargers not designed for use with the device
Airline passenger does not properly maintain mobility aid creating an unknown safety condition (H1-H6)	Airline passenger does not remove a battery that was supposed to be removed.	
	Airline passenger is not the original owner of the mobility aid and does not have the knowledge of the energy source or maintenance history.	Manufacturers take steps to minimize the likelihood of that users will use chargers not designed for use with the device.
	Airline passenger overcharges a battery from an incompatible energy source.	
	Airline Passenger does not receive, ignores, or misinterprets error, maintenance, or diagnostic messages.	Manufacturers design devices to provide diagnostic information to users.
	The battery powered mobility aid fire was not detected.	Fires involving battery powered mobility aids must be detected, and measures taken to extinguish until the aircraft can safely land
Flight crew does not suppress a fire involving battery powered mobility aid	The flight crew does not have the necessary resources to extinguish a fire involving a battery powered mobility aid.	Fires involving battery powered mobility aids must be detected, and measures taken to extinguish until the aircraft can safely land
	The fire occurs in a location not accessible to the flight crew.	

7. STRENGTH OF CONTROLS AND SEVERITY OF IMPACT IF UNSAFE BEHAVIOR IS NOT CONTROLLED

7.1 Select unsafe control actions identified in paragraph 5 were translated into requirements. These requirements were further plotted against the matrix shown below that identifies both the strength of the control i.e. how effective the control mitigates unsafe actions, and the severity of the impact if the unsafe behaviour is not controlled.

			Severity of Impact if Uncontrolled				
			1 Very Low	2 Low	3 Moderate	4 High	5 Critical
Strength of control	Weak or non-existent	5	Very Low	Low	Moderate	High	Critical
	Marginally Adequate <i>Warning signs/detection</i>	4	Very Low	Low	Moderate	High	Critical
	Adequate <i>Engineered features or devices</i>	3	Very Low	Very Low	Low	Moderate	High
	Reasonably strong <i>Reduces risk through design alteration</i>	2	Very Low	Very Low	Low	Moderate	Moderate
	Strong <i>Eliminates Risk through design</i>	1	Very Low	Very Low	Low	Low	Moderate

UCA: Air Operator accepts for transport a battery powered mobility aid with a battery that is thermally or electrically unstable (H1-H5)

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
The operator must validate the acceptability of a battery powered mobility aid.	4	5	Critical	Partial - Operators obtain information of the mobility aid make, model and battery type during ticketing process and may validate that information at passenger check-in. Working group participants indicated that this validation step is not always taken.
The operator must validate the acceptability of spare batteries for a battery powered mobility aid.	4	5	Critical	Partial - Technical Instructions 7;2.13.3 require the operator to verify that spare batteries are carried in the cabin and protected from damage and short circuit. However, there is no requirement to inspect batteries for damage.
The operator must have a means to collect mobility aid information from the passenger.	4	5	Critical	Partial - Passengers are encouraged to make advanced arrangements with each operator and provide information on the type of battery installed and on the handling of the mobility aid. Technical Instructions 8-1, Regulation (EC) No 1107/2006/14 CFR 382.27.
The operator must have the capability to assess and validate information on the battery powered mobility aid provided by airline passengers.	4	4	High	Partial - Technical Instructions require the operator to verify that terminals are protected from short circuits and the battery is either protected from damage by the design of the mobility aid and securely attached to the mobility aid or the battery is removed from the mobility aid following the manufacturer's instructions.

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
If the operator accepts for transport a battery powered mobility aid containing an energy source with an unknown safety condition that mobility aid must not be stowed onto the aircraft.	4	5	Critical	Partial - After acceptance the mobility aid may become damaged, or an inspection may not have been completed prior to acceptance. However, if damage is identified there are rules in the Technical Instructions 7;2.5 requiring the operator to remove from the aircraft.

UCA: GHSP stowed a mobility aid containing a damaged or unstable energy source. (H1-H5)

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
The service provider must have processes and procedures in place to recognize a mobility aid with a damaged or unstable energy source and prevent them from being stowed when they are discovered.	4	5	Critical	Partial - No requirements to inspect a mobility aid for damage. However, if damage is identified there are rules in the Technical Instructions 7;2.5 requiring the operator to remove from the aircraft.
All personnel involved in the handling of battery powered mobility aids must examine and identify potential damage to battery powered mobility aids during each change of custody.	4	5	Critical	Partial - While the Technical Instructions require the operator verify the battery terminals are protected against short circuit and the battery is protected against damage. The battery may become damaged after initial inspection but prior to loading. Damage must be identified.
All personnel involved in the handling of battery powered mobility aids must examine and report damage to the battery.	4	5	Critical	Partial - If damage is identified there are rules in the Technical Instructions 7;2.5 requiring the operator to remove from the aircraft.

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
If ground handling service provider stowed a battery powered mobility aid containing a damaged or unstable energy source there must be a means to detect and suppress a thermal event.	4	5	Critical	Partial - Halon fire suppression systems have limited effectiveness against lithium ion battery fires. Detection of a fire may be delayed due to stowage conditions e.g. placement inside of a unit load device. 1) Aircraft cargo compartments are equipped with an approved smoke detector or fire detector system to give warning at the pilot or flight engineer station. 2) There is an approved built-in fire-extinguishing system controllable from the pilot or flight engineer stations. 3) There are means to exclude hazardous quantities of smoke, flames, or extinguishing agent, from any compartment occupied by the crew or passengers. 4) There are means to control ventilation and drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

UCA: GHSP stows the mobility aid in a manner that risks damage (H1-H4)

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
Battery powered mobility aids must be stowed in a manner that prevents damage to the energy source.	3	5	High	Full - ICAO Technical Instructions 7; 2.13.3.1
Baggage, cargo, and mail must not damage the battery powered mobility aid energy source.	3	5	High	Full - ICAO Technical Instructions 7; 2.13.3.1
Battery powered mobility aids must be stowed in a manner to prevent inadvertent activation.	3	4	Moderate	None - The Technical Instructions do not require mobility aids to be stowed in a manner that prevents inadvertent activation.
Battery powered mobility aids must be stowed in a manner to prevent excessive movement.	3	4	Moderate	Partial - Technical Instructions 7;2.4.2 have a general requirement to secure dangerous goods in the aircraft in a manner that will prevent any movement. Technical Instructions 7; 2.13.3.1 requires the operator to secure the mobility aid.
Batteries removed from a mobility aid must be protected from damage and short circuit and stowed in the cabin.	4	4	High	Full - Technical Instructions 7;2.13.3.3.
Spare batteries must be protected from damage and short circuit and stowed in the cabin	4	4	High	Full - Technical Instructions 7;2.13.3.3.
Battery powered mobility aids must be switched off prior to stowage.	3	4	Moderate	None - The Technical Instructions do not require mobility aids to be switched off prior to stowage.

UCA: GHSP/passenger handling staff accepts a mobility aid energy source for carriage that exceeds aircraft fire suppression capabilities. (H1-H4)

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
Aircraft cargo compartment fire suppression systems must suppress a fire event involving a battery powered mobility aid. Four configurations: a) Battery powered mobility aid stowed directly into the cargo compartment. b) Battery powered mobility aid loaded into a conventional aircraft unit load device. c) Battery powered mobility aid loaded into a fire-resistant container unit load device. d) Battery powered mobility aid enclosed by a fire containment cover.	4	5	Critical	Partial – a), b) Halon fire suppression systems have limited effectiveness against lithium ion battery fires. Detection of a fire may be delayed due to stowage conditions e.g. placement inside of a unit load device. c) Fire resistant containers offer superior ability to contain a thermal event relative to conventional unit load devices. Currently there is no recognized performance standard for evaluation. Effectiveness may be substantially reduced if the container is improperly closed. d) Fire containment covers utilized for palletized cargo may offer protection but their application to mobility aids is currently unknown.
Cabin crew must suppress fires involving battery powered mobility aid energy sources.	4	5	Critical	Partial - Fire suppression systems have limited effectiveness against a lithium ion battery fire. The larger batteries used in mobility aids may exceed fire suppression capabilities.

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
If a mobility aid with an energy source that exceeds the aircraft fire suppression capabilities is accepted the flight crew must know the location of battery powered mobility aids.	4	3	Moderate	Full - The operator must inform the pilot in command of the location of any mobility aids with installed lithium ion batteries, removed batteries, and spare batteries.

UCA: Airline passenger does not properly maintain a battery powered mobility aid creating an unknown safety condition (H1-H5)

Requirement	Strength of control	Severity of impact if uncontrolled	Category	Coverage (Full, Partial, None, Uncertain)
Airline passengers must maintain battery powered mobility aids in accordance with manufacturer instructions.	4	3	Moderate	Partial - Outside of the scope of the Technical Instructions. If damage is identified there are rules in the Technical Instructions 7;2.5 requiring the operator to remove from the aircraft.
Battery powered mobility aids must only contain an energy source designed for the device.	3	4	Moderate	Partial - Technical Instructions 8-1 requires the battery to be of a type which meets UN Manual of Tests and Criteria Part III, Section 38.3.
Battery powered mobility aids must provide diagnostic information to ensure acceptability for transport.	4	4	High	None - Outside of the scope of the Technical Instructions.

APPENDIX C TO THE REPORT ON AGENDA ITEM 4**DEVELOPMENT OF AMENDMENTS AIMED AT MITIGATING RISKS ASSOCIATED WITH
BATTERY-POWERED MOBILITY AIDS IN PART 7 AND 8 OF THE TECHNICAL
INSTRUCTIONS
(English only)****1. PROPOSED AMENDMENT**

1.1 DGP-Task Force/Mobility Aids developed proposed amendments to Part 7 and 8 of the Technical Instructions for the consideration of DGP/30.

1.2 The proposed amendments to Part 7 included requirements for:

- a) the operator to base approvals for transporting dangerous goods on criteria supported by a safety risk assessment;
- b) the operator's criteria and associated procedures for granting the approvals to ensure that a fire involving the dangerous goods can be detected and effectively suppressed or contained until the aircraft landed safely; and
- c) the operator to establish requirements for passengers seeking approval within the operator's conditions of carriage and a recommendation for the approval process to be made publicly accessible.

1.3 The proposed amendments to Part 8 included:

- a) a revision to the provision in Part 8;1.1 stipulating when passengers and crew could carry dangerous goods to include:
 - 1) an approval from the operator in cases where Table 8-1 required an approval;
 - 2) a new note specifying that the process for assessing and granting the approval is to be based on considerations related to safety.
- b) requirements for passengers to make advance arrangements with the operator and to provide detailed information about their mobility aid;
- c) Two options to address concerns about battery energy capacity for the consideration of the panel:
 - 1) allow batteries with a Watt-hour rating above 300 Wh if the charge did not exceed 25%, unless the operator approved a higher charge; or
 - 2) limit carriage to one battery not exceeding 300 Wh, or two batteries not exceeding 160 Wh each.

2. DGP/30 DELIBERATIONS**2.1 Amendments to Part 7**

2.2 The panel unanimously supported the amendments to Part 7, with a minor change to replace references to “aeroplane” with “aircraft”. One query was raised about why the new requirement for operator procedures focused specifically on the detection and suppression of fires involving dangerous goods and not the consequences of other types of hazardous events. Members noted this aligned with *Guidance for Safe Operations Involving Aeroplane Cargo Compartments* (Doc 10102), which recognized that consequences of all hazards must be considered, but special focus was given to a fire due to its immediate impact on airworthiness.

2.3 Amendments to Part 8

2.4 The panel supported the amendments in Part 8 in principle, but developed revisions to the original amendments to Table 8-1 after extensive discussion on:

- a) upgrading the recommendation for passengers to make advance arrangements with the operator to a requirement; and
- b) establishing a Watt-hour rating limit.

Advance arrangements with the operator

2.5 Some members felt making advance arrangements mandatory would impose unrealistic burdens on passengers that could impede travel, while others stressed the need for timely operator access to information. All agreed that the operator needed the information. The requirement was amended to focus on the need for the operator to have the information and to provide flexibility on how this was achieved.

Watt-hour rating limit

2.6 The majority favoured a 300 Watt-hour rating limit for the batteries over the alternative option, considering it clearer, easier to implement and easier to enforce. Some opposed any limit due to lack of safety data to justify a given limit and potential impact on passengers with reduced mobility. Others acknowledged that the 300 Watt-hour rating limit for batteries removed from the mobility aid and carried in the cabin was established based on expressed needs at the time and not on safety data. They agreed the 300 Watt-hour rating limit was consistent with existing requirements and unlikely to affect most mobility aids, as only a small amount exceeded this rating (data from one State indicated approximately 3 per cent). The aim of the limit was to prevent an increase in the growth of energy capacity of the batteries powering the mobility aids being carried. All panel members recognized the importance of engaging with stakeholders, especially representatives of persons with reduced mobility, before committing to any amendment. What was proposed by the panel was intended as a basis for discussion with these stakeholders. With this in mind, the panel proposed a 300 Watt-hour rating limit, with exceptions for higher capacity if authorized by the operator under the conditions of its approval. The exception did not change the existing requirements for batteries removed from the mobility aid and carried in the cabin or to spare batteries, i.e. there was no exception from the combined 300 Watt-hour rating limit for these batteries.

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APPENDIX D TO THE REPORT ON AGENDA ITEM 4

AMENDMENT TO THE PROVISIONS IN THE TECHNICAL INSTRUCTIONS FOR PASSENGERS AND CREW TO CARRY LITHIUM BATTERY POWERED MOBILITY AIDS FOR CONSIDERATION DURING STAKEHOLDER ENGAGEMENT

Part 7

OPERATOR'S RESPONSIBILITIES

Chapter 5

PROVISIONS CONCERNING PASSENGERS AND CREW

5.1 DANGEROUS GOODS PERMITTED WITH THE APPROVAL OF THE OPERATOR

5.1.1 The operator must establish criteria and associated operating procedures for approving a passenger or crew member to safely carry dangerous goods that are identified by Part 8 of the Technical Instructions as only being permitted with the approval of the operator. The criteria and associated operating procedures must ensure, to a reasonable certainty, that in the event of a fire involving the dangerous goods, it can be detected and sufficiently suppressed or contained until the aircraft makes a safe landing. The adequacy of the procedures must be demonstrated through a safety risk assessment conducted in accordance with the safety management system.

Note.— Dangerous goods carried on an aircraft as checked baggage are subject to the specific safety risk assessment on the transport of items in the cargo compartment required by Annex 6, Part I, Chapter 15.

5.1.2 INFORMATION TO PASSENGERS

5.2.1 The operator must establish the requirements for passengers seeking approval for the transport of dangerous goods when so required by Table 8-1 within the operator's conditions of carriage.

5.2.2 Operators must inform passengers about dangerous goods that passengers are forbidden to transport aboard an aircraft. The notification system must be described in their operations manual and/or other appropriate manuals. If the ticket purchase and/or boarding pass issuance can be completed by a passenger without the involvement of another person, the notification system must include an acknowledgement by the passenger of having been presented with the information. The information must be provided to passengers:

- a) at the point of ticket purchase or, if this is not practical, made available in another manner to passengers prior to boarding pass issuance; and
- b) at boarding pass issuance, or when no boarding pass is issued, prior to boarding the aircraft.

Note.— The information may be provided in text or pictorial form, electronically, or verbally, as described in the operator's manuals.

5.2.3 An operator or the operator's handling agent and the airport operator must ensure that information on the types of dangerous goods which passengers are forbidden to transport aboard an aircraft is communicated effectively to them. This information must be presented at each of the places at an airport where tickets are issued, boarding passes are issued, passenger baggage is dropped off and aircraft boarding areas are maintained, and at any other location where passengers are issued boarding passes and/or checked baggage is accepted. This information must include visual examples of dangerous goods forbidden from transport aboard an aircraft.

~~5.1.3~~5.2.4 An operator, of passenger aircraft, should have information on those dangerous goods which may be carried by passengers in accordance with 8;1.1.2 and on the process for seeking the operator's approval for carriage when so required by Table 8-1 made available prior to the boarding pass issuance process on their websites or other sources of information.

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Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

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Chapter 1

PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS AND CREW

Parts of this Chapter are affected by State Variations BR 10, MO 3, US 15, VE 9, VE 10; see Table A-1

1.1 DANGEROUS GOODS CARRIED BY PASSENGERS AND CREW

1.1.1 Passengers and crew are forbidden to carry dangerous goods either as or in carry-on baggage, checked baggage or on their person unless the dangerous goods are:

- a) permitted in accordance with Table 8-1; ~~and~~
- b) for personal use only; ~~and~~
- c) approved for carriage by the passenger or crew member by the operator, when such an approval is required by Table 8-1.

Note.— The process for assessing and granting the approval of the operator is to be based upon considerations related to flight safety.

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1.1.2 Except for the criteria for granting operator approval required by 7;5.1; the loading requirements of 7;2.13; information to be provided to employees required by 7;4.2; and reporting provisions of 7;4.4 and 7;4.5, the provisions of these Instructions do not apply to the dangerous goods permitted by Table 8-1 when those dangerous goods are:

- a) carried by passengers or crew for personal use only;
- b) contained in baggage that has been separated from its owner during transit (for example, mishandled baggage such as lost baggage or improperly routed baggage); or
- c) contained within items of excess baggage sent as cargo as permitted by 1;1.1.5.1 h).

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Table 8-1. Provisions for dangerous goods carried by passengers and crew

Dangerous Goods	Location		Approval of the operator(s) is required	Restrictions
	Checked baggage	Carry-on baggage		
4) Mobility aids (e.g. wheelchairs) powered by: – spillable batteries; – non-spillable wet batteries; – dry batteries; – nickel-metal hydride batteries; or – lithium ion batteries	Yes	(see e))	Yes	a) for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg); b) ~~the passenger should make advance arrangements with each operator and provide information on the type of battery installed and on the handling of the mobility aid (including instructions on how to isolate the battery);~~ <u>information must be provided to the operator(s) in accordance with 7.5.2;</u> c) in the case of a dry battery or nickel-metal hydride battery, each battery must comply with Special Provision A123 or A199, respectively; d) in the case of a non-spillable wet battery: i) each battery must comply with Special Provision A67; and ii) a maximum of one spare battery may be carried per passenger; e) in the case of a lithium ion battery: i) each battery must be of a type which meets the requirements of each test in the <i>UN Manual of Tests and Criteria</i>, Part III, subsection 38.3; ii) <u>when the mobility aid provides adequate protection to the battery(ies) and they remain installed, the battery(ies) must not exceed a Watt-hour rating of 300 Wh per mobility aid, unless a higher Watt-hour rating is authorized by the operator under the conditions of its approval in accordance with 7.5.2;</u> iii) <u>when the mobility aid does not provide adequate protection to the battery(ies):</u> – the battery(ies) must be removed in accordance with the manufacturer's instructions; – the battery(ies) must not exceed <u>a Watt-hour rating of 300 Wh per mobility aid;</u> – the battery terminals must be protected from short circuit (by insulating the terminals, e.g. by taping over exposed terminals); – the battery(ies) must be protected from damage (e.g. by placing each battery in a protective pouch); and – the battery(ies) must be carried in the cabin; <u>and</u> iv) <u>a maximum of one spare set of battery(ies) with a total Watt-hour rating not exceeding 300 Wh or two spare batteries not exceeding 160 Wh each may be carried. Spare batteries must be carried in the cabin.</u>
<u>Note: When the lithium battery(ies) remain installed in the mobility aid, there is no Watt hour limit.</u>				

APPENDIX E TO THE REPORT ON AGENDA ITEM 4**DISCUSSIONS ON AMENDING THE PROVISIONS IN THE
TECHNICAL INSTRUCTIONS FOR PASSENGRS, CREW AND THE
OPERATOR TO CARRY POWER BANKS ON AIRCRAFT
(English only)****1. PROPOSED AMENDMENT**

1.1 DGP/30 developed amendments to the provisions in Table 8-1 of the Technical Instructions for passengers and crew to carry power banks on the aircraft and to Part 1;2 of the Technical Instructions for exceptions for dangerous goods of the operator.

1.2 Amendment to passenger and crew provisions in Table 8-1

1.3 DGP/30 developed the following restrictions to the provisions for passengers and crew to carry power banks on the aircraft (Table 8-1 of the Technical Instructions):

- a) they must not be charged and should not be used to recharge a portable electronic device while onboard the aircraft; and
- b) no more than two power banks may be carried per person.

These were in addition to existing restrictions requiring that they be carried as carry-on baggage, individually protected to prevent short circuit and within established energy capacity limits. The panel emphasized that the additional restrictions were not intended to increase the number of power banks or spare batteries permitted under the current provisions.

1.4 The amendments were unanimously agreed after extensive discussion. Major discussion points included defining the term “power bank”, where they should be stowed on board the aircraft, whether there should be charging or recharging requirements, and whether the number of power banks a passenger could carry should be limited.

1.5 Amendment to operator exceptions

1.5.1 Electronic devices such as electronic flight bags, personal entertainment devices and credit card readers containing lithium batteries and spare batteries for the devices were not subject to the Technical Instructions provided they met the provisions for lithium batteries carried by passengers and crew contained in Table 8-1 of the Technical Instructions. The new restrictions proposed for inclusion in Table 8-1 would inadvertently prohibit the operator from recharging powerbanks during flight. The amendment therefore replaced the reference to Table 8-1 in Part 1;2.2.1 e) with the actual provisions from Table 8-1 that applied. For the sake of consistency, a similar amendment was proposed for 1;2.2.1 b), which made portable electronic devices containing lithium batteries carried aboard the aircraft by the operator for use or sale during the flight not subject to the Technical Instructions.

2. MAJOR DISCUSSION POINTS

2.1 Defining power bank

2.1.1 The panel sought to define “power bank” in a way that would be universally understood and accepted, ensuring that any restrictions applied to power banks would be unambiguous and easy to interpret. Much of the discussion focused on defining the term so that language could be used to except devices such as earbud charging cases and hearing aids from the restrictions, given that they posed little risk. While it agreed that the primary function of a power bank was to charge external devices, some members expressed discomfort with rigid definitions, noting that technology evolved rapidly and definitions might quickly become outdated. The panel ultimately concluded that devices such as earbud charging cases and hearing aids should be classified as batteries contained in or packed with equipment, making an exception from the power bank restrictions unnecessary. Members noted the UN Sub-Committee had concluded that such devices were batteries contained in or packed with equipment and were not considered power banks. Industry guidance had made the same interpretation. The panel ultimately decided that potential ambiguity should be addressed through guidance material instead of risking the unintended consequences that could result from a regulatory definition.

2.1.2 Another area of discussion was whether there should be a distinction in the Technical Instructions between batteries and power banks. A power bank was considered a battery in the Technical Instructions and had been subject to the same restrictions in Table 8-1. However, power banks often lacked the quality assurance found in batteries from the original equipment manufacturer. The panel agreed that power banks should be regulated separately from spare batteries, with specific restrictions applied to them.

2.2 Stowage

2.2.1 To enhance visibility and enable rapid response in case of a thermal event, the original amendment proposed to the panel recommended that power banks should not be stored in overhead bins. Timely detection and response was critical to avoid the risk of rapid escalation. Instead, they should be placed in baggage under the seat, in the seat back pocket, or in another operator-designated location outside the overhead bin, where they remained visible and accessible to both passengers and crew. This aligned with restrictions some States and several airlines had implemented.

2.2.2 Some panel members cautioned against making such regulatory requirements, because overhead compartments could offer containment benefits in the event of a fire. They could also help reduce the likelihood of items being crushed or damaged by passenger movement. Cabin crew had demonstrated the ability to pour liquid into an overhead locker to suppress a fire, which could be more difficult if the device was under a seat or in a seat pocket. Conversely, stowing a power bank in a pocket or under a seat could increase the risk of physical damage. The device might be crushed, bent, or punctured by movement, seat adjustments, or other objects. Power banks stored in pockets or under seats were more likely to be forgotten by passengers. Forgotten devices could be damaged during cleaning or seat movement or might go unnoticed if they began to overheat or emit smoke. Pockets and seat areas often contained flammable items such as tissues, papers, and clothing. If a power bank overheated or caught fire in a pocket, it could ignite these materials, increasing the severity of the incident. While keeping a power bank on the person or in a seat pocket could allow for rapid detection of thermal events, it also meant that any incident occurred close to the passenger, increasing the risk of injury before crew could respond.

2.2.3 There was agreement that no single stowage location was perfect for all aircraft types and operational scenarios. Flexibility for operators to make decisions based on aircraft configuration, operational capabilities and overall risk was seen as important. The panel therefore did not include any requirements or recommendations on where to stow the power banks in the cabin.

2.3 Charging and recharging restrictions

2.3.1 The panel agreed that power banks must not be recharged while on board the aircraft. This aligned with restrictions some States and several airlines had implemented. It was considered a key safety measure to prevent thermal events during flight. Charging was a stress on cells, and a thermal event could occur if charging was too fast or uncontrolled. Overcharging or using incompatible cables or adapters increased the risk significantly. Editorial changes were made to the original proposal to provide clarity so that both passengers and crew understood that charging power banks during the flight was not allowed.

2.3.2 The panel considered whether using power banks to recharge portable electronic devices while on board the aircraft should be prohibited, ultimately agreeing to make this a recommendation. Panel members distinguished charging other devices with a power bank, which would result in the power bank having a lower state of charge and potentially lowering risk, from charging the power bank itself, which would result in the power bank having a higher state of charge and potentially increasing the risk. The panel recognized the reality of passenger needs and the practical challenges of enforcing such a requirement. Sufficiently charged devices were a necessity in many cases, some of them critical for medical reasons or other essential functions at the destination. There were concerns that determined passengers might attempt to recharge devices discreetly, risking a delay in awareness of an event should it occur. Excessive monitoring of passengers to ensure they were not using power banks to recharge other devices could also distract cabin crew from other critical safety duties and reduce their ability to respond to other emergencies or routine operations. The panel concluded that allowing operators flexibility to manage the risks was important.

2.4 Number of power banks a passenger could carry

2.4.1 The panel discussed limiting the number of power banks each passenger could carry to reduce the likelihood of a thermal event on board the aircraft. While banning them would eliminate risk (provided there was full compliance), the panel feared this might lead passengers to place power banks in checked baggage, posing additional safety risks. The panel agreed on a limit of two power banks per passenger. It considered this to be a practical limit that balanced safety with need.

3. ADDITIONAL CONCERNS RAISED DURING DISCUSSION

3.1 Incidents on the flight deck

3.1.1 While the amendment focused on managing risks in the cabin, members noted that managing risks associated with thermal events in the flight deck, including from e-cigarettes, was also critical with suggestions they were insufficiently addressed. The Secretary noted that the ANC had tasked FLTOPSP-SCGSWG with developing procedures handle lithium battery incidents from devices such as EFBs, PEDs and power banks carried on board by the flight crew though job card SCGSWG.003. The concerns raised by DGP/30 would be forwarded to that group.

3.2 Crew responsibilities

3.2.1 The panel recognized the importance of effective crew training to respond to lithium battery incidents. It also recognized the importance of considering passenger behaviour during emergencies and its impact on crew effectiveness during an emergency. It was noted that crew response was delayed during the Air Busan incident because passengers panicked and blocked the aisle, which hindered access to the fire. The Secretary of the newly established Cabin Safety Specific Working Group of FLTOPSP (FLTOPSP-CSSWG) noted that that group had been established to address risks such as this. The concerns raised by DGP/30 would be forwarded to that group.

3.2.2 While the safety measures it was proposing were important, care was needed to ensure cabin crew were not burdened with excessive monitoring and enforcement responsibilities. The panel stressed the need to balance safety with practicality, ensuring that cabin crew could focus on their core duties without being overwhelmed by additional tasks. It was important for regulators and industry to implement effective safety outreach activities to ensure passengers were aware of all restrictions before boarding the aircraft so that cabin crew did not have to worry about non compliance.

4. FUTURE WORK: COLLABORATION WITH EXPERT GROUPS

4.1.1 The following were identified as additional efforts needed to manage safety risks associated with the carriage of lithium batteries by passengers and crew. The Secretary would bring them to the attention of FLTOPSP- SCGSWG in the event it was not already considering these issues.

4.2 Guidance material

4.2.1 The panel noted that the issues raised during the discussions should be included in guidance material to assist operators in assessing and managing risks associated with the carriage of power banks and portable electronic devices by passengers and crew.

4.3 Safety promotion

4.3.1 The need for effective safety promotion aimed at ensuring passengers were aware of what constituted dangerous goods and the risks they posed when carried on aircraft was emphasized. Standardized safety material developed by ICAO for use by States would help ensure consistent messaging aimed at improving passenger awareness and improving compliance.

4.4 Airside sales of power banks

4.4.1 Airside retail outlets were found to be selling power banks with power ratings from 100Wh to 160Wh, which required operator approval and even those exceeding 160Wh, which were prohibited for carriage by passengers or crew. A need for stronger oversight to eliminate this practice was identified.

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APPENDIX F TO THE REPORT ON AGENDA ITEM 4

PROPOSED AMENDMENT TO THE TECHNICAL INSTRUCTIONS RELATED TO THE CARRIAGE OF LITHIUM BATTERIES BY PASSENGERS, CREW AND THE OPERATOR

Part 1

GENERAL

...

Chapter 2

LIMITATION OF DANGEROUS GOODS ON AIRCRAFT

...

2.2 EXCEPTIONS FOR DANGEROUS GOODS OF THE OPERATOR

2.2.1 The provisions of these Instructions do not apply to the following:

- a) articles and substances which would otherwise be classified as dangerous goods but which are required to be aboard the aircraft in accordance with the pertinent airworthiness requirements and operating regulations or that are authorized by the State of the Operator to meet special requirements;
- b) aerosols, alcoholic beverages, perfumes, colognes, liquefied gas lighters and portable electronic devices containing lithium metal or lithium ion cells or batteries provided ~~that the batteries~~ they meet the provisions of ~~Table 8-1, Item 1)~~ 2.2.2 carried aboard an aircraft by the operator for use or sale on the aircraft during the flight or series of flights, but excluding non-refillable gas lighters and those lighters liable to leak when exposed to reduced pressure;
- c) dry ice intended for use in food and beverage service aboard the aircraft;
- d) alcohol-based hand sanitizers and cleaning products carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights for the purposes of passenger and crew hygiene;
- e) electronic devices, such as electronic flight bags, personal entertainment devices, and credit card readers, containing lithium metal or lithium ion cells or batteries and spare lithium batteries for such devices ~~or power banks~~ carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights, provided ~~that the batteries~~ they meet the provisions of ~~Table 8-1, Item 1)~~ ~~Spare lithium batteries must be individually protected so as to prevent short circuits when not in use~~ 2.2.2. Conditions for the carriage and use of these electronic devices and for the carriage of spare batteries ~~and power banks~~ must be provided in the operations manual and/or other appropriate manuals as will enable flight crew, cabin crew and other employees to carry out the functions for which they are responsible.

2.2.2 The following conditions must be met for lithium cells or batteries and the devices they power referred to in 2.2.1 b) and e):

- a) spare lithium batteries and power banks must be individually protected so as to prevent short circuits when not in use;
- b) measures must be taken to prevent unintentional activation of the portable electronic devices; and
- c) the batteries must:
 - 1) be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3; and
 - 2) for lithium metal batteries, not exceed a lithium content of 2 g and for lithium ion batteries, not exceed a Watt-hour rating of 100 Wh.

...

Renumber subsequent paragraphs

...

Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

Chapter 1

PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS AND CREW

...

Table 8-1. Provisions for dangerous goods carried by passengers and crew

<i>Dangerous Goods</i>	<i>Location</i>		<i>Approval of the operator(s) is required</i>	<i>Restrictions</i>
	<i>Checked baggage</i>	<i>Carry-on baggage</i>		
Batteries				
1) Lithium batteries (including <u>power banks</u> and portable electronic devices)	Yes (except for g) and h))	Yes	(see c) and d))	a) each battery must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3; b) each battery must not exceed the following: — for lithium metal batteries, a lithium content of 2 g; or — for lithium ion batteries, a Watt-hour rating of 100 Wh; c) each battery may exceed 100 Wh but not exceed 160 Wh Watt-hour rating for lithium ion with the approval of the operator; d) each battery may exceed 2 g but not exceed 8 g lithium content for lithium metal for portable medical electronic devices with the approval of the operator; e) <u>no more than two spare batteries meeting the requirements of c) or d) may be carried per person.</u> ef) for portable electronic devices containing batteries: — measures must be taken to prevent unintentional activation and to protect the devices from damage; — the devices should be carried as carry-on baggage; however, if carried as checked baggage, the devices must be completely switched off (not in sleep or hibernation mode) if the batteries exceed: — for lithium metal batteries, a lithium content of 0.3 g per device; or — for lithium ion batteries, a Watt-hour rating of 2.7 Wh per device;

	Location		Approval of the operator(s) is required	Restrictions
	Checked baggage	Carry-on baggage		
Dangerous Goods				~~f~~g) batteries and heating elements must be isolated in portable electronic devices capable of generating extreme heat, which could cause a fire if activated, by removal of the heating element, battery or other components; ~~g~~h) spare batteries, ~~including power banks~~: — must be carried as carry-on baggage; and — must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); i) <u>power banks</u>: — <u>must be carried as carry-on baggage</u>; — <u>must not be recharged while onboard the aircraft</u>; — <u>should not be used to recharge a portable electronic device while onboard the aircraft; and</u> — <u>no more than two power banks may be carried per person</u>; ~~h~~i) baggage equipped with a lithium battery(ies) exceeding: — for lithium metal batteries, a lithium content of 0.3 g; or — for lithium ion batteries, a Watt-hour rating of 2.7 Wh must be carried as carry-on baggage unless the battery(ies) is removed from the baggage, in which case the battery(ies) must be carried in accordance with ~~g~~h); ~~i) no more than two spare batteries meeting the requirements of e) or d) may be carried per person.~~ <u>Note.— The restrictions in a) and the applicable limits in b), c), d) or e) apply to all batteries for this item, i.e. those contained in portable electronic devices, spare batteries, power banks and baggage equipped with lithium batteries.</u>

...

Agenda Item 5: Clarifying State oversight responsibilities in Annex 18 (Ref: Job Card DGP.005.05)**5.1 PROPOSED AMENDMENT TO ANNEX 18 TO CLARIFY STATES' RESPONSIBILITIES WITH RESPECT TO THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (DGP/30-WP/4) AND REVISIONS TO PROPOSED AMENDMENT TO ANNEX 18 DEVELOPED SINCE DGP-WG/25 (DGP/30-IP/8)****5.1.1 Background**

5.1.1.1 The meeting reviewed a proposed amendment to Annex 18 developed by the DGP Working Group on Annex 18 (DGP-WG/Annex 18). The amendment clarified and strengthened State responsibilities for managing the safe transport of dangerous goods by air. It also ensured alignment with operational requirements in Annex 6 and State safety programme (SSP) responsibilities in Annex 19. The amendment was the result of extensive collaboration over several years, involving multiple face-to-face meetings and input from various panels and working groups.

5.1.1.2 An earlier version of the amendment was recommended by DGP/29, with the understanding that it would be refined based on feedback through formal coordination with relevant expert groups (see paragraph 5.1 of the DGP/29 Report). More substantial refinements were subsequently made than anticipated to address feedback from the thirty-fifth meeting of the Aviation Security Panel (Montréal, 22 to 26 April 2024) (AVSECP/35), the seventh meeting of the Safety Management Panel (4 to 5 December (virtual) and 10 to 13 December (Montréal) 2024) (SMP/7) and the eleventh meeting of the Flight Operations Panel (Montréal, 20 to 24 January 2025) (FLTOSP/11). Expert groups concluded that the amendment was not yet mature enough to be sent to States and international organizations for consultation. The Air Navigation Commission (ANC) reviewed the amendment at the twelfth meeting of its 228th session and agreed with this conclusion. The Secretary shared comments from the expert groups and the ANC with DGP-WG/Annex 18. The amendment presented to DGP/30 addressed the feedback from the ANC and the expert groups.

5.1.2 Revisions to address feedback from expert groups

5.1.2.1 The amendments to proposed Chapter 4 on safety management responsibilities and Chapter 10 on Dangerous Goods Safety Intelligence were streamlined based on feedback from SMP/7 and the ANC by removing SARPs already covered by Annex 19, consolidating references to guidance material in one note and aligning with the lasted amendment to Annex 19 (Amendment 2).

5.1.2.2 Substantial amendments to the operator responsibilities, now in Chapter 6, and an associated amendment to Annex 6 (see paragraph 8.1 of this report) were developed through a DGP/FLTOSP inter-panel working group. The revisions were made to clarify operator responsibilities, avoid duplication with Annex 6, and ensure that the requirements were practical and aligned with current operational realities. New SARPs were added to ensure each operator responsibility in the Technical Instructions was connected to a high-level Standard in the Annex, making the requirements more visible to States. The chapter was restructured into two main sections to clearly distinguish between operators with and operators without a specific approval to transport goods. Each of these sections was structured to

distinguish between responsibilities for dangerous goods transported as cargo, in mail, and carried by passengers and crew. New provisions were added for helicopters, based on existing provisions in the Technical Instructions, and remotely piloted aircraft systems.

5.1.2.3 Standards requiring dangerous goods training for security screening personnel and measures for physical and cyber security of exemption data in Chapter 11 included in the DGP/29 proposal were removed after AVSECP/35 feedback. AVSECP felt mandatory dangerous goods training could result in security screeners being distracted from their main task—detecting prohibited articles such as explosives. While some DGP members supported keeping the training Standard due to its benefits and existing requirements in the Technical Instructions and Aviation Security Manual, the majority agreed to remove it. They believed it should be up to each State to decide whether to engage security screeners with detecting dangerous goods based on their own risk management activities. If they did engage them, training would automatically be required by Annex 18. The panel also removed the cyber security Standard, as this was being addressed by other expert groups and was broader than just exemptions. The topic could be revisited with relevant expert groups at an appropriate time in the future. The panel recognized the need for close collaboration with AVSECP when developing guidance material to support implementation of the proposed new SARPs related to preventing dangerous goods not permitted for air transport in cargo, baggage or mail from being loaded on an aircraft contained in new Chapter 4 on State safety management responsibilities.

5.1.3 Endorsement

5.1.3.1 Some members were concerned that the revised reporting requirements for misdeclared dangerous goods in the new chapter on safety intelligence introduced ambiguity that would be challenging to implement and enforce. The current requirements were for all misdeclared dangerous goods to be reported to the State of the Operator and the State of Occurrence. The amendment introduced a requirement for them to be reported to these States only if they were discovered any time other than during an acceptance check or during an acceptance check if they were of a type that could endanger the aircraft or its occupants if left undetected. Members noted that operators would have to make subjective judgments about whether the aircraft or its occupants would have been endangered, which could be difficult to legislate and lead to inconsistent reporting. The majority supported the revised requirement, as it was intended to prevent too many reports of minor incidents from overwhelming competent authorities when these should already be captured by the operator's own reporting system. While it did introduce some subjectivity, this was accepted so that only serious incidents of misdeclared dangerous goods were reported to the State allowing the State to focus on bigger safety issues. This rationale was accepted by all, with the understanding that robust guidance material was needed to ensure clear and consistent application of the reporting requirement.

5.1.3.2 The panel reached consensus on the proposed amendment to Annex 18, subject to minor editorial amendments. The amendment is presented in the appendix to the report on this agenda item.

5.1.4 Guidance material

5.1.4.1 The panel emphasized the importance of comprehensive guidance material to support implementation. This would be contained in a new manual referred to in the proposed amendment as *Oversight and Management of the Safe Transport of Dangerous Goods by Air Manual* (Doc xxxxx, forthcoming). Guidance material on integrating dangerous goods into the State safety programme (SSP) would be particularly important. The chapter on State safety management responsibilities in the original amendment contained a section for each element of the SSP, with either SARPs or a note referring to

associated guidance material in each. It was structured this way to emphasize the need for dangerous goods to be integrated into the SSP. The chapter had been streamlined since DGP/29 to remove SARPs already covered by Annex 19 based on feedback from SMP/7 and the ANC. While acknowledging the justification for doing this, panel members were concerned their attempt to make the need for integrating dangerous goods into the SSP clear would be lost by the streamlining. This concern would be addressed through robust guidance material.

5.1.4.2 Completed guidance material would be submitted to the thirty-first meeting of the DGP for endorsement.

5.1.5 Technical Instructions

5.1.5.1 Consequential amendments to the Technical Instructions and its Supplement would be necessary to align with Annex 18 should the amendment be adopted. The panel would begin to develop these during the next biennium. The aim would be to have the amendments incorporated in the 2029-2030 Edition of the Technical Instructions and the Supplement assuming an applicability date of November 2030 is accepted.

5.1.6 Review of protocol questions

5.1.6.1 The panel discussed the need for a review of the Universal Safety Oversight Audit Programme (USOAP) protocol questions to ensure they adequately addressed States' dangerous goods responsibilities. It was noted that States could be assessed as having mature SSPs, but this did not necessarily mean there was the same level of maturity when it came to their specific dangerous goods responsibilities. It was therefore important to have SSP protocol questions specific to dangerous goods.

5.1.7 Applicability date

5.1.7.1 The applicability date for the amendment was originally suggested as November 2028. However, during the Air Navigation Commission's review, concerns were expressed that 2028 might be unrealistic for States to implement such a substantial amendment. The panel agreed with this assessment. Deferring the applicability date to November 2030 would give States additional time to review and implement the amendments and ICAO and the panel time to implement a robust implementation plan that would include webinars, workshops, and dissemination of guidance material.

5.2 PROPOSED AMENDMENT TO THE STANDARDS IN THE DRAFT AMENDMENT TO ANNEX 18 AND IN THE TECHNICAL INSTRUCTIONS REGARDING REPORTING REQUIREMENTS (DGP/30-WP/33) AND PROPOSED AMENDMENT TO THE STANDARDS IN THE DRAFT AMENDMENT TO ANNEX 18 AND IN THE TECHNICAL INSTRUCTIONS REGARDING REPORTING REQUIREMENTS (DGP/30-IP/4)

5.2.1 An amendment to extend the requirements to report the discovery of undeclared or misdeclared dangerous goods in cargo or mail and dangerous goods not permitted to be carried by passengers or crew in baggage or on the person to additional State authorities was proposed. Several thought the current requirements were sufficient and that adding more would not provide any additional

safety benefits. There were already requirements through Annex 19 for States to forward safety information it might have if considered of interest to other States. The amendment was not agreed, but there was support for addressing the concerns the proposed amendment aimed to address through guidance material.

5.3 RECOMMENDATION

5.3.1 In light of the foregoing discussions, the meeting developed the following recommendation:

RSPP	Recommendation 5/1 — Amendment to Annex 18 to clarify States' responsibilities with respect to the safe transport of dangerous goods by air

That Annex 18 be amended as indicated in the appendix to the report on this agenda item with an applicability date of November 2030.

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**APPENDIX TO REPORT ON AGENDA ITEM 5
(English only)**

PROPOSED AMENDMENT TO ANNEX 18

**PROPOSED AMENDMENT TO
INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES**

ANNEX 18

TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

1. ~~Text to be deleted is shown with a blue line through it.~~	text to be deleted	
2. <u>New text to be inserted is highlighted with grey shading.</u>	new text to be inserted	
3. ~~Text to be deleted is shown with a line through it~~ <u>followed by the replacement text which is highlighted with grey shading.</u>	new text to replace existing text	

PROPOSED AMENDMENT TO**ANNEX 18*****THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR*****FOREWORD****Historical background**

Annex 18 governs the international transport of dangerous goods by air. The material in ~~this the~~ Annex was developed by the Air Navigation Commission in response to a need expressed by ~~Contracting~~ States for an internationally agreed set of provisions governing the safe transport of dangerous goods by air. ~~In order to assist in achieving compatibility with the regulations covering the transport of dangerous goods by other modes of transport, the provisions of this Annex are based on the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and the Regulations for the Safe Transport of Radioactive Materials of the International Atomic Energy Agency.~~ The Annex was originally adopted by Council on 26 June 1981 and became applicable on 1 January 1984.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Justification: The objective of Annex 18 is currently provided under the heading for “Relationship with the <i>Technical Instructions for the Safe Transport of Dangerous Goods by Air</i>”. It is proposed to move the objective as a general statement at the beginning of the Foreword under the heading for “Historical background” to make it immediately clear. The current text under “Historical background” about the provisions of the Annex being based on the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and the Regulations for the Safe Transport of Radioactive Materials of the International Atomic Energy Agency is inaccurate. It is not the Annex that is based on these recommendations and regulations, but rather the Technical Instructions. It is proposed to explain the relationship with these bodies in the “Relationship with the Technical Instructions” section. It is also proposed to delete the reference to the IAEA regulations as it is considered unnecessary. The relevant material from these regulations are included in the United Nations recommendations upon which the Technical Instructions are based. The input from the IAEA is explained in the Foreword of the Technical Instructions. The original adoption and applicability dates of the Annex are proposed for inclusion in the Annex for the sake of consistency with other Annexes.

**Relationship with the *Technical Instructions*
for the *Safe Transport of Dangerous Goods by Air*
(Doc 9284)**

~~The provisions of Annex 18 govern the international transport of dangerous goods by air.~~ The broad provisions of this Annex are amplified by the detailed specifications of the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) (Technical Instructions). The provisions of the Technical Instructions are based on recommendations on the transport of dangerous goods developed for all modes of transport by the United Nations Economic and Social Council's Committee of Experts on the Transport of Dangerous Goods. The intent of using this common base by all modes of transport is to allow cargo to be transferred safely and smoothly between air, sea, rail, and road modes. Modifications from these recommendations are made in the Technical Instructions to address specific aviation safety needs while keeping in mind the need to ensure compatibility with other modes of transport.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Justification: The objective of Annex 18 is moved to the beginning of the foreword under “Historical background” (see justification under that paragraph). The new text is moved from this same paragraph (“Historical background”) and modified to more clearly explain the relationship between the Technical Instructions and the United Nations recommendations (see justification under “Historical background”).

Status of the Technical Instructions

The detailed specifications of the Technical Instructions are considered binding on a State by virtue of 2.3.1 of this Annex unless it has notified a difference to this provision under Article 38 of the Convention.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Justification: The inside cover of Annex 18 explains the status of the Technical Instructions. The status was agreed by States in recognition of the critical need for compliance with the Technical Instructions to ensure safety. It is proposed to make this explanation more visible by including it in the Foreword.

Amendments to Annex 18 and the Technical Instructions

Annex 18 is intended to contain stable material requiring only minor amendments using the normal Annex amendment process. The Technical Instructions require more substantial and frequent amendments to keep up with day-to-day operational use.

The Air Navigation Commission established the Dangerous Goods Panel (DGP) and tasked it with maintaining the Technical Instructions. The DGP meets periodically to review comments received from States and interested international organizations, to consider any changed recommendations of the United Nations Committee, to address safety and facilitation issues specific to air transport and to prepare revised editions of the Technical Instructions. Amendments recommended by the DGP are published in panel meeting reports and made publicly available on www.icao.int/dangerous-goods.

Amendments recommended by the DGP are reviewed by the Air Navigation Commission and approved and published by decision of the Council of ICAO. Action taken by the Air Navigation Commission or the Council on the recommendations is published in the Supplement to DGP meeting reports and made available on www.icao.int/dangerous-goods.

A new edition of the Technical Instructions is published every two years. Amendments to the Technical Instructions during the specific period of applicability of an edition of the document may also be published if deemed necessary. Amendments during the specific period of applicability are made available on www.icao.int/dangerous-goods.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Justification: The status and amendment process for the Technical Instructions is unlike that for any other ICAO provisions. It is therefore considered necessary to make the process and the ability for States to see amendments being proposed visible.

Guidance

Guidance to States on the implementation of Annex 18 is contained in *Oversight and Management of the Safe Transport of Dangerous Goods by Air Manual (Doc xxxxx, forthcoming)*.

The Technical Instructions are supported by the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284SU)*. The Supplement contains guidance to assist States when considering authorizations to transport dangerous goods by air that the Technical Instructions forbid under normal circumstances through approvals or exemptions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Justification: A new section containing references to available guidance is proposed to support States.

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INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1. DEFINITIONS

When the following terms are used in this Annex, they have the following meanings:

Appropriate national authority. Any authority designated, or otherwise recognized, by a State to perform specific functions related to provisions contained in these Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	“Appropriate national authority” is referenced throughout Annex 18. The term is defined in the Technical Instructions. It is proposed to replicate the definition in Annex 18 to ensure consistent application of the term.

Approval. An authorization granted by an appropriate national authority for:

- a) the transport of dangerous goods forbidden on passenger and/or cargo aircraft where the Technical Instructions state that such goods may be carried with an approval; or
- b) other purposes as provided for in the Technical Instructions.

Note.— In the absence of a specific reference in the Technical Instructions allowing the granting of an approval, an exemption may be sought.

Baggage. Personal property of passengers or crew carried on an aircraft by agreement with the operator.

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	The amendment to Annex 18 introduces references to baggage. Baggage is defined in Annex 9 and the Technical Instructions. It is proposed to replicate the definition in Annex 18 to ensure consistent application of the term.

Cargo. Any property carried on an aircraft other than mail and accompanied or mishandled baggage.

Note.— This definition differs from the definition of “cargo” given in Annex 9 — Facilitation whereby Annex 9 excludes stores (supplies) from cargo, but Annex 18 does not.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The definition for cargo is currently not in Annex 18, but it is in the Technical Instructions. The panel is proposing the definition in the Technical Instructions be added to the Annex given the need to understand the distinction between cargo, baggage and mail established through the proposed revised structure of the Annex. The definition in Annex 9 – <i>Facilitation</i> excludes stores (supplies), but the one in the Technical Instructions does not. This misalignment was purposely introduced into the 2011-2012 Edition of the Technical Instructions to ensure operator stores classified as dangerous goods being shipped for replacement or repair comply with the Technical Instructions. Aligning with the definition in Annex 9 would create significant gaps and have safety implications with respect to the transport of dangerous goods.

~~*Cargo aircraft. Any aircraft, other than a passenger aircraft, which is carrying goods or property.*~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	The definition for cargo aircraft and passenger aircraft (see below) are proposed for deletion because they are considered unnecessary in the Annex. They have been wrongly used by States to determine who can be on an aircraft, when that determination is governed by Annex 6. Deleting it will help avoid such misinterpretations. The definitions are maintained in the Technical Instructions.

Civil aviation authority (CAA). The governmental entity or entities, however titled, that are directly responsible for the regulation of all aspects of civil air transport, technical (i.e. air navigation and aviation safety) and economic (i.e. the commercial aspects of air transport).

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	The term is referred to in Annex 18 and a definition for it is contained in <i>Safety Oversight Manual</i> (Doc 9734). It is proposed to include the definition in Annex 18 to ensure consistent interpretation of what is meant when CAA is referred to.

Consignee. Any person, organization or government which is entitled to take delivery of a consignment.

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	“Consignee” is referenced in the definition for consignment and is defined in the Technical Instructions. The definition in the Technical Instructions aligns with the definition in the UN Model Regulations. It is proposed to replicate the definition in Annex 18 to ensure consistent application of the term.

Consignment. One or more packages of dangerous goods accepted by an operator from one shipper at one time and at one address, receipted for in one lot and moving to one consignee at one destination address.

Crew member. A person assigned by an operator to duty on an aircraft during a flight duty period.

Dangerous goods. Articles or substances which are capable of posing a ~~risk~~hazard to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/26 AN Min. 207-5 AN Min. 209-2	Justification: The need was identified during work on harmonizing provisions of the Technical Instructions with the UN Recommendations on the Transport of Dangerous Goods for incorporation in the 2019-2020 Edition. The amendment corrected inaccurate use of the term “risk”. The definition in the Technical Instructions already aligns with the UN Model Regulations. The ANC conducted a final review of the amendment following State consultation. It was pointed out, and recognized by the Commission, that the amendment proposal was administrative in nature and, as such, should be consolidated with other Annex 18 amendment proposals which could imply a later applicability date than the currently indicated 7 November 2019. (AN Min 209-2).

Dangerous goods accident. An occurrence associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in fatal or serious injury to a person or major property or environmental damage.

Note.— A dangerous goods accident may also constitute an aircraft accident as defined in Annex 13— Aircraft Accident and Incident Investigation.

<i>Origin:</i>	<i>Rationale:</i>
DGP/26 and DGP/29	Clarification that a dangerous goods accident is not restricted to an accident associated with the operation of an aircraft. The wording aligns with text in the definition for dangerous goods incident. It is important to capture accidents not associated with the operation of an aircraft because they could indicate a safety deficiency that might have resulted in an aircraft accident if the dangerous goods had been loaded on the aircraft.

Dangerous goods incident. An occurrence, other than a dangerous goods accident, associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to where:

- a) a person is injured;
- b) there is property or environmental damage;
- c) there is fire, breakage, spillage, leakage of fluid contents or radiation or there is other evidence that the integrity of the packaging has not been maintained. Any; or
- d) occurrence relating to the transport of dangerous goods which seriously jeopardizes the safety of the aircraft or its occupants is also deemed to constitute a dangerous goods incident is jeopardized.

Note.— A dangerous goods incident may also constitute an aircraft incident as defined in Annex 13 — Aircraft Accident and Incident Investigation.

<i>Origin:</i>	<i>Rationale:</i>
DGP/26 and DGP/29	— Editorial amendments to improve readability (see DGP/26 Report and DGP/26-IP/6). — “fluid” is replaced with “contents” to include solids. — Note added to establish relationship between a dangerous goods incident and an aircraft incident under Annex 13. It is similar to the one added under “Dangerous goods accident”.

Designated postal operator. Any governmental or non-governmental entity officially designated by a Universal Postal Union (UPU) member country to operate postal services and to fulfil the related obligations arising from the acts of the UPU Convention on its territory.

~~**Exception.** A provision in this Annex which excludes a specific item of dangerous goods from the requirements normally applicable to that item.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	The term is not referred to in Annex 18, so it is unnecessary for it to be defined. “Excepted” is referred to in Annex 18, but the dictionary definition is sufficient.

Exemption. An authorization, other than an approval, granted by an appropriate national authority providing relief from the provisions of the Technical Instructions.

~~**Flight crew member.** A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	“Flight crew member is not referred to in Annex 18, it is therefore unnecessary to define it.

~~**Misdeclared dangerous goods.** Dangerous goods offered for transport by air with incorrect documentation, marks, or labels.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29 and DGP/30	“Misdeclared dangerous goods” is referred to in proposed Standards and Recommended Practices (SARPs) aimed at mitigating risks associated with dangerous goods being shipped that do not comply with the Technical Instructions and in revised SARPs for dangerous goods safety intelligence. The term is currently referred to in Annex 18, Chapter 12, <i>Dangerous goods accident and incident reporting</i> and there has been on-going queries from States and industry on what is meant by it.

~~**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).~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Mail is referred to in Annex 18. It is defined in Annex 9 and the Technical Instructions. It is proposed to replicate the definition from these documents in Annex 18 to ensure consistent interpretation of the term.

Operator. A person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Overpack. An enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage.

Note.— A unit load device is not included in this definition.

Package. The complete product of the packing operation consisting of the packaging and its contents prepared for transport.

Packaging. ~~Receptacles~~ One or more receptacles and any other components or materials necessary for the ~~receptacle~~ receptacles to perform ~~its~~ their containment ~~function~~ and other safety functions.

Note.— For radioactive material, see Part 2, paragraph 7.2.1.3 of the Technical Instructions.

Origin:	Rationale:
DGP/27 AN Min. 213-3	Recommended by DGP/27 (Recommendation 1/1). Harmonizes the definition with the one contained in the UN Recommendations on the Transport of Dangerous Goods and corrects an out-of-date reference in the note. The definition is also contained in the Technical Instructions and already aligns with the UN Model Regulations. The Air Navigation Commission made a preliminary review of Recommendation 1/1 and, noting the amendment was editorial in nature, agreed that it should be referred for comments to States and appropriate international organizations, together with the Commission's own comments and proposals thereon, only as part of a more substantive amendment to Annex 18. (AN Min. 213-3)

~~**Passenger aircraft.** An aircraft that carries any person other than a crew member, an operator's employee in an official capacity, an authorized representative of an appropriate national authority or a person accompanying a consignment or other cargo.~~

Origin:	Rationale:
DGP/30	The definition for cargo aircraft and passenger aircraft (see above) are proposed for deletion because they are considered unnecessary in the Annex. They have been wrongly used by States to determine who can be on an aircraft, when that determination is governed by Annex 6. Deleting it will help avoid such misinterpretations. The definitions are maintained in the Technical Instructions.

Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Remote pilot-in-command. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

Origin:	Rationale:
DGP/30	Remote pilot-in-command is now referred to in Annex 18. It is proposed to replicate the definition from Annex 6 to ensure consistent interpretation of the term.

Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, ~~accountabilities~~ accountability, responsibilities, policies and procedures.

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	The existing definition for SMS aligns with the definition in the first edition of Annex 19. The amendment is proposed to align it with the definition in the latest edition of Annex 19 (second edition).

Serious injury. An injury which is sustained by a person in an accident and which:

- a) requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or
- b) results in a fracture of any bone (except simple fractures of fingers, toes or nose); or
- c) involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or
- d) involves injury to any internal organ; or
- e) involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or
- f) involves verified exposure to infectious substances or injurious radiation.

State of Destination. The State in the territory of which the consignment is finally to be unloaded from an aircraft.

State of Occurrence. The State in the territory of which an accident or incident occurs.

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	State of occurrence is referred to in revised provisions requiring information to be provided to specific entities in the event of an aircraft accident or incident. The term is defined in Annex 13. It is proposed to replicate the definition from Annex 13 to ensure consistent interpretation of the term.

State of Origin. The State in the territory of which the consignment is first to be loaded on an aircraft.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

Technical Instructions. The *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284), approved and issued periodically in accordance with the procedure established by the ICAO Council.

~~**UN number.** The four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals to identify an article or substance or a particular group of articles or substances.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	"UN number" is not referred to in Annex 18, so it is unnecessary for it to be defined.

Undeclared dangerous goods. Dangerous goods offered for transport by air which are not identified as dangerous goods in accordance with the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29 and DGP/30	“Undeclared dangerous goods” is referred to in proposed Standards and Recommended Practices (SARPs) aimed at mitigating risks associated with dangerous goods being shipped that do not comply with the Technical Instructions and in revised SARPs for dangerous goods safety intelligence. The term is currently referred to in Annex 18, Chapter 12, <i>Dangerous goods accident and incident reporting</i> and there has been on-going queries from States and industry on what is meant by it.

Unit load device. ~~Any type of freight container,~~ (ULD). A device for grouping and restraining cargo, mail and baggage for air transport. It is either an aircraft container, ~~or a combination of an aircraft pallet with a net, or~~ and an aircraft pallet ~~with a net over an igloo~~ net. A ULD is designed to be directly restrained by the aircraft cargo loading system.

Note 1.— An overpack is not included in this definition.

Note 2.— A freight container for radioactive material is not included in this definition (see Part 2, paragraph 7.1.3 of the Technical Instructions).

<i>Origin:</i>	<i>Rationale:</i>
DGP/29 and DGP- WG/23	The definition has been in the Annex since its first edition. It is also contained in the Technical Instructions. The wording refers to older terminology and to articles that are no longer used. The amendment modernizes the terminology. The addition of Note 2 is made for the sake of alignment with the definition in the Technical Instructions. It was added to the Technical Instructions to differentiate a freight container for radioactive material from a ULD, because the former has specific characteristics that do not necessarily apply to a ULD. The amendment will ensure this concept is clear and ensure alignment between the two documents.

CHAPTER 2. APPLICABILITY GENERAL

2.1 Objective

Each State shall promote the safety of the aircraft, its occupants, ground personnel, the general public and the environment as a primary objective in all matters related to the safe transport of dangerous goods by air.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The safe transport of dangerous goods by air is dependent on the diligence of entities both within and outside the aviation system. The primary objective when using aviation to transport or carry dangerous goods for those outside the aviation system is not typically the safety of the aircraft and its occupants. It is therefore important to make it clear to all entities that safety is the primary objective when it comes to the safe transport of dangerous goods by air. This SARP is based on 2.1.1 of Annex 17 — <i>Security</i> , another Annex that deals with entities outside the aviation system.

2.1.2 and 2.1.3 of current Annex 18 are moved to 2.4.2.1 and 2.4.2.2:

~~— 2.1.2 — Where specifically provided for in the Technical Instructions, the States concerned may grant an approval provided that in such instances an overall level of safety in transport which is equivalent to the level of safety provided for in the Technical Instructions is achieved.~~

~~— 2.1.3 — In instances:~~

~~— a) — of extreme urgency; or~~

~~— b) — when other forms of transport are inappropriate; or~~

~~— c) — when full compliance with the prescribed requirements is contrary to the public interest,~~

~~the States concerned may grant an exemption from the provisions of the Technical Instructions provided that in such instances every effort shall be made to achieve an overall level of safety in transport which is equivalent to the level of safety provided for in the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	It is proposed to move the approval and exemption provisions from the applicability section to the limitation on the transport of dangerous goods by air section because they are more associated with the latter than with applicability. Approvals and exemptions are already mentioned in that section, so keeping all the relevant SARPs together makes them more comprehensive.

~~— 2.1.4 — For the State of Overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.~~

Note 1 of current Annex 18 is moved to under 2.4.2.1 and Notes 2 and 3 of current Annex 18 are moved to under 2.4.2.2:

~~— Note 1. For the purpose of approvals, “States concerned” are the States of Origin and the Operator, unless otherwise specified in the Technical Instructions.~~

~~— Note 2. For the purpose of exemptions, “States concerned” are the States of Origin, Operator, Transit, Overflight and Destination.~~

~~— Note 3. Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the Supplement to the Technical Instructions (Part S-1, Chapter 1, 1.2 and 1.3).~~

Origin:	Rationale:
DGP/29	Note 1 is specific to approvals and Notes 2 and 3 are specific to the exemptions. It is proposed to move Note 1 under the provision for approvals (now 2.4.2.1) and Notes 2 and 3 under the provision for exemptions (now 2.4.2.2) to improve clarity.

~~— Note 4. Refer to 4.3 for dangerous goods forbidden for transport by air under any circumstances.~~

Origin:	Rationale:
DGP/29	Note 4 is necessary in the current Annex because the provisions for approvals and exemptions and the provisions for dangerous goods forbidden under any circumstance are in different sections of this chapter. This is no longer necessary, since all these provisions are proposed for inclusion in the same location, i.e. the limitation on the transport of dangerous goods section.

~~— Note 5. It is not intended that this Annex be interpreted as requiring an operator to transport a particular article or substance or as preventing an operator from adopting special requirements on the transport of a particular article or substance.~~

Origin:	Rationale:
DGP/29	Note 5 is moved to Chapter 6: Operator responsibilities. The note is currently under the provisions for approvals and exemptions, but its application goes beyond these. Moving the note to Chapter 6 makes the provisions for operators more comprehensive.

~~2.1.2.2~~ ~~General applicability~~ **Applicability**

~~2.1.1~~ **2.2.1** The Standards and Recommended Practices of this Annex shall be applicable to ~~all~~ international ~~operations of civil aircraft~~ **aviation**.

Origin:	Rationale:
DGP/29	a) “General” is removed for the sake of consistency with other Annexes. b) Applying the Annex to aviation rather than to the operation of the aircraft is intended to ensure that entities other than the operator that contribute to the safe transport of dangerous goods are covered by this Annex.

The following is moved from 2.3 of current Annex 18:

~~2.3~~ Domestic civil aircraft operations

2.2.2 Recommendation.— ~~In the interests of safety and of minimizing interruptions to the international transport of dangerous goods, Contracting States should also take the necessary measures to achieve compliance with the Annex and the Technical Instructions for~~ Each State should apply the Standards and Recommended Practices contained in this Annex to domestic civil ~~aircraft operations~~ aviation.

Origin:	Rationale:
DGP/29	a) The provision relates to the applicability of the Annex and the Technical Instructions to domestic civil aircraft operations. There is a current recommendation to take the necessary measures to achieve compliance with the Annex and the Technical Instructions to domestic transport, but it is currently located outside of the applicability section of Chapter 2 (2.3). It is therefore proposed to move the recommended practice under the international applicability SARP. b) “Contracting State” is replaced with “Each State” for the sake of consistency. c) The current recommendation refers to the Annex and the Technical Instruction. Removing the reference to the Technical Instructions is proposed as it is considered redundant, given that Annex 18 makes the document binding on a State. d) It is proposed to replace “to achieve compliance” with “apply” for the sake of clarity and consistency. e) Text referring to “the interests of safety and minimizing interruptions to the international transport of dangerous goods” is considered more appropriate as guidance material. It is therefore proposed to remove it from the recommended practice and to elaborate on the concept in a new guidance document to support the implementation of Annex 18 (<i>Oversight and Management of the Safe Transport of Dangerous Goods by Air Manual (Doc xxxxx, forthcoming)</i>). f) “to domestic aircraft operations” is replaced with “to domestic civil aviation” to align with the revision to the previous SARP for the same reason, i.e. to ensure that entities other than the operator that contribute to the safe transport of dangerous goods are covered.

The following is moved from 2.4 of current Annex 18:

~~2.4~~ Exceptions

~~2.4.1~~**2.2.3** Articles and substances which would otherwise be ~~classified~~ classified as dangerous goods but which are required to be aboard the aircraft in accordance with the pertinent airworthiness requirements and operating regulations, or for those specialized purposes identified in the Technical Instructions, shall be excepted from the provisions of this Annex.

~~2.4.2.2.4~~ Where articles and substances intended as replacements for those described in ~~2.4.1.2.3~~ or which have been removed for replacement are carried on an aircraft, they shall be transported in accordance with the provisions of this Annex except as permitted in the Technical Instructions.

~~2.4.3 Specific articles and substances carried by passengers or crew members shall be excepted from the provisions of this Annex to the extent specified in the Technical Instructions.~~

Origin:	Rationale:
DGP/29	The provisions in current 2.4 relate to the applicability of the Annex and the Technical Instructions, but they are located outside of the applicability section of Chapter 2. It is therefore proposed to move the Standards to this section, i.e. the applicability section. The provision in current 2.4.3 is proposed for deletion because it is not considered valid. Specific articles and substances carried by passengers and crew are subject to Annex 18 and Part 8 of the Technical Instructions. This is clarified through the proposed new SARP in 2.4.1.2.

The following is moved from 2.2 of current Annex 18:

~~2.2.2.3~~ **Dangerous Goods Compliance with the** Technical Instructions

~~2.2.1.2.3.1~~ Each ~~Contracting~~ State shall take ~~the necessary~~ measures to ensure that any entity that offers, handles, transports or causes to achieve be offered, handled or transported dangerous goods in cargo or mail achieves compliance with the detailed provisions contained in the Technical Instructions.

~~2.2.2 Recommendation.— Each Contracting State should inform ICAO of difficulties encountered in the application of the Technical Instructions and of any amendments which it would be desirable to make to them.~~

2.3.2 Each State shall implement measures to ensure that passengers and crew members achieve compliance with the detailed provisions contained in Part 8 of the Technical Instructions.

2.3.3 Each Contracting State shall also take the necessary measures to ensure that the entities referred to in 2.3.1 and 2.3.2 achieve compliance with any amendment to the Technical Instructions which may be published during the specified period of applicability of an edition of the Technical Instructions.

The following is moved to 3.3 in proposed new Chapter 3:

~~2.2.2 Recommendation.— Each Contracting State should inform ICAO of difficulties encountered in the application of the Technical Instructions and of any amendments which it would be desirable to make to them.~~

The following is moved from 2.2.3 of current Annex 18:

~~2.2.3.2.3.4~~ **Recommendation.**— *Although an amendment to the Technical Instructions with an immediate applicability for reasons of safety may not yet have been implemented in a Contracting State, such State should, nevertheless, facilitate the movement of dangerous goods in its territory which are consigned from another Contracting State in accordance with that amendment, providing the goods comply in total with the revised requirements.*

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) 2.3: The revision to the heading is proposed to better describe the intent of the section. b) 2.3.1: Which entities are subject to the Technical Instructions has been the subject of extensive discussions on the Dangerous Goods Panel, specifically with respect to whether entities handling cargo but not intending to handle dangerous goods can be subject to them. Entities such as freight forwarders play an important role in preventing undeclared dangerous goods from being introduced into the air cargo system, so there has been a desire by members of the DGP to require training on how to identify and reject dangerous goods for all such entities, even if they do not intend to handle them. Some States do not have authority to enforce dangerous goods regulations on entities not performing functions described in the Technical Instruction. However, they do have authority over a person or organization once they have performed a dangerous goods function, such as offering cargo for transport that includes dangerous goods, regardless of whether the person or organization knowingly or unknowingly performed the function. The wording “or <i>causes</i> to be offered, handled or transported” is intended to capture this concept. c) 2.3.1 and 2.3.2: Current 2.2.1 could incorrectly be interpreted to imply that the <i>State</i> needs to comply with the detailed provisions contained in the Technical Instructions. It is the entities performing functions related to the transport of dangerous goods by air and also passengers and crew carrying dangerous goods that need to achieve compliance. The proposed amendment clarifies who needs to comply with the Technical Instructions. It separates the provision into two distinct areas, one to address those dealing with dangerous goods in cargo or mail (2.3.1) and the other to address passengers and crew carrying dangerous goods (2.3.2). d) 2.3.3: Current 2.2.1 contains two Standards. An editorial amendment is proposed to create a separate Standard for compliance with any amendment to the Technical Instructions (2.3.3). e) 2.3.4: Current 2.2.2 is moved to proposed new 3.3 in Chapter 3: Provision of information to ICAO which consolidates all SARPs related to providing ICAO with information in one place.

The following is moved from 2.6 of current Annex 18:

~~2.6~~—Surface transport

2.3.5 Recommendation.— ~~States~~*Each State* should ~~make provisions~~*take measures* to enable dangerous goods intended for air transport and prepared in accordance with the ~~ICAO~~-Technical Instructions to be accepted for ~~surface~~*transport by other modes of* transport to or from aerodromes.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) The amendment to the heading is proposed because multimodal transport is a common term in the dangerous goods world and makes the intent of the provision easier to understand. b) Editorial revisions are proposed for the sake of clarity and consistency. c) The references to “ICAO” is unnecessary as there is now a definition for “Technical Instructions”. d) It is proposed to move the recommendation from its current location to this location so that all provisions related to the Technical Instructions are in one place.

The following is moved to new Chapter 3, 3.2:

~~2.5 Notification of variations from the Technical Instructions~~

~~2.5.1 Where a Contracting State adopts different provisions from those specified in the Technical Instructions, it shall notify ICAO promptly of such State variations for publication in the Technical Instructions.~~

~~Note. Contracting States are expected to notify a difference to the provisions of 2.2.1 under Article 38 of the Convention only if they are unable to accept the binding nature of the Technical Instructions. Where States have adopted different provisions from those specified in the Technical Instructions, they are expected to be reported only under the provisions of 2.5.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The requirement for States to inform ICAO of State variations is proposed to be moved to a new Chapter 3: Provision of information to ICAO. The new chapter is proposed so that all SARPs related to providing ICAO with information is in one place.

~~2.5.2 Recommendation. The State of the Operator should take the necessary measures to ensure that when an operator adopts more restrictive requirements than those specified in the Technical Instructions, the notification of such operator variations is made to ICAO for publication in the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Few operator variations are reported to ICAO, and updates to already reported variations are not always provided. Users of the Technical Instructions cannot depend on these variations. Operator variations are more reliably reported to industry and included in industry regulations. It is therefore proposed that the recommendation be deleted.

The following is moved to 2.3.5:

~~2.6 Surface transport~~

~~Recommendation. States should make provisions to enable dangerous goods intended for air transport and prepared in accordance with the ICAO Technical Instructions to be accepted for surface transport to or from aerodromes.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Current 2.6 is moved to the 2.3.5 in the section on Compliance with the Technical Instructions so that all provisions related to the Technical Instructions are in one place.

The following is moved to new Chapter 3, 3.1:

~~2.7~~ National authority

~~Each Contracting State shall designate and specify to ICAO an appropriate authority within its administration to be responsible for ensuring compliance with this Annex.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The requirement for States to designate and specify to ICAO an appropriate authority within its administration to be responsible for ensuring compliance with this Annex is proposed to be moved to a new Chapter 3: Provision of information to ICAO. The new chapter is proposed so that all SARPs related to providing ICAO with information is in one place.

The following is moved from Chapter 4:

~~CHAPTER 4.~~ 2.4 Limitation on the transport of dangerous goods by air

~~4.1~~2.4.1 Dangerous goods permitted for transport by air

2.4.1.1 Each State shall permit the transport of dangerous goods as cargo or mail by air ~~shall be forbidden except as established in~~ solely in accordance with this Annex and the detailed ~~specifications and procedures provided in~~ specifications of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) Moved from Chapter 4 (Limitation on the transport of dangerous goods by air) to keep the general regulatory framework for transport of dangerous goods by air in one place. b) Editorial revisions to the Standard are proposed to improve clarity by aligning the wording with the header. c) “Each State” is added to reflect the fact that the SARP is directed at the State. d) The addition of a reference to cargo or mail is proposed to differentiate from passenger baggage in the next SARP (2.4.1.2). e) “specifications and procedures” is replaced with “provisions” for the sake of consistency with other parts of the Annex.

2.4.1.2 Each State shall permit the carriage of dangerous goods by passengers or crew members solely when specifically permitted in accordance with Part 8 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) New Standard which replaces the exception from the Annex of specific articles and substances carried by passengers or crew members currently contained in 2.4.3 because dangerous goods carried by passengers and crew are not excepted from the Annex. They are forbidden unless specifically permitted in the Technical Instructions, and there are criteria for allowing them there. b) Having the provision here clarifies the distinction between dangerous goods carried as cargo and dangerous good carried by passengers and crew and the fact that they are both covered by the Annex

2.4.2 Dangerous goods forbidden for transport by air unless approved or exempted

~~The dangerous goods described hereunder shall be forbidden on aircraft unless exempted by the States concerned under the provisions of 2.1 or~~ Each State shall not permit the transport of dangerous goods identified in the Technical Instructions as being forbidden for transport by air under normal circumstances unless the provisions of the Technical Instructions indicate they may be transported under an approval granted by the State of Origin. ~~States concerned in accordance with 2.4.2.1 or an exemption granted by the States concerned in accordance with 2.4.2.2.~~

~~— a) dangerous goods that are identified in the Technical Instructions as being forbidden for transport in normal circumstances; and~~

~~— b) infected live animals.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) Moved from Chapter 4 (Limitation on the transport of dangerous goods by air) to keep the general regulatory framework for transport of dangerous goods by air in one place. b) The addition of “approved” in the heading is proposed because the SARP refers to both approvals and exemptions. c) “Each State shall not permit ...” added to reflect the fact that the SARP is directed at the State. d) Editorial amendments to clarify intent. e) The references to exemption and approval provisions have changed because it is proposed to move these provisions from the general applicability section to this section. f) Reference to only State of Origin for an approval is inconsistent with what is currently in the general applicability section, which includes the State of the Operator as part of the approval process. “States concerned” is explained under the specific provisions for approvals (2.4.2.1) and exemptions (2.4.2.2) below. g) Deleted “infected live animals” because this is covered by the Technical Instructions.

The following is moved from 2.1.2 of current Annex 18:

~~— 2.1.2~~ 2.4.2.1 Approvals

Where specifically provided for in the Technical Instructions, the States concerned may grant an approval provided that in such instances an overall level of safety in transport which is equivalent to the level of safety provided for in the Technical Instructions is achieved.

The following is moved from under 2.1.4 of current Annex 18:

Note ~~4~~.— For the purpose of approvals, “States concerned” are the States of Origin and the Operator, unless otherwise specified in the Technical Instructions.

~~2.1.3~~ 2.4.2.2 Exemptions

In instances:

- a) of extreme urgency; or
- b) when other forms of transport are inappropriate; or
- c) when full compliance with the prescribed requirements is contrary to the public interest,

the States concerned may grant an exemption from the provisions of the Technical Instructions provided that in such instances every effort shall be made to achieve an overall level of safety in transport which is equivalent to the level of safety provided for in the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) Moved from the current general applicability section in 2.1.3 as it relates more to the limitation provisions than to applicability provisions. b) Addition of heading for the sake of clarity.

~~2.1.4 For the State of Overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The Standard in 2.1.4 is proposed for deletion as it is considered more appropriate to address its intent, which is not clear by the wording, in guidance material. The intent of the SARP is to address challenges faced by the State of Overflight when considering whether to grant an exemption when the criteria for granting it are not applicable to that State. The challenges faced by the State of overflight are transferred to applicants, who are often unable to acquire an exemption. Addressing the issue through guidance will allow for more comprehensive assistance to States on the subject.

Current Note 1 is moved to under 2.4.2.1:

~~Note 1.— For the purpose of approvals, “States concerned” are the States of Origin and the Operator, unless otherwise specified in the Technical Instructions.~~

Note ~~2~~ 1.— For the purpose of exemptions, “States concerned” are the States of Origin, Operator, Transit, Overflight and Destination.

Note-3.2.— Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the ~~Supplement to the Technical Instructions (Part S-1, Chapter 1, 1.2 and 1.3)~~. Oversight and Management of the Safe Transport of Dangerous Goods by Air Manual (Doc xxxxx, forthcoming), Chapter yy.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The guidance for processing of exemptions is currently contained in the Supplement to the Technical Instructions, but it is proposed to move all guidance specific to States from the Supplement to a new manual so that all guidance is consolidated in one place. The note is updated accordingly.

~~— Note 4.— Refer to 4.3 for dangerous goods forbidden for transport by air under any circumstances.~~

~~— Note 5.— It is not intended that this Annex be interpreted as requiring an operator to transport a particular article or substance or as preventing an operator from adopting special requirements on the transport of a particular article or substance.~~

2.4.3 Dangerous goods forbidden for transport by air under any circumstances

2.4.3.1 Each State shall forbid any article or substance to be transported by air under any circumstance if, as presented for transport, it is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapours under conditions normally encountered in transport.

2.4.3.2 The ~~A~~articles and substances referred to in 2.4.3.1 shall include those that are specifically identified by name or by generic description in the Technical Instructions as being forbidden for transport by air under any circumstances ~~shall not be carried~~ on any aircraft.

2.4.3.23 Each State shall not grant approvals or exemptions for articles and substances identified in 2.4.3.1.

Note.— Guidance on dangerous goods forbidden for transport under any circumstance is provided in Doc xxxx (forthcoming), Chapter yy.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) Moved from Chapter 4 (Limitation on the transport of dangerous goods by air) to keep the general regulatory framework for transport of dangerous goods by air in one place. b) The current SARP in 4.3 refers to articles or substances specifically identified by name or by generic description in the Technical Instructions as being forbidden for transport under and circumstance. The Technical Instructions make it clear that it is not possible to list all dangerous goods that should be forbidden under any circumstance. It is therefore proposed to include an explanation of what cannot be safely transported on an aircraft in the SARP and to include guidance for determining this in the new document referred to in the note. c) States should not grant approvals or exemptions to transport such articles or substances. New 2.4.3.2 makes this clear.

CHAPTER 3. ~~CLASSIFICATION~~ PROVISION OF INFORMATION TO ICAO

~~The classification of an article or substance shall be in accordance with the provisions of the Technical Instructions.~~

~~—Note.—The detailed definitions of the classes of dangerous goods are contained in the Technical Instructions. These classes identify the potential risks associated with the transport of dangerous goods by air and are those recommended by the United Nations Committee of Experts on the Transport of Dangerous Goods.~~

Origin:	Rationale:
DGP/29	The intent of this Standard is to ensure anyone preparing a package containing dangerous goods for transport classifies the hazards associated with the dangerous goods in accordance with the Technical Instructions. However, the Standard does not make this clear nor does it make the obligation that the Standard places on a State clear. A new Chapter 5 on the safety of the supply chain is proposed which captures the intent and State obligation of this SARP and similar SARPs in current Chapters 5 (Packing), 6 (Labelling and marking) and 7 (Shipper's responsibilities).

The following is moved from current 2.7:

~~2.7~~ 3.1 ~~Appropriate~~ National authority

Each ~~Contracting~~ State shall designate and specify to ICAO an appropriate national authority within its administration to be responsible for ensuring compliance with this Annex.

Origin:	Rationale:
DGP/29	Proposed to be moved from Chapter 2 to this chapter so that all SARPs related to providing information to ICAO are in one place.

The following is moved from current 2.5:

~~2.5~~ 3.2 Notification of variations from the Technical Instructions

~~—2.5.1—~~Where a ~~Contracting~~ State adopts different provisions from those specified in the Technical Instructions, it shall notify ICAO promptly of such State variations for publication in the Technical Instructions.

Note.—~~Contracting~~ Each ~~States are~~ is expected to notify a difference to the provisions of ~~2.2.1~~ 2.3.1 and 2.3.2 under Article 38 of the Convention only if they are unable to accept the binding nature of the Technical Instructions. Where States have adopted different provisions from those specified in the Technical Instructions, they are expected to be reported only under the provisions of ~~2.5~~ 3.2.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Proposed to be moved from Chapter 2 to this chapter so that all SARPs related to providing information to ICAO are in one place.

The following is moved from current 2.2.2:

3.3 Difficulties encountered in the application of the Technical Instructions

2.2.2—Recommendation.— *Each ~~Contracting~~ State should inform ICAO of difficulties encountered in the application of the Technical Instructions and of any amendments which it would be desirable to make to them.*

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	a) Heading added to differentiate between other sections of this chapter b) Proposed to be moved from Chapter 2 to this chapter so that all SARPs related to providing information to ICAO are in one place.

CHAPTER 4. ~~LIMITATION ON THE TRANSPORT OF DANGEROUS GOODS BY AIR~~ STATE SAFETY MANAGEMENT RESPONSIBILITIES

~~4.1—Dangerous goods permitted for transport by air~~

~~The transport of dangerous goods by air shall be forbidden except as established in this Annex and the detailed specifications and procedures provided in the Technical Instructions.~~

~~4.2—Dangerous goods forbidden for transport by air unless exempted~~

~~The dangerous goods described hereunder shall be forbidden on aircraft unless exempted by the States concerned under the provisions of 2.1 or unless the provisions of the Technical Instructions indicate they may be transported under an approval granted by the State of Origin:~~

- ~~— a) dangerous goods that are identified in the Technical Instructions as being forbidden for transport in normal circumstances; and~~
- ~~— b) infected live animals.~~

~~4.3—Dangerous goods forbidden for transport by air under any circumstances~~

~~Articles and substances that are specifically identified by name or by generic description in the Technical Instructions as being forbidden for transport by air under any circumstances shall not be carried on any aircraft.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs currently in Chapter 4 for the limitation on the transport of dangerous goods are moved to Chapter 2 to keep the general regulatory framework for transport of dangerous goods by air in one place. It is proposed that Chapter 4 contain safety management provisions specific to dangerous goods with the aim of ensuring all entities involved with the safe transport of dangerous goods are working towards the level of safety expected in aviation.

Note 1.— Provisions for a State Safety Programme (SSP) are contained in Chapter 3 to Annex 19. Guidance on an SSP is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 2.— This chapter contains specific State safety management responsibilities relevant to the safe transport of dangerous goods by air. Guidance on the integration of the safe transport of dangerous goods by air into the SSP is contained in Doc xxxx (forthcoming).

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Authorities involved with the safe transport of dangerous goods by air may not all be part of the aviation sector in some States. The notes are intended to ensure all are aware of the requirements for a State safety programme and the fact that the transport of dangerous goods by air is an integral part of it by pointing to guidance.

4.1 Approval and exemption obligations

Each State shall implement documented processes and procedures to ensure that individuals and organizations performing an activity related to the transport of dangerous goods by air meet the established requirements before they are allowed to exercise the privileges of an approval or exemption to conduct the relevant dangerous goods activity.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29 DGP/27	This Standard is aimed at ensuring States meet their responsibilities with respect to the granting of exemptions and approvals related to the transport of dangerous goods by air. The DGP has identified a need for additional guidance on the issuance of approvals and exemptions, particularly with respect to which entities the approval or exemption should be issued to and the relationship between the shipper, the operator and the State authorities processing them. Ensuring each State has documented process and procedures and providing guidance to assist them in developing them will help ensure States meet their exemption and approval obligations.

4.2 Dangerous goods safety investigations

4.2.1 Each State shall establish a process to investigate dangerous goods accidents and dangerous goods incidents reported in accordance with Chapter 10 in support of the management of safety in the State.

4.2.2 Each State shall implement a risk-based process for the analysis and investigation of:

- a) occasions when undeclared or misdeclared dangerous goods are discovered in cargo or mail;
- b) occasions when dangerous goods not permitted in passenger or crew baggage are discovered; and
- c) other safety issues

which are reported in accordance with Chapter 10 in support of the management of safety in the State.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This new Standard replaces the SARPs currently in 12.1 and 12.2 that require each State to establish procedures for investigating and compiling information concerning dangerous goods accidents and incidents which occur in its territory and involve the transport of dangerous goods originating or destined for another State and to report in accordance with the Technical Instructions and recommends the same when not originating or destined for another State. While accidents and incidents defined in accordance with Annex 13 apply to the operation of an aircraft, dangerous goods accidents and incidents defined in accordance with Annex 18 do not necessarily occur on board an aircraft. This SARP is intended to ensure that dangerous goods accidents or incidents that do not meet the criteria for accidents or incidents defined in Annex 13 are investigated. The investigation of an accident or incident that did not occur on board an aircraft is valuable because it may reveal safety deficiencies that need to be resolved to prevent another accident or incident and to prevent an incident from leading to an accident. The wording of the Standard is revised to: a) align with the wording in Annex 19; b) require the establishment of a process to conduct safety investigations for all accidents and incidents involving the transport of dangerous goods that are reported to the State regardless of where they occurred; c) remove the reference to compiling information because this is covered in new Chapter 10 which is proposed to contain provisions related to safety intelligence.

4.2.3 Each State shall participate in cooperative efforts with other States conducting dangerous goods safety investigations, as appropriate, with the aim of resolving safety issues and eliminating violations of dangerous goods regulations.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This new Standard replaces the recommendation currently in 11.2. The cooperation of States when conducting safety investigations of an international nature is critical for the resolution of dangerous goods safety issues. The recommendation is therefore upgraded to a SARP. Supporting guidance is included in the current recommendation. It is proposed to delete it and to incorporate it in the new guidance document to support implementation of Annex 18.

4.3 Management of safety risks

4.3.1 Dangerous goods transported as cargo or mail

4.3.1.1 Each State shall address safety risks associated with dangerous goods offered, handled or transported or caused to be offered, handled or transported as cargo or mail by air.

4.3.1.2 Each State shall implement measures to prevent dangerous goods not in compliance with the Technical Instructions from being transported in cargo or mail by air.

4.3.1.3 Each State shall implement measures to ensure that any person that offers, handles or transports or causes to be offered, handled or transported dangerous goods in cargo or mail has processes and procedures in place to identify dangerous goods in cargo or mail that are not in compliance with the Technical Instructions and to prevent them from being offered for transport by air or loaded on an aircraft.

4.3.2 Dangerous goods carried by passengers and crew

4.3.2.1 Each State shall address safety risks associated with dangerous goods carried by passengers or crew.

4.3.2.2 Each State shall implement measures to prevent passengers or crew from carrying dangerous goods on board an aircraft which they are not permitted to carry.

4.3.2.3 Each State shall implement measures to ensure that entities handling baggage have processes and procedures in place to recognize dangerous goods that are not permitted to be carried by passengers or crew and to prevent them from being carried on an aircraft when they are discovered.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Section 4.3 addresses risk posed by hazards introduced throughout the supply chain and carried by passengers and crew, particularly when not in compliance with regulations, which may pose significant safety risks to aviation. Annex 6 obligates the operator to consider the supply chain in its safety risk management activities. Supply chains impact multiple operators. It is therefore important for the State to assess system-wide hazards and manage system-wide safety risks to improve system-wide safety. These SARPs will be supported by robust guidance material.

4.4 State safety promotion

4.4.1 Dangerous goods transported as cargo or mail

4.4.1.1 Each State shall include activities to prevent the transport of dangerous goods in cargo and mail by air which are not in compliance with the provisions of this Annex and the Technical Instructions in the State safety promotion activities through its SSP.

4.4.1.2 Each State shall promote dangerous goods safety and a positive safety culture throughout the supply chain.

4.4.2 Dangerous goods carried by passengers or crew

4.4.2.1 Each State shall include activities to increase passenger and crew awareness of dangerous goods which they are forbidden to carry on an aircraft in the State safety promotion activities through its SSP.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	State safety promotion specific to dangerous goods is needed for the same reasons it is needed in other aviation sectors. The new SARPs are needed because State safety promotion needs to extend beyond the aviation system. This is essential to the management of safety risks associated with the transport of dangerous goods, particularly the risk of non-compliance with dangerous goods regulations.

CHAPTER 5. **PACKING SAFETY OF THE SUPPLY CHAIN**

5.1—General requirements

~~Dangerous goods shall be packed in accordance with the provisions of this chapter and as provided for in the Technical Instructions.~~

5.2—Packagings

~~— 5.2.1 Packagings used for the transport of dangerous goods by air shall be of good quality and shall be constructed and securely closed so as to prevent leakage which might be caused in normal conditions of transport, by changes in temperature, humidity or pressure, or by vibration.~~

~~— 5.2.2 Packagings shall be suitable for the contents. Packagings in direct contact with dangerous goods shall be resistant to any chemical or other action of such goods.~~

~~— 5.2.3 Packagings shall meet the material and construction specifications in the Technical Instructions.~~

~~— 5.2.4 Packagings shall be tested in accordance with the provisions of the Technical Instructions.~~

~~— 5.2.5 Packagings for which retention of a liquid is a basic function, shall be capable of withstanding, without leaking, the pressure stated in the Technical Instructions.~~

~~— 5.2.6 Inner packagings shall be so packed, secured or cushioned as to prevent their breakage or leakage and to control their movement within the outer packaging(s) during normal conditions of air transport. Cushioning and absorbent materials shall not react dangerously with the contents of the packagings.~~

~~— 5.2.7 No packaging shall be reused until it has been inspected and found free from corrosion or other damage. Where a packaging is reused, all necessary measures shall be taken to prevent contamination of subsequent contents.~~

~~— 5.2.8 If, because of the nature of their former contents, uncleaned empty packagings may present a hazard, they shall be tightly closed and treated according to the hazard they constitute.~~

~~— 5.2.9 No harmful quantity of a dangerous substance shall adhere to the outside of packages.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The provisions in this chapter are details contained in the Technical Instructions. The SARPs are therefore redundant. Packing requirements are now covered more generally by the SARP proposed in new Chapter 5, 5.2.1 b) 3).

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	A new chapter on the safety of the supply chain is proposed to more clearly outline the expectations of States. The current edition of Annex 18 has three separate chapters that address the responsibilities of entities involved with preparing and offering dangerous goods for transport by air. These are: Chapter 3: Classification; Chapter 5: Packing; Chapter 6: Labelling and marking; Chapter 7: Shipper's responsibilities. All these provisions point to the provisions of the Technical Instructions, with some provisions from the Technical Instructions repeated in the Annex. They do not directly state what is required of the State, and there does not appear to be any rationale for determining what should be repeated and what should simply be referenced. This new chapter clearly defines what is expected of the State, which is to adopt regulations directed at entities in the supply chain preparing, offering and transporting dangerous goods for transport by air. The new chapter lists the functions for which regulations are needed and refers to the applicable parts of the Technical Instructions where the detailed Instructions are found. Listing the functions provides the added benefit of an overview of how the Technical Instructions mitigate risk.

5.1 Primary aviation legislation

Each State shall promulgate laws that enable the oversight and safety management of entities that offer, handle, transport or cause to be offered, handled or transported dangerous goods by air, the resolution of safety issues and the enforcement of regulations through the relevant authorities established for that purpose.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This, along with proactive/risk-based SARPs in new Chapter 4, replace what is the current Standard in 11.1. The current Standard requires inspection, surveillance and enforcement procedures for all entities performing any dangerous goods function prescribed in a State's regulations. Requiring surveillance activities for all these entities is impossible to implement given the vast numbers performing dangerous goods functions and the fact that licence, certification, authorization or approval obligations do not apply to entities other than operators and designated postal operators. Inspection and enforcement procedures are covered by the SARPs for State safety risk management. It will be supplemented by guidance material.

5.2 Specific operating regulations

Note.— The term “person” in this section includes individuals and organizations.

Each State shall establish specific operating regulations to require, at a minimum, that:

- a) a person does not offer or cause to be offered for transport:
 - 1) articles or substances which are forbidden for transport in accordance with 2.4.2 unless permitted by the States concerned through an approval or exemption;
 - 2) articles or substances which are forbidden for transport in accordance with 2.4.3;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	5.2.1 a) and b) replace part of current 7.1.

b) a person does not offer or cause to be offered dangerous goods for transport unless:

1) associated hazards are identified in accordance with the classification criteria of Part 2 of the Technical Instructions;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	5.2.1 b) 1) replaces current Chapter 3

2) risks associated with the identified hazards are mitigated at the package level through quantity limitations, packing and packaging requirements in accordance with Parts 3, 4 and 6 of the Technical Instructions;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	5.2.1 b) 2 Replaces part of current 7.1 (Shippers' responsibilities — general requirements) and Chapter 5 (Packing).

3) hazard and handling information are communicated to entities in the supply chain in accordance with the marking, labelling and documentation requirements of Parts 3, 4 and 5 of the Technical Instructions;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	4.1.2 b) 3) replaces Chapter 6 (Labelling and Marking) and 7.2 (Dangerous goods transport document).

c) documentation is retained in accordance with the Technical Instructions;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The need for documentation to be retained is required by the detailed provisions of the Technical Instructions. The documentation is evidence of compliance and provides important information for safety investigations.

d) in the case of radioactive material, a radiation protection programme is established in accordance with Part 1:6 of the Technical Instructions;

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The Technical Instructions contain provisions for a radiation protection programme by entities involved with the transport of radioactive material. There was never any reference to this in Annex.

e) operators accept, handle and transport dangerous goods in accordance with Chapter 6;

f) dangerous goods accidents, dangerous goods incidents and occasions when undeclared or misdeclared dangerous goods are discovered are reported in accordance with Chapter 10;

g) dangerous goods training and assessment is conducted in accordance with Chapter 9;

h) dangerous goods are not offered, caused to be offered or accepted for transport by mail unless specifically permitted in accordance with Chapter 8; and

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	5.2.1 e), f), g) and h) establish the need for the State to establish regulations aimed at the operator, reporting, training and assessment and the mail. They refer to the associated SARPs in the Annex.

i) entities other than operators involved in the transport of dangerous goods by air provide such information to their personnel as will enable them to carry out their responsibilities regarding the transport of dangerous goods including instructions as to the action to be taken in the event of emergency involving dangerous goods.

Note.— The operator's responsibility to establish dangerous goods procedures, instructions and guidance in its operations manual is contained in Annex 6, Part I, Chapter 14; Part III, Chapter 12; and Part IV, Chapter 14.

<i>Origin:</i>	<i>Rationale:</i>
	5.2.1 i) is moved from 9.4. The text in 9.4 is modified to make it applicable to entities other than the operator, given that the operator is required to provide the information and instructions in the Operators Manual in accordance with Annex 6 and is now proposed to be covered to be SARPs in Chapter 6. This is reflected through the note under g).

~~CHAPTER 6. LABELLING AND MARKING~~

~~6.1—Labels~~

~~Unless otherwise provided for in the Technical Instructions, each package of dangerous goods shall be labelled with the appropriate labels and in accordance with the provisions set forth in those Instructions.~~

~~6.2—Markings~~

~~—6.2.1 Unless otherwise provided for in the Technical Instructions, each package of dangerous goods shall be marked with the proper shipping name of its contents and, when assigned, the UN number and such other markings as may be specified in those Instructions.~~

~~—6.2.2 *Specification markings on packagings.* Unless otherwise provided for in the Technical Instructions, each packaging manufactured to a specification contained in those Instructions shall be so marked in accordance with the appropriate provisions of those Instructions and no packaging shall be marked with a packaging specification marking unless it meets the appropriate packaging specification contained in those Instructions.~~

~~6.3—Languages to be used for markings~~

~~**Recommendation.** *In addition to the languages required by the State of Origin and pending the development and adoption of a more suitable form of expression for universal use, English should be used for the markings related to dangerous goods.*~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The provisions in this chapter are details contained in the Technical Instructions. The SARPs are therefore redundant. Labelling and marking requirements are now covered more generally by the SARP proposed in new Chapter 5, 5.2.1 b) 4).

CHAPTER 7. SHIPPER'S RESPONSIBILITIES

7.1 General requirements

~~Before a person offers any package or overpack of dangerous goods for transport by air, that person shall ensure that the dangerous goods are not forbidden for transport by air and are properly classified, packed, marked, labelled and accompanied by a properly executed dangerous goods transport document, as specified in this Annex and the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This SARP is covered by proposed new 5.2.1 a), 5.2.1 b) 2), 5.2.1 b) 3), 5.2.1 b) 4) and 5.2.1 b) 5)

7.2 Dangerous goods transport document

~~7.2.1 Unless otherwise provided for in the Technical Instructions, the person who offers dangerous goods for transport by air shall complete, sign and provide to the operator a dangerous goods transport document, which shall contain the information required by those Instructions.~~

~~7.2.2 The transport document shall bear a declaration signed by the person who offers dangerous goods for transport indicating that the dangerous goods are fully and accurately described by their proper shipping names and that they are classified, packed, marked, labelled, and in proper condition for transport by air in accordance with the relevant regulations.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The provisions in 7.2 are details contained in the Technical Instructions. The SARPs are therefore redundant. The dangerous goods transport document is covered by proposed new 5.2.1 b) 3)

7.3 Languages to be used

~~**Recommendation.** In addition to the languages which may be required by the State of Origin and pending the development and adoption of a more suitable form of expression for universal use, English should be used for the dangerous goods transport document.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This recommendation is contained in by Part 5, Chapter 4, 4.1.6.3 of the Technical Instructions. It is therefore redundant.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This rationale applies to all of new Chapter 6 (Operator's responsibilities): — A change in the structure of the chapter is proposed to differentiate between those operators with and those without specific approvals to transport dangerous goods as cargo in alignment with the structure of the dangerous goods chapters in Annex 6 (Chapters 14 in Parts I and IV and Chapter 12 in Part II). This makes the responsibilities applicable to each type of operator clear and establishes a stronger connection with Annex 6. — The SARPs for the operator responsibilities have been expanded to ensure all the detailed provisions in the Technical Instructions are connected to a high-level Standard in the Annex to provide more visibility to States, enabling them to better assess an operator's ability to perform dangerous goods functions through the AOC process and during surveillance activities. — Editorial amendments to existing SARPs are made to make the subject of the SARP clear and to align with language used in Annex 6 (i.e. "The operator shall ...").

CHAPTER 86. OPERATOR'S RESPONSIBILITIES

Note 1.— This chapter distinguishes responsibilities for operators who have not been issued a specific approval to transport dangerous goods (6.2) from those who have been issued a specific approval to transport dangerous goods (6.3) by separating them into two sections. Specific approval in the context of this chapter refers to an approval issued to an air operator in accordance with Annex 6.

Note 2.— Annex 19 includes safety management provisions for air operators. Further guidance is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 3.— The carriage of dangerous goods is included in the scope of the operator's safety management system (SMS).

Note 4.— See Annex 6 — Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes, Chapter 15 and Part IV — International Operations — Remotely Piloted Aircraft Systems, Chapter 15 for SARPs concerning cargo compartment safety.

Note 5.— It is not intended that this Annex be interpreted as requiring an operator to transport a particular article or substance. It is also not intended to prevent an operator from adopting requirements on the transport of a particular article or substance in addition to what is required by this Annex.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Note 1 explains the structure of the chapter and what is meant by a specific approval. Note 4 refers to operator responsibilities impacting dangerous goods contained in Annex 6. Note 5 is moved from Chapter 2: Applicability. The note is currently under the provisions for approvals and exemptions, but its application goes beyond these. Moving the note to this chapter makes the provisions for operators more comprehensive. Editorial amendments are proposed for clarification.

6.1 General

6.1.1 The provisions of 6.2 apply to operators who have not been issued a specific approval for the transport of dangerous goods.

6.1.2 The provisions of 6.3 apply to operators who have been issued a specific approval for the transport of dangerous goods.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	6.1.1 and 6.1.2 set out the applicability of the two remaining sections in this chapter, one for those operators without specific approval to transport dangerous goods as cargo and one for those with specific approval. The two sections correspond with the two sections in Annex 6, Part I, Chapter 14, Part II, Chapter 12 and Part IV, Chapter 14. DGP proposes to maintain the dangerous goods provisions in Annex 18 and to replace what is in Annex 6 with references to the sections in this Annex. Keeping the dangerous goods SARPs in Annex 18 allows for a comprehensive set of dangerous goods provisions and facilitates maintenance of them. DGP proposes repeating provisions that apply to both types of operators in 6.2 and 6.3 as is done in Annex 6. This eliminates any ambiguity as to what each operator is responsible for, which is sometimes the case for operators without specific approval.

6.2 Operators with no specific approval for the transport of dangerous goods

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	6.2 is a proposed new section specific to operators with no specific approval for the transport of dangerous goods as cargo. It is added with the aim of making dangerous goods responsibilities for these operators clear (see rationale under 6.1.3).

6.2.1 General

Note 1.— Annex 6, Part I, Chapter 14 and Appendix 2, Annex 6, Part III – International Operations – Helicopters, Chapter 12 and Appendix 8 and Annex 6, Part IV, Chapter 14 and Appendix 2 include provisions for operators to include dangerous goods procedures, instructions and guidance in its operations manual, including emergency procedures involving dangerous goods.

Note 2.— See also Annex 6 Part I, 4.2.1.3.1, Part III, 2.2.1.3.1 and Part IV, 4.2.2.1 for work performed by third parties on behalf of the operator.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Note 1 is proposed in lieu of maintaining the Standards in current 9.2 and 9.4 requiring information and instructions to flight crew members in the Operations Manual and information to other operator employees involved in the transport of dangerous goods enabling them to carry out their responsibilities given that these requirements are in Annex 6. Note 2 refers to Standards in Annex 6 requiring the operator to develop policies and procedures for third parties that perform work on its behalf.

6.2.2 Dangerous goods carried by passengers and crew

6.2.2.1 The operator shall ensure that measures are in place to mitigate the risk of passengers and crew members carrying dangerous goods on board an aircraft which they are not permitted to carry.

6.2.2.2 The mitigations required by 6.2.2.1 shall include, at a minimum:

- a) measures to ensure that passengers and crew members are aware of the limitations on the carriage of dangerous goods on aircraft; and
- b) ensuring relevant personnel are trained to assist them in identifying and detecting dangerous goods.

Note 1.— See Part 7;5 of the Technical Instructions for provision of information to passengers and for passenger check-in procedures.

Note 2.— See Part 7;6 of the Technical Instructions for provisions to aid recognition of dangerous goods in general cargo, baggage or mail.

<i>Origin:</i>	Rationale:
DGP/29	6.2.2.1 and 6.2.2.2 are proposed new SARPs aimed at mitigating against the risk of dangerous goods in baggage or mail being transported on an aircraft that are not in compliance with the Technical Instructions. The Technical Instructions currently contain several prescriptive requirements related to information to passengers and crew to make them aware of dangerous goods limitations. The proposed new SARPs are intended to make the need to mitigate the risk clear while not limiting measures to what is provided in Technical Instructions. It aims to ensure operators implement effective measures for their specific operating environment while incorporating the existing measures in the Technical Instructions in a manner that focuses on what needs to be achieved.

6.2.2.3 The operator shall establish criteria for approving a passenger or crew member to safely carry dangerous goods that are identified by Part 8 of the Technical Instructions as only being permitted with the approval of the operator.

<i>Origin:</i>	Rationale:
DGP/29	6.2.2.3 is a proposed new SARP. Some dangerous goods are only permitted for carriage by passengers and crew with the approval of the operator as specified in Table 8-1 of the Technical Instructions (e.g. battery-powered mobility aids, oxygen cylinders required for medical use, dry ice). There are specific handling and loading requirements for the operator for some of them. Including this general SARP in the Annex is proposed to make it clear to States that the operator needs to demonstrate it can carry these goods safely.

6.2.2.4 The operator shall load dangerous goods carried by passengers or crew members in accordance with the applicable requirements of the Technical Instructions.

<i>Origin:</i>	Rationale:
DGP/29	The Technical Instructions contain loading requirements for certain dangerous goods carried by passengers and crew, but there is no related Standard in current Annex 18. 6.2.2.4 is proposed to close that gap and to make it clear to States.

6.2.2.5 The operator shall isolate baggage suspected of being contaminated by dangerous goods and nullify any hazardous contamination before the baggage is subsequently transported.

6.2.3 Transport of cargo or mail

6.2.3.1 The operator shall ensure that measures are in place to mitigate the risk of:

- a) dangerous goods being transported as cargo on an aircraft;
- b) dangerous goods being transported which are intended as replacement for or removed for replacement of those required to be aboard an aircraft in accordance with pertinent airworthiness requirements and operator regulations; and
- c) dangerous goods being transported in mail which are not in compliance with the Technical Instructions.

6.2.3.2 The mitigations required by 6.2.3.1 shall include, at a minimum:

- a) measures to ensure that cargo customers are aware of the limitations on the transport of dangerous goods as cargo on aircraft;
- b) measures to assist operators' cargo personnel in identifying, detecting and rejecting dangerous goods presented as general cargo and dangerous goods not permitted in mail.

Note 1.— See 2.4 for limitations on the transport of dangerous goods by air.

Note 2.— See Part 7;1.1 of the Technical Instructions for cargo acceptance procedures related to detecting dangerous goods presented as general cargo.

Note 3.— See Part 7;4.8 of the Technical Instructions for provision of information at cargo acceptance points.

Note 4.— See Part 7;6 of the Technical Instructions for provisions to aid recognition of dangerous goods in general cargo, baggage or mail.

<i>Origin:</i>	Rationale:
DGP/29	6.2.3.1 and 6.2.3.2 are proposed new SARPs aimed at mitigating the risk of non-compliance dangerous goods being transported by air. The inadvertent transport of undeclared dangerous goods offered as general cargo, dangerous goods in air mail that are not permitted, and dangerous goods carried by passengers and crew that are not permitted pose a risk to aircraft. The Technical Instructions currently contain several prescriptive requirements for information concerning dangerous goods to be provided to various entities that may introduce this risk as one way to mitigate it. These are referred to in the Notes proposed for inclusion under 6.2.3.2. The proposed new SARPs are intended to make the need to mitigate the risk clear while not limiting measures to what is provided in Technical Instructions. It aims to ensure operators implement effective measures for their specific operating environment while incorporating the existing measures in the Technical Instructions in a manner that focuses on what needs to be achieved.

6.2.3.3 Damage or leakage

The operator shall ensure that cargo or mail suspected of being contaminated by dangerous goods is isolated and any hazardous contamination nullified before the cargo or mail is subsequently transported.

<i>Origin:</i>	Rationale:
DGP/29	Current 8.4.3 applies to packages of dangerous goods appearing to be damaged or leaking but not to mail, and it implies that the operator would know that a package contained dangerous goods. The operator would only know if a package contained dangerous goods if it was declared as such. The SARP in 8.4.3 is therefore proposed to contamination from undeclared dangerous goods.

6.3 Operators with a specific approval for the transport of dangerous goods

6.3.1 General

Note 1.— Specific approvals for the transport of dangerous goods are issued by the State of Operator in accordance with Annex 6.

Note 2.— Annex 6, Part I, Chapter 14 and Appendix 2, Annex 6, Part III, Chapter 12 and Appendix 8 and Annex 6, Part IV, Chapter 14 and Appendix 2 include provisions for the operators to include dangerous goods procedures, instructions and guidance in its operations manual, including emergency procedures involving dangerous goods.

Note 3.— See also Annex 6, Part I, 4.2.1.3.1, Part III, 2.2.1.3.1 and Part IV, 4.2.2.1 for work performed by third parties on behalf of the operator.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Note 1 creates a link to Annex 6 with respect to the AOC process by explaining where the provisions for a specific approval are contained. Note 2 creates a link to Annex 6 with respect to the operations manual and for it to include emergency procedures involving dangerous goods by where the requirements are. This requirement is currently contained in Annex 18 through 9.2 and 9.4. It is proposed for deletion given that it is redundant. Note 3 refers to Standards in Annex 6 requiring the operator to develop policies and procedures for third parties that perform work on its behalf.

6.3.2 Dangerous goods carried by passengers and crew members

6.3.2.1 The operator shall ensure that measures are in place to mitigate the risk of passengers and crew members carrying dangerous goods on board an aircraft which they are not permitted to carry.

6.3.2.2 The mitigations required by 6.3.2.1 shall include, at a minimum:

- a) measures to ensure that passengers and crew members are aware of the limitations on the carriage of dangerous goods on aircraft; and*
- b) ensuring relevant personnel are trained to assist them in identifying and detecting dangerous goods.*

Note 1.— See Part 7.5 of the Technical Instructions for provision of information to passengers and for passenger check-in procedures.

Note 2.— See Part 7.6 of the Technical Instructions for provisions to aid recognition of dangerous goods in general cargo, baggage or mail.

<i>Origin:</i>	Rationale:
DGP/29	6.2.2.1 and 6.2.2.2 are proposed new SARPs aimed at mitigating against the risk of dangerous goods in baggage or mail being transported on an aircraft that are not in compliance with the Technical Instructions. The Technical Instructions currently contain several prescriptive requirements related to information to passengers and crew to make them aware of dangerous goods limitations. The proposed new SARPs are intended to make the need to mitigate the risk clear while not limiting measures to what is provided in Technical Instructions. It aims to ensure operators implement effective measures for their specific operating environment while incorporating the existing measures in the Technical Instructions in a manner that focuses on what needs to be achieved.

6.3.2.3 The operator shall establish criteria for approving a passenger or crew member to safely carry dangerous goods that are identified by Part 8 of the Technical Instructions as only being permitted with the approval of the operator.

<i>Origin:</i>	Rationale:
DGP/29	6.2.2.3 is a proposed new SARP. Some dangerous goods are only permitted for carriage by passengers and crew with the approval of the operator as specified in Table 8-1 of the Technical Instructions (e.g. battery-powered mobility aids, oxygen cylinders required for medical use, dry ice). There are specific handling and loading requirements for the operator for some of them. Including this general SARP in the Annex is proposed to make it clear to States that the operator needs to demonstrate it can carry these goods safely.

6.3.2.4 The operator shall load dangerous goods carried by passengers or crew members in accordance with the applicable requirements of the Technical Instructions.

<i>Origin:</i>	Rationale:
DGP/29	The Technical Instructions contain loading requirements for certain dangerous goods carried by passengers and crew, but there is no related Standard in current Annex 18. 6.3.2.4 is proposed to close that gap and to make it clear to States.

6.3.2.5 The operator shall isolate baggage suspected of being contaminated by dangerous goods and nullify any hazardous contamination before the baggage is subsequently transported.

<i>Origin:</i>	Rationale:
DGP/29	Current Annex 18 has a similar requirement in 8.4.3 that does not apply to baggage. The Technical Instructions have provisions related to baggage. 6.3.2.5 is proposed to make it clear to States that operators need procedures in place to deal with baggage suspected of being contaminated by dangerous goods.

6.3.3 Transport of cargo and mail**6.3.3.1 Prevention of non-compliance**

6.3.3.1.1 The operator shall ensure that measures are in place to mitigate the risk of:

- a) dangerous goods being transported as cargo on an aircraft that are not in compliance with the Technical Instructions and the limitations with regard to the transport of dangerous goods established in the Operations Manual;
- b) dangerous goods being transported which are intended as replacement for or removed for replacement of those required to be aboard an aircraft in accordance with pertinent airworthiness requirements and operator regulations that are not in compliance with the Technical Instructions; and
- c) dangerous being transported in air mail which are not in compliance with the Technical Instructions.

6.3.3.1.2 The mitigations required by 6.3.3.1,1 shall include, at a minimum:

- a) measures to ensure that cargo customers are aware of the limitations on the transport of dangerous goods as cargo by air; and
- b) measures to assist operators' acceptance staff personnel in identifying, detecting and rejecting dangerous goods presented as general cargo.

Note 1.— See 2.4 for limitations on the transport of dangerous goods by air.

Note 2.— See Part 7;4.8 of the Technical Instructions for provision of information at cargo acceptance points.

Note 3.— See Part 7;1.1 of the Technical Instructions for cargo acceptance procedures related to detecting dangerous goods presented as general cargo.

Note 4.— See Part 7;6 of the Technical Instructions for provisions to aid recognition of dangerous goods in general cargo, baggage or mail.

<i>Origin:</i>	Rationale:
DGP/29	6.3.3.1 contains proposed new SARPs aimed at mitigating the risk of non-compliance dangerous goods being transported by air. The inadvertent transport of undeclared dangerous goods offered as general cargo, dangerous goods in air mail that are not permitted, and dangerous goods carried by passengers and crew that are not permitted pose a risk to aircraft. The Technical Instructions currently contain several prescriptive requirements for information concerning dangerous goods to be provided to various entities that may introduce this risk as one way to mitigate it. These are referred to in the Notes proposed for inclusion at the bottom of the section. The proposed new SARPs are intended to make the need to mitigate the risk clear while not limiting measures to what is provided in Technical Instructions. It aims to ensure operators implement effective measures for their specific operating environment while incorporating the existing measures in the Technical Instructions in a manner that focuses on what needs to be achieved.

~~8.1~~6.3.3.2 *Acceptance of dangerous goods for transport as cargo*

~~An~~ 6.3.3.2.1 The operator shall not accept dangerous goods for transport ~~by air~~ as cargo:

- a) unless ~~the dangerous goods are accompanied by a completed~~ information is provided in accordance with Part 7;1.2 of the Technical Instructions describing the dangerous goods ~~transport document in the consignment~~, except where the Technical Instructions indicate that such a ~~document~~ information is not required; and
- b) until the package, overpack or freight container containing the dangerous goods has been inspected in accordance with the acceptance procedures contained in Part 7;1 of the Technical Instructions.

~~— Note 1. — See Chapter 12 concerning the reporting of dangerous goods accidents and incidents.~~

~~— Note 2. — Special provisions relating to the acceptance of overpacks are contained in the Technical Instructions.~~

8.2—Acceptance checklist

6.3.3.2.2 ~~An~~The operator shall ~~develop and~~ use an acceptance checklist as an aid to compliance with the provisions of ~~8.1~~ 6.3.3.2.1 in accordance with Part 7;1 of the Technical Instructions.

6.3.3.2.3 The operator shall not accept a freight container or unit load device containing dangerous goods from a shipper except as permitted by 7;1 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	“As cargo” is added to reflect the fact that these acceptance procedures apply only to dangerous goods offered for transport as cargo. Sub-paragraph a) is modified from current 8.1 a) to accommodate dangerous goods information provided electronically, which the Technical Instructions allow. Note 1 under current 8.1 is deleted to remove the implication that the reporting of dangerous goods accidents and incidents is only applicable during acceptance. Note 2 under current 8.1 is deleted as it is considered unnecessary. “Overpack” is referenced in 6.3.3.1, making it clear that there are provisions for them in the Technical Instructions. A separate section for the acceptance checklist is considered unnecessary since it is directly related to the provisions in the previous section. It is therefore proposed to delete the heading in current 8.2. The requirement in proposed new 6.3.3.2.3 is contained in the Technical Instructions but not Annex 18. The amendment closes this gap.

6.3.3.3 Handling

6.3.3.3.1 General

6.3.3.3.1.1 The operator shall handle cargo containing dangerous goods in a manner that prevents damage, leakage or dangerous reaction in accordance with the provisions of the Technical Instructions.

6.3.3.3.1.2 The operator shall ensure that marks and labels required by the Technical Instructions are visible throughout the course of air transport in accordance with Part 7;2 of the Technical Instructions.

6.3.3.3.1.3 The operator shall ensure that dangerous goods contained in unit load devices are identified on the exterior of the unit load devices in accordance with Part 7;2 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP-WG/Annex 18	How dangerous goods are handled contributes to their safe transport. The Technical Instructions contain provisions related to handling, yet there is no mention of this function in Annex 18. SARPs related to handling are proposed to address this gap in Annex 18.

86.3.3.3.2 Loading, unloading and stowage

~~Packages and overpacks containing dangerous goods and freight containers containing radioactive materials shall be loaded and stowed on an aircraft in accordance with the provisions of the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	It is proposed to replace this general SARP with more detailed SARPs contained in this section about loading and stowage and also requirements for unloading of dangerous goods.

8.4—Inspection for damage or leakage

~~— 8.4.1 Packages and overpacks containing dangerous goods and freight containers containing radioactive materials shall be inspected for evidence of leakage or damage before loading on an aircraft or into a unit load device. Leaking or damaged packages, overpacks or freight containers shall not be loaded on an aircraft.~~

~~— 8.4.2 A unit load device shall not be loaded aboard an aircraft unless the device has been inspected and found free from any evidence of leakage from, or damage to, any dangerous goods contained therein.~~

~~— 8.4.3 Where any package of dangerous goods loaded on an aircraft appears to be damaged or leaking, the operator shall remove such package from the aircraft, or arrange for its removal by an appropriate authority or organization, and thereafter shall ensure that the remainder of the consignment is in a proper condition for transport by air and that no other package has been contaminated.~~

~~— 8.4.4 Packages or overpacks containing dangerous goods and freight containers containing radioactive materials shall be inspected for signs of damage or leakage upon unloading from the aircraft or unit load device. If evidence of damage or leakage is found, the area where the dangerous goods or unit load device were stowed on the aircraft shall be inspected for damage or contamination.~~

6.3.3.3.2.1 Damage or leakage

6.3.3.3.2.1.1 The operator shall not load dangerous goods as cargo onto an aircraft unless:

- a) packages, overpacks and freight containers containing dangerous goods have been inspected immediately prior to placing them in a unit load device or loading them on an aircraft and found free from any evidence of leakage or damage; and
- b) unit load devices have been inspected and found free from any evidence of leakage from, or damage to, any dangerous goods contained therein.

6.3.3.3.2.1.2 The operator shall inspect upon unloading:

- a) packages, overpacks and freight containers containing dangerous goods for evidence of damage or leakage from the aircraft or unit load device; and
- b) unit load devices containing dangerous goods from the aircraft for evidence of leakage from, or damage to any dangerous goods contained therein.

6.3.3.3.2.1.3 The operator shall ensure that cargo or mail containing or suspected of containing dangerous goods is removed from the aircraft or unit load device if there is evidence of damage or leakage in accordance with Parts 7;2 and 7;3 of the Technical Instructions.

6.3.3.3.2.2 Removal of contaminationThe operator shall ensure that:

- a) any hazardous contamination found on an aircraft or unit load device from dangerous goods is removed without delay in accordance with the Technical Instructions.
- b) an aircraft which has been contaminated by radioactive materials is immediately taken out of service and not returned to service until the radiation level at any accessible surface and the non-fixed contamination are not more than the values specified in the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The Standards for inspecting for damage or leakage of dangerous goods in current 8.4 is separated from Standards for removal of contamination in current 8.6 despite being related. The Standards for contamination are therefore moved under the Standards for inspecting for damage or leakage. “Inspection” is removed from the heading since the discovery of damage or leakage is not limited to inspections. The structure of the section is modified and reordered more logically to more clearly delineate inspections for damage or leakage during loading from inspections during unloading and the action that needs to be taken whenever damage or leakage is discovered. The current Standard for action to be taken if evidence of damage or leakage is discovered in 8.4.3 appears to be comprehensive when it is not. The action is replaced with a reference to more detailed action contained in the Technical Instructions. Current 8.4.3 applies only to packages of dangerous goods appearing to be damaged or leaking. It does not address leakage of dangerous goods from anything other than a package, including mail, and implies that the operator would know that a package contained dangerous goods. The operator would only know if a package contained dangerous goods if it was declared as such. The SARP in 8.4.3 is therefore proposed to be amended to ensure it covers contamination from declared and undeclared dangerous goods and dangerous goods in mail. It also replaces text specifying the action to be taken when evidence of damage or leakage is discovered, which appears to be comprehensive when it is not, with a reference to the detailed requirements in the Technical Instructions. Editorial amendments are made for the sake of consistent language. A distinction between packages and overpacks containing dangerous goods and freight containers containing radioactive material was removed by simply stating “packages, overpacks and freight containers containing dangerous goods” since radioactive material is dangerous goods. The fact that freight containers can only contain radioactive material when shipping dangerous goods is not relevant to this section.

8.5~~6.3.3.3.2.3~~ Loading restrictions ~~in passenger cabin or on flight deck~~

~~Dangerous~~ 6.3.3.3.2.3.1 The operator shall ensure that ~~dangerous~~ goods ~~shall be~~ not ~~be~~ carried in an aircraft cabin occupied by passengers or on the flight deck ~~of an aircraft~~, except in circumstances permitted by the provisions of the Technical Instructions.

6.3.3.3.2.3.2 The operator shall ensure that dangerous goods are not carried in the main deck cargo compartment of an aircraft conducting passenger operations, except in circumstances permitted by the provisions of the Technical Instructions.

6.3.3.3.2.3.3 Notwithstanding the provisions in 6.3.3.3.2.3.2, the operator may transport dangerous goods in the main deck cargo compartment of an aircraft conducting passenger operations that do not meet the requirements of Part 7;2.1.1 of the Technical Instructions, if approved by the State of Origin and the State of the Operator, based on the results of an approved safety risk assessment process implemented by the operator.

6.3.3.3.2.3.4 The process required by 6.3.3.3.2.3.3 shall demonstrate how risks to the operation resulting from such an allowance can be managed.

6.3.3.3.2.3.5 The operator shall ensure that packages of dangerous goods bearing the “Cargo aircraft only” label are not loaded for transport on aircraft conducting passenger operations.

The following is moved from 8.9 of current Annex 18:

8.9—Loading on cargo aircraft

6.3.3.3.2.3.6 ~~Packages~~The operator shall ensure that packages of dangerous goods bearing the “Cargo aircraft only” label ~~shall be~~are loaded on an aircraft conducting cargo operations in accordance with ~~the provisions in~~Part 7;2.4.1 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Editorial amendments to make the subject of the action required clear and to point to the specific provisions of the Technical Instructions.

8.6—Removal of contamination

~~— 8.6.1 Any hazardous contamination found on an aircraft as a result of leakage or damage to dangerous goods shall be removed without delay.~~

~~— 8.6.2 An aircraft which has been contaminated by radioactive materials shall immediately be taken out of service and not returned to service until the radiation level at any accessible surface and the non-fixed contamination are not more than the values specified in the Technical Instructions.~~

8.7~~6.3.3.3.2.4~~ Separation and segregation

6.3.3.3.2.4.1 ~~Packages~~The operator shall ensure that packages containing dangerous goods which might react dangerously ~~one~~with one another ~~shall not be stowed on an aircraft next to~~are

~~segregated or separated from~~ each other ~~or in a position that would allow interaction between them in the event of leakage.~~

~~— 8.7.2 Packages of toxic and infectious substances shall be stowed on an aircraft,~~ as applicable, in accordance with ~~the provisions~~ Part 7;2.2 of the Technical Instructions.

~~— 8.7.3 Packages~~ 6.3.3.3.2.4.2 The operator shall ensure that packages of radioactive materials ~~shall be~~ are stowed on an aircraft so that they are separated from persons, live animals and undeveloped film, in accordance with ~~the provisions in~~ Part 7;2.9.6 of the Technical Instructions.

8.86.3.3.3.2.5 *Securing of dangerous goods cargo loads*

~~When~~ 6.3.3.3.2.5.1 The operator shall protect dangerous goods ~~subject to~~ on the ~~provisions contained herein are loaded in an aircraft, the operator shall protect the dangerous goods~~ or in a unit load device from being damaged; and ~~shall~~ secure such goods in the aircraft in such a manner that will prevent any movement ~~in flight which would change the orientation of the packages.~~

6.3.3.3.2.5.2 For packages containing radioactive materials, the securing shall be adequate to ensure that the separation requirements of ~~8.7~~6.3.3.3.2.5.1 are met at all times.

6.3.4 Operator responsibilities for specific types of dangerous goods

The operator shall comply with handling, stowage, loading and transport requirements for the specific types of dangerous goods identified in Part 7 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP-WG/Annex 18	There are specific requirements for handling, stowing and transporting infectious substances and radioactive material and for handling and loading some specific types of dangerous goods contained in the Technical Instructions, but no mention of this is currently made in Annex 18. The amendment addresses this gap.

9.16.3.5 Information to pilot-in-command ~~or remote-pilot-in-command~~

The operator ~~of~~ shall ensure that when an aircraft ~~in which~~ is to transport dangerous goods ~~are to be carried~~ shall provide ~~as cargo,~~ the pilot-in-command ~~or remote-pilot-in-command,~~ as applicable, is provided as early as practicable before departure of the aircraft with accurate and legible written or printed information ~~as specified in~~ in accordance with Part 7;4.1 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This Standard is moved from current 9.1 and modified to: a) incorporate specific language from Annex 6, Part I, 14.3.5), which is proposed for deletion from that Annex; b) clarify that the information provided applies to dangerous goods transported as cargo; and c) include reference to remote-pilot-in-command.

6.3.6 Additional provisions for helicopters and remotely piloted aircraft

6.3.6.1 The State of the Operator may, based on the results of a specific safety risk assessment conducted by the operator, allow for variations to the Technical Instructions for the transport of dangerous goods on helicopters or remotely piloted aircraft where full compliance is not appropriate or necessary due to the type of operation.

6.3.6.2 The process required by 6.3.6.1 shall demonstrate how risks to the operation resulting from such variations can be managed.

Note 1.— Types of operations where full compliance may not be appropriate or necessary as referred to in 6.3.6.1 are for example those involving unmanned sites, remote locations, mountainous areas and construction sites.

Note 2.— Guidance for States on approving variations from the Technical Instructions to transport dangerous goods on helicopters or remotely piloted aircraft is provided in Doc xxxx (forthcoming), Chapter yy.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Proposed new 6.3.6.3 is contained in the Technical Instructions, but no mention of it is made in current Annex 18. The amendment addresses this gap. Proposed 6.3.6.4 is not contained in the Technical Instructions. It is added to ensure the State only approves variations if it can be demonstrated that safety risks can be managed. A consequential amendment to the Technical Instructions will be necessary if this is adopted. Guidance currently contained in the Supplement will be moved to the new guidance document to support the implementation of Annex 18. It is proposed to extend this provision to remotely-piloted aircraft, given that full compliance may similarly not always be appropriate or necessary for certain types of remotely-piloted aircraft.

Replace 9.6 with the following:

6.3.7 Provision of information in the event of an aircraft accident, serious incident or incident*6.3.7.1 Information to emergency services*

The operator shall, without delay, provide emergency services responding to an accident, serious incident or incident the information about the dangerous goods on board that was provided to the pilot-in-command or remote-pilot in command.

*6.3.7.2 Information to States**6.3.7.2.1 Aircraft accident or serious incident*

In the event of an aircraft accident or serious incident where dangerous goods as cargo may have been involved, the operator shall provide, as soon as possible, the information that was provided to the pilot-in-command or remote-pilot in command about the dangerous goods on board to the appropriate national authorities of the State of the Operator and the State of Occurrence.

6.3.7.2.2 Aircraft incident

In the event of an aircraft incident, the operator shall, if requested to do so, provide, without delay, the information about the dangerous goods on board that was provided to the pilot-in-command or the remote-pilot-in-command to the appropriate national authority of the State of Occurrence.

Note.— The terms “accident”, “serious incident” and “incident” are as defined in Annex 13.

End of replaced text

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The provisions in 6.3.7 are modified from current 9.6 to improve clarity, to clarify who the intended recipients of the dangerous goods information are, and to facilitate the operator’s ability to determine who to provide the information to and when to provide.

CHAPTER 7. SHIPPER'S RESPONSIBILITIES

7.1 General requirements

~~Before a person offers any package or overpack of dangerous goods for transport by air, that person shall ensure that the dangerous goods are not forbidden for transport by air and are properly classified, packed, marked, labelled and accompanied by a properly executed dangerous goods transport document, as specified in this Annex and the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This SARP is covered by proposed new 5.2.1 a), 5.2.1 b) 2), 5.2.1 b) 3), 5.2.1 b) 4) and 5.2.1 b) 5)

7.2 Dangerous goods transport document

~~7.2.1 Unless otherwise provided for in the Technical Instructions, the person who offers dangerous goods for transport by air shall complete, sign and provide to the operator a dangerous goods transport document, which shall contain the information required by those Instructions.~~

~~7.2.2 The transport document shall bear a declaration signed by the person who offers dangerous goods for transport indicating that the dangerous goods are fully and accurately described by their proper shipping names and that they are classified, packed, marked, labelled, and in proper condition for transport by air in accordance with the relevant regulations.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The provisions in 7.2 are details contained in the Technical Instructions. The SARPs are therefore redundant. The dangerous goods transport document is covered by proposed new 5.2.1 b) 4)

7.3 Languages to be used

~~**Recommendation.** In addition to the languages which may be required by the State of Origin and pending the development and adoption of a more suitable form of expression for universal use, English should be used for the dangerous goods transport document.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This recommendation is contained in by Part 5, Chapter 4, 4.1.6.3 of the Technical Instructions. It is therefore redundant.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	A new chapter on airport operator's responsibilities is proposed to capture a requirement currently in the Technical Instructions

CHAPTER 7. AIRPORT OPERATOR'S RESPONSIBILITIES

7.1 Provision of information to passengers

Each State shall require airport operators to promulgate information in such a manner that passengers are warned of the types of dangerous goods which they are forbidden from carrying aboard an aircraft as provided for in Part 7 of the Technical Instructions.

Note.— Requirements for the operator to provide information to passengers are contained in Chapter 6.

The provisions for operator responsibilities contained in current Chapter 8 are modified and moved to Chapter 6. The provisions for dangerous goods by mail contained in current 11.4 are moved to a new chapter on the transport of dangerous goods by mail.

CHAPTER 8. ~~OPERATOR'S RESPONSIBILITIES~~CHAPTER 8. ~~TRANSPORT OF DANGEROUS GOODS BY POST~~TRANSPORT OF DANGEROUS GOODS BY MAIL

8.1 Designated postal operator's responsibilities

8.1.1 A designated postal operator accepting mail into air transport shall:

- a) establish and maintain a dangerous goods training programme in accordance with Chapter 9;
- b) implement procedures for preventing the introduction of dangerous goods in mail when not in compliance with the provisions of this Annex and the Technical Instructions; and
- c) implement procedures in accordance with Chapter 10 for the reporting of dangerous goods accidents, dangerous goods incidents and occasions when dangerous goods which do not comply with the provisions of this Annex and the Technical Instructions are discovered in mail.

8.1.2 A designated postal operator that allows dangerous goods in mail shall:

- a) ensure that dangerous goods are only permitted in the mail in accordance with Part 1:2.3 of the Technical Instructions; and
- b) not permit lithium batteries identified in Part 1:2.3 of the Technical Instructions in the mail into air transport unless the civil aviation authority of its State has issued a specific approval.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Current Standard 11.4 requires procedures of designated postal operators for controlling the introduction of dangerous goods in mail into air transport be approved by the civil aviation authority of the State where the mail is accepted. Annex 18 does not require the designated postal operators to do anything. This new SARP outlines what the designated operator needs to do and what the civil aviation authority needs to consider when approving its procedures. It also adds a requirement for procedures for reporting of dangerous goods accidents, dangerous goods incidents and occasions when undeclared or misdeclared dangerous goods offered for air transport are discovered in mail. Data from these reports is necessary for the State's safety risk management activities.

8.1.3 Each State's designated postal operator accepting mail in another State shall comply with the requirements of 8.1.1 and 8.1.2.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The designated postal operator is responsible for its postal operators regardless of where they operate. The civil aviation authority needs to evaluate how the designated postal operator manages its operation in other States when approving the dangerous goods training programme.

Moved from 11.4:

11.4.8.2 Approval of procedures for controlling the introduction of dangerous goods by mail into air transport

The procedures of a State's designated postal operators ~~for controlling the introduction of dangerous goods in mail into air transport identified in 8.1~~ shall be approved by the State's civil aviation authority ~~of the State where the mail is accepted~~.

Note 1.—~~In accordance with the Universal Postal Union (UPU) Convention, dangerous goods are not permitted in mail, except as provided for in the Technical Instructions. See Chapter 9 for approval of the designated postal operator's dangerous goods training programme.~~

Note 2.—~~The Universal Postal Union has established procedures to control the introduction of dangerous goods into air transport through the postal services (see the UPU Parcel Post Regulations and Letter Post Regulations). The Universal Postal Convention embodies the rules applicable throughout the international postal service and the provisions concerning the letter-post and parcel-post services. The Universal Postal Union (UPU) requires that member countries ensure that their designated postal operators fulfil the obligations arising from the Universal Postal Convention. The Regulations to the Universal Postal Convention contain the rules of application necessary for the implementation of the Universal Postal Convention and reflect the ICAO Standards and Recommended Practices for the transport of dangerous goods in airmail (see the UPU Convention Manual).~~

Note 3.—~~Guidance for approving the procedures established by designated postal operators to control the introduction of dangerous goods into air transport may be found in the Supplement to the Technical Instructions (Part S-1, Chapter 3). Doc xxxx (forthcoming), Chapter yyyy.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The wording of the Standard was modified to remove any implication that the civil aviation authority must approve procedures of a foreign designated postal operator operating in its territory. The SARP is intended to make the procedures of the State's DPOs subject to the approval of the CAA regardless of where the DPO is operating. Existing Note 1 is deleted because new Note 2 achieves the same intent more comprehensively. New Note 1 is added to refer to the training provisions in Chapter 9, which include those for designated postal operators. Amendments to Note 2 are proposed to more accurately reflect the role of the Universal Postal Union. The amendments make existing Note 1 unnecessary.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The Standards in this chapter are either moved to other locations or deleted as they are considered redundant.

CHAPTER 9. — PROVISION OF INFORMATION

9.1 — Information to pilot-in-command

~~The operator of an aircraft in which dangerous goods are to be carried shall provide the pilot-in-command as early as practicable before departure of the aircraft with written information as specified in the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This is now captured in Chapter 6, 6.3.5 to make the chapter on operator responsibilities more comprehensive.

9.2 — Information and instructions to flight crew members

~~The operator shall provide such information in the Operations Manual as will enable the flight crew to carry out its responsibilities with regard to the transport of dangerous goods and shall provide instructions as to the action to be taken in the event of emergencies arising involving dangerous goods.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	It is proposed to delete this Standard because it is a duplicate of what is required in Annex 6. It is more appropriate for it to be in Annex 6, because it relates to the operation of the aircraft.

9.3 — Information to passengers

~~Each Contracting State shall ensure that information is promulgated in such a manner that passengers are warned as to the types of dangerous goods which they are forbidden from transporting aboard an aircraft as provided for in the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This is now captured more comprehensively through safety management SARPs directly at the State in 4.3.2 and 4.4.2, the operator through 6.6.2 and 6.6.3 and the aerodrome in Chapter 7.

9.4—Information to other persons

~~Operators, shippers or other organizations involved in the transport of dangerous goods by air shall provide such information to their personnel as will enable them to carry out their responsibilities with regard to the transport of dangerous goods and shall provide instructions as to the action to be taken in the event of emergencies arising involving dangerous goods.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Information to operators is captured in Annex 6 and to entities other than operators in This is now captured in 5.2 i).

9.5—Information from pilot in command to aerodrome authorities

~~If an in-flight emergency occurs, the pilot in command shall, as soon as the situation permits, inform the appropriate air traffic services unit, for the information of aerodrome authorities, of any dangerous goods on board the aircraft, as provided for in the Technical Instructions.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This SARP is requiring a specific duty of the pilot-in-command. Annex 6 contains provisions for the duties of the pilot in command. It is therefore proposed to delete this requirement from Annex 18 and included it in Annex 6, given that it is an operational requirement.

9.6—Information in the event of an aircraft accident or incident

~~—9.6.1—In the event of:~~

~~—a) an aircraft accident; or~~

~~—b) a serious incident where dangerous goods carried as cargo may be involved;~~

~~the operator of the aircraft carrying dangerous goods as cargo shall provide information, without delay, to emergency services responding to the accident or serious incident about the dangerous goods on board, as shown on the written information to the pilot in command. As soon as possible, the operator shall also provide this information to the appropriate authorities of the State of the Operator and the State in which the accident or serious incident occurred.~~

~~—9.6.2—In the event of an aircraft incident, the operator of an aircraft carrying dangerous goods as cargo shall, if requested to do so, provide information without delay to emergency services responding to the incident and to the appropriate authority of the State in which the incident occurred, about the dangerous goods on board, as shown on the written information to the pilot in command.~~

~~—Note.—The terms “accident”, “serious incident” and “incident” are as defined in Annex 13.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs in 9.6 are now captured in 6.3.7 to make the chapter on operator responsibilities more comprehensive.

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CHAPTER ~~10~~ 9. TRAINING ~~PROGRAMMES~~ AND ASSESSMENT

Origin:	<i>Rationale for approach taken in amending the training provisions:</i>
DGP/29	The title is modified to reflect the critical role assessment plays in ensuring personnel are competent to perform their dangerous goods functions.

~~10.19.1~~ 10.19.1 Establishment of Dangerous goods training programmes

~~Initial and recurrent dangerous goods training programmes shall be established and maintained in accordance with the Technical Instructions.~~

Origin:	<i>Rationale for approach taken in amending the training provisions:</i>
DGP/29	This SARP is moved to 9.3.2.

Note 1.— A training programme includes elements such as design methodology, assessment, initial and recurrent training, instructor qualifications and competencies, training records, and evaluation of the effectiveness of the training.

Origin:	<i>Rationale for approach taken in amending the training provisions:</i>
DGP/29	The note is moved from the Technical Instructions. It is intended to make it clear that the State needs to consider more than a course syllabus when approving dangerous goods training programmes.

9.1.1 Each State shall require the establishment and maintenance of a dangerous goods training programme by any entity that:

a) offers, handles, or transports dangerous goods by air; or

b) causes dangerous goods to be offered, handled, or transported by air.

Origin:	<i>Rationale:</i>
DGP/29	Who requires a dangerous goods training programme is currently established in the Technical Instructions. There have been extensive discussions on the Dangerous Goods Panel on whether training programmes can be required for entities not intending to handle dangerous goods by air. Entities such as freight forwarders play an important role in preventing undeclared dangerous goods from being introduced into the air cargo system, but they can only do this if they know how to identify them. A mandatory requirement for freight forwarders and other entities handling general cargo to be trained was introduced into the 2005-2006 Edition of the Technical Instructions, but some panel members had not interpreted the provisions to be mandatory because they referred to guidance. Whether mandating training for entities not intending to handle dangerous goods is feasible globally was raised by the DGP when it was revising the dangerous goods training provisions in the Technical Instructions to support a competency-based approach to training and assessment. Some States did not have oversight authority over entities not performing functions

	described in the Technical Instructions, so a mandatory requirement was not feasible in those States. However, entities performing functions described in the Technical Instructions are required to be trained in those States regardless of whether they knowingly or unknowingly perform them. The amendment is intended to capture this concept.

Note.— A dangerous goods training programme is required for all operators regardless of whether the operator has been issued a specific approval to transport dangerous goods in accordance with Annex 6.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The note is moved from under current 10.2.1 and amended to refer to the specific approval required by Annex 6. The need for all operators to have dangerous goods training programmes is established in new 9.1.1, but it is important to maintain this note for the same reason it was added through Amendment 12 to Annex 18. The need for clarification was based on safety oversight audit results that highlighted a lack of awareness of dangerous goods training requirements in relation to operators not approved to carry dangerous goods.

9.1.2 Each State shall require the establishment and maintenance of a dangerous goods training programme by its designated postal operators regardless of whether the designated postal operator allows the introduction of dangerous goods in mail in accordance with Part 1 of the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	This is a proposed new SARP intended to ensure all DPOs are trained to ensure they are able to identify reject dangerous goods in mail when not permitted.

10.2.2 Approval of training programmes

10.2.19.2.1 Dangerous goods training programmes for operators ~~The appropriate national authority of the State of the Operator shall be approved by the appropriate authority of the State of the Operator the operator's dangerous goods training programme.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Editorial revision for the sake of alignment with the wording of other Standards.

~~*Note.— Dangerous goods training programmes are required for all operators regardless of whether or not they are approved to transport dangerous goods.*~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Moved to 9.1.1.

10.2.29.2.2 The State's civil aviation authority shall approve the D~~dangerous goods training programmes for of the State's designated postal operators shall be approved by the civil aviation authority of the State where the mail is accepted by the designated postal operator.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Revised to clarify the scope of oversight. Designated postal operators may operate in different States. The wording of the current Standard may imply that the civil aviation authority must approve the training programme of foreign designated postal operators operating in its State. The existing SARP was added to Annex 18 through Amendment 12, along with new Standards in current 11.4, to control the introduction of dangerous goods not permitted in mail from entering the airmail stream. The provisions were intended to provide for stronger relationships between civil aviation and postal authorities. Not specifying the civil aviation authority as the authority required to approve the training programme could result in the designated postal operator approving itself. The civil aviation authority needs to approve the dangerous goods programme because of the unique risks to air transport of which the designated postal operator may appreciate.

~~10.2.3~~**9.2.3 Recommendation.**— *Dangerous goods training programmes required for entities other than operators and designated postal operators should be approved as determined by the appropriate national authority in accordance with its safety risk management activities.*

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	Modified to clarify that a risk-based approach to determining whether to approve other entities should be used. The decision will be different among States based on the level of risk posed by specific entities in the State and the size and complexity of the State. Alternate risk mitigating approaches may be more appropriate

~~— Note 1. — See 11.4 for dangerous goods by mail.~~

~~— Note 2. — See 4.2.2 of Annex 6 — Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes for surveillance of operations by a foreign operator.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/30	Note 1 is deleted because provisions for the mail are no longer contained in one area and it would be inconsistent to cross reference provisions for one entity without cross referencing parts of the Annex for others. The development of guidance material will be developed in lieu of maintaining Note 2. It has been reported that some States subject foreign operators' training programmes to review and approval despite training programmes only being subject to the approval of the State of the Operator. This note was intended to refer States to the Standard in Annex 6 that specifies that the State shall recognize as valid an air operator certificate issued by another State. However, operations experts recommend deleting this note and addressing the issue through guidance material, as the practice applies to more than dangerous goods and the Standard referred to in Annex 6 is intended to automatically apply only to personnel licenses and airworthiness certificates.

9.3 Competency of personnel

9.3.1 Each State shall require the employer to ensure their personnel are competent to perform any function for which they are responsible prior to performing any of these functions through dangerous goods training and assessment commensurate with the functions for which they are responsible.

9.3.2 Each State shall require the employer to provide initial and recurrent dangerous goods training and assessment in accordance with the Technical Instructions.

9.3.3 Each State shall require the employer to ensure that the competency of personnel is maintained.

9.3.4 Each State shall require the employer to ensure the effectiveness of the dangerous goods training programme.

Note.— An approach to ensuring personnel are competent to perform any function for which they are responsible is provided in Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment (Doc 10147).

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	These provisions are current contained in the Technical Instructions but not the Annex. Proposed to include them in the Annex given the State's responsibility to approve training programmes.

9.4 Training and assessment records

9.4.1 Each State shall require the employer to maintain and retain records of training and assessment in accordance with the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs in Section 9.3 are moved from the Technical Instructions. The record of training provides evidence that employees have been trained and assessed as competent to perform their functions. They provide a standardized tool for authorities to use when evaluating training programmes.

CHAPTER 11.—COMPLIANCE

11.1—Inspection systems

~~Each Contracting State shall establish inspection, surveillance and enforcement procedures for all entities performing any function prescribed in its regulations for air transport of dangerous goods with a view to achieving compliance with those regulations.~~

~~—Note 1.—It is envisaged that these procedures would include provisions for:~~

~~—— inspecting dangerous goods consignments prepared, offered, accepted or transported by the entities referred to in 11.1;~~

~~—— inspecting the practices of the entities referred to in 11.1; and~~

~~—— investigating alleged violations (see 11.3).~~

~~—Note 2.—Guidance on dangerous goods inspections and enforcement may be found in the Supplement to the Technical Instructions (Part S 5, Chapter 1 and Part S 7, Chapters 5 and 6).~~

Origin:	Rationale:
DGP/29	The SARP in 11.1 is now covered by new 5.1 and the proactive/risk-based SARPs in new Chapter 4.

11.2—Cooperation between States

~~—Recommendation.—Each Contracting State should participate in cooperative efforts with other States concerning violations of dangerous goods regulations, with the aim of eliminating such violations. Cooperative efforts could include coordination of investigations and enforcement actions; exchanging information on a regulated party's compliance history; joint inspections and other technical liaisons; exchange of technical staff, and joint meetings and conferences. Appropriate information that could be exchanged include safety alerts, bulletins or dangerous goods advisories; proposed and completed regulatory actions; incident reports; documentary and other evidence developed in the investigation of incidents; proposed and final enforcement actions; and educational/outreach materials suitable for public dissemination.~~

Origin:	Rationale:
DGP/29	The SARP in 11.2 is now covered by new 4.2.3.

~~11.3—Penalties~~

~~— 11.3.1 Each Contracting State shall take such measures as it may deem appropriate to achieve compliance with its dangerous goods regulations including the prescription of appropriate penalties for violations.~~

~~— 11.3.2 **Recommendation.** Each Contracting State should take appropriate action to achieve compliance with its dangerous goods regulations, including the prescription of appropriate penalties for violations, when information about a violation is received from another Contracting State, such as when a consignment of dangerous goods is found not to comply with the requirements of the Technical Instructions on arrival in a Contracting State and that State reports the matter to the State of Origin.~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs in 11.3 are now covered by new 5.1 and the proactive/risk-based SARPs in new Chapter 4. More robust guidance will be contained in the new guidance document to support implementation of Annex 18.

~~11.4—Dangerous goods by mail~~

~~The procedures of designated postal operators for controlling the introduction of dangerous goods in mail into air transport shall be approved by the civil aviation authority of the State where the mail is accepted.~~

~~— Note 1. In accordance with the Universal Postal Union (UPU) Convention, dangerous goods are not permitted in mail, except as provided for in the Technical Instructions.~~

~~— Note 2. The Universal Postal Union has established procedures to control the introduction of dangerous goods into air transport through the postal services (see the UPU Parcel Post Regulations and Letter Post Regulations).~~

~~— Note 3. Guidance for approving the procedures established by designated postal operators to control the introduction of dangerous goods into air transport may be found in the Supplement to the Technical Instructions (Part S-1, Chapter 3).~~

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs for dangerous goods in the mail are now contained in a dedicated (Chapter 8).

CHAPTER ~~12~~10. DANGEROUS GOODS ~~ACCIDENT~~ AND INCIDENT REPORTING SAFETY INTELLIGENCE

~~— 12.1 — With the aim of preventing the recurrence of dangerous goods accidents and incidents, each Contracting State shall establish procedures for investigating and compiling information concerning such accidents and incidents which occur in its territory and which involve the transport of dangerous goods originating in or destined for another State. Reports on such accidents and incidents shall be made in accordance with the detailed provisions of the Technical Instructions.~~

~~— 12.2 **Recommendation.** — With the aim of preventing the recurrence of dangerous goods accidents and incidents, each Contracting State should establish procedures for investigating and compiling information concerning such accidents and incidents which occur in its territory other than those described in 12.1. Reports on such accidents and incidents should be made in accordance with the detailed provisions of the Technical Instructions.~~

~~— 12.3 — With the aim of preventing the recurrence of instances of undeclared or misdeclared dangerous goods in cargo, each Contracting State shall establish procedures for investigating and compiling information concerning such occurrences which occur in its territory and which involve the transport of dangerous goods originating in or destined for another State. Reports on such instances shall be made in accordance with the detailed provisions of the Technical Instructions.~~

~~— 12.4 **Recommendation.** — With the aim of preventing the recurrence of instances of undeclared or misdeclared dangerous goods in cargo, each Contracting State should establish procedures for investigating and compiling information concerning such occurrences which occur in its territory other than those described in 12.3. Reports on such instances should be made in accordance with the detailed provisions of the Technical Instructions.~~

Note. — The provisions for the development of safety intelligence contained in Chapter 5 of Annex 19 are applicable to this Annex. This chapter of Annex 18 contains specific safety intelligence development responsibilities relevant to the safe transport of dangerous goods by air.

10.1 Mandatory dangerous goods safety reporting

10.1.1 States shall require the operator to report:

- a) dangerous goods accidents to the appropriate national authority of the State in which they occurred and to the State of the Operator;
- b) dangerous goods incidents to the appropriate national authority of the State in which they occurred and to the State of the Operator;
- c) occasions when undeclared dangerous goods are discovered in cargo or mail to the appropriate national authority of the State in which they were discovered and the State of the Operator;
- d) occasions when misdeclared dangerous goods are discovered in cargo or mail, other than those discovered during the acceptance check required by 6.3.3.1, to the appropriate national authority of the State in which they were discovered and the State of the Operator;

- e) occasions when misdeclared dangerous goods are discovered in cargo or mail during the acceptance check required by 6.3.3.1, which if left undetected would cause the potential to endanger an aircraft, its occupants, or any other person to the appropriate national authority of the State in which they were discovered and the State of the Operator; and
- f) occasions when dangerous goods not permitted to be carried by passengers or crew members are discovered in baggage or on the person to the appropriate national authority of the State in which this occurred.

Note 1.— 10.1.1 f) includes occasions when the operator discovers dangerous goods not permitted to be carried by passengers or crew and when the operator is advised they were discovered by another entity.

Note 2.— Dangerous goods permitted to be carried by passengers and crew members are included in Part 8 of the Technical Instructions.

10.1.2 States shall require their designated postal operators to report to the civil aviation authority of the State where the mail is accepted:

- a) dangerous goods accidents;
- b) dangerous goods incidents; and
- c) occasions when dangerous goods which do not comply with the provisions of this Annex and the Technical Instructions are discovered in mail.

10.1.3 **Recommendation.**— States should require entities other than operators and designated postal operators to report dangerous goods accidents and dangerous goods incidents to the appropriate national authority of the State in which they occurred.

10.1.4 **Recommendation.**— States should require entities other than operators to report occasions when undeclared or misdeclared dangerous goods are discovered to the appropriate national authority of the State in which they were discovered.

10.1.5 States shall ensure that dangerous goods safety data and dangerous goods safety information collected through mandatory dangerous goods safety reporting are incorporated into the safety data collection and processing system (SDCPS) required by Annex 19.

Note.— Guidance on the establishment of an SDCPS is contained in the Safety Intelligence Manual (Doc 10159). Guidance specific to dangerous goods is provided in Doc yyyy (forthcoming).

10.2 Voluntary dangerous goods safety reporting

States should ensure that dangerous goods safety data and dangerous goods safety information not captured through the mandatory dangerous goods safety reporting system are reported through the voluntary safety reporting system established in Annex 19, Chapter 5.

Note.— Guidance on voluntary safety reporting systems is contained in Doc 10159. Guidance specific to dangerous goods is provided in Doc yyyy (forthcoming).

10.3 Safety data and safety information analysis

Note.— Guidance on safety data and safety information analysis is contained in Doc 10159. Guidance specific to dangerous goods is provided in Doc yyyy (forthcoming).

10.4 Safety data and safety information protection

Note.— Principles for the protection of safety data, safety information and related sources can be found in Appendix 3 to Annex 19. Guidance on safety data and safety information protection is contained in the Manual on Protection of Safety Information (Doc 10053).

10.5 Safety information sharing and exchange

10.5.1 If a State, in the analysis of the dangerous goods information contained in its SDCPS, identifies safety issues which may pose an unacceptable risk to the global aviation safety system, that State shall forward such safety information to ICAO with a minimum of delay.

10.5.2 States shall provide ICAO with dangerous goods information from their SDCPS upon request to address global safety issues related to the transport of dangerous goods by air.

Note.— Guidance to support the sharing and exchange of safety information and safety intelligence between States is contained in Doc 10159.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The SARPs in current Chapter 10 relate to both investigating and reporting. The investigating part of the SARPs is proposed to be included in 4.2. The reporting requirements remain in the retitled chapter “Dangerous goods Safety Intelligence” and are modified to align with terminology in Annex 19.

CHAPTER ~~13~~ 11. DANGEROUS GOODS SECURITY PROVISIONS

Each ~~Contracting~~ State shall establish dangerous goods security measures, applicable to ~~shippers, operators and other individuals~~ entities in the supply chain engaged in the transport of dangerous goods by air, ~~to be taken~~, to minimize theft or misuse of dangerous goods that may endanger persons, property or the environment. These measures should be commensurate with security provisions specified in other Annexes and the Technical Instructions.

<i>Origin:</i>	<i>Rationale:</i>
DGP/29	The current reference to “other individuals” is ambiguous. Referring to “entities in the supply chain” covers the specific entities currently referred to and “other individuals” more clearly.

Agenda Item 6: Dangerous goods provisions to support RPAS operations (Ref: Job Card DGP.007.02)

6.1 DANGEROUS GOODS PROVISIONS TO SUPPORT REMOTELY PILOTED AIRCRAFT SYSTEMS (DGP/30-WP/29) AND TRANSPORT OF DANGEROUS GOODS IN THE SPECIFIC UNMANNED AIRCRAFT SYSTEM CATEGORY (DGP/30-IP/5)

6.1.1 Background

6.1.1.1 The panel, joined by a Remotely Piloted Aircraft System (RPAS) officer from the Secretariat, discussed proposed new provisions for Annex 18, the Technical Instructions and the Supplement to support international operations of RPAS. The amendments were developed by the DGP Working Group on RPAS (DGP-WG/RPAS) to support the work assigned to the panel by the ANC through ANC Job Card DGP.007. The objective of the work was to ensure Annex 18 and the Technical Instructions supported the SARPs contained in Annex 6, Part IV – *International Operations of Remotely Piloted Aircraft Systems*. Feedback from discussions at DGP-WG/24 and DGP-WG/25 was addressed in the amendment presented to the meeting (see paragraph 4.6 of DGP-WG/24 and paragraph 4.6.2 of the DGP-WG/25 report). The working groups agreed on the following assumptions, upon which the amendments were based:

- a) Annex 6, Part IV applied to the operation of RPAS certificated in accordance with Annex 8 — *Airworthiness of Aircraft* by operators authorized to conduct international RPAS operations. It did not apply to open and specific categories of operation. RPAS operations beyond this scope could not be incorporated in the Technical Instructions. However, guidance for transporting dangerous goods beyond this scope should be developed and published separate from the Technical Instructions.
- b) No unique hazards or operational differences in RPAS were identified that would require changes to these parts of the Technical Instructions: Part 2 (Classification of dangerous goods), Part 3 (Dangerous goods list, special provisions and limited and excepted quantities), Part 4 (Packing instructions) or Part 6 (Packaging nomenclature, marking, requirements and tests). The provisions in Part 8 (Provisions concerning passengers and crew) were not yet relevant to RPAS, so no changes would be made to it. However, consideration would eventually need to be given since such operations were inevitable in the not-so-distant future. Whether or not dangerous goods would be permitted by passenger and crew on such aircraft would be something to be considered.
- c) Most panel members supported creating a new chapter in Part 7 to address RPAS-specific needs. Some debated its necessity, arguing that remotely piloted aircraft (RPA) certified under Annex 8 were similar to manned aircraft. However, there could be differences in the types of operations performed. The group concluded that a new chapter should be developed with high-level provisions similar to what was done for helicopters.

- d) Normal transport conditions outlined in Part 4 would apply to RPA operations for aircraft certified under Annex 8.

6.1.2 PROPOSED AMENDMENTS TO ANNEX 18

6.1.2.1 DGP-WG/RPAS coordinated with DGP-WG/Annex 18 to develop amendments to Annex 18 necessary to accommodate RPAS. The amendments, included with the proposed amendment to Annex 18 presented in the appendix to the report on Agenda Item 5, are:

- a) the addition of the definition for remote pilot-in-command contained in Annex 6 to Chapter 1;
- b) an update to a reference to Annex 6 to include Part IV (Chapter 6, Note 4);
- c) updates to references to pilot-in-command to include remote-pilot-in-command (Chapter 6, 6.3.5, 6.3.7); and
- d) a new SARP permitting the State of the Operator to allow variations from the Technical Instructions if full compliance is not appropriate or necessary because of the type of operation, based on the results of a specific safety risk assessment conducted by the operator (Chapter 6, 6.3.6).

6.1.3 PROPOSED AMENDMENTS TO THE TECHNICAL INSTRUCTIONS AND ITS SUPPLEMENT

6.1.3.1 The RPAS expert from the Secretariat suggested several revisions to the amendment which were accepted. Some suggested modifications to the new chapter on RPAS operations were not accepted by the panel, for the following reasons:

6.1.3.2 The panel agreed to maintain requirements for dangerous goods to be transported in a cargo compartment meeting all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment or as external carriage by a remotely piloted helicopter, even though Annex 6 Part IV contained the same cargo compartment requirements as Part I. This was to ensure the dangerous goods were not loaded in a cargo compartment meeting certification requirements that relied on the aircraft design enabling a crew member to detect or respond to a fire. Guidance material for the State of the Operator to issue an approval to the operator to transport certain dangerous goods in a cargo compartment that did not meet all the applicable certification requirements was developed for the Supplement.

6.1.3.3 The panel agreed to maintain references to circumstances when the full provisions of the Technical Instructions were not appropriate or necessary, i.e. when RPA operations were conducted to and from unmanned sites, in remote locations or in mountainous areas, even though the scope of Part 6, Part IV was “controlled airspace and from aerodromes”. The text aligned with what was contained in the existing chapter on helicopters.

6.1.3.4 The RPAS officer suggested that text emphasizing that more States could require involvement in the exemption process through a State variation in the case of RPAS (Part 1;1.1.4 Note 2) might be redundant given Article 8 of the Chicago Convention stated that ‘No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization’. The panel

agreed to maintain this text given the specific requirements for an exemption and to ensure visibility to operators and States of this provision for the transport of dangerous goods.

6.1.4 GUIDANCE MATERIAL TO SUPPORT CARRIAGE OF DANGEROUS GOODS TRANSPORTED BY UNMANNED AIRCRAFT (UA)

6.1.4.1 Most States were already enabling unmanned aircraft operations in the specific category (i.e. what was considered by Annex 6, Part IV as medium risk/regulated low risk) for the transport of dangerous goods, which was beyond the scope of Annex 6, Part IV, Annex 18 and the Technical Instructions. However, the panel saw a growing need for harmonization of requirements for the transport of dangerous goods for such operations. Supporting guidance had been developed through Advisory Circular (AC) 102-37 (Unmanned Aircraft Systems (UAS) Carrying Dangerous Goods). The panel agreed to review challenges faced by States with respect to the transport of dangerous goods on such aircraft over the next biennium and to address any gaps in this guidance material.

6.1.5 OUTSTANDING WORK

6.1.5.1 A comprehensive review of the Supplement to the Technical Instructions, *Guidance for Safe Operations Involving Aeroplane Cargo Compartments* (Doc 10102), and *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) was still required. This would be conducted over the next biennium.

6.1.6 RECOMMENDATION

6.1.7 In light of the foregoing discussions, the meeting developed the following recommendations:

Recommendation 6/1 — Amendment to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) to support remotely piloted aircraft system operations

That the amendments to support remotely piloted aircraft system operations presented in Appendix A to the report on this agenda item be incorporated in the 2027-2028 Edition Technical Instructions.

Recommendation 6/2 — Amendment to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) to support remotely piloted aircraft system operations

That the amendments to support remotely piloted aircraft system operations presented in Appendix B to the report on this agenda item be incorporated in the 2027-2028 Edition Technical Instructions.

Recommendation 6/3 — Guidance material to support dangerous goods transport on unmanned aircraft operations in the specific category

That the panel review and modify Advisory Circular (AC) 102-37 (Unmanned Aircraft Systems (UAS) Carrying Dangerous Goods), as necessary, to ensure it addresses challenges faced by States that enable unmanned aircraft operations in the specific category for the transport of dangerous goods.

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APPENDIX A TO THE REPORT ON AGENDA ITEM 6

PROPOSED AMENDMENT TO THE TECHNICAL INSTRUCTIONS TO SUPPORT RPAS OPERATIONS

Editorial Note.— The term ‘pilot-in-command’ is used more than fifty times in the Technical Instructions. An amendment to all references to include “or remote-pilot-in-command” will be made, except those related to the carriage of passenger electric mobility aids, which would not apply to RPAS operations.

Part 1

GENERAL

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Chapter 1

SCOPE AND APPLICABILITY

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1.1.4 For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

Note 1.— For the purpose of approvals, “States concerned” are the States of Origin and the Operator, unless otherwise specified in these Instructions.

Note 2.— For the purpose of exemptions, “States concerned” are the States of Origin, Operator, Transit, Overflight and Destination. For Remotely Piloted Aircraft System (RPAS) operations, exemptions from other States such as the State of the Remote Station or the State of the Remote Pilot are also required where such States have informed ICAO of this through a State Variation.

Note 3.— Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the Supplement to the Technical Instructions (Part S-1;1.2 and 1.3).

Note 4.— Refer to 1;2.1 for dangerous goods forbidden for transport by air under any circumstance.

Note 5.— Due to the differences in the type of operations carried out by helicopters compared with aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in 7;7.

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Chapter 3

GENERAL INFORMATION

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External carriage. Any load suspended from a helicopter or a remotely piloted aircraft (RPA) or in equipment attached to a helicopter or an RPA.

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Remote crew member. A person assigned by an operator with duties connected to the operation of a remotely piloted aircraft system during a flight duty period.

Remote flight crew member. A licensed flight crew member charged with duties essential to the operation of a remotely piloted aircraft system during a flight duty period.

Remote pilot. A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

Remote pilot-in-command. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

Remote pilot station (RPS). The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

RPAS Operating Certificate (ROC). A certificate authorizing an RPAS operator to conduct specified RPAS operations (AOC).

Remotely Piloted Aircraft (RPA). An unmanned aircraft that is piloted from a remote pilot station. They are one type of unmanned aircraft.

Remotely piloted aircraft system (RPAS). A remotely piloted aircraft, its associated remote pilot station(s), the required C2 Link(s) and any other components as specified in the type design.

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Part 7

OPERATOR'S RESPONSIBILITIES

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Chapter 1

ACCEPTANCE PROCEDURES

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1.7 CONDUCTING SAFETY RISK ASSESSMENTS

Operators must include the transport of dangerous goods, including lithium batteries and cells as cargo, in the scope of their:

- a) safety management system (SMS) in accordance with Annex 19; and
- b) specific safety risk assessment on the transport of items in the cargo compartment in accordance with Annex 6 – *Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes* and Part IV – International Operations – Remotely Piloted Aircraft Systems.

Note 1.— Guidance on implementation of an SMS is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 2.— Guidance on the conduct of a specific safety risk assessment on the transport of items in the cargo compartment is contained in the Cargo Compartment Operational Safety Manual (Doc 10102).

Note 3.— Specific guidance on safety risk assessments related to consignments containing COVID-19 pharmaceuticals is provided at www.icao.int/safety/OPS/OPS-Normal/Pages/Safety-transport-vaccines.aspx.

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Chapter 2

STORAGE AND LOADING

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2.1 LOADING RESTRICTIONS ON THE FLIGHT DECK AND FOR PASSENGER AIRCRAFT

2.1.1 Dangerous goods must not be carried in an aircraft cabin occupied by passengers or on the flight deck of an aircraft, except as permitted by 1;2.2.1 and 8;1 and for radioactive material, excepted packages under 2;7.2.4.1.1. Dangerous goods may be carried in a main deck cargo compartment of a passenger aircraft provided that compartment meets all the certification requirements for a Class B or a Class C aircraft cargo compartment. Dangerous goods bearing the "Cargo aircraft only" label must not be carried on a passenger aircraft.

2.1.2 Under the conditions specified in S-7;2.2 of the Supplement, the State of Origin and the State of the Operator may approve the transport of dangerous goods in main deck cargo compartments of passenger aircraft that do not meet the requirements in 2.1.1.

Note.— Cargo compartment classification is described in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

2.1.3 For additional requirements concerning the loading of dangerous goods for carriage by helicopters, see Part 7;7.

2.1.4 For additional requirements concerning the loading of dangerous goods for carriage by RPA, see Part 7;8.

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2.4 LOADING AND SECURING OF DANGEROUS GOODS

2.4.1 LOADING OF CARGO AIRCRAFT

2.4.1.1 Packages or overpacks of dangerous goods bearing the "Cargo aircraft only" label must be loaded for carriage by a cargo aircraft in accordance with one of the following provisions:

- a) in a Class C aircraft cargo compartment; or
- b) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority (a ULD that is determined by the appropriate national authority to meet the Class C aircraft cargo compartment standards must include "Class C compartment" on the ULD tag); or
- c) in such a manner that in the event of an emergency involving such packages or overpacks, a crew member or other authorized person can access those packages or overpacks, and can handle and, where size and mass permit, separate such packages or overpacks from other cargo; or
- d) external carriage by a helicopter or a remotely piloted helicopter; or
- e) with the approval of the State of the Operator, for helicopter operations, in the cabin (see Part S-7;2.4 of the Supplement).

Note.— Cargo compartment classification is described in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

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2.9.6 Separation

2.9.6.1 Separation from persons

Categories II – Yellow and III – Yellow packages, overpacks or freight containers must be separated from persons. The minimum separation distances to be applied are shown in Tables 7-3 and 7-4 and these distances are from the surface of the packages, overpacks or freight containers to the nearest inside surface of the passenger cabin or flight deck partitions

or floors, irrespective of the duration of the carriage of the radioactive material. Table 7-4 applies only when radioactive material is being carried by a cargo aircraft, and in those circumstances the minimum distances must be applied as above and also to any other areas occupied by persons.

Note.— The provisions of Tables 7-3 and 7-4 do not apply to the carriage of radioactive materials in an RPA if there are no persons onboard.

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Chapter 4

PROVISION OF INFORMATION

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4.1 INFORMATION TO THE PILOT-IN-COMMAND OR REMOTE PILOT IN COMMAND

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4.1.1.1 Except as otherwise provided, the information required by 4.1.1 must include the following:

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f) the number of packages and their exact loading location. For radioactive material see g) h) below;

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j) the aerodrome at which the package(s) is to be unloaded;

...

Chapter 8

RPAS OPERATIONS

Note 1.— The requirements in this chapter are in addition to the other provisions of these Instructions that apply to all operators (such as Part 1:4 and Part 7).

Note 2. — For the purpose of this chapter, in addition to the State of the Operator, a State concerned may be the State where the operations are being conducted, the State of a Remote Pilot, or the State of the Remote Station (when different from the State of the Operator).

8.1 An RPA may only transport dangerous goods either:

- a) in a cargo compartment that meets all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment; or
- b) as external carriage in the case of a remotely piloted helicopter.

Note.— See 7:2.4.1 for additional restrictions for packages or overpacks of dangerous goods bearing the “Cargo aircraft only” label.

8.2 Where the cargo compartment of the RPA does not meet all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment, the State of the Operator and the State of Origin may grant an approval for the transport of those dangerous goods in accordance with part S-7:2.3 of the Supplement. The associated hazards must be addressed by the operator through a specific safety risk assessment.

8.3 Due to the nature or type of operations carried out by an RPA, there may be circumstances when the full provisions of the Technical Instructions are not appropriate or necessary. These circumstances include instances such as when no persons are carried on board an RPA, the RPA operations are conducted to and from unmanned sites and operations are conducted in remote locations or in mountainous areas. In such circumstances and when deemed

appropriate, the State of the Operator may grant an approval to permit the carriage of dangerous goods without all of the normal requirements of the Technical Instructions being fulfilled. When States other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of Origin and destination, as appropriate, or from any other states concerned.

Note 1.— Doc 9859 contains general guidance on implementation of Annex 19, including the conduct of safety risk assessments.

Note 2.— Doc 10102 provides guidance on specific safety risk assessments on the transport of items in the cargo compartment, including dangerous goods.

8.4 When loading dangerous goods for open external carriage by a remotely piloted helicopter, consideration should also be given to the type of packaging used and to the protection of those packagings, where necessary, from the effects of airflow and weather (such as by damage from rain or extreme temperatures), in addition to the general loading provisions of 7.2. If such loads include dangerous goods suspended from a remotely piloted helicopter, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of the load.

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APPENDIX B TO THE REPORT ON AGENDA ITEM 6

PROPOSED AMENDMENT TO THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS TO SUPPORT RPAS OPERATIONS

Part S-7

STATE'S RESPONSIBILITIES WITH RESPECT TO OPERATORS

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Chapter 2

STORAGE AND LOADING

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2.2 LOADING ON PASSENGER AIRCRAFT

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2.3 LOADING ON REMOTELY PILOTED AIRCRAFT (RPA)

2.3.1 Part 7;8.1 of the Technical Instructions provides that an RPA may only transport dangerous goods either:

- a) in a cargo compartment that meets all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment; or
- b) as external carriage.

For RPA operations, the State of the Operator may approve the carriage of the dangerous goods listed in 2.2.2 and 2.2.3 in a cargo compartment that does not meet all the applicable certification requirements, in accordance with 2.2.5, 2.2.6, 2.2.7 and 2.2.8. When such an approval is to be granted, States should consider the factors that may mean internal carriage is required or preferable, such as:

- the size/mass of packages making it impractical to carry them as an external load;
- the types and quantity of dangerous goods involved;
- the types of packaging used;
- the duration of the flight(s);
- the types of operation; and
- the ability to land quickly in the event of an emergency.

2.3.2 When States other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of Origin and Destination, as appropriate.

Renumber subsequent paragraphs accordingly

Agenda Item 7: Aviation security/dangerous goods coordination

7.1 There were no updates from the Aviation Security Panel (AVSECP) during DGP/30. There was close coordination between the DGP and the Aviation Security Panel (AVSECP) during the development of the amendment to Annex 18 related to the supply chain and dangerous goods security developed under Agenda Item 5 (see paragraph 4.7 of the DGP-WG/24 Report). Further coordination would be needed when developing guidance material to support implementation of Annex 18 SARPs related to the supply chain.

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Agenda Item 8: Coordination with other Air Navigation Commission panels**8.1 PROPOSED AMENDMENTS TO ANNEX 6 DEVELOPED
BY THE DGP-FLTOPSP INTER-PANEL WORKING
GROUP**

8.1.1 The Dangerous Goods Working Group on Annex 18 (DGP-WG/Annex 18) identified inconsistencies, gaps and overlaps between dangerous goods provisions in Annexes 6, 18 and the Technical Instructions. A working group made up of experts from DGP and FLTOPSP developed a proposed amendment to address them. The meeting was invited to review and comment prior to it being considered by the twelfth meeting of the FLTOPSP (FLTOPSP/12, Montreal, 17 to 21 November 2025). The amendment is presented in the appendix to the report on this agenda item. The amendment, together with the proposed amendment to operators' responsibilities in Annex 18 developed under Agenda Item 5:

- a) introduced an explicit Standard prohibiting an operator from transporting dangerous goods unless it held a specific approval by the State of the Operator, with some exceptions, and clarified what was expected to issue one (current Annex 6 only implicitly required this through a dangerous goods field on the operations specification template);
- b) simplified the dangerous goods provisions and removed duplicated SARPs by replacing detailed dangerous goods responsibilities with references to the applicable provisions in the proposed amendment to Annex 18;
- c) eliminated a requirement for an operations manual from Annex 18 given that this was governed by Annex 6;
- d) moved SARPs that were more relevant to Annex 6 from Annex 18, including responsibilities of the flight crew;
- e) strengthened dangerous goods training requirements for flight crew members and other operations personnel; and
- f) replaced dangerous goods guidance material provided in Attachment G to Annex 6, which was considered unnecessary given it was specific to Annex 18 and would be covered by its supporting guidance material, with guidance on issuing the specific approval, which was specific to Annex 6.

8.1.2 The following comments were provided:

- a) Excepted quantities and de minimis quantities were listed as dangerous goods that were not subject to the specific approval. The logic of referring specifically to excepted quantities was questioned, given that there were other exceptions in the Technical Instructions. A suggestion to broaden the provision by referring simply to dangerous goods that were not subject to the Technical Instructions was made. Another suggestion was to only make de minimis quantities not subject to the specific approval, given that procedures and training were required for excepted but not for de minimis quantities.

- b) A suggestion was made to add a note emphasizing that information needed to respond to an emergency must be on the aircraft was made out of concern this requirement might be lost with the movement of provisions from Annex 18 to Annex 6. It was noted that dangerous goods manuals were not always available to flight crew, so it was important to emphasize this.
- c) A requirement for the pilot-in-command to inform the appropriate air traffic services unit of any dangerous goods on board the aircraft in the event of an in-flight emergency was moved from Chapter 9 of Annex 18 to Annex 6. A suggestion was made to clarify that the information required was for dangerous goods transported as cargo.
- d) The applicability of mail with respect to the specific approval was questioned. The scope of the specific approval had been a topic of discussion at previous meetings of the panel, with a common assumption being that it applied only to dangerous goods as cargo. However, some States referenced dangerous goods in mail within the specific approval to either specifically allow or to restrict it. Specifying dangerous goods *as cargo* with respect to the specific approval was therefore not recommended, at this would narrow the scope beyond what was happening in some States.

8.1.3 The panel expressed its appreciation to the DGP/FLTOPSP inter-panel working group for the work done. The comments raised would be shared with the working group.

8.2 **PROPOSED AMENDMENT TO DELETE THE DEFINITIONS OF PASSENGER AIRCRAFT AND CARGO AIRCRAFT (DGP/30-WP/32)**

8.2.1 An amendment was proposed to address inconsistencies between States on who was permitted on board a cargo aircraft carrying dangerous goods not permitted on a passenger aircraft. It was the latest of several different proposed amendments developed to address them, the first at the twenty-seventh meeting of the DGP (DGP/27, Montreal, 16 to 20 September 2019) (see paragraphs 8.1.1 and 8.1.2 of the report) and the latest at DGP-WG/25 (see paragraph 4.3.3 of the report).

8.2.2 The panel supported a proposal, in principle, recommending that FLTOPSP be asked to consider amending Annex 6 to allow the operator to authorize persons onboard an aircraft in accordance with requirements specified by the State of the Operator and relevant provisions of Annex 6. Agreed text would then be added to Part 7 of the Technical Instructions.

8.3 **UP-TO-DATE REFERENCE DOCUMENTS (DGP/30-WP/42)**

8.3.1 The meeting agreed to add a requirement to Part 7 for the operator to ensure that the information enabling flight crews and other employees to carry out dangerous goods functions for which they were responsible contained in the operations or other appropriate manual was up to date. While some considered this redundant since it was already a requirement in Annex 6, there were no objections to adding it. Having it in the Technical Instructions made the requirement more visible and could benefit safety by improving compliance. Some panel members reported that operations manuals were discovered

to have not been updated to the latest version during inspections. A requirement for all amendments or revisions to be issued to all personnel that were required to use them was not supported. It was considered unnecessary given that the operator was required to provide the employees with all applicable information. Panel members thought it could be perceived to be a new requirement and result in an unnecessary burden to the industry.

8.3.2 The panel did not support adding a similar requirement to Part 5 for shippers to ensure their operations manuals or other appropriate manuals were up to date. They considered it unnecessary given that shippers were required to comply with the latest edition of the Technical Instructions through Annex 18. The requirement for shippers was to provide information to employees to enable them to carry out dangerous goods functions for which they are responsible. Panel members believed the proposed requirement would impose a new and unnecessary burden.

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Agenda Item 9: Harmonization of *Guidance Material for the Dangerous Goods Panel (DGP) to Aid in the Preparation of the Technical Instructions and Supporting Documents* with revised dangerous goods provisions

9.1 MAINTENANCE OF GUIDANCE MATERIAL FOR THE DANGEROUS GOODS PANEL

9.1.1 DGP-WG/UN Harmonization was tasked with reviewing the *Guidance Material for the Dangerous Goods Panel (DGP) to Aid in the Preparation of the Technical Instructions and Supporting Documents* (Version 2) and to consider any necessary revisions resulting from amendments proposed by DGP/30.

Agenda Item 10: Other business**10.1 SECRETARIAT FEEDBACK ON ACCESSIBILITY OF THE TECHNICAL INSTRUCTIONS**

10.1.1 The meeting followed up on discussions at DGP-WG/25 on making the Technical Instructions available online. The issue had been discussed several times on the DGP and at the 39th and 40th Sessions of the Assembly. The 40th Session of the Assembly approved, based on an analysis by the Council following the 39th Session, a two-phased approach to public web access to ICAO publications in a freemium mode (see paragraph 52.2 of the Report of the Administrative Commission to the Fortieth Session of the Assembly). The first phase, which was already implemented, provided read-only access of documents containing Standards and Recommended Practices (SARPs). The second phase would provide the same for the Technical Instructions, subject to the continued ability of the Organization to generate revenue to support its triennial budget commitment. The Organization had not yet found a way to offset the loss in revenue that would ensue if the publication was available free of charge, so the second phase had yet been implemented. The Organization continued to explore ways to offset the revenue with the intention of eventually implementing phase 2

10.1.2 A legal officer from the Legal Bureau and the Head of E-commerce and Publication Sales from the Capacity Development and Implementation Bureau were on hand to respond to questions regarding the copyright status of the Technical Instructions, the process for incorporating them into national legislation, and the plans for implementing phase two of the two-phased approach to web access. It was the responsibility of each Member State to incorporate the Standards into their national legislation. Once incorporated, they became binding for the industry within that State. She acknowledged the specific nature of the Technical Instructions but emphasized that the process remained the same: Member States must ensure legal incorporation for industry compliance. The Technical Instructions were copyright-protected under *ICAO Publications Regulations* (Doc 7231). However, States could request permission from ICAO to translate them. ICAO was flexible in granting permission, and a single request from a specific State would cover multiple languages.

10.1.3 The Head of E-commerce and Publication Sales noted that the Technical Instructions were freely available to Member States in accordance with Doc 7231 and ICAO Electronic Bulletin EB 2023/4. Phase two of the two-phased approach to web access for the Technical Instructions had yet to be implemented, because this would impact ICAO's revenue, which funded essential activities. Phase two had been postponed, not cancelled, and ICAO would continue to monitor financial impacts and explore alternative revenue sources.

10.1.4 The panel expressed its appreciation for the information provided. It reiterated its support for making the Technical Instructions publicly assessable, while acknowledging copyright and financial realities. It emphasized the importance of ensuring all States were aware of their accessibility rights and ability to engage with ICAO to find solutions to implementation challenges.

**10.2 REPORT OF THE DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETINGS (DGP-WG/24 AND
DGP-WG/25) (DGP/30-WP/2 AND DGP/30-WP/3)**

10.2.1 The meeting reviewed the narrative parts of the reports of the 2024 and 2025 DGP Working Group Meetings, DGP-WG/24 (Montréal, 6 to 10 October 2025) and DGP-WG/25 (Delhi, India, 21 to 25 April 2025). A comment was raised with respect to a need expressed at DGP-WG/24 for a review of all provisions for loading of cargo aircraft with dangerous goods forbidden on a passenger aircraft to ensure they were clear and that the underlying assumption on which they were based remained valid. The report indicated that a job card would be developed by those interested in coordination with the secretary, but this had yet to be done. Another comment was made regarding an error in paragraph 4.2.2.4 a) of the DGP-WG/25 report, which referred to “stowage” as the arrangement and handling of goods during transit. The panel agreed that stowage was specific to goods on board the aircraft.

10.2.2 The amendments proposed by the working groups were reviewed under:

- a) DGP/30-WPs/11, 12, 13, 14, 15 16, 19 and 20 (see Report on Agenda Item 1); and
- b) DGP/29-WPs/17 and 21(see Report on Agenda Item 2); and
- c) DGP/29-WP/18 (see Report on Agenda Item 3).

**10.3 REPORT OF THE ICAO DGP WORKING GROUP ON
TRAINING (DGP/30-IP/7)**

10.3.1 The meeting was updated on the DGP Working Group on Training’s (DGP-WG/Training) activities since DGP-WG/25. An ANC job card was developed outlining the need for more practical guidance to support implementation of dangerous goods training provisions. The group had begun addressing the items on the job card despite it having not already been approved. Deadlines proposed for delivery were the end of the 2026–2027 biennium. The meeting was invited to review and comment on proposed revisions to *Guidance on a Competency-based Approach to Dangerous Goods Training and Assessment* (Doc 10147) and related materials.

10.3.2 The revised document reflected a major effort to make dangerous goods training guidance more practical, flexible, and aligned with real-world needs. It emphasized competency-based training tailored to actual functions, not just roles or titles. Panel members were invited to provide feedback and ideas for improvement to the rapporteur via correspondence.

10.3.3 The meeting expressed its appreciation for the work done. Panel members were invited to provide feedback to the rapporteur via correspondence.

10.4 WORK PROGRAMME UPDATE

10.4.1 The panel reviewed the status of its work programme as outlined below.

10.4.2 **Mitigating safety risks posed by the carriage of lithium batteries (see report on Agenda Item 4)**

10.4.3 The following action items remained open on ANC Job Card DGP.003: Mitigating safety risks posed by the carriage of lithium batteries.

10.4.3.1 Completion of a performance-based packaging standard by the SAE G27 committee (Item 9412), and the development of an effective hazard classification system by the UN sub-committee (Item 9419) were dependent on the work of the two groups. They had made progress and were closer to completing their tasks, but more time was needed for both. SAE published a standard for lithium ion cylindrical cells developed by the G27 committee and was awaiting feedback on it. It was working on expanding the scope of the standard based on this feedback. The UN hazard communication system had reached a level of maturity with hope of completing it over the next biennium.

10.4.3.2 Simplifying the provisions (Item 9416) was an on-going process that would be impacted from the outcome of the SAE and UN Sub-Committee's work. Nevertheless, the provisions had been significantly simplified since the ANC job card was initiated.

10.4.4 Assessing the need for additional mitigation measures based on evolving technology and new data was a recurring task, as the panel was continuously assessing the need for additional mitigation measures based on evolving technology and new data. Some of the amendments developed by DGP/30 were the result of this process.

10.4.5 **Clarifying State oversight responsibilities in Annex 18 (see report on Agenda Item 5)**

10.4.5.1 For ANC Job Card DGP.005: Clarifying State oversight responsibilities in Annex 18, one item remained open: the development of guidance material to assist States. The panel was developing material for inclusion in a new manual on the implementation of Annex 18. Much material had already been developed, but more work was needed, some of it through coordination with other panels. The delivery date needed to be rescheduled for 2027, following the thirty-first meeting of the DGP.

10.4.6 **Dangerous goods provisions to support RPAS operations (see report on Agenda Item 6)**

10.4.7 The panel completed all action items on ANC Job Card DGP.007: Dangerous goods provisions to support RPAS operations. The panel agreed to amendments to Annex 18, the Technical Instructions, and its Supplement that supported RPAS operations to transport dangerous goods under Agenda Item 6 to this report. However, the panel identified a need for guidance material to help States deal with a growing need for harmonization of requirements for the transport of dangerous goods using unmanned aircraft systems. Basic guidance was developed by DGP/30, but the panel considers it necessary to expand on it. It therefore recommended that a new action item be added to the job card.

10.4.8 Proposed new job cards

10.4.8.1 Two new job cards were proposed, one to review provisions for loading cargo aircraft with dangerous goods forbidden on a passenger aircraft to ensure they were clear and that the underlying assumption on which they were based remained valid (see paragraph 10.2.1 of this report) and the other for the development of practical guidance to support implementation of dangerous goods training provisions (see paragraph 10.3 of this report).

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APPENDIX A

CONSOLIDATED AMENDMENTS TO THE TECHNICAL INSTRUCTIONS RECOMMENDED BY DGP/30

Part 1

GENERAL

...

Chapter 1

SCOPE AND APPLICABILITY

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

1.1.4 For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

Note 1.— For the purpose of approvals, “States concerned” are the States of Origin and the Operator, unless otherwise specified in these Instructions.

Note 2.— For the purpose of exemptions, “States concerned” are the States of Origin, Operator, Transit, Overflight and Destination. For Remotely Piloted Aircraft System (RPAS) operations, exemptions from other States such as the State of the Remote Station or the State of the Remote Pilot are also required where such States have informed ICAO of this through a State Variation.

Note 3.— Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the Supplement to the Technical Instructions (Part S-1;1.2 and 1.3).

Note 4.— Refer to 1;2.1 for dangerous goods forbidden for transport by air under any circumstance.

Note 5.— Due to the differences in the type of operations carried out by helicopters compared with aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in 7;7.

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1.1.5 General exceptions

Amendments to facilitate transport or State oversight

Paragraph 4.3.4 of DGP-WG/24 report:

1.1.5.1 Except for 7;4.2, these Instructions do not apply to dangerous goods carried by an aircraft where the dangerous goods are:

- a) to provide, during flight, medical aid to a patient or to preserve blood or blood components for the purpose of transfusion or tissues or organs intended for use in transplantation when those dangerous goods:

- 1) have been placed on board with the approval of the operator; or
 - 2) form part of the permanent equipment of the aircraft when it has been adapted for specialized use;
- providing that:
- 1) gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;
 - 2) equipment containing wet cell batteries is kept and, when necessary, secured in an upright position to prevent spillage of the electrolyte;
 - 3) lithium metal or lithium ion cells or batteries meet the provisions of 2;9.3 and spare lithium batteries are individually protected so as to prevent short circuits when not in use;

Note.— For dangerous goods that passengers are permitted to carry as medical aid, see 8;1.1.2.

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Amendments to energy storage device provisions

Paragraph 4.4.3 of DGP-WG/24 report and paragraph 1.2.1.1 of DGP/30 report:

- i) data loggers and cargo-tracking devices with installed lithium batteries or sodium ion batteries, attached to or placed in packages, overpacks or unit load devices, provided the following conditions are met:
 - 1) the data loggers or cargo-tracking devices must be in use or intended for use during transport;
 - 2) each cell or battery must meet the provisions of either Part 2;9.3 a), e), f) (if applicable) and g) or Part 2;9.4 a), e) and f);
 - 3) for a lithium ion or sodium ion cell, the Watt-hour rating not exceeding 20 Wh;
 - 4) for a lithium ion or sodium ion battery, the Watt-hour rating not exceeding 20 Wh;
 - 5) for a lithium metal cell, the lithium content not exceeding 1 g;
 - 6) for a lithium metal battery, the aggregate lithium content not exceeding 1 g;
 - 7) the number of data loggers or cargo-tracking devices in or on any package or overpack must be no more than the number required to track or to collect data for the specific consignment;

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.5, 5.5.4.1 c) (see ST/SG/AC.10/52/Add.1)

- 8) the data loggers or cargo-tracking devices must be capable of withstanding the shocks and loadings normally encountered during transport and must be safe for use in the dangerous environments to which they may be exposed;
- 9) the devices must not be capable of generating a dangerous evolution of heat; and
- 10) the devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.

Note.— This exception does not apply where the data loggers or cargo-tracking devices are offered for transport as a consignment in accordance with Packing Instruction 967 ~~or~~ 970 or 978.

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Chapter 2

LIMITATION OF DANGEROUS GOODS ON AIRCRAFT

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Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.3 of DGP/30 report:

2.2 EXCEPTIONS FOR DANGEROUS GOODS OF THE OPERATOR

2.2.1 The provisions of these Instructions do not apply to the following:

- a) articles and substances which would otherwise be classified as dangerous goods but which are required to be aboard the aircraft in accordance with the pertinent airworthiness requirements and operating regulations or that are authorized by the State of the Operator to meet special requirements;
- b) aerosols, alcoholic beverages, perfumes, colognes, liquefied gas lighters and portable electronic devices containing lithium metal or lithium ion cells or batteries provided ~~that the batteries~~ they meet the provisions of ~~Table 8-1, Item 1)~~ 2.2.2 carried aboard an aircraft by the operator for use or sale on the aircraft during the flight or series of flights, but excluding non-refillable gas lighters and those lighters liable to leak when exposed to reduced pressure;
- c) dry ice intended for use in food and beverage service aboard the aircraft;
- d) alcohol-based hand sanitizers and cleaning products carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights for the purposes of passenger and crew hygiene;
- e) electronic devices, such as electronic flight bags, personal entertainment devices, and credit card readers, containing lithium metal or lithium ion cells or batteries and spare lithium batteries for such devices ~~or power banks~~ carried aboard an aircraft by the operator for use on the aircraft during the flight or series of flights, provided ~~that the batteries~~ they meet the provisions of ~~Table 8-1, Item 1). Spare lithium batteries must be individually protected so as to prevent short circuits when not in use~~ 2.2.2. Conditions for the carriage and use of these electronic devices and for the carriage of spare batteries ~~and power banks~~ must be provided in the operations manual and/or other appropriate manuals as will enable flight crew, cabin crew and other employees to carry out the functions for which they are responsible.

2.2.2 The following conditions must be met for lithium cells or batteries and the devices they power referred to in 2.2.1 b) and e):

- a) spare lithium batteries and power banks must be individually protected so as to prevent short circuits when not in use;
- b) measures must be taken to prevent unintentional activation of the portable electronic devices; and
- c) the batteries must:
 - 1) be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3; and
 - 2) for lithium metal batteries, not exceed a lithium content of 2 g and for lithium ion batteries, not exceed a Watt-hour rating of 100 Wh.

...

Renumber subsequent paragraphs

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Amendments to manage aviation specific risks and address anomalies

Paragraph 2.2.2 of DGP/30 report:

2.3 TRANSPORT OF DANGEROUS GOODS BY POST

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2.3.3 The procedures of designated postal operators (DPOs) for controlling the introduction of dangerous goods in mail into air transport are subject to review and approval by the Civil Aviation Authority of the State where the mail is accepted.

2.3.4 The DPO must have received ~~specific approval~~ an authorization from the Civil Aviation Authority before the DPO can introduce the acceptance of lithium batteries as identified in 2.3.2 d) and e).

Note 1.— Designated postal operators may accept the dangerous goods identified in 2.3.2 a), b) and c) without receiving specific approval from the Civil Aviation Authority.

Note 2.— Guidelines for appropriate national authorities and civil aviation authorities are contained in the Supplement to these Instructions (S-1;3).

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Chapter 3

GENERAL INFORMATION

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.2, 1.2.1 (see ST/SG/AC.10/52/Add.1)

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Cylinder. A pressure receptacle of a water capacity not exceeding 150 litres with a test pressure volume product not exceeding 1.5 million bar litres.

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Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.7 of DGP-WG/25 report:

Explosive article. ~~An article containing one or more explosive substances.~~ For the definition, see 2;1.2.

Explosive substance. ~~A solid or liquid substance (or a mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Included are pyrotechnic substances even when they do not evolve gases. A substance which is not itself an explosive but which can form an explosive atmosphere of gas, vapour or dust is not included.~~ For the definition, see 2;1.2.

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

External carriage. Any load suspended from a helicopter or a remotely piloted aircraft (RPA) or in equipment attached to a helicopter or an RPA.

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.2, 1.2.1 (see ST/SG/AC.10/52/Add.1)

Filling ratio. The ratio of the mass of gas to the mass of water at 15°C that would fill completely ~~a pressure receptacle~~ the means of containment fitted ready for use.

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UN harmonization amendments

Paragraph 4.1.2.1.2.1 a) of DGP-WG/25 report:

GHS. The ~~tenth~~ eleventh revised edition of the *Globally Harmonized System of Classification and Labelling of Chemicals*, published by the United Nations as document ST/SG/AC.10/30/Rev.~~40~~11.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.2, 1.2.1 (see ST/SG/AC.10/52/Add.1)

Large packaging. A packaging consisting of an outer packaging which contains articles or inner packagings and which:

- a) is designed for mechanical handling; and
- b) exceeds 400 kg net mass or 450 litres capacity but has ~~a volume~~ an internal volume of not more than 3 m³;

Note.— Large packagings are only permitted as provided for in Part 4, Introductory Note 12 and S-4;13 of the Supplement.

Large salvage packaging. (Not permitted for air transport.) A special packaging which:

- a) is designed for mechanical handling; and
- b) exceeds 400 kg net mass or 450 litres capacity but has ~~a volume~~ an internal volume of not more than 3 m³;

into which damaged, defective, leaking or non-conforming dangerous goods packages, or dangerous goods that have spilled or leaked are placed for purposes of transport for recovery or disposal.

...

UN harmonization amendments

Paragraph 4.1.2.1.2.1 a) of DGP-WG/25 report:

Manual of Tests and Criteria. The eighth revised edition of the United Nations publication bearing this title (ST/SG/AC.10/11/Rev.8 and Amend.1).

...

Model Regulations. The twenty-~~third~~ fourth revised edition of the United Nations publication entitled *Recommendations on the Transport of Dangerous Goods: Model Regulations* (ST/SG/AC.10/1/Rev.~~23~~24).

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.2, 1.2.1 (see ST/SG/AC.10/52/Add.1)

Net explosive mass (NEM). The total mass of the explosive substances, without the packagings, casings, etc. (net explosive quantity (NEQ) ~~or~~ net explosive contents (NEC) ~~or net explosive weight (NEW)~~ are often used to convey the same meaning).

...

Pressure volume product (pV-product). The value resulting from multiplying the (usable) water capacity of a containment with its relevant maximum pressure during filling and usage (e.g. test pressure or charging pressure) as referenced for the relevant kind of containment. It is expressed in bar litres.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.7 of DGP-WG/25 report:

Pyrotechnic substance. ~~A mixture or compound designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic, chemical reactions.~~ For the definition, see 2:1.2.

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

Remote crew member. A person assigned by an operator with duties connected to the operation of a remotely piloted aircraft system during a flight duty period.

Remote flight crew member. A licensed flight crew member charged with duties essential to the operation of a remotely piloted aircraft system during a flight duty period.

Remote pilot. A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.

Remote pilot-in-command. The remote pilot designated by the operator as being in command and charged with the safe conduct of a flight.

Remote pilot station (RPS). The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.

RPAS operating certificate (ROC). A certificate authorizing an RPAS operator to conduct specified RPAS operations (AOC).

Remotely Piloted Aircraft (RPA). An unmanned aircraft that is piloted from a remote pilot station. They are one type of unmanned aircraft.

Remotely piloted aircraft system (RPAS). A remotely piloted aircraft, its associated remote pilot station(s), the required C2 Link(s) and any other components as specified in the type design.

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.2, 1.2.1 (see ST/SG/AC.10/52/Add.1)

Salvage pressure receptacle. (Not permitted for air transport.) A pressure receptacle ~~with a water capacity not exceeding 3 000 litres~~ into which are placed damaged, defective, leaking or non-conforming pressure receptacle(s) having a total test pressure volume product not exceeding 1.5 million bar litres for the purpose of transport, such as for recovery or disposal.

...

Tube. (Not permitted for air transport.) A pressure receptacle of seamless or composite construction having a water capacity exceeding 150 litres but not more than 3 000 litres with a test pressure volume product not exceeding 1.5 million bar litres.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.6 of DGP-WG/25 report and 2.2.2.2 of the DGP-WG/25 report:

Chapter 4

DANGEROUS GOODS TRAINING

...

4.1 ESTABLISHMENT OF DANGEROUS GOODS TRAINING PROGRAMMES

...

4.1.2 All operators must establish a dangerous goods training programme regardless of whether or not they ~~are approved~~ have been issued a specific approval to transport dangerous goods as cargo.

...

Chapter 6

GENERAL PROVISIONS CONCERNING RADIOACTIVE MATERIAL

...

6.1 SCOPE AND APPLICATION

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 1.5, 1.5.1.3 (see ST/SG/AC.10/50/Add.1)

6.1.3 These Instructions apply to the transport of radioactive material by air, including transport that is incidental to the use of the radioactive material. Transport comprises all operations and conditions associated with and involved in the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, shipment after storage, unloading and receipt at the final destination of the radioactive material and packages. A graded approach is applied to the performance standards in these Instructions that are characterized by three general severity levels:

- a) routine conditions of transport (incident free);
- b) normal conditions of transport (minor mishaps); and
- c) accident conditions of transport.

...

Chapter 6

GENERAL PROVISIONS CONCERNING RADIOACTIVE MATERIAL

...

UN harmonization amendments

Paragraph 1.2.1.9 of DGP/30 report:

6.1.5 Specific provisions for the transport of excepted packages

6.1.5.1 Excepted packages which may contain radioactive material as specified in 2;7.2.4.1.1 are subject only to the following provisions of Parts 5 to 7:

- a) the applicable provisions specified in 5;1.1 (as applicable), 5;1.2.2.2, 5;1.2.2.3, 5;1.2.4, 5;1.4, 5;1.6.3, 5;2.2, 5;2.4.10, 5;3.2.12 e), 5;3.3, 5;4.1.5.7.1 [fg](#)) 1), 5;4.1.5.7.1 [fg](#)) 2), 5;4.4, 7;1.6, 7;2.5, 7;2.9.3.1, 7;3.2.1, 7;3.2.4, 7;4.4 and 7;4.5; and
- b) the requirements for excepted packages specified in 6;7.3;

except when the radioactive material possesses other hazardous properties and has to be classified in a class other than Class 7 in accordance with Special Provision A130 or A194, where the provisions listed in a) and b) above apply only as relevant and in addition to those relating to the main class or division.

...

Part 2

CLASSIFICATION OF DANGEROUS GOODS

...

3. UN NUMBERS AND PROPER SHIPPING NAMES

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.2.7 (see ST/SG/AC.10/52/Add.1)

3.7 A mixture or solution containing one or more substances identified by name in Table 3.1 or classified under an n.o.s. entry ~~and one or more substances not subject to these instructions~~ is not subject to these Instructions if the hazard characteristics of the mixture or solution are such that they do not meet the criteria (including human experience criteria) for any class or division.

...

4. PRECEDENCE OF HAZARD CHARACTERISTICS

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.3.1 (see ST/SG/AC.10/52/Add.1)

- g) substances of Division 6.1 with a Packing Group I inhalation toxicity. Except for substances or ~~preparations~~ mixtures meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC₅₀) in the range of Packing Group I, but toxicity through oral ingestion ~~or dermal contact only in the range~~ and dermal contact in the range of Packing Group III or less, which must be allocated to Class 8 (see note under 2.6.2.2.4.1 and 2.8.2.4);

...

5.4 Samples of energetic materials for testing purposes

UN harmonization amendments

Paragraph 4.1.2.1.3 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.0, 2.0.4.3 (see ST/SG/AC.10/52/Add.1)

5.4.1 Samples of organic substances carrying functional groups listed in tables A6.1 and/or A6.3 in Appendix 6 (Screening Procedures) of the UN Manual of Tests and Criteria may be transported under UN 3224 (self-reactive solid type C) or UN 3223 (self-reactive liquid type C), as applicable, of Division 4.1 provided that:

- a) the samples do not contain any:

- i) known explosives;
 - ii) substances showing explosive effects in testing;
 - iii) compounds designed with the view of producing a practical explosive or pyrotechnic effect; or
 - iv) components consisting of synthetic precursors of intentional explosives;
- b) for mixtures, complexes or salts of inorganic oxidizing substances of Division 5.1 with organic material(s), the concentration of the inorganic oxidizing substance is:
- i) less than 15 per cent, by mass, if assigned to Packing Group I (high hazard) or II (medium hazard); or
 - ii) less than 30 per cent, by mass, if assigned to Packing Group III (low hazard);
- c) available data do not allow a more precise classification;
- d) the sample is not packed together with other goods;
- e) the sample is packed in accordance with Packing Instruction 459; and
- f) the proper shipping name is supplemented with the word "sample".

5.4.2 Samples of organic substances carrying functional groups listed in tables A6.1 or A6.3 in appendix 6 (Screening Procedures) of the UN Manual of Tests and Criteria may be assigned to one of the appropriate entries for self-reactive substances type C (UN 3223 or UN 3224) of Division 4.1 and transported under the provisions of 2.4.2.3.2.6 when packed in quantities not exceeding 200 g for solids or 200 mL for liquids per outer packaging provided that:

- a) they fulfil the criteria of Part 2, Introductory chapter, paragraph 5.4.1 a) to c) and f); and
- b) their decomposition energy is:
 - i) less than 1 500 J/g for salts or complexes of organic compounds;
 - ii) less than 2 000 J/g for other organic substances;
 - iii) 1 500 J/g or more for salts or complexes of organic compounds, and in test C.1 the result is not "yes, rapidly" and in any one of test series F the result is not "not low"; or
 - iv) 2 000 J/g or more for other organic substances, and in test C.1 the result is not "yes, rapidly" and in any one of test series F the result is not "not low".

The assessment in b) iii) and iv) may be based on a single test C.1 and one single test from test series F. If the criteria in b) are fulfilled, it can be assumed that the sample is not more dangerous than self-reactive substances type B. Samples not passing the criteria in b) iii) or iv) are forbidden for transport unless dissolved or diluted with an inert compound to form a homogenous mixture in agreement with the criteria in b) i) or ii), as applicable.

5.4.3 A flow chart describing the classification of energetic samples is shown in Figure 2-1.

Insert new text as follows:

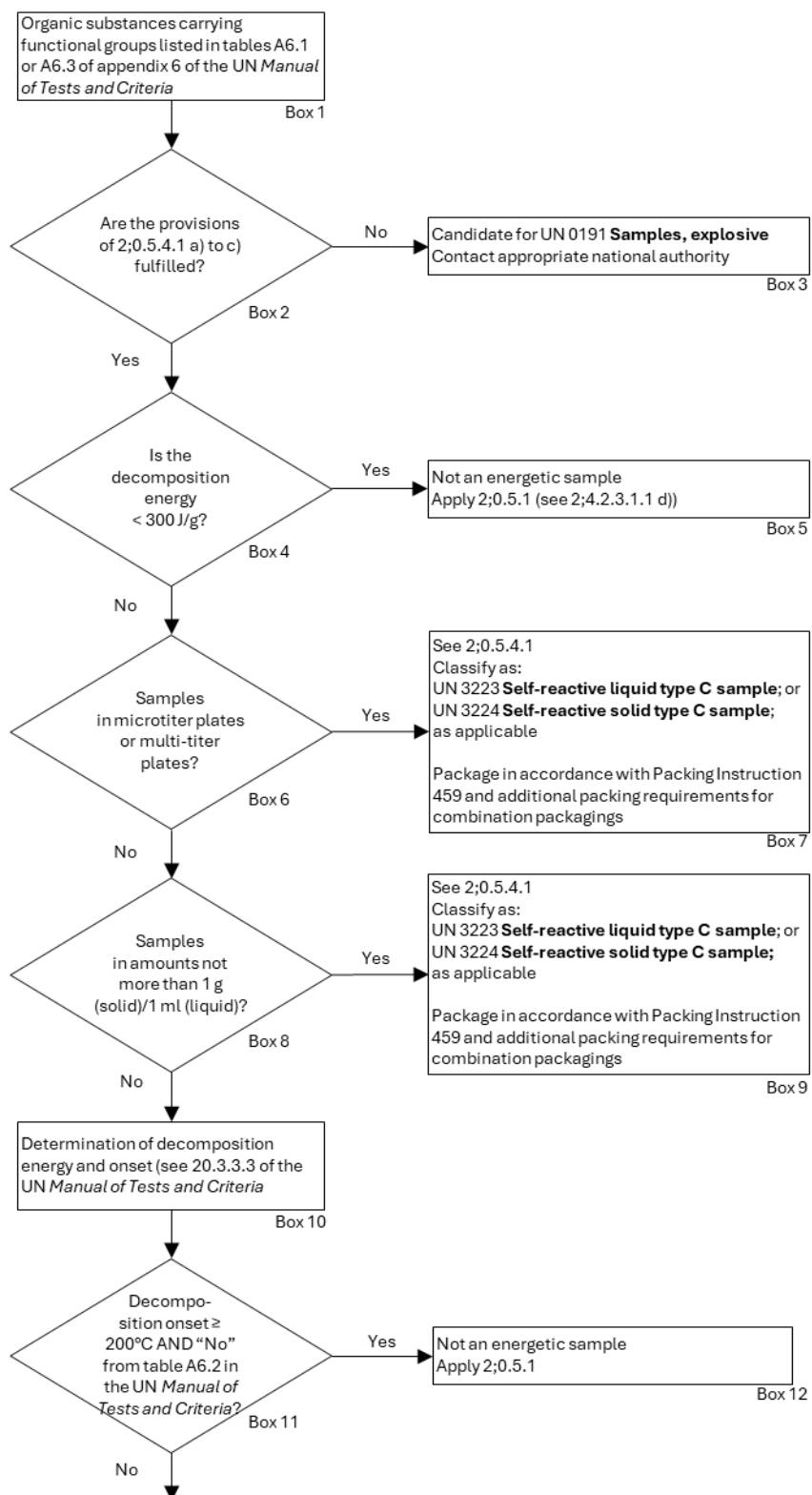


Figure 2-1. Classification of energetic samples

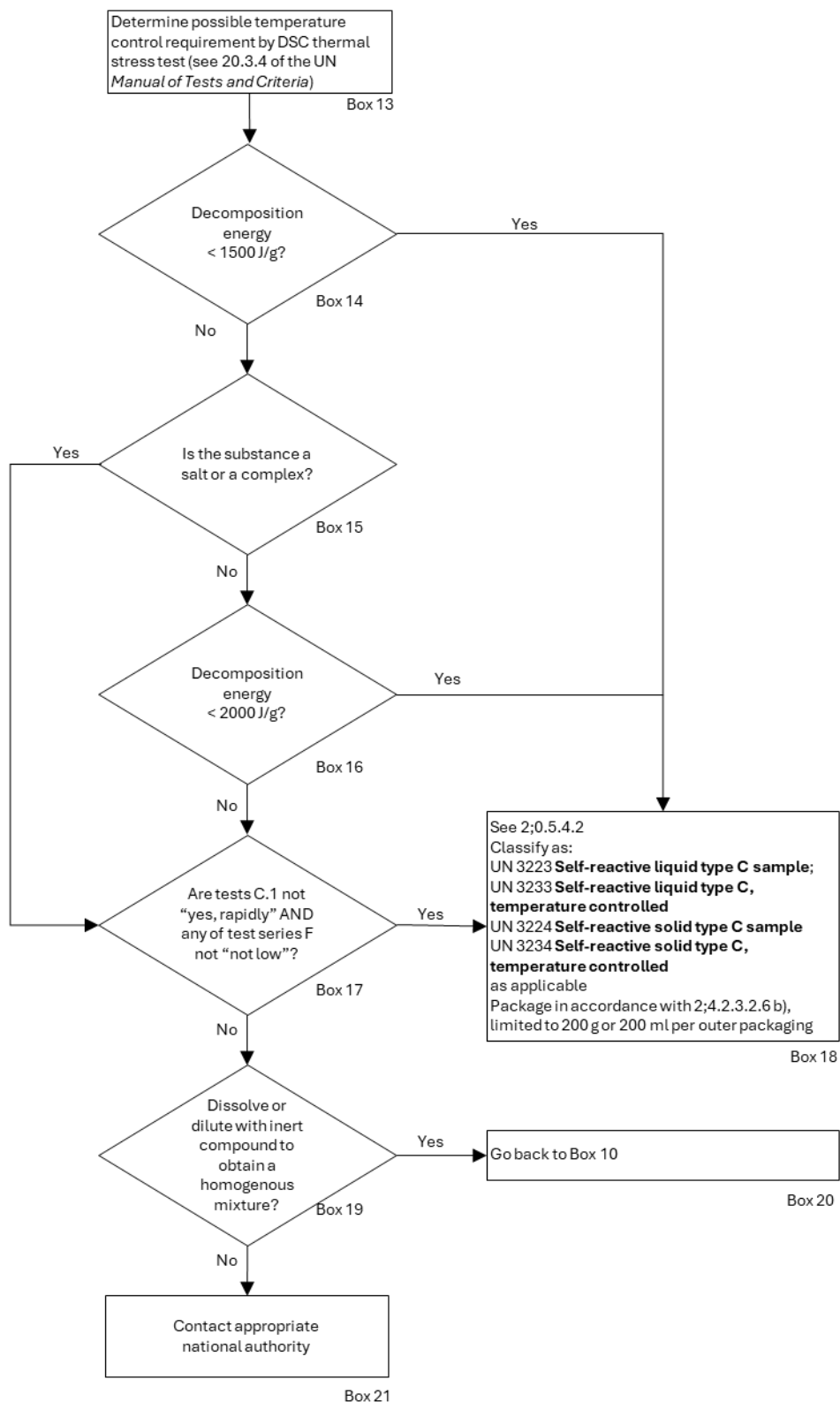


Figure 2-1. Classification of energetic samples (cont'd)

End of new text.

6. CLASSIFICATION OF ARTICLES AS ARTICLES CONTAINING DANGEROUS GOODS N.O.S.

...

UN harmonization amendments

Paragraphs 4.1.2.1 and 4.4.2 of DGP-WG/25 report and 4.1 of DGP/30 report:

UN Model Regulations, Chapter 2.0, 2.0.5.2 (see ST/SG/AC.10/52/Add.1)

6.2 Such articles may in addition contain cells or batteries. ~~Lithium cells and batteries~~ Lithium metal, lithium ion and sodium ion cells and batteries that are integral to the article must be of a type proven to meet the testing requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3. For articles containing pre-production prototype ~~lithium cells or batteries~~ lithium metal, lithium ion or sodium ion cells or batteries transported for testing, or for articles containing ~~lithium cells or batteries~~ lithium metal, lithium ion or sodium ion cells or batteries manufactured in annual production runs of not more than 100 cells or batteries, the requirements of Special Provision A88 apply.

...

Chapter 1

CLASS 1 – EXPLOSIVES

...

1.1 DEFINITIONS AND GENERAL PROVISIONS

Class 1 comprises:

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.1.1.1 (see ST/SG/AC.10/52/Add.1)

- b) explosive articles, except those that are too dangerous to transport or devices containing explosive substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport will not cause any effect external to the device either by projection, fire, smoke, heat or loud noise (see 1.5.2); and

...

1.2 DEFINITIONS

For the purposes of these Instructions, the following definitions apply:

- a) **Explosive substance** is a solid or liquid substance (or a mixture of substances) which is in itself capable, by chemical reaction, of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.
- b) **Pyrotechnic substance** is an explosive substance designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining, exothermic, chemical reactions.
- c) **Explosive article** is an article containing one or more explosive substances.
- d) **Phlegmatized** means that a substance (or “phlegmatizer”) has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: paper, wax, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin).

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.1.1.3 (see ST/SG/AC.10/52/Add.1)

- e) **Explosive or pyrotechnic effect** means, in the context of 1.1.1 c), is an effect produced by self-sustaining exothermic chemical reactions including shock, blast, fragmentation, projection, heat, light, sound, gas and smoke.

Note.— Explanations for a number of other terms used in connection with explosives can be found in Attachment 2 to these Instructions.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 2.2.4 of DGP/30 report:

1.5 CLASSIFICATION OF EXPLOSIVES

...

1.5.1.3 Except for substances that are listed by their proper shipping name in the Dangerous Goods List (Table 3-1), goods must not be offered for transport as Class 1 until they have been subjected to the classification procedure prescribed in this Chapter. In addition, the classification procedure must be undertaken before a new product is offered for transport. In this context, a new product is one which, in the opinion of the appropriate national authority, involves any of the following:

- a) a new explosive substance or a combination or a mixture of explosive substances which is considered to be significantly different from other combinations or mixtures already classified;
- b) a new design of article or an article containing a new explosive substance or a new combination or mixture of explosive substances;
- c) a new design of package for an explosive substance or article including a new type of inner packaging.

Note.— The importance of this can be overlooked unless it is realized that a relatively minor change in an inner or outer packaging can be critical and can convert a lesser hazard into a mass explosion hazard. Consequently, if the explosives are repacked for subsequent distribution, the shipper will need to verify that the proposed packaging is permitted by the original classification or re-apply the classification procedure prescribed in this chapter.

1.5.1.4 Prior to transport, the explosive classification must have been conducted, approved or accepted by an appropriate national authority.

1.5.1.45 The producer or other applicant for classification of the product must provide adequate information concerning the names and characteristics of all explosive substances in the product and must furnish the results of all relevant tests which have been done. It is assumed that all the explosive substances in a new article have been properly tested and then approved.

...

Chapter 2

CLASS 2 – GASES

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and 1.2.1.2.1 b) of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 63 (see ST/SG/AC.10/52/Add.1)

2.5 AEROSOLS

2.5.1 For aerosols, the division of Class 2 and the subsidiary hazards depend on the nature of the contents of the aerosol dispenser. The following provisions must apply:

- a) Division 2.1 applies if the contents include 85 per cent by mass or more flammable components and the chemical heat of combustion is 30 kJ/g or more;
- b) Division 2.2 applies if the content contains 1 per cent by mass or less flammable components and the heat of combustion is less than 20 kJ/g;
- c) otherwise the product must be classified as tested by the tests described in the UN Manual of Tests and Criteria, Part III, section 31. Extremely flammable and flammable aerosols must be classified in Division 2.1; non-flammable in Division 2.2;
- d) gases of Division 2.3 must not be used as a propellant in an aerosol dispenser;

- e) ~~where the contents other than the propellant of aerosol dispensers to be ejected are classified as Division 6.1, Packing Groups II or III or Class 8, Packing Groups II or III, the aerosol must have a subsidiary hazard of Division 6.1 or Class 8; the aerosol must have a subsidiary hazard of Division 6.1 or Class 8 where the contents, other than the propellant of aerosol dispensers, are classified as:~~

i) Division 6.1, Packing Groups II or III; or

ii) Class 8, Packing Groups II or III.

The aerosol is forbidden for transport where the contents are classified as Division 6.1, Packing Group I or Class 8, Packing Group I;

- f) ~~aerosols with contents meeting the criteria of Packing Group I for toxicity or corrosivity are forbidden from transport~~ the aerosol is forbidden for transport where the contents additionally meet the classification criteria of:

i) Class 1 – Explosives;

ii) liquid desensitized explosives of Class 3;

iii) self-reactive substances and solid desensitized explosives of Division 4.1;

iv) Division 4.2 – Substances liable to spontaneous combustion;

v) Division 4.3 – Substances which, in contact with water, emit flammable gases;

vi) Division 5.2 – Organic peroxides;

vii) Division 6.2 – Infectious substances; or

viii) Class 7 – Radioactive material.

2.5.2 Flammable components are flammable liquids, flammable solids or flammable gases and gas mixtures as defined in Notes 1 to 3 of subsections 31.1.3 of Part III of the UN *Manual of Tests and Criteria*. ~~This designation does not cover pyrophoric, self-heating or water-reactive substances.~~ The chemical heats of combustion must be determined either by one of the following reference to published scientific literature, through calculation or by using suitable calorimetric test methods: (e.g. ASTM D 240, ISO/FDIS 13943: 1999 (E/F) 86.1 to 86.3 or and NFPA 30B).

...

Chapter 4

CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

...

4.3 SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION (DIVISION 4.2)

...

4.3.2 Classification in Division 4.2

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.2.3.1 (see ST/SG/AC.10/52/Add.1)

4.3.2.3.1 A substance must be classified as a self-heating substance of Division 4.2 if, in tests performed in accordance with the test method given in the current edition of the UN Manual of Tests and Criteria, Part III, subsection 33.3.1.6:

- a) a positive result is obtained using a 25 mm sample cube at 140°C;
- b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 3 m³;
- c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 450 L;

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.2.3.2 (see ST/SG/AC.10/52/Add.1)

4.3.2.3.2 A substance must not be classified in Division 4.2 if:

- a) a negative result is obtained in a test using a 100 mm sample cube at 140°C;
- b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of not more than 3 cubic metres; or
- c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a negative result is obtained in a test using a 100 mm sample cube at 100°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of not more than 450 L.

...

4.3.3 Assignment of packing groups

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.4.3.3.3 (see ST/SG/AC.10/52/Add.1)

4.3.3.3 Packing Group III must be assigned to self-heating substances if:

- a) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 3 cubic metres;
- b) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C, a positive result is obtained in a test using a 100 mm sample cube at 120°C and the substance is to be transported in packages with ~~a volume~~ an internal volume of more than 450 L; or
- c) a positive result is obtained in a test using a 100 mm sample cube at 140°C and a negative result is obtained in a test using a 25 mm sample cube at 140°C and a positive result is obtained in a test using a 100 mm sample cube at 100°C.

...

Chapter 5

CLASS 5 – OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

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5.3.4 Desensitization of organic peroxides

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Table 2-7. List of currently assigned organic peroxides in packagings

Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.

UN harmonization amendments									
Paragraph 4.1.2.1 of DGP-WG/25 report:									
UN Model Regulations, Chapter 2.5.3.2.4 (see ST/SG/AC.10/52/Add.1)									
Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera- ture (°C)	Emergency tempera- ture (°C)	UN generic entry	Sub-sidiar y hazards and notes
([3r-(3r,5as,6s,8as,9r,10r,12s,12ar**)]-Decahydro-10-methoxy-3,6,9-trimethyl-3,12-epoxy-12h-pyrano[4,3-j]-1,2-benzodioxepin)	≤100							3106	
...									
tert-Amyl peroxy-pivalate	≤77		≥23			+10	+15	3113	
tert-Amyl peroxy-pivalate	≤ 72	≥ 28				+10	+15	3115	
tert-Amylperoxy-3,5,5-trimethylhexanoate	≤100							3105	
Arteether (including stereoisomers)	≤ 100							3106	
Artemether (including stereoisomers)	≤ 100							3106	
Artemisinin	≤ 100							3106	
Artesunate (including stereoisomers)	≤ 100							3106	
...									
2,2-Dihydroperoxypropane	≤27		≥73					FORBIDDEN	
Dihydroartemisinin (including stereoisomers)	≤ 100							3106	
...									
1-(2-Ethylhexanoylperoxy)-1,3-dimethylbutyl peroxy-pivalate	≤52	≥45	≥10			-20	-10	3115	
1,2,4,5,7,8-Hexoxonane, 3,6,9-trimethyl-3,6,9-tris (ethyl and propyl) derivatives	≤ 41	≥ 59						3105	35

Organic peroxide	Concentration (per cent)	Diluent type A (per cent)	Diluent type B (per cent) (Note 1)	Inert solid (per cent)	Water (per cent)	Control tempera- ture (°C)	Emergency tempera- ture (°C)	UN generic entry	Sub-sidiar y hazards and notes
tert-Hexyl Peroxyneodecanoate	≤71	≥29				0	+10	3115	

...

Notes:

...

34. Sum of diluent type A and water ≥55 per cent and in addition methyl ethyl ketone.

35. Available oxygen ≤ 7.3 %

...

Chapter 6

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

...

6.2 DIVISION 6.1 – TOXIC SUBSTANCES

...

6.2.2 Assignment of packing groups

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.2.2.4.1 (see ST/SG/AC.10/52/Add.1)

6.2.2.4.1 The grouping criteria for the oral and dermal routes as well as for inhalation of dusts and mists are as shown in Table 2-8.

Note.— Substances or mixtures meeting the criteria of Class 8 and with an inhalation toxicity of dusts and mists (LC_{50}) leading to Packing Group I are only accepted for an allocation to Division 6.1 if the toxicity through oral ingestion or dermal contact is at least in the range of Packing Group I or II. Otherwise, an allocation to Class 8 is made when appropriate (see Part 2, Introductory chapter, paragraph 4 g) and 8.2.4).

...

6.3.2 Classification of infectious substances

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.3.2.2 (see ST/SG/AC.10/52/Add.1)

6.3.2.2 Infectious substances are divided into ~~the following categories~~ Categories A and B.

6.3.2.2.1 ~~Category A~~:

6.3.2.2.1.1 An infectious substance which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease in otherwise healthy humans or animals is assigned to Category A. Indicative examples of substances that meet these criteria are given in Table 2-10.

Note.— An exposure occurs when an infectious substance is released outside of the protective packaging resulting in physical contact with humans or animals.

~~a)~~ 6.3.2.2.1.2 Infectious substances meeting these criteria which cause disease in humans or in both humans and animals must be assigned to UN 2814 – Infectious substance, affecting humans. Infectious substances which cause disease only in animals must be assigned to UN 2900 – Infectious substance, affecting animals.

~~b)~~ 6.3.2.2.1.3 Assignments to UN 2814 or UN 2900 must be based on the known medical history and symptoms of the source human or animal, endemic local conditions, or professional judgement concerning individual circumstances of the source human or animal.

~~————— Note 1. — The proper shipping name for UN 2814 is Infectious substance, affecting humans. The proper shipping name for UN 2900 is Infectious substance, affecting animals only.~~

~~————— Note 2. —~~ 6.3.2.2.1.4 Table 2-10 is not exhaustive. Infectious substances, including new or emerging pathogens, which do not appear in Table 2-10 but which meet the same criteria must be assigned to Category A. In addition, if there is doubt as to whether or not a substance meets the criteria it must be included in Category A.

~~————— Note 3. — In Table 2-10, the micro-organisms written in italics are bacteria or fungi. To address emerging health situations, more up-to-date information on the applicable categories can be obtained from human and animal health inter-governmental organizations and national authorities.~~

6.3.2.2.2 ~~Category B~~:

An infectious substance which does not meet the criteria for inclusion in Category A is assigned to Category B. Infectious substances in Category B must be assigned to UN 3373 – Biological substance, Category B.

~~————— Note. — The proper shipping name of UN 3373 is Biological substance, Category B.~~

...

**Table 2-10. Indicative examples of infectious substances included in Category A
in any form unless otherwise indicated**

~~(6.3.2.2.1 a))~~

UN Number and Proper Shipping Name	Micro-organism <u>(bacteria and fungi are written in italics)</u>
UN 2900 Infectious substances affecting animals <u>only</u>	

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.6.3.2.3.9 (see ST/SG/AC.10/52/Add.1)

6.3.2.3.9 Except for:

- a) medical waste (UN 3291 and UN 3549);
- b) medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900); and
- c) medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class, other than lithium cells or batteries or sodium ion cells or batteries contained in or packed with equipment (UN 3091, UN 3481 and UN 3552).

medical devices or equipment potentially contaminated with or containing infectious substances which are being transported for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to the provisions of these Instructions if packed in packagings designed and constructed in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. Packagings must be designed to meet the construction requirements listed in 6;3.

6.3.2.3.9.1 Medical devices or equipment must be drained of free liquid to the extent practicable. They must be packed in a strong rigid outer packaging fitted with sufficient cushioning material to prevent movement within the outer packaging. These packagings must meet the general packing requirements of 4;1.1.1, 4;1.1.3.1 and 4;1.1.4 (with the exception of 4;1.1.4.1). If the outer packaging is not liquid tight and the medical devices or equipment are contaminated with or contain liquid infectious substances, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally effective means of containment. These packagings must be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m.

Note.— A packaging's capability of retaining medical devices or equipment when dropped from a height of 1.2 m should be determined through testing a sample package as prepared for transport or through alternative means such as non-destructive testing and engineering analysis, testing with an article of similar mass and size, or other equivalent means.

6.3.2.3.9.2 Packages must be marked "Used medical device" or "Used medical equipment". When an overpack is used, it must be marked with the words "Used medical device" or "Used medical equipment" unless the markings are visible.

6.3.2.3.9.3 When used medical devices contain or are packed with lithium cells or batteries or sodium ion cells or batteries, the relevant entry of the Dangerous Goods List (Table 3-1) must be used and all applicable provisions of these Instructions must apply.

...

Chapter 8

CLASS 8 – CORROSIVE SUBSTANCES

...

8.2 GENERAL CLASSIFICATION PROVISIONS

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.8.2.4 (see ST/SG/AC.10/52/Add.1)

8.2.4 ~~As~~ Substances or mixtures meeting the criteria of Class 8 having an inhalation toxicity of dusts and mists (LC₅₀) in the range of Packing Group I, but toxicity through oral ingestion ~~or dermal contact only in the range~~ and dermal contact in the range of Packing Group III or less, must be allocated to Class 8 (see Part 2, Introductory chapter, paragraph 4 g) and Note under 6.2.2.4.1).

...

Chapter 9

CLASS 9 – MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES, INCLUDING ENVIRONMENTALLY HAZARDOUS SUBSTANCES

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 2.9.2 (see ST/SG/AC.10/52/Add.1)

Table 2-16. Substances and articles of Class 9

UN number	Name	Notes
...		
3536	Lithium <u>ion</u> batteries installed in cargo transport unit	
<u>3563</u>	<u>Lithium metal batteries installed in cargo transport unit</u>	
...		
3552	Sodium ion batteries contained in equipment with organic electrolyte	
3552	Sodium ion batteries packed with equipment with organic electrolyte	
<u>3564</u>	<u>Sodium ion batteries installed in cargo transport unit</u>	

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and 1.2.1.2.1 b) of DGP/30 report:

UN Model Regulations, Chapter 2.9.4 (see ST/SG/AC.10/52/Add.1)

9.3 LITHIUM BATTERIES

Cells and batteries, cells and batteries ~~contained in equipment~~ contained in articles, engines, equipment or vehicles or cells and batteries packed with equipment, containing lithium in any form ~~must be assigned to UN Nos. 3090, 3091, 3480 or 3481, as appropriate. They~~ may be transported under ~~these entries~~ the appropriate entry provided:

- a) each cell or battery is of the type proved to meet the requirements of each test of the UN Manual of Tests and Criteria, Part III, subsection 38.3;

Cells and batteries manufactured according to a type meeting the requirements of subsection 38.3 of the UN Manual of Tests and Criteria, Revision 3, Amendment 1 or any subsequent revision and amendment applicable at the date of the type testing may continue to be transported, unless otherwise provided in these Instructions.

Cell and battery types only meeting the requirements of the UN Manual of Tests and Criteria, Revision 3, are no longer valid. However, cells and batteries manufactured in conformity with such types before 1 July 2003 may continue to be transported if all other applicable requirements are fulfilled.

Note 1.— Batteries must be of a type proved to meet the testing requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3, irrespective of whether the cells of which they are composed are of a tested type.

Note 2.— A battery with a change resulting from treatment, such as repairing, refurbishing, or remanufacturing in accordance with 38.3.2.2 (c) of the UN Manual of Tests and Criteria may be considered to differ from a tested type.

- b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally incident to transport;
- c) each cell and battery is equipped with an effective means of preventing external short circuits;
- d) each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (such as diodes, fuses, etc.);
- e) cells and batteries are manufactured under a quality management programme that includes:
- 1) a description of the organizational structure and responsibilities of personnel with regard to design and product quality;
 - 2) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;
 - 3) process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
 - 4) quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;
 - 5) management reviews to ensure the effective operation of the quality management programme;
 - 6) a process for control of documents and their revision;
 - 7) a means for control of cells or batteries that are not conforming to the type tested in accordance with Part III, subsection 38.3 of the UN *Manual of Tests and Criteria*;
 - 8) training programmes and qualification procedures for relevant personnel;
 - 9) procedures to ensure that there is no damage to the final product;

Note.— In-house quality management programmes may be accepted. Third-party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate national authority upon request.

- f) lithium batteries, containing both primary lithium metal cells and rechargeable lithium ion cells, that are not designed to be externally charged (see Special Provision A213), meet the following conditions:
 - i) the rechargeable lithium ion cells can only be charged from the primary lithium metal cells;
 - ii) overcharge of the rechargeable lithium ion cells is precluded by design;
 - iii) the battery has been tested as a lithium primary battery;
 - iv) component cells of the battery are of a type proved to meet the respective testing requirements of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3; and
- g) except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 make available the test summary as specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, paragraph 38.3.5.

Note.— The term “make available” means that manufacturers and subsequent distributors ensure that the test summary is accessible so that the shipper or other persons in the supply chain can confirm compliance.

h) hybrid batteries, containing both lithium ion cells and sodium ion cells (see Special Provision A235), must meet the following conditions:

- i) the lithium ion cells and sodium ion cells are electrically connected;
- ii) the battery has been tested as a lithium ion battery in accordance with 9.3 a);
- iii) each component lithium ion and sodium ion cell of the battery is of a type proved to meet the respective testing requirements of the UN *Manual of Tests and Criteria*, part III, sub-section 38.3.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and 1.2.1.2.1 b) of DGP/30 report:

UN Model Regulations, Chapter 2.9.5 (see ST/SG/AC.10/52/Add.1)

9.4 SODIUM ION BATTERIES

Cells and batteries, cells and batteries ~~contained in equipment~~ contained in articles, engines, equipment or vehicles or cells and batteries packed with equipment containing sodium ion, which are a rechargeable electrochemical system where the positive and negative electrode are both intercalation or insertion compounds, constructed with no metallic sodium (or sodium alloy) in either electrode and with an organic non-aqueous compound as electrolyte, ~~must be assigned to UN Nos. 3551 or 3552, as appropriate.~~

~~They~~ may be transported under ~~these entries~~ the appropriate entry provided:

Note.— Intercalated sodium exists in an ionic or quasi-atomic form in the lattice of the electrode material.

- a) each cell or battery is of the type proved to meet the requirements of applicable tests of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3;

*Note.— Batteries must be of a type proved to meet the testing requirements of the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, irrespective of whether the cells of which they are composed are of a tested type.*

- b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under conditions normally encountered during transport;
- c) each cell and battery is equipped with an effective means of preventing external short circuits;

- d) each battery containing cells or a series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (such as diodes, fuses, etc.);
- e) cells and batteries are manufactured under a quality management programme as prescribed under 9.3 e) 1) to 9);
- f) manufacturers and subsequent distributors of cells or batteries make available the test summary as specified in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3, paragraph 38.3.5.

Note.— The term “make available” means that manufacturers and subsequent distributors ensure that the test summary is accessible so that the shipper or other persons in the supply chain can confirm compliance.

Editorial Note.— The following are editorial amendments necessary because of the edition of new Figure 2-1.

Chapter 6

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

...

6.2.2 Assignment of packing groups

6.2.2.4.4 In Figure ~~2-1~~ 2-2, the criteria according to 6.2.2.4.3 are expressed in graphical form, as an aid to easy classification. However, because of approximations inherent in the use of graphs, substances on or near packing group borderlines must be checked using numerical criteria.

...

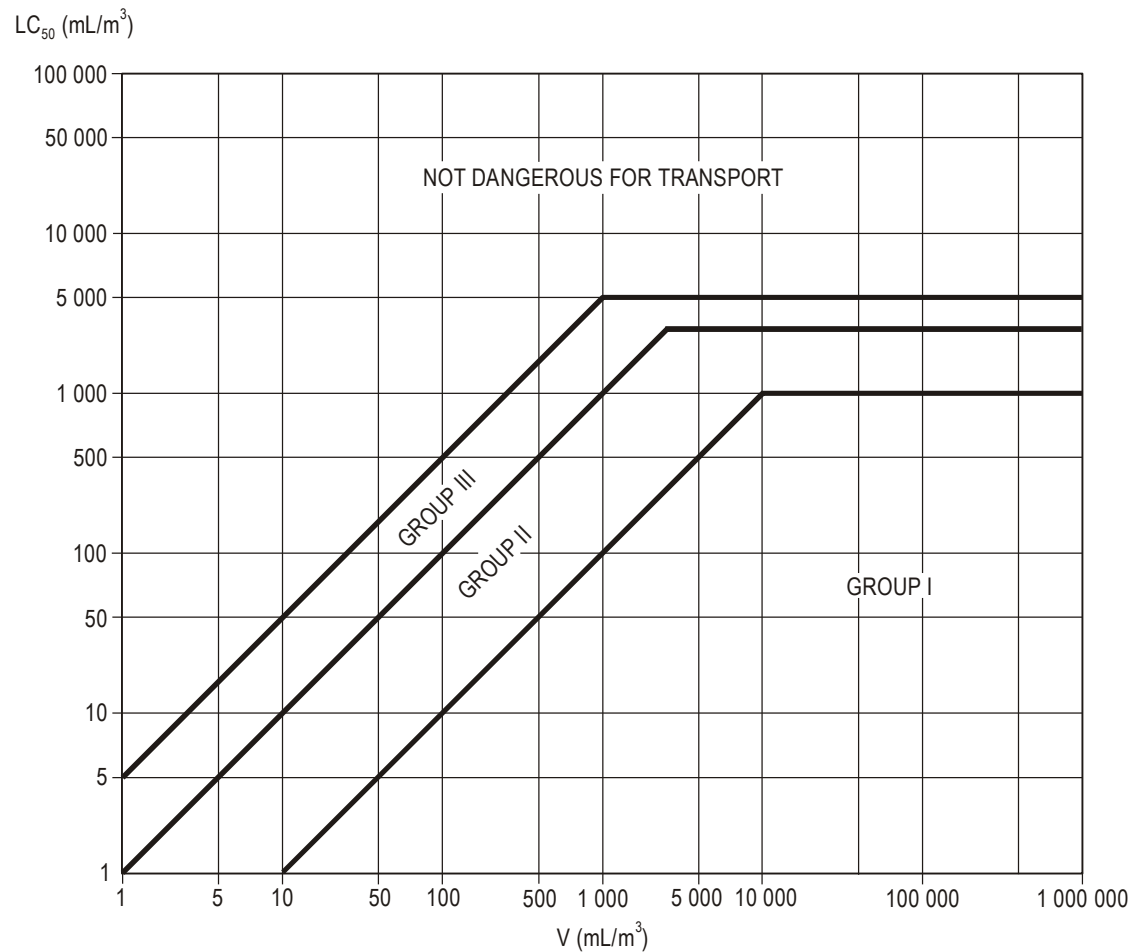


Figure ~~2-1~~ 2-2. Criteria for inhalation of vapours

Chapter 8

CLASS 8 – CORROSIVE SUBSTANCES

...

8.4 ALTERNATIVE PACKING GROUP ASSIGNMENT METHODS FOR MIXTURES: STEP-WISE APPROACH

8.4.1 General provisions

For mixtures, it is necessary to obtain or derive information that allows the criteria to be applied to the mixture for the purpose of classification and assignment of packing groups. The approach to classification and assignment of packing groups is tiered, and is dependent upon the amount of information available for the mixture itself, for similar mixtures and/or for its ingredients. The flow chart of Figure 2-2-2-3 outlines the process to be followed.

...

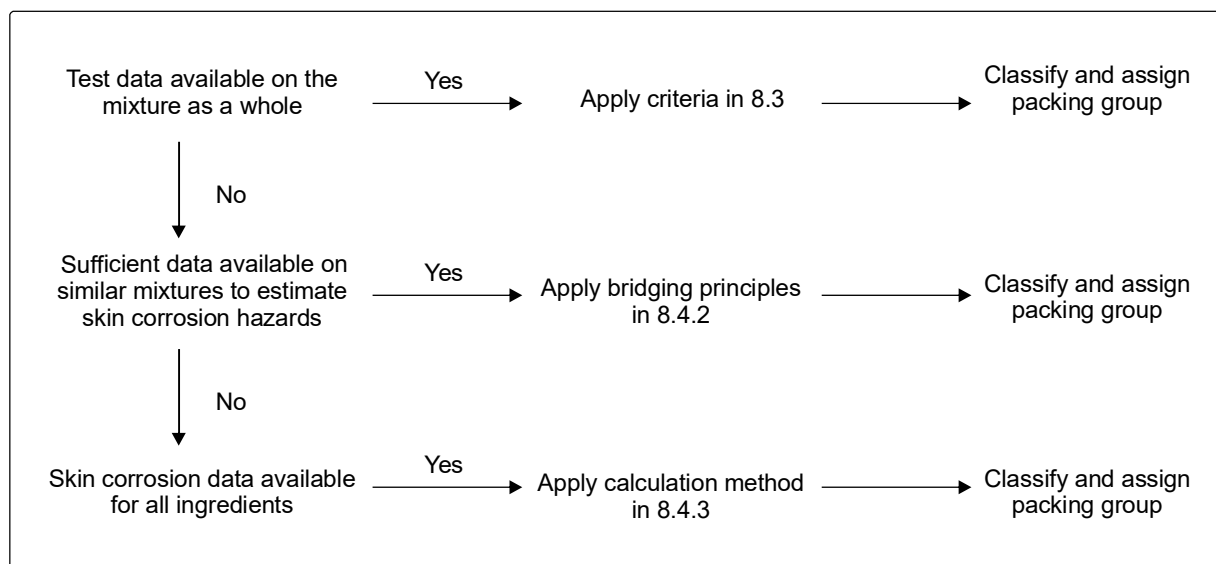


Figure 2-2-2-3. Step-wise approach to classify and assign packing group of corrosive mixtures

...

8.4.3 Calculation method based on the classification of the substances

...

8.4.3.3 To determine whether a mixture containing corrosive substances must be considered a corrosive mixture and to assign a packing group, the calculation method in the flow chart in Figure 2-3-2-4 must be applied.

8.4.3.4 When a specific concentration limit (SCL) is assigned to a substance following its entry in Table 3-1 or in a special provision, this limit must be used instead of the generic concentration limits (GCL). This appears where 1 per cent is used in the first step for the assessment of the Packing Group I substances, and where 5 per cent is used for the other steps respectively in Figure 2-3-2-4.

8.4.3.5 For this purpose, the summation formula for each step of the calculation method must be adapted. This means that, where applicable, the generic concentration limit must be substituted by the specific concentration limit assigned to the substance(s) (SCL_i), and the adapted formula is a weighted average of the different concentration limits assigned to the different substances in the mixture:

$$(PGx_1)/GCL + (PGx_2)/[SCL]_2 + \dots + (PGx_i)/[SCL]_i \geq 1$$

Where:

PG_{x_i} = concentration of substance 1, 2 ... i in the mixture, assigned to Packing Group x (I, II or III)

GCL = generic concentration limit

SCL_i = specific concentration limit assigned to substance i

The criterion for a packing group is fulfilled when the result of the calculation is ≥ 1 . The generic concentration limits to be used for the evaluation in each step of the calculation method are those found in Figure 2-32-4.

...

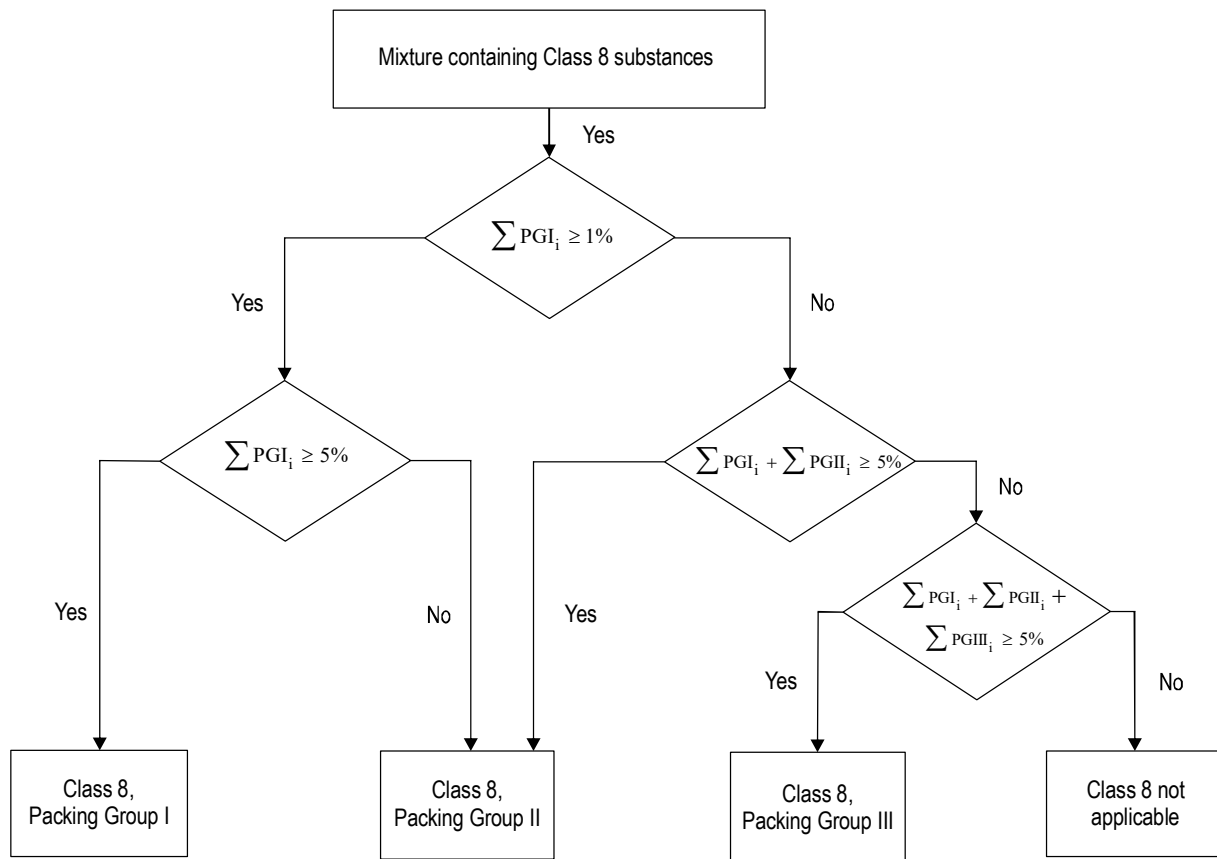


Figure 2-32-4. Calculation method

...

Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

...

Chapter 2

ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

See the attachment to this appendix for proposed amendments to Table 3-1.

...

Chapter 3

SPECIAL PROVISIONS

...

Table 3-2. Special provisions

<i>TIs</i>	<i>UN</i>

...

UN harmonization amendments

Paragraph 4.1.2.1.4.1 e) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 145 (see ST/SG/AC.10/52/Add.1):

- A9 (≈145) Alcoholic beverages ~~containing~~ with more than 24 per cent but not more than 70 per cent alcohol by volume, when packed in receptacles of 5 litres or less, are not subject to these Instructions when carried as cargo.

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 119 (see ST/SG/AC.10/52/Add.1):

- A26 (119) Refrigerating machines include air conditioning units and machines or other appliances which have been designed for the specific purpose of keeping food or other items at low temperature in an internal compartment. Heating machines include machines or other appliances which have been designed for the specific purpose of heating. Refrigerating or heating machines and ~~refrigerating machine~~ their components are considered not subject to these Instructions if containing less than 12 kg of a gas in Division 2.2 or if containing less than 12 L ammonia solution (UN 2672). Machines or other appliances that are used to perform heating and cooling functions may be transported either as "Refrigerating machines" or "Heating machines"

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 172 (see ST/SG/AC.10/52/Add.1):

A78 (~172) Where a radioactive material has a subsidiary hazard(s):

- a) The substance must be allocated to Packing Group I, II or III, if appropriate, by application of the packing group criteria provided in Part 2 corresponding to the nature of the predominant subsidiary hazard.
- b) Packages must be labelled with subsidiary hazard labels corresponding to each subsidiary hazard exhibited by the material in accordance with the relevant provisions of 5;3.2; corresponding placards must be affixed to cargo transport units in accordance with the relevant provisions of 5;3.6.
- c) For the purposes of documentation and package marking, the proper shipping name must be supplemented with the name of the constituents which most predominantly contribute to ~~this~~ each subsidiary hazard(s) and which must be enclosed in parenthesis. However, where the constituent is listed by name in Table 3-1 and:
 - i) "forbidden" is shown in columns 10 and 11, the dangerous goods transport document must indicate Cargo Aircraft Only and the package must bear cargo aircraft only labels, except that the substance may be shipped on a passenger aircraft with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the conditions established by those authorities. A copy of the document of approval, showing the quantity limitations and the packaging requirements, must accompany the consignment; and
 - ii) "forbidden" is shown in columns 12 and 13, the substance is forbidden for transport by air except that the substance may be shipped on a cargo aircraft with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the conditions established by those authorities. A copy of the document of approval, showing the quantity limitations and the packaging requirements, must accompany the consignment.

Radioactive material with a subsidiary hazard of Division 4.2 in Packing Group I must be transported in Type B packages. These may be transported on passenger or cargo aircraft.

- d) The dangerous goods transport document must indicate the class or division of ~~the~~ each subsidiary hazard and, where assigned, the packing group as required by 5;4.1.4.1 d) and e).

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1.4.1 f) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 405 (see ST/SG/AC.10/52/Add.1):

A87 Articles which are not fully enclosed by packaging, crates or other means that prevent ready identification are not subject to the marking requirements of 5;2 or the labelling requirements of 5;3.

Amendments to manage safety risks posed by energy storage device provisions

See paragraph 4.4.2 of DGP-WG/25 report and paragraph 4.1 of the DGP/30 report:

A88 Pre-production prototypes of lithium cells or batteries, or sodium ion cells or batteries, when these prototypes are transported for testing or low annual production runs (that is, annual production runs consisting of not more than 100 lithium cells or batteries, or sodium ion cells or batteries) of not more than 100 lithium cells or batteries, or sodium ion cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator and the requirements in Packing Instruction 910 of the Supplement are met.

A copy of the document of approval including the quantity limitations must accompany the consignment. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

Irrespective of the limit specified in column 13 of Table 3-1, the cell or battery as prepared for transport may have a mass exceeding 35 kg.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 291 (see ST/SG/AC.10/52/Add.1):

A103 (≈291) Flammable liquefied gases must be contained within refrigerating or heating machine components. These components must be designed and tested to at least three times the working pressure of the machinery. The refrigerating or heating machines must be designed and constructed to contain the liquefied gas and preclude the risk of bursting or cracking of the pressure-retaining components during normal conditions of transport. Refrigerating or heating machines and refrigerating machine their components are considered not subject to these Instructions if containing less than 100 g flammable, non-toxic, liquefied gas. Machines that are used to perform heating and cooling functions may be transported either as "Refrigerating machines" or "Heating machines".

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and paragraph 1.2.1.4.1 c) of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 301 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Packing Instruction 962

A107 (≈301) This entry only applies to articles such as machinery, apparatus or devices containing dangerous goods as a residue or as an integral element of the articles. It must not be used for articles for which a proper shipping name already exists in Table 3-1. Such articles may in addition contain lithium cells or batteries or sodium ion cells or batteries, provided that the cells or batteries:

a) provide electrical power for the operation of the article; and

b) meet the requirements of Section II of Packing Instruction 967 for lithium ion cells or batteries, 970 for lithium metal cells or batteries or 978 for sodium ion cells or batteries.

Articles containing no other dangerous goods than lithium cells or batteries or sodium ion cells or batteries must be transported under UN 3091, UN 3481 or UN 3552, as appropriate.

Where the quantity of dangerous goods exceeds the limits permitted by Packing Instruction 962, and the dangerous goods meet the provisions of Special Provision 301 of the UN Model Regulations, the articles may be transported only with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Notwithstanding the quantities specified in Packing Instruction 962, articles may also contain up to 5 kg of UN 3077 – **Environmentally hazardous substance, solid, n.o.s.** and/or 5 L of UN 3082 – **Environmentally hazardous substance, liquid, n.o.s.** The quantity of environmentally hazardous substance must not be indicated on the dangerous goods transport document.

Articles containing only UN 3077 – **Environmentally hazardous substance, solid, n.o.s.** and/or UN 3082 – **Environmentally hazardous substance, liquid, n.o.s.** in quantities not exceeding 5 kg or 5 L, respectively, are not subject to these Instructions.

Note.— Where the quantity of dangerous goods in the article exceeds the quantity permitted by Special Provision 301 of the UN Model Regulations, or the dangerous goods are not permitted as limited quantity by the UN Model Regulations, classification of the article must be in accordance with Part 2, Introductory Chapter, 6.1 to 6.6.

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 280 (see ST/SG/AC.10/52/Add.1):

- A115 (280) This entry applies to safety devices for vehicles, vessels or aircraft, such as air bag inflators, air bag modules, seat belt pretensioners, and pyromechanical devices and which contain dangerous goods of Class 1 or dangerous goods of other classes and when transported as component parts and if these articles as presented for transport have been tested in accordance with test series 6 (c) of Part I of the UN *Manual of Tests and Criteria*, with no explosion of the device, no fragmentation of the device casing or pressure receptacle, and no projection hazard or thermal effect which would significantly hinder firefighting or other emergency response efforts in the immediate vicinity.

This entry does not apply to life saving appliances described in Packing Instruction 955 (UN Nos. 2990 and 3072) or to fire suppressant dispersing devices (UN Nos. 0514 and 3559). However, this entry may be used for safety devices of Class 9 transported for installation in life-saving appliances (UN 2990) in accordance with Packing Instruction 955.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 360 (see ST/SG/AC.10/52/Add.1):

- A185 (360) Vehicles only powered by lithium metal, lithium ion or sodium ion batteries must be assigned to UN 3556 **Vehicle, lithium ion battery powered** or UN 3557 **Vehicle, lithium metal battery powered** or UN 3558 **Vehicle, sodium ion battery powered**, as applicable. Vehicles powered only by hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2;9.3 h) must be assigned to the entry UN 3556 Vehicle, lithium ion battery powered.

Lithium batteries, sodium ion batteries or hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2;9.3 h) installed in cargo transport units, designed only to provide power external to the transport unit must be assigned to UN 3536 **Lithium ion batteries installed in cargo transport unit**, UN 3563 Lithium metal batteries installed in cargo transport unit or UN 3564 Sodium ion batteries installed in cargo transport unit, as applicable.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 387 (see ST/SG/AC.10/52/Add.1):

- A213 (387) Lithium batteries in conformity with 2;9.3 f) containing both primary lithium metal cells and rechargeable lithium ion cells must be assigned to UN Nos. 3090 or 3091 as appropriate. When such batteries are transported in accordance with Section IB of Packing Instruction 968 or in accordance with Section II of Packing Instruction 969 or 970, the total lithium content of all lithium metal cells contained in the battery must not exceed 1.5 g, and the total capacity Watt-hour rating of all lithium ion cells contained in the battery must not exceed 10 Wh.

TIs UN

UN harmonization amendments

Paragraphs 4.1.2.5 of DGP-WG/24 report and 4.1.2.1.4.1 g) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Packing Instructions 950, 951 and 952

A214 (388) UN No. 3166 entries apply to vehicles powered by flammable liquid or flammable gas internal combustion engines or fuel cells.

Vehicles powered by a fuel cell engine must be assigned to UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, ~~sodium batteries, lithium metal batteries or lithium ion batteries~~ nickel-metal hydride batteries, metallic sodium batteries, sodium alloy batteries, lithium metal batteries, lithium ion batteries, hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2.9.3 h) or sodium ion batteries, transported with the battery(ies) installed.

Other vehicles which contain an internal combustion engine must be assigned to UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, ~~sodium batteries, lithium metal batteries or lithium ion batteries~~ nickel-metal hydride batteries, metallic sodium batteries, sodium alloy batteries, lithium metal batteries, lithium ion batteries, hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2.9.3 h) or sodium ion batteries, transported with the battery(ies) installed.

If a vehicle is powered by a flammable liquid and a flammable gas internal combustion engine, it must be assigned to UN 3166 **Vehicle, flammable gas powered**.

Entry UN 3171 only applies to vehicles and equipment powered by wet batteries, metallic sodium batteries or sodium alloy batteries transported with these batteries installed.

UN 3556 **Vehicle, lithium ion battery powered**, UN 3557 **Vehicle, lithium metal battery powered** and UN 3558 **Vehicle, sodium ion battery powered**, as applicable, apply to vehicles powered by lithium ion, lithium metal or sodium ion batteries transported with the batteries installed. Vehicles powered only by hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2.9.3 h) must be assigned to the entry UN 3556 Vehicle, lithium ion battery powered.

For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles are cars, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, trucks, locomotives, bicycles (pedal cycles with a motor) and other vehicles of this type (such as self-balancing vehicles or vehicles not equipped with at least one seating position), wheelchairs, lawn tractors, self-propelled farming and construction equipment, boats and aircraft. When vehicles are transported in a packaging, some parts of the vehicle, other than the battery, may be detached from their frame to fit into the packaging.

Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries ~~or~~ lithium ion batteries or sodium ion batteries must be assigned to UN 3091 **Lithium metal batteries contained in equipment** or UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries contained in equipment** or UN 3481 **Lithium ion batteries packed with equipment** or UN 3552 Sodium ion batteries contained in equipment or UN 3552 Sodium ion batteries packed with equipment, as appropriate. Lithium ion batteries ~~or~~ lithium metal batteries, hybrid batteries containing both lithium ion cells and sodium ion cells in accordance with 2.9.3 h) or sodium ion batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit must be assigned to UN 3536 **Lithium ion batteries installed in cargo transport unit**, UN 3563 Lithium metal batteries installed in cargo transport unit or UN 3564 Sodium ion batteries installed in cargo transport unit, as appropriate.

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 393 (see ST/SG/AC.10/52/Add.1):

A216 (393) The nitrocellulose must meet the criteria of the Bergmann-Junk test or methyl violet paper test in the UN *Manual of Tests and Criteria* Appendix 10. Tests of type 3 (c) need not be applied to dry or unmodified nitrocellulose.

UN harmonization amendments

DGP-WG/UN Harmonization identified the need to incorporate sodium ion cells or batteries into Special Provision A224 to align with the amendment to Part 2;0.6.2

UN Model Regulations, Chapter 2.0, 2.0.5.2 (see ST/SG/AC.10/52/Add.1)

A224 UN 3548 – **Articles containing miscellaneous dangerous goods, n.o.s.** may be transported on passenger and cargo aircraft irrespective of the indication of “forbidden” in columns 10 to 13 of Table 3-1, provided that:

- a) with the exception of lithium cells or batteries and sodium ion cells or batteries that comply with Section II of Packing Instruction 967-~~or~~, Section II of Packing Instruction 970 or Section II of Packing Instruction 978, as applicable, the only dangerous goods contained in the article is an environmentally hazardous substance;
- b) the articles are packed in accordance with Packing Instruction 975; and
- c) reference to Special Provision A224 is made on the dangerous goods transport document as required by Part 5;4.1.5.8.

All other provisions of these Instructions apply. If the above conditions are met, the requirements of Special Provision A2 do not apply.

TIs UN

UN harmonization amendments

DGP-WG/UN Harmonization identified the need to incorporate sodium ion cells or batteries into Special Provision A225 to align with the amendment to Part 2;0.6.2

UN Model Regulations, Chapter 2.0, 2.0.5.2 (see ST/SG/AC.10/52/Add.1)

A225 UN 3538 – **Articles containing non-flammable, non-toxic gas, n.o.s.** may be transported on passenger and cargo aircraft irrespective of the indication of “forbidden” in columns 10 to 13 of Table 3-1, provided that:

- a) with the exception of lithium cells or batteries and sodium ion cells or batteries that comply with Section II of Packing Instruction 967-~~or~~, Section II of Packing Instruction 970 or Section II of Packing Instruction 978, as applicable, the only dangerous goods contained in the article is a Division 2.2 gas without a subsidiary hazard, but excluding refrigerated liquefied gases and gases forbidden for transport on passenger aircraft;
- b) the articles are packed in accordance with Packing Instruction 222; and
- c) reference to Special Provision A225 is made on the dangerous goods transport document as required by Part 5;4.1.5.8.

All other provisions of these Instructions apply. If the above conditions are met, the requirements of Special Provision A2 do not apply.

UN harmonization amendments

Paragraph 4.1.2.1.4.1 c) of DGP-WG/25 report:

~~A226 (399) For articles that meet the definition for **Detonators, electric** as described in Attachment 2 and assigned to UN Nos. 0511, 0512 and 0513, the entries for **Detonators, electric** (UN Nos. 0030, 0255 and 0456) may continue to be used until 30 June 2025.~~

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 401 (see ST/SG/AC.10/52/Add.1):

A228 (401) Sodium ion cells and batteries with organic electrolyte must be transported as UN 3551 or UN 3552 as appropriate. Sodium ion batteries with aqueous alkali electrolyte must be transported as UN 2795. ~~Batteries, wet, filled with alkali, electric storage~~ Batteries containing metallic sodium or sodium alloy must be transported as UN 3292.

TIs UN

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 405 (see ST/SG/AC.10/52/Add.1):

A230 (403) Nitrocellulose (NC) membrane filters covered by this entry with NC content not exceeding 53 g/m² and an NC net weight not exceeding 300 g per inner packaging, are not subject to the requirements of these Instructions if they meet the following conditions:

- a) they are packed with paper separators of minimum 80 g/m² placed between each layer of NC membrane filters;
- b) they are packed to maintain the alignment of the NC membrane filters and the paper separators in any of the following configurations:
 - 1) rolls tightly wound and packed in plastic foil of minimum 80 g/m² or aluminium pouches with an oxygen permeability of equal or less than 0.1 per cent ~~according to~~ in accordance with standard ISO 15105-1:2007;
 - 2) Sheets packed in cardboard of minimum 250 g per square metre or aluminium pouches with an oxygen permeability of equal or less than 0.1 per cent ~~according to~~ in accordance with standard ISO 15105-1:2007; or
 - 3) round filters packed in disc holders or cardboard packaging of minimum 250 g per square metre or single packed in pouches of paper and plastic material of total minimum 100 g per square metre.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 407 (see ST/SG/AC.10/52/Add.1):

A232 (407) Fire suppressant dispersing devices are articles that contain a pyrotechnic substance, are intended to disperse a fire extinguishing agent (or aerosol) when activated, and do not contain any other dangerous goods. These articles, as packaged for transport, must fulfil the criteria for Division 1.4S, when tested in accordance with test series 6(c) of Section 16 of Part 1 of the UN *Manual of Tests and Criteria*. The device must be transported with either the means of activation removed or equipped with at least two independent means to prevent accidental activation.

Fire suppressant dispersing devices must only be assigned to Class 9, UN 3559, if the following additional conditions are met:

- a) the device meets the exclusion criteria in 2;1.5.2.4 b), c) and d);
- b) the suppressant ~~must be~~ is deemed safe for normally-occupied spaces in compliance with international or regional standards (such as NFPA2010); and
- c) the article ~~must be~~ is packaged in a manner such that when activated, temperatures of the outside of the package ~~must do~~ not exceed 200°C;

This entry must be used only with the approval of the appropriate national authority of the State of manufacture.

This entry does not apply to UN 3268 **Safety devices**, electrically initiated, described in Special Provision A115.

TIs *UN*

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and paragraph 1.2.1.3.1 b) of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 410 (see ST/SG/AC.10/52/Add.1):

A235 410 Hybrid batteries in conformity with 2;9.3 h) containing both lithium ion cells and sodium ion cells must be assigned to UN 3480 or UN 3481, as appropriate. When such batteries are transported in accordance with Section IB of Packing Instruction 965, Section II of Packing Instruction 966 or Section II of Packing Instruction 967, the Watt-hour rating must not exceed 100 Wh and must be marked on the outside case.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 411 (see ST/SG/AC.10/52/Add.1):

A236 411 Articles transported under this entry include magnetic resonance imaging (MRI) scanners containing non-flammable, non-toxic gas. The non-flammable, non-toxic gas must be contained within MRI scanner components. The MRI scanners must be designed and constructed to contain the gas and preclude the risk of bursting or cracking of the gas retaining components during normal conditions of transport. MRI scanners are not subject to these Instructions if they contain less than 12 kg of gas in Division 2.2.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and 1.2.1.3.1 c) of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 412 (see ST/SG/AC.10/52/Add.1):

A237 412 This entry may contain up to 12% by mass of dimethyl ether.

UN harmonization amendments

Paragraph 4.1.2.1.4.1 h) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 413 (see ST/SG/AC.10/52/Add.1):

A238 413 Liquid organic hydrogen carriers (LOHC) based on substances classified under this entry with physically dissolved hydrogen may only be transported under this entry when the content of physically dissolved hydrogen does not exceed 0.5 L(H₂)/kg(LOHC).

TIs UN

Amendments to facilitate transport or State oversight

Paragraph 3.5 of DGP/30 report:

A239

The technical or chemical group names are not required to be indicated on a dangerous goods transport document or on the package if a national law or international convention prohibits its disclosure if it is a controlled substance (see 3;1.2.7.1).

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Part 4

PACKING INSTRUCTIONS

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Chapter 2

GENERAL

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.3.4 (see ST/SG/AC.10/52/Add.1)

2.5 The following packagings must not be used when the substances being transported are liable to become liquid during transport:

Single packagings

For substances of Packing Group I, unless approved for the transport of liquids of Packing Group I:

Drums: 1A2, 1B2, 1H2 and 1N2
 Jerricans: 3A2, 3B2 and 3H2

For substances of Packing Groups I, II and III:

Drums: 1D and 1G
 Boxes: 4A, 4B, 4C1, 4C2, 4D, 4F, 4G ~~and~~ 4H1, 4H2 and 4N
 Bags: 5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2
 Composite packagings: 6HC, 6HD1, 6HD2, 6HG1, 6HG2, ~~6HD4~~, 6PC, 6PD1, 6PD2, 6PG1, 6PG2 ~~and~~ 6PH1 ~~and~~ 6PH2.

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.3.6.5 (see ST/SG/AC.10/52/Add.1)

2.7.6 The ~~level~~ degree of filling must not exceed 95 per cent of the capacity of the cylinder at 50°C. Sufficient ullage (outage) must be left to ensure that the cylinder will not be liquid full at a temperature of 55°C.

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Chapter 3

CLASS 1 – EXPLOSIVES

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Packing Instruction 130

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P130 (see ST/SG/AC.10/52/Add.1)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- The following applies to UN 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0238, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0459, 0488, 0502 and 0510. Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport. Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.
- For UN 0457, 0458, 0459 and 0460, whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating.
- For UN Nos. 0012 and 0014, despite the requirements of 4;3.3.1.6, articles may be packed without internal cushioning, fittings, coating or liner in metal outer packagings.

Chapter 4

CLASS 2 – GASES

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4.1 SPECIAL PACKING PROVISIONS FOR DANGEROUS GOODS OF CLASS 2

4.1.1 General requirements

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.6.1.2 (see ST/SG/AC.10/52/Add.1)

4.1.1.2 Parts of cylinders and closed cryogenic receptacles that are in direct contact with dangerous goods must not be affected or weakened by those dangerous goods and must not cause a dangerous effect (such as catalysing a reaction or reacting with the dangerous goods). In addition to the requirements specified in the relevant packing instruction, which take precedence, the applicable provisions of ISO 11114-1:2020 + Amd 1:2023 and ISO 11114-2:2021 must be met.

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.6.1.8 (see ST/SG/AC.10/52/Add.1)

4.1.1.8 Valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage, which could cause inadvertent release of the contents of the cylinder and closed cryogenic receptacle, by one of the following methods:

- a) Valves are placed inside the neck of the cylinder and closed cryogenic receptacle and protected by a threaded plug or cap;
- b) Valves are protected by caps or guards. Caps must possess vent holes of a sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
- c) Valves are protected by shrouds or permanent protective attachments;
- d) Not used; or
- e) Cylinders and closed cryogenic receptacles are transported in an outer packaging. The packaging as prepared for transport must be capable of meeting the drop test specified in 6;4.3 at the Packing Group I performance level.

For cylinders and closed cryogenic receptacles with valves as described in b), the requirements of ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019 must be met. Requirements for shrouds and permanent protective attachments used as valve protection under c) are given in the relevant pressure receptacle shell design standards, see 6;5.2.1. Valves with inherent protection used for refillable cylinders must meet the requirements of clause 4.6.2 of ISO 10297:2006, clause 5.5.2 of ISO 10297:2014, clause 5.5.2 of ISO 10297:2014 + Amd 1:2017 or clause 5.4.2 of ISO 10297:2024 or, in the case of self-closing valves, of clause 5.4.2 of ISO 17879:2017. For valves with inherent protection used for non-refillable cylinders, the requirements of clause 9.2.5 of ISO 11118:2015 or of clause 9.2.5 of ISO 11118:2015 + Amd 1:2019 must be met.

Packing Instruction 200

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The following requirements must be met:

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P200 (see ST/SG/AC.10/52/Add.1)

- 5) The filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures. The procedures should include checks of:
 - a) the conformity of cylinders and accessories with these Instructions;
 - b) their compatibility with the product to be transported;
 - c) the absence of damage which might affect safety;
 - d) compliance with the ~~degree or pressure of filling~~ filling ratio or pressure of filling, as appropriate; and
 - e) marks and identification.

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Packing Instruction 220

Cargo aircraft only for UN 3529 only

(See Packing Instruction 378 for flammable liquid-powered engines or machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles, Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

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ADDITIONAL PACKING REQUIREMENTS

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Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1 of DGP/30 report:

Batteries

All batteries must be installed and securely fastened in the battery holder of the machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.

- 2) If lithium batteries are installed:
- i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2;9.3, except that pre-production prototypes of lithium ~~cells or batteries~~ ~~or cells~~, when these prototypes are transported for testing, or ~~low annual~~ production runs of not more than 100 lithium cells or batteries ~~lithium batteries or cells~~ that have not been tested to the requirements in Part III, subsection 38.3 of the UN Manual of Tests and Criteria may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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UN harmonization amendments

Amendments to manage aviation specific risks and address anomalies

DGP-WG/UN Harmonization identified a need to incorporate sodium ion cells and batteries into this packing instruction to align with Part 2;0.6.2 and to add the prohibition from transport of cells or batteries identified as being damage or defective in accordance with Special Provision A154 in Packing Instruction 222:

Packing Instruction 222

Passenger and cargo aircraft for UN 3538 only

Introduction

This packing instruction is only permitted for articles which do not have an existing proper shipping name and which contain only gases of Division 2.2 without a subsidiary hazard, but excluding refrigerated liquefied gases and gases forbidden for transport on passenger aircraft, where the quantity of the Division 2.2 gas exceeds the quantity limits for UN 3363 as prescribed in Packing Instruction 962. In addition to the Division 2.2 gas, the article may also contain lithium metal, lithium ion or sodium ion cells or batteries that comply with Section II of Packing Instruction 967 ~~or~~ Section II of Packing Instruction 970 or Section II of Packing Instruction 978, as applicable. Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

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Chapter 5

CLASS 3 – FLAMMABLE LIQUIDS

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Packing Instruction 378

Passenger and cargo aircraft for UN 3528 only
(See Packing Instruction 220 for flammable gas-powered engines or machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles, Packing Instruction 952 for battery-powered equipment and vehicles or Packing Instruction 972 for engines or machinery containing only environmentally hazardous fuels)

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ADDITIONAL PACKING REQUIREMENTS

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Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1 of DGP/30 report:

Batteries

All batteries must be installed and securely fastened in the battery holder of the machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries are installed:
 - i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2:9.3, except that pre-production prototypes of lithium ~~cells or batteries or cells~~ cells or batteries, when these prototypes are transported for testing, or ~~low annual~~ low annual production runs of ~~lithium batteries or cells~~ lithium cells or batteries not more than 100 lithium cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Chapter 6

CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

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Packing Instruction 459

Passenger and cargo aircraft – self-reactive substances and polymerizing substances

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.7.1.1 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Cushioning materials must not be readily combustible.
- Packagings must meet the Packing Group II performance requirements.
- To avoid the unnecessary confinement of liquids, metal packagings meeting the criteria of the internal pressure (hydraulic) test for Packing Group I must not be used.

Note.— The shipper should consult with the packaging manufacturer to verify that the metal packaging does not meet the internal pressure (hydraulic) test criteria for Packing Group I.

UN 3223 or UN3224

Energetic samples classified in accordance with Part 2, Introductory Chapter, paragraph 5.4 may be carried under UN 3223 or UN 3224, as appropriate, provided that:

1. The quantity per individual inner cavity does not exceed 0.01 g for solids or 0.01 mL for liquids and the maximum net quantity per outer packaging does not exceed 20 g for solids or 20 mL for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 20:
 - a) the samples are carried in microtiter plates or multi-titer plates made of plastics, glass, porcelain or stoneware as an inner packaging;
 - b) only combination packaging with outer packaging comprising boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1 and 4H2) are permitted; or

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P520 (see ST/SG/AC.10/52/Add.1)

2. The maximum content of each inner packaging does not exceed 1 g for solids or 1 mL for liquids and the maximum net quantity per outer packaging does not exceed 56 g for solids or 56 mL for liquids, or in the case of mixed packing the sum of grams and millilitres does not exceed 56:
 - a) The individual substance is contained in an inner packaging of glass or plastics of maximum capacity of 30 mL placed in an expandable polyethylene foam matrix of at least 130 mm thickness having a density of 18 ± 1 g/L or 24 ± 2.4 g/l;
 - b) Within the foam carrier, inner packagings are segregated from each other by a minimum distance of 40 mm and from the wall of the outer packaging by a minimum distance of 70 mm. The package may contain up to two layers of such foam matrices, each carrying up to twenty-eight inner packagings;
 - c) The outer packaging consists only of corrugated fibreboard boxes (4G) having minimum dimensions of 60 cm (length) by 40.5 cm (width) by 30 cm (height) and minimum wall thickness of 1.3 cm.

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Packing Instruction 497

Passenger and cargo aircraft for UN 3476 (packed with equipment) only

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UN harmonization amendments

Paragraph 4.2.2.8 of DGP-WG/25 report:

ADDITIONAL PACKING REQUIREMENTS

- When fuel cell cartridges are packed with equipment, they must be packed in intermediate packagings together with the equipment they are capable of powering.
- The ~~maximum~~ number of fuel cell cartridges in the intermediate packaging must ~~be not exceed~~ the ~~minimum~~ number required ~~to power the equipment for the equipment's operation~~, plus two spares ~~sets~~. A "set" of fuel cell cartridges is the number of individual fuel cell cartridges that are required to power each piece of equipment.
- The fuel cell cartridges and the equipment must be packed with cushioning material or divider(s) or inner packaging so that the fuel cell cartridges are protected against damage that may be caused by the movement or placement of the equipment and the cartridges within the packaging.
- The mass of each fuel cell cartridge must not exceed 1 kg.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Drums

Jerricans

Strong outer packagings

Chapter 7**CLASS 5 – OXIDIZING SUBSTANCES;
ORGANIC PEROXIDES**

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Packing Instruction 570

Passenger and cargo aircraft

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UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.7.1.1 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Packagings must meet the Packing Group II performance requirements.
- To avoid the unnecessary confinement of liquids, metal packagings meeting the criteria of the internal pressure (hydraulic) test for Packing Group I must not be used.

Note.— The shipper should consult with the packaging manufacturer to verify that the metal packaging does not meet the internal pressure (hydraulic) test criteria for Packing Group I.

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Chapter 8

CLASS 6 – TOXIC AND INFECTIOUS SUBSTANCES

8.1 PACKING INSTRUCTIONS

Packing Instruction 603

Passenger and cargo aircraft for UN 3507 only

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UN harmonization amendments

Paragraph 1.2.1.8 of DGP/30 report:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

- Substances must be packed in a metal or plastics primary receptacle in a leakproof rigid secondary packaging in a rigid outer packaging.
- Primary inner receptacles must be packed in secondary packagings in a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the secondary packaging. Secondary packagings must be secured in outer packagings with suitable cushioning material to prevent movement. If multiple primary receptacles are placed in a single secondary packaging, they must be either individually wrapped or separated so as to prevent contact between them.
- The contents must comply with the provisions of 2;7.2.4.5.2.
- The provisions of 6;7.3 must be met.
- In the case of fissile-excepted material, limits specified in 2;7.2.3.5 ~~and 6;7.10.2~~ must be met.

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Chapter 11

CLASS 9 – MISCELLANEOUS DANGEROUS GOODS

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Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only

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ADDITIONAL PACKING REQUIREMENTS

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UN harmonization amendments

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1.2.1 of DGP-WG/25 report and 4.1 of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries or sodium ion batteries are installed:
 - i) lithium-batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium batteries or cells or batteries or sodium ion cells or batteries, when these prototypes are transported for testing, or low annual production runs of not more than 100 lithium batteries or cells or batteries or sodium ion cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 951

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ADDITIONAL PACKING REQUIREMENTS

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UN harmonization amendments

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1.2.1 of DGP-WG/25 report and 4.1 of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries or sodium ion batteries are installed:
 - i) ~~lithium~~ batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium ~~batteries or~~ cells or batteries or sodium ion cells or batteries, when these prototypes are transported for testing, ~~or low annual~~ production runs of not more than 100 lithium ~~batteries or~~ cells or batteries or sodium ion cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 952

... ADDITIONAL PACKING REQUIREMENTS

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UN harmonization amendments

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1.2.1 of DGP-WG/25 report and 4.1 of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 388 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A214

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the vehicle or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries or sodium ion batteries are installed:
 - i) batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport;
 - ii) lithium batteries must meet the provisions of Part 2;9.3 and sodium ion batteries must meet the provisions of Part 2;9.4, except that pre-production prototypes of lithium cells or batteries or sodium ion cells or batteries, when these prototypes are transported for testing, or low annual production runs of not more than 100 lithium cells or batteries or sodium ion cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment;
 - iii) where the battery is removed from the vehicle and is packed separate from the vehicle in the same outer packaging, the package must be consigned as UN 3481 – **Lithium ion batteries packed with equipment**, UN 3552 – **Sodium ion batteries packed with equipment** or UN 3091 – **Lithium metal batteries packed with equipment** and packed according to Packing Instruction 966, 969 or 977, as applicable; and
 - iv) for UN 3556 – **Vehicle, lithium ion battery powered**, UN 3557 – **Vehicle, lithium metal battery powered** when the battery is rechargeable, and UN 3558 – **Vehicle, sodium ion battery powered**:
 - 1) **Until 31 December 2025**
 Vehicles should be offered for transport with:
 - the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
 - 2) **From 1 January 2026**

- a) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh must be offered for transport with:
- the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
- b) Vehicles powered by batteries with a Watt-hour rating not in excess of 100 Wh should be offered for transport with:
- the battery(ies) at a state of charge not exceeding 30 per cent of their rated capacity; or
 - an indicated battery capacity not exceeding 25 per cent.
- c) Vehicles powered by batteries with a Watt-hour rating in excess of 100 Wh and at a state of charge exceeding 30 per cent of their rated capacity or with an indicated battery capacity exceeding 25 per cent may only be offered for transport with the approval of the appropriate national authorities of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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Packing Instruction 955

Passenger and cargo aircraft for UN 2990 and UN 3072 only

UN harmonization amendments

UN Model Regulations, Chapter 3.3, SP 296 (see ST/SG/AC.10/52/Add.1):

The term "life-saving appliances" applies to articles such as life rafts, ~~life vests~~, personal flotation devices, self-inflating protective equipment, aircraft survival kits or aircraft evacuation slides.

The description "Life-saving appliances, self-inflating" (UN 2990) is intended to apply to life-saving appliances that present a hazard if the self-inflating device is activated accidentally.

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

<i>UN number and proper shipping name</i>	<i>Quantity – passenger</i>	<i>Quantity – cargo</i>
UN 2990 Life-saving appliances, self-inflating UN 3072 Life-saving appliances, not self-inflating containing dangerous goods as equipment	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

Life-saving appliances may only contain the dangerous goods listed below:

- a) Division 2.2 gases, must be contained in cylinders which conform to the requirements of the appropriate national authority of the country in which they are approved and filled. Such cylinders may be connected to the life-saving appliance. These cylinders may include installed actuating cartridges (cartridges, power device of Division 1.4C and 1.4S) or safety devices of Class 9 (UN 3268) provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per unit. When the cylinders are shipped separately, they must be classified as appropriate for the Division 2.2 gas contained and need not be marked, labelled or described as explosive articles;
- b) signal devices (Class 1), which may include smoke and illumination signal flares; signal devices must be packed in plastic or fibreboard inner packagings;
- c) small quantities of flammable substances, corrosive solids and organic peroxides (Class 3, Class 8, Division 4.1 and 5.2), which may include a repair kit and not more than 30 strike-anywhere matches. The organic peroxide may only be a component of a repair kit and the kit must be packed in strong inner packaging. The strike-anywhere matches must be packed in a cylindrical metal or composition packaging with a screw-type closure and be cushioned to prevent movement;
- d) electric storage batteries (Class 8), which must be disconnected or electrically isolated and protected against short circuits;

Editorial revisions proposed (the provision does not make sense without them):

- e) lithium batteries ~~and~~ or sodium ion batteries provided the following conditions are met:
 - 1) those identified as damaged or defective in accordance with Special Provision A154 are forbidden for transport;
 - 2) they must meet the applicable requirements of 2;9.3 or 2;9.4, as applicable;
 - 3) they must be disconnected or electrically isolated and protected against short circuits; and
 - 4) they must be secured against movement within the appliance.
- f) first aid kits which may include flammable, corrosive and toxic articles or substances.

The appliances must be packed, so that they cannot be accidentally activated, in strong outer packagings and, except for life vests, the dangerous goods must be in inner packagings packed so as to prevent movement. The dangerous goods must be an integral part of the appliance without which it would not be operational and in quantities which do not exceed those appropriate for the actual appliance when in use.

Life-saving appliances may also include articles and substances not subject to these Instructions which are an integral part of the appliance.

Packing Instruction 962

Passenger and cargo aircraft for UN 3363 only

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and 1.2.1.4.1 a) of DGP/30 report:

UN Model Regulations, Chapter 3.3, SP 301 (see ST/SG/AC.10/52/Add.1):

See also proposed amendment to Special Provision A107

General requirements

Part 4, Chapter 1 requirements must be met (except that the requirements of 4;1.1.2, 1.1.9, 1.1.13 and 1.1.16 do not apply), including:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

This entry only applies to articles, such as machinery, apparatus or devices containing dangerous goods as a residue or as an integral element of the article. It must not be used for an article for which a proper shipping name exists in Table 3-1. For other than fuel system components, articles may only contain one or more of the following: dangerous goods permitted under 3;4.1.2 or UN 2807 or gases of Division 2.2 without subsidiary hazard but excluding refrigerated liquefied gases. The articles may also contain lithium metal, lithium ion or sodium ion cells or batteries that comply with Section II of Packing Instruction 967, Section II of Packing Instruction 970 or Section II of Packing Instruction 978, as applicable. Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

<i>UN number and proper shipping name</i>	<i>State</i>	<i>Total net quantity of dangerous goods in one package (excluding magnetic material)</i>
UN 3363 Dangerous goods in apparatus or Dangerous goods in machinery or Dangerous goods in articles	Liquid	0.5 L
	Solid	1 kg
	Gas (Division 2.2 only)	0.5 kg

ADDITIONAL PACKING REQUIREMENTS

- If the article contains more than one item of dangerous goods and these could react dangerously with one another during transport, the individual each of the dangerous goods must be enclosed to prevent them reacting dangerously with one another during transport separately (see 4;1.1.3).
- Receptacles containing dangerous goods must be so secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within the article during normal conditions of transport. Cushioning material must not react dangerously with the contents of the receptacles. Any leakage of the contents must not substantially impair the protective properties of the cushioning material.
- "Package orientation" labels (Figure 5-29), or preprinted orientation labels meeting the same specification as either Figure 5-29 or ISO Standard 780-1997 must be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction only when required to ensure liquid dangerous goods remain in their intended orientation.
- Irrespective of 5;3.2.10, articles containing magnetized material meeting the requirements of Packing Instruction 953 must also bear the "Magnetized material" label (Figure 5-27).
- For Division 2.2 gases, cylinders for gases, their contents and filling ratios must conform to the requirements of Packing Instruction 200.
- Dangerous goods in articles must be packed in strong outer packagings unless the receptacles containing the dangerous goods are afforded adequate protection by the construction of the articles.

Fuel system components

- Fuel system components must be emptied of fuel as far as practicable and all openings must be sealed securely. They must be packed:
 - 1) in sufficient absorbent material to absorb the maximum amount of liquid which may possibly remain after emptying. Where the outer packaging is not liquid tight, a means of containing the liquid in the event of leakage must be provided in the form of a leakproof liner, plastic bag or other equally efficient means of containment; and
 - 2) in strong outer packagings.

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Packing Instruction 964

Passenger and cargo aircraft for UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 only

General requirements

Part 4, Chapter 1 requirements must be met (with the exception that for UN 3082 packed in combination packagings, the requirements of 4;1.1.6 do not apply).

These requirements include:

1) Compatibility requirements

- Substances must be compatible with their packagings as required by 4;1.1.3.

2) Closure requirements

- Closures must meet the requirements of 4;1.1.4.

COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
<i>UN number and proper shipping name</i>	<i>Inner packaging (see 6;3.2)</i>	<i>Inner packaging quantity (per receptacle)</i>	<i>Total quantity per package – passenger</i>	<i>Total quantity per package – cargo</i>	<i>Passenger</i>	<i>Cargo</i>
UN 1941 Dibromodifluoromethane	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 1990 Benzaldehyde	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 2315 Polychlorinated biphenyls, liquid	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3082 Environmentally hazardous substance, liquid, n.o.s.	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3151 Polyhalogenated biphenyls, liquid or Polyhalogenated terphenyls, liquid or Halogenated monomethyldiphenylmethanes, liquid	Glass	10.0 L	100 L	220 L	100 L	220 L
	Plastics	30.0 L				
	Metal	40.0 L				
UN 3334 Aviation regulated liquid, n.o.s.	Glass	10.0 L	450 L	450 L	450 L	450 L
	Plastics	30.0 L				
	Metal	40.0 L				

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report and paragraph 12.3.1.1 d) of DGP/30 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P001, PP99 (see ST/SG/AC.10/52/Add.1) and paragraph 1.2.1.3.1 d) of DGP/30 report:

ADDITIONAL PACKING REQUIREMENTS

For mixtures assigned to UN 3082 containing less than 1% of substances of highly toxic ingredients with an M factor of 10, 100, or 1000 (as described in 2.9.3.4.6.4 of the UN Model Regulations), plastics drums with removable heads containing quantities of more than 5 litres and not more than 20 litres per packaging are not subject to the performance tests in 6;4 for a transitional period until 31 December 2034, provided the packagings have successfully passed the stacking test in 6;4.6 for plastics drums intended for liquids and meet the general provisions of 4;1, except for 4;1.1.2, and 4;2.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Other metal (4N)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Drums

Aluminium (1B1, 1B2)
Fibre (1G)
Other metal (1N1, 1N2)
Plastics (1H1, 1H2)
Steel (1A1, 1A2)

Jerricans

Aluminium (3B1, 3B2)
Plastics (3H1, 3H2)
Steel (3A1, 3A2)

SINGLE PACKAGINGS

Composites

All (see 6;3.1.18)

Cylinders

See 4;2.7

Drums

Aluminium (1B1, 1B2)
Other metal (1N1, 1N2)
Plastics (1H1, 1H2)
Steel (1A1, 1A2)

Jerricans

Aluminium (3B1, 3B2)
Plastics (3H1, 3H2)
Steel (3A1, 3A2)

Packing Instruction 965

Cargo aircraft only for UN 3480

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Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.4.3 of DGP-WG/25 report:

IA. SECTION IA

Each cell or battery must meet the provisions of 2;9.3.

IA.1 General requirements

- Part 4;1 requirements must be met.
- Cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be ~~shipped~~ **offered for transport** with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

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IB. SECTION IB

Cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

Cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number "965" required by 5;4.1.5.8.1 a) must be supplemented with "IB". All other applicable provisions of Part 5;4 apply.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~ **g) and h) (if applicable)** and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside of the battery case except for batteries manufactured before 1 January 2009;

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.4.3 of DGP-WG/25 report:

IB.1 General requirements

- Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).
- Cells and batteries must be offered for transport at a state of charge not exceeding 30 per cent of their rated capacity. Cells and/or batteries at a state of charge greater than 30 per cent of their rated capacity may only be ~~shipped~~ **offered for transport** with the approval of the State of Origin and the State of the Operator under the written conditions established by those authorities.

Note.— Guidance and methodology for determining the rated capacity can be found in sub-section 38.3.2.3 of the UN Manual of Tests and Criteria. Cells and batteries shipped at a reduced state of charge are less prone to thermal runaway.

Table 965-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium ion cells and batteries	Forbidden	10 kg

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Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

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II. SECTION II

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.5 of DGP-WG/25 report:

Cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers ~~or~~ and crew); and
- Paragraphs 1 and 2 of this packing instruction.

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~ g) ~~and h) (if applicable)~~ and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside case except for batteries manufactured before 1 January 2009.

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Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

... II. SECTION II

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.5 of DGP-WG/25 report:

Cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers ~~or~~ and crew); and
- Paragraphs 1 and 2 of this packing instruction.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e) ~~and~~ g) ~~and h)~~ (if applicable) and the following:

- 1) for cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
- 2) for batteries, the Watt-hour rating is not more than 100 Wh;
 - the Watt-hour rating must be marked on the outside of the battery case except for batteries manufactured before 1 January 2009.

... II.2 Additional requirements

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UN harmonization amendments

Paragraph 4.1.2.1.5.1 a) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.

Note.— Where the equipment contains one or more button cells in addition to cells or batteries, the button cell or cells do not count toward package or consignment limits.

- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words “lithium ion batteries, in compliance with Section II of PI967” must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

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Packing Instruction 968

Cargo aircraft only for UN 3090

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IB. SECTION IB

Cells or batteries prepared in accordance with this section are subject to all of the applicable provisions of these Instructions (including the requirements in paragraph 2 of this packing instruction and of this section) except for the provisions of Part 6.

Cells or batteries shipped in accordance with the provisions of Section IB must be described on a dangerous goods transport document as set in Part 5;4. The packing instruction number “968” required by 5;4.1.5.8.1 a) must be supplemented with “IB”. All other applicable provisions of Part 5;4 apply.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) ~~and g)~~ and h) (if applicable) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

IB.1 General requirements

Cells and batteries must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

Table 968-IB

Contents	Net quantity per package	
	Passenger	Cargo
Lithium metal cells and batteries	Forbidden	2.5 kg

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Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

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II. SECTION II

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.5 of DGP-WG/25 report:

Cells and batteries packed with equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers ~~or~~ and crew); and
- Paragraphs 1 and 2 of this packing instruction.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Lithium metal cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) ~~and~~ g) and h) (if applicable) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

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II. SECTION II

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.5 of DGP-WG/25 report:

Cells and batteries contained in equipment, when complying with Section II of this packing instruction, are only subject to the following additional provisions of these Instructions:

- Part 1;2.3 (General – Transport of dangerous goods by post);
- Part 5;2.4.16 (Shipper's responsibilities – Special marking requirements for lithium batteries or sodium ion batteries);
- Part 7;4.4 (Operator's responsibilities – Reporting of dangerous goods accidents and incidents);
- Part 7;4.5 (Operator's responsibilities – Reporting of undeclared and misdeclared dangerous goods);
- Part 8;1.1 (Provisions concerning passengers and crew – Dangerous goods carried by passengers ~~or~~ and crew); and
- Paragraphs 1 and 2 of this packing instruction.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Cells and batteries may be offered for transport provided that each cell and battery meets the provisions of 2;9.3 a), e), f) (if applicable) ~~and~~ g) and h) (if applicable) and the following:

- 1) for cells, the lithium content is not more than 1 g;
- 2) for batteries, the aggregate lithium content is not more than 2 g.

II.2 Additional requirements

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- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
- This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.

UN harmonization amendments

Paragraph 4.1.2.1.5.1 a) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Note.— Where the equipment contains one or more button cells in addition to cells or batteries, the button cell or cells do not count toward package or consignment limits.

- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words “lithium metal batteries, in compliance with Section II of PI970” must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

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Packing Instruction 972

Passenger or cargo aircraft for UN 3530 only

(See Packing Instruction 220 for flammable gas-powered engines and machinery, Packing Instruction 378 for flammable liquid-powered engines and machinery, Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles or Packing Instruction 952 for battery-powered equipment and vehicles)

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ADDITIONAL PACKING REQUIREMENTS

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Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.1 of DGP/30 report:

Batteries

All batteries must be installed and securely fastened in the battery holder of the machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) If spillable batteries are installed, and it is possible for the machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 870.
- 2) If lithium batteries are installed:
 - i) lithium batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport; and
 - ii) they must meet the provisions of Part 2;9.3, except that pre-production prototypes of lithium ~~batteries or cells~~ or batteries, when these prototypes are transported for testing, or ~~low annual~~ production runs of ~~lithium batteries or cells~~ not more than 100 lithium cells or batteries that have not been tested to the requirements in Part III, subsection 38.3 of the UN *Manual of Tests and Criteria* may be transported aboard cargo aircraft if approved by the appropriate authority of the State of Origin and the State of the Operator. A copy of the document of approval must accompany the consignment.
- 3) If metallic sodium or sodium alloy batteries are installed, they must conform to the requirements of Special Provision A94.

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UN harmonization amendments

Amendments to manage aviation specific risks and address anomalies

DGP-WG/UN Harmonization identified a need to incorporate sodium ion cells and batteries into this packing instruction to align with Part 2;0.6.2 and to add the prohibition from transport of cells or batteries identified as being damage or defective in accordance with Special Provision A154:

Packing Instruction 975

Passenger and cargo aircraft for UN 3548 only

Introduction

This packing instruction is only permitted for articles which do not have an existing proper shipping name and which contain only environmentally hazardous substances where the quantity of the environmentally hazardous substance in the article exceeds 5 L or 5 kg. In addition to the environmentally hazardous substances, the article may also contain lithium metal, lithium ion or sodium ion cells or batteries that comply with Section II of Packing Instruction 967 ~~or~~, Section II of Packing Instruction 970 or Section II of Packing Instruction 978, as applicable. Cells or batteries identified as being damaged or defective in accordance with Special Provision A154 are forbidden for transport.

...

Packing Instruction 978

Passenger and cargo aircraft only for UN 3552 (contained in equipment) only

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II. SECTION II

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II.2 Additional requirements

- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- Cells and batteries must be protected so as to prevent short circuits.
- Where multiple pieces of equipment are packed in the same outer packaging, each piece of equipment must be packed to prevent contact with other equipment.
- Each package must be marked with the battery mark (Figure 5-3). The package must be of such size that there is adequate space to affix the mark on one side without the mark being folded.
 - This requirement does not apply to:
 - packages containing only button cell batteries installed in equipment (including circuit boards); and
 - packages containing no more than four cells or two batteries installed in equipment, where there are not more than two packages in the consignment.

UN harmonization amendments

Paragraph 4.1.2.1.5.1 a) of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 188 (see ST/SG/AC.10/52/Add.1):

Note.— Where the equipment contains one or more button cells in addition to cells or batteries, the button cell or cells do not count toward package or consignment limits.

- Where a consignment includes packages bearing the battery mark (Figure 5-3), the words “sodium ion batteries, in compliance with Section II of PI978” must be placed on the air waybill, when an air waybill is used. Where packages of Section II batteries from multiple packing instructions are included on one air waybill, the compliance statement for the different battery types and/or packing instructions may be combined into a single statement provided that the statement identifies the applicable battery type(s) and packing instruction numbers.
- Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with the functions for which they are responsible.

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Part 5

SHIPPER'S RESPONSIBILITIES

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Chapter 1

GENERAL

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UN harmonization amendments

Paragraph 1.2.1.9 of DGP/30 report:

1.2.4 Specific provisions for excepted packages of radioactive material of Class 7

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1.2.4.2 The documentation requirements of 5;4 do not apply to excepted packages of radioactive material of Class 7, except that:

- a) the UN number preceded by the letters "UN" and the name and address of the shipper and the consignee and, if relevant, the identification mark for each competent authority certificate of approval (see 5;4.1.5.7.1 [sh](#)) must be shown on a transport document such as an air waybill or other similar document complying with the requirements of 5;4.1.2.1 to 5;4.1.2.4;
- b) the requirements, if relevant, of 4.1.5.7.1 [sh](#), 4.1.5.7.3 and 4.1.5.7.4 apply; and
- c) the requirements of 4.4 apply.

Where an agreement exists with the operator, the shipper may provide the information by EDP or EDI techniques.

...

Chapter 2

MARKING

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.2, 5.2.1.9.1 (see ST/SG/AC.10/52/Add.1):

...

2.4.16 ~~Special marking requirements for lithium batteries or sodium ion batteries~~ Battery mark

...

2.4.16.2 The mark must indicate the appropriate UN number preceded by the letters "UN" as follows:

- a) "UN 3090" for lithium metal cells or batteries;
- b) "UN 3480" for lithium ion cells or batteries;

- c) "UN 3091" for lithium metal cells or batteries contained in, or packed with, equipment;
- d) "UN 3481" for lithium ion cells or batteries contained in, or packed with, equipment; or
- e) "UN 3552" for sodium ion cells or batteries contained in, or packed with, equipment.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.2, 5.2.1.9.2 (see ST/SG/AC.10/52/Add.1):

Where a package contains ~~lithium~~ cells or batteries assigned to different UN numbers, all applicable UN numbers must be indicated on one or more marks. However, where equipment contains one or more button cells in addition to cells or batteries there is no requirement for the UN number indicating the button cell or cells to be included on the mark.

2.4.16.3 The mark must be in the form of a rectangle or a square with hatched edging. The symbol (group of batteries, one damaged and emitting flame, above the UN number for lithium ion, lithium metal or sodium ion cells or batteries) must be black on white or suitable contrasting background. The hatching must be red. The mark must be a minimum dimension of 100 mm wide × 100 mm high and the minimum width of the hatching must be 5 mm. If the size of the package so requires, the dimensions may be reduced to not less than 100 mm wide × 70 mm high. Where dimensions are not specified, all features must be in approximate proportion to those shown on the full-size mark (Figure 5-3).

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.2, 5.2.1.9.3 (see ST/SG/AC.10/52/Add.1):

2.4.16.4 When both the battery mark and hazard labels in accordance with 3.5 other than the Class 9 label for lithium batteries or sodium ion batteries (Figure 5-26) are required, the battery mark must be located on the same surface as the hazard labels if the package dimensions are adequate.

~~2.4.16.4~~ 2.4.16.5 Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 or 968 must bear both the battery mark (Figure 5-3) and the lithium battery or sodium ion battery Class 9 hazard label (Figure 5-26).

...

Figure 5-3. Battery mark

~~Note. The mark shown in Figure 5-3 of the 2021–2022 edition of the Technical Instructions may continue to be applied until 31 December 2026.~~

...

Chapter 3

LABELLING

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.2, 5.2.2.2.1 (see ST/SG/AC.10/52/Add.1):

3.5 LABEL SPECIFICATIONS

3.5.1 Class hazard label specifications

3.5.1.1 Labels must satisfy the provisions of this section and conform, in terms of colour, symbols and general format, to the specimen labels shown in Figures 5-4 to 5-26. Corresponding specimen labels required for various modes of transport, with minor variations which do not affect the obvious meaning of the label, are also acceptable.

...

Chapter 4

DOCUMENTATION

...

4.1 DANGEROUS GOODS TRANSPORT INFORMATION

...

4.1.5 Information required in addition to the dangerous goods description

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.3 of DGP-WG/25 report and paragraph 1.2.1.5 of DGP/30 report:

4.1.5.1 ~~Quantity of dangerous goods, number of packages, and type of packaging~~ and quantity of dangerous goods

4.1.5.1.1 ~~Except as specified in 4.1.5.1.2 to 4.1.5.1.7, the number of packages, type of packaging (such as steel drum, fibreboard box, etc.) and net quantity of dangerous goods in each package (by volume or mass, as appropriate) must be indicated~~ included for each item of dangerous goods bearing a different proper shipping name, UN number or packing group. Abbreviations may be used to specify the unit of measurement for the quantity.

Moved from the end of 5;4.1.5.1 and replaced
“indicated” with “included”:

Note.— The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be included.

For packages containing the same dangerous goods and quantity per package a multiple of the quantity may be ~~used~~ included.
For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L

Consignment comprising packages of different quantities of the same dangerous good must be clearly identified. For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L, 10 fibreboard boxes x 10 L

UN packaging codes may only be used to supplement the description of the kind of package (such as one fibreboard box (4G)).

4.1.5.1.2 For limited quantities, where the letter “G” follows the quantity in column 11 of Table 3-1:

a) the gross mass of each package must be ~~indicated, included rather than the net quantity (except~~

b) for more than one package of limited quantities of ID 8000, Consumer commodity, either the actual gross mass of each package or the average gross mass of the packages must be included. For example: if there are 10 packages and the total gross mass of them is 100 kg, the dangerous goods transport document may show this as “average gross mass per package 10 kg”; or

c) when there are different dangerous goods packed together in the same outer packaging ~~which must be described as shown in paragraph e) and the net quantity of each dangerous goods followed by the gross mass of the completed package must be included~~

4.1.5.1.3 ~~a) For empty uncleaned packagings as described by 4.1.4.3 b) only the number and type of packagings need must be shown~~ included

~~4.1.5.1.4~~ ~~b)~~ ~~f~~For chemical kits and first aid kits, the total net mass of dangerous goods must be included. Where the kits contain solids and/or liquids, the net mass of liquids within the kits is to be calculated on a 1 to 1 basis of their volume, that is, 1 L equal to 1 kg.

~~4.1.5.1.5~~ ~~c)~~ ~~f~~For dangerous goods in apparatus, articles or machinery ~~or apparatus~~, the individual total quantities of dangerous goods in solid, liquid or gaseous state, contained in the article(s) must be included.

~~4.1.5.1.6~~ ~~d)~~ ~~f~~For dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods must be ~~given~~ included.

~~e)~~ ~~for dangerous goods in limited quantities with a 30 kg G limit in Table 3-1, where different dangerous goods are packed together in the same outer packaging, the net quantity of each dangerous goods followed by the gross mass of the completed package;~~

Paragraph 4.2.2.3 of DGP-WG/25 report and paragraph 1.2.1.5 of DGP/30 report:

~~4.1.5.1.7~~ ~~f)~~ ~~f~~For explosive articles of Class 1, the net quantity ~~indicated~~ included for each package must be supplemented with the net explosive mass (see Part 1;3.1.1 for the definition of net explosive mass) contained in the package followed by the unit of measurement. The abbreviations "NEQ", "NEM" or ~~"NEW"~~ "NEC" may be ~~indicated~~ included in association with the value provided.

Moved to below first paragraph under
5;4.1.5.1:

~~Note. The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be indicated.~~

...

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

...

Chapter 3

REQUIREMENTS FOR PACKAGINGS

3.1 REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.1, 6.1.4.12.1 (see ST/SG/AC.10/52/Add.1)

3.1.11 Fibreboard boxes (including corrugated fibreboard boxes) 4G

3.1.11.1 Strong and good quality solid or double-faced corrugated fibreboard (single or multiwall) must be used, appropriate to the capacity of the box and to its intended use. The water resistance of the outer surface must be such that the increase in mass, as determined in a test carried out over a period of 30 minutes by the Cobb method of determining water absorption, is not greater than 155 g/m² – see ~~ISO 535:2014~~ [ISO 535:2023](#). It must have proper bending qualities. Fibreboard must be cut, creased without scoring, and slotted so as to permit assembly without cracking, surface breaks or undue bending. The fluting of corrugated fibreboard must be firmly glued to the facings.

...

Chapter 4

PACKAGING PERFORMANCE TESTS

4.1 PERFORMANCE AND FREQUENCY OF TESTS

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.1, 6.1.5.1.3 (see ST/SG/AC.10/52/Add.1)

4.1.3 [Appropriate](#) tests must be repeated on production samples at intervals established by the appropriate national authority. For such tests on paper or fibreboard packagings, preparation at ambient conditions is considered equivalent to the provisions of 4.2.3.

...

Chapter 5

REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

...

5.1 GENERAL REQUIREMENTS

...

5.1.5 Initial inspection and testing

5.1.5.1 New cylinders, other than closed cryogenic receptacles and metal hydride storage systems, must be subjected to inspection and testing during and after manufacture in accordance with the applicable design standards or recognized technical codes including the following:

On an adequate sample of cylinder shells:

- a) testing of the mechanical characteristics of the material of construction;
- b) verification of the minimum wall thickness;
- c) verification of the homogeneity of the material for each manufacturing batch;
- d) inspection of the external and internal conditions;
- e) inspection of the threads used to fit closures;
- f) verification of the conformance with the design standard;

For all cylinder shells:

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.1.5.1 (see ST/SG/AC.10/52/Add.1)

- g) a hydraulic pressure test. Cylinder shells must meet the acceptance criteria specified in the design and construction technical standard or recognized technical code;

Note.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

- h) inspection and assessment of manufacturing defects and either repairing them or rendering the cylinder shells unserviceable. In the case of welded cylinder shells, particular attention must be paid to the quality of the welds;
- i) an inspection of the marks on the cylinder shells;
- j) in addition, cylinder shells intended for the transport of UN 1001 – Acetylene, dissolved, and UN 3374 – Acetylene, solvent free, must be inspected to ensure proper installation and condition of the porous material and, if applicable, the quantity of solvent.

On an adequate sample of closures:

- k) verification of materials;

- l) verification of dimensions;
- m) verification of cleanliness;
- n) inspection of completed assembly;
- o) verification of the presence of marks;

For all closures:

- p) testing for leakproofness;

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.1.5.2 (see ST/SG/AC.10/52/Add.1)

5.1.5.2 Closed cryogenic receptacles must be subjected to testing and inspection during and after manufacture in accordance with the applicable design standards or recognized technical codes, including the following:

On an adequate sample of inner vessels:

- a) testing of the mechanical characteristics of the material of construction;
- b) verification of the minimum wall thickness;
- c) inspection of the external and internal conditions;
- d) verification of the conformance with the design standard or recognized technical code;
- e) inspection of welds by radiographic, ultrasonic or other suitable non-destructive test method according to the applicable design and construction standard or recognized technical code;

For all inner vessels:

- f) a hydraulic pressure test. The inner vessel must meet the acceptance criteria specified in the design and construction technical standard or recognized technical code;

Note.— With the agreement of the competent authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

- g) inspection and assessment of manufacturing defects and either repairing them or rendering the inner vessel unserviceable;
- h) an inspection of the marks;

On an adequate sample of closures:

- i) verification of materials;
- j) verification of dimensions;
- k) verification of cleanliness;
- l) inspection of completed assembly;
- m) verification of the presence of marks.

For all closures:

- n) testing for leakproofness.

On an adequate sample of completed closed cryogenic receptacles:

- o) testing the satisfactory operation of service equipment;
- p) verification of the conformance with the design standard or recognized technical code.

For all completed closed cryogenic receptacles:

- q) testing for leakproofness.

Note.— Closed cryogenic receptacles, which were constructed in accordance with the initial inspection and test requirements of 5.1.5.2 applicable in the 2021–2022 edition of these Instructions, but which do not conform to the requirements of 5.1.5.2 relating to the initial inspection and test applicable in the 2023–2024 edition of these Instructions, may continue to be used.

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.1.6.1 (see ST/SG/AC.10/52/Add.1)

5.1.6 Periodic inspection and testing

5.1.6.1 Refillable cylinders other than cryogenic receptacles must be subjected to periodic inspections and tests by a body authorized by the appropriate national authority, in accordance with the following:

- a) check of the external conditions of the cylinder and verification of the equipment and the external marks;
- b) check of the internal conditions of the cylinder (such as internal inspection, verification of minimum wall thickness);
- c) check of the threads either:
 - i) if there is evidence of corrosion; or
 - ii) if the closures or other service equipment are removed;
- d) a hydraulic pressure test of the cylinder shell and, if necessary, verification of the characteristics of the material by suitable tests;

Note 1.— With the agreement of the appropriate national authority, the hydraulic pressure test may be replaced by a test using a gas, where such an operation does not entail any danger.

Note 2.— For seamless steel cylinder shells the check of 5.1.6.1 b) and hydraulic pressure test of 5.1.6.1 d) may be replaced by a procedure conforming to ISO 16148:2016 + Amd 1:2020 "Gas cylinders – Refillable seamless steel gas cylinders and tubes – Acoustic emission examination (AT) and follow-up ultrasonic examination (UT) for periodic inspection and testing".

Note 3.— The check of internal conditions of 5.1.6.1 b) and the hydraulic pressure test of 5.1.6.1 d) may be replaced by ultrasonic examination carried out in accordance with ISO 18119:2018 + Amd 1:2021 + Amd 2:2024 for seamless steel and seamless aluminium alloy cylinder shells. For a transitional period until 31 December 2026, the standard ISO 18119:2018 may be used for this same purpose. For a transitional period until 31 December 2028 the standard ISO 18119:2018 + Amd 1:2021 may be used for this same purpose. For a transitional period until 31 December 2024, the standard ISO 10461:2005 + Amd 1:2006 may be used for seamless aluminium alloy cylinders and ISO 6406:2005 may be used for seamless steel cylinder shells for this same purpose.

- e) check of service equipment if to be reintroduced into service. This check may be carried out separately from the inspection of the cylinder shell.

Note.— For the periodic inspection and test frequencies, see Packing Instruction 200 or, for a chemical under pressure, Packing Instruction 218.

...

5.2 REQUIREMENTS FOR UN CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.1.1 (see ST/SG/AC.10/52/Add.1)

5.2.1 Design, construction and initial inspection and testing

5.2.1.1 The following standards apply for the design, construction and initial inspection and test of refillable UN cylinder shells, except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5:

Reference	Title	Applicable for manufacture
...		
ISO 4706:2008	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below.	~~Until further notice~~ Until 31 December 2030
<u>ISO 4706:2023</u>	<u>Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below</u>	<u>Until further notice</u>
...		

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.1.3 (see ST/SG/AC.10/52/Add.1)

5.2.1.3 The following standards apply for the design, construction and initial inspection and test of UN acetylene cylinders except that inspection requirements related to the conformity assessment system and approval must be in accordance with 5.2.5.

Note.— The maximum of 1 000 L volume as mentioned in the ISO standard ISO 21029-1:2004 Cryogenic vessels, does not apply for refrigerated liquefied gases in closed cryogenic receptacles installed in apparatus (such as MRI or cooling machines).

For the cylinder shell:

Reference	Title	Applicable for manufacture
...		
ISO 4706:2008	Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below	~~Until further notice~~ Until 31 December 2030
<u>ISO 4706:2023</u>	<u>Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below</u>	<u>Until further notice</u>
...		

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.2 (see ST/SG/AC.10/52/Add.1)

5.2.2 Materials

In addition to the material requirements specified in the design and construction standards, and any restrictions specified in the applicable Packing Instruction for the gas(es) to be transported (such as Packing Instruction 200, Packing Instruction 202 or Packing Instruction 214), the following standards apply to material compatibility:

<i>Reference</i>	<i>Title</i>	<i>Applicable for manufacture</i>
ISO 11114-1:2020 <u>+</u> <u>Amd 1:2023</u>	Gas cylinders – Compatibility of cylinder and valve materials with gas contents – Part 1: Metallic materials.	Until further notice
...		

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.3 (see ST/SG/AC.10/52/Add.1)

5.2.3 Closures and their protection

The following standards apply to the design, construction, and initial inspection and test of closures and their protection:

<i>Reference</i>	<i>Title</i>	<i>Applicable for manufacture</i>
...		
ISO 10297:2014 + Amd 1:2017	Gas cylinders – Cylinder valves – Specification and type testing	~~Until further notice~~ <u>Until 31 December 2028</u>
<u>ISO 10297:2024</u>	<u>Gas cylinders – Cylinder valves – Specification and type testing</u>	<u>Until further notice</u>
...		
ISO 14246:2014 + Amd 1:2017	Gas cylinders – Cylinder valves – Manufacturing tests and examination	~~Until further notice~~ <u>Until 31 December 2030</u>
<u>ISO 14246:2022</u>	<u>Gas cylinders – Cylinder valves – Manufacturing tests and examinations</u>	<u>Until further notice</u>
...		

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.4 (see ST/SG/AC.10/52/Add.1)

5.2.4 Periodic inspection and test

5.2.4.1 The following standards apply to the periodic inspection and testing of UN cylinders:

Reference	Title	Applicable for manufacture
...		
ISO 18119:2018 + Amd 1:2021	Gas cylinders – Seamless steel and seamless aluminium-alloy gas cylinders and tubes – Periodic inspection and testing.	~~Until further notice~~ <u>Until 31 December 2028</u>
<u>ISO 18119:2018 + Amd 1:2021 + Amd 2:2024</u>	<u>Gas cylinders – Seamless steel and seamless aluminium-alloy gas cylinders and tubes – Periodic inspection and testing</u>	<u>Until further notice</u>
...		
ISO 11623:2015	Gas cylinders – Composite construction – Periodic inspection and testing	~~Until further notice~~ <u>Until 31 December 2028</u>
<u>ISO 11623:2023</u>	<u>Gas cylinders – Composite cylinders and tubes – Periodic inspection and testing</u> <u>Note.— The pressure test must not be replaced by a non-destructive examination (NDE) technique, though such techniques can be used for monitoring purposes.</u>	<u>Until further notice</u>
ISO 22434:2006	Transportable gas cylinders – Inspection and maintenance of cylinder valves <i>Note.— These requirements may be met at times other than at the periodic inspection and test of UN cylinders.</i>	~~Until further notice~~ <u>Until 31 December 2028</u>
<u>ISO 22434:2022</u>	<u>Gas cylinders – Inspection and maintenance of valves</u> <u>Note.— These requirements may be met at times other than at the periodic inspection and test of UN cylinders.</u>	<u>Until further notice</u>

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.7.3 (see ST/SG/AC.10/52/Add.1)

5.2.7 Marking of UN refillable cylinders and closed cryogenic receptacles

...

5.2.7.3 The following operational marks must be applied:

...

k) In the case of cylinders for UN 1001 **Acetylene, dissolved:**

- i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling, any coating, the solvent and the saturation gas expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit;
- ii) the identity of the porous material (such as name or trademark); and
- iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters "KG";

Acetylene cylinders constructed in accordance with the 2021-2022 Edition of the Technical Instructions may continue to be used without the application of the marks detailed in ii) and iii) when the marking can neither be applied on the cylinder shoulder nor applied on any neck ring.

l) In the case of cylinders for UN 3374 **Acetylene, solvent free:**

- i) the tare in kilograms consisting of the total of the mass of the empty cylinder shell, the service equipment (including porous material) not removed during filling and any coating expressed to three significant figures rounded down to the last digit followed by the letters "KG". At least one decimal must be shown after the decimal point. For cylinders of less than 1 kg, the mass must be expressed to two significant figures rounded down to the last digit;
- ii) the identity of the porous material (such as name or trademark); and
- iii) the total mass of the filled acetylene cylinder in kilograms followed by the letters "KG".

Acetylene cylinders constructed in accordance with the 2021-2022 Edition of the Technical Instructions may continue to be used without the application of the marks detailed in ii) and iii) when the marking can neither be applied on the cylinder shoulder nor applied on any neck ring.

~~Note. Acetylene cylinders constructed in accordance with the 2021-2022 edition of these Instructions, which are not marked in accordance with 6.5.2.7.3 k) or l) applicable in the 2023-2024 edition of these Instructions, may continue to be used until the next periodic inspection and test two years after the coming into force of this edition of these Instructions, where they must be marked according to the provisions above or be taken out of operation.~~

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.7.4 (see ST/SG/AC.10/52/Add.1)

5.2.7.4 The following manufacturing marks must be applied:

...

- p) In the case of steel cylinders and closed cryogenic receptacles and composite cylinders and closed cryogenic receptacles with steel liner intended for the transport of gases with a risk of hydrogen embrittlement, the letter "H" showing compatibility of the steel (see ISO 11114-1:2020 + Amd 1:2023);

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.8.1 (see ST/SG/AC.10/52/Add.1)

5.2.8 Marking of non-refillable UN cylinders

5.2.8.1 Non-refillable UN cylinders must be marked clearly and legibly with certification and gas or cylinder specific marks. These marks must be permanently affixed (such as stencilled, stamped, engraved or etched) on the cylinder. Except when stencilled, the marks must be on the shoulder, top end or neck of the cylinder shell or on a permanently affixed component of the cylinder (such as welded collar). Except for the “UN” mark and the “DO NOT REFILL” mark, the minimum size of the marks must be 5 mm for cylinders with a diameter greater than or equal to 140 mm and 2.5 mm and for cylinders with a diameter less than 140 mm. The minimum size of the “UN” mark must be 10 mm for cylinders with a diameter greater than or equal to 140 mm and 5 mm for cylinders with a diameter less than 140 mm. The minimum size of the “DO NOT REFILL” mark must be 5 mm.

5.2.8.2 Non-refillable UN cylinders of seamless construction with a diameter of 40 mm or less may instead be permanently marked (e.g. stencilled, stamped, engraved or etched) on their side walls provided no harmful stress concentration is created, and the minimum cylindrical shell wall thickness is maintained. The minimum size of the marks must be 1.5 mm. The minimum size of the UN packaging symbol must be 3 mm. The minimum size of the “DO NOT REFILL” mark must be 3 mm.

5.2.8.23 The marks listed in 5.2.7.2 to 5.2.7.4 must be applied with the exception of g), h) and m). The serial number o) may be replaced by the batch number. In addition, the words “DO NOT REFILL” in letters of at least 5 mm in height are required.

5.2.8.34 The requirements of 5.2.7.5 must apply.

Note.— Non-refillable cylinders may, on account of their size, substitute a label for these permanent marks.

5.2.8.45 Other marks are allowed provided they are made in low stress areas other than the side wall and are not of a size and depth that will create harmful stress concentrations. Such marks must not conflict with required marks.

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.2, 6.2.2.9.2 (see ST/SG/AC.10/52/Add.1)

5.2.9 Marking of UN metal hydride storage systems

...

5.2.9.2 The following marks must be applied:

...

j) In the case of steel cylinders and composite cylinders with steel liner, the letter “H” showing compatibility of the steel (see ISO 11114-1:2020 + Amd 1:2023); and

...

Chapter 6**PACKAGINGS FOR INFECTIOUS SUBSTANCES OF CATEGORY A
(UN 2814 AND UN 2900)**

...

6.5 TEST REQUIREMENTS FOR PACKAGINGS**6.5.1 PERFORMANCE AND FREQUENCY OF TESTS**

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.3, 6.3.5.1.3 (see ST/SG/AC.10/52/Add.1)

6.5.1.3 Appropriate tests must be repeated on production samples at intervals established by the competent authority.

...

|

Chapter 7

REQUIREMENTS FOR THE CONSTRUCTION, TESTING AND APPROVAL OF PACKAGES FOR RADIOACTIVE MATERIAL AND FOR THE APPROVAL OF SUCH MATERIAL

...

7.2 ADDITIONAL REQUIREMENTS FOR PACKAGES TRANSPORTED BY AIR

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 3.3 of DGP/30 report:

7.2.3 Packages containing radioactive material must be capable of withstanding, without loss or dispersal of radioactive contents from the containment system, an internal pressure that produces a pressure differential of not less than maximum normal operating pressure plus 95 kPa.

Note.—In the case of solid material, to comply with 7.2.3, means other than pressure resistance may be used to demonstrate compliance. If it can be demonstrated that there is no loss or dispersal of the radioactive contents from the containment system when the package is exposed to the pressure differential expected during flight, the package design can be considered to meet the requirement even if the internal pressure is not maintained.

...

7.10 REQUIREMENTS FOR PACKAGES CONTAINING FISSILE MATERIAL

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.3, 6.4.11.2 (see ST/SG/AC.10/52/Add.1)

7.10.2 Packages containing fissile material that meet the provisions of subparagraph d) and one of the provisions of a) to c) below are excepted from the requirements of 7.10.4 to 7.10.14.

...

- d) the total mass of beryllium, hydrogenous material enriched in deuterium, graphite and other allotropic forms of carbon in an individual package must not be greater than the mass of fissile nuclides in the package except where the total concentration of these materials does not exceed 1 g in any 1 000 g of material. Beryllium incorporated in copper alloys up to 4 per cent in ~~weight~~ mass of the alloy does not need to be considered.

...

Chapter 8

REQUIREMENTS FOR INTERMEDIATE BULK CONTAINERS

8.1 MARKING OF PACKAGING FOR INTERMEDIATE BULK CONTAINERS

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.5, 6.5.2.1.1 (see ST/SG/AC.10/52/Add.1)

8.1.2 The packaging mark consists of:

...

- g) the ~~stacking test load~~ superimposed stacking test mass in kg. For IBCs not designed for stacking, the figure "0" must be shown;

...

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 6.5, 6.5.2.2.2 (see ST/SG/AC.10/52/Add.1)

8.1.3 The maximum permitted ~~stacking load~~ superimposed stacking mass applicable when the IBC is in use must be displayed on a symbol as shown in Figure 6-2 or Figure 6-3. The symbol must be durable and clearly visible.

...

Part 7

OPERATOR'S RESPONSIBILITIES

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

Chapter 1

ACCEPTANCE PROCEDURES

...

1.7 CONDUCTING SAFETY RISK ASSESSMENTS

Operators must include the transport of dangerous goods, including lithium batteries and cells as cargo, in the scope of their:

- a) safety management system (SMS) in accordance with Annex 19; and
- b) specific safety risk assessment on the transport of items in the cargo compartment in accordance with Annex 6 – *Operation of Aircraft, Part I – International Commercial Air Transport – Aeroplanes* and Part IV – International Operations – Remotely Piloted Aircraft Systems.

Note 1.— Guidance on implementation of an SMS is contained in the Safety Management Manual (SMM) (Doc 9859).

Note 2.— Guidance on the conduct of a specific safety risk assessment on the transport of items in the cargo compartment is contained in the Cargo Compartment Operational Safety Manual (Doc 10102).

Note 3.— Specific guidance on safety risk assessments related to consignments containing COVID-19 pharmaceuticals is provided at www.icao.int/safety/OPS/OPS-Normal/Pages/Safety-transport-vaccines.aspx.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 2.2.1 of DGP/30 report:

Chapter 2

STORAGE ~~AND~~, LOADING AND STOWAGE

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

2.1 LOADING RESTRICTIONS ON THE FLIGHT DECK AND FOR PASSENGER AIRCRAFT

2.1.1 Dangerous goods must not be carried in an aircraft cabin occupied by passengers or on the flight deck of an aircraft, except as permitted by 1;2.2.1 and 8;1 and for radioactive material, excepted packages under 2;7.2.4.1.1. Dangerous goods may be carried in a main deck cargo compartment of a passenger aircraft provided that compartment meets all the certification requirements for a Class B or a Class C aircraft cargo compartment. Dangerous goods bearing the "Cargo aircraft only" label must not be carried on a passenger aircraft.

2.1.2 Under the conditions specified in S-7;2.2 of the Supplement, the State of Origin and the State of the Operator may approve the transport of dangerous goods in main deck cargo compartments of passenger aircraft that do not meet the requirements in 2.1.1.

Note.— Cargo compartment classification is described in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

2.1.3 For additional requirements concerning the loading of dangerous goods for carriage by helicopters, see Part 7;7.

2.1.4 For additional requirements concerning the loading of dangerous goods for carriage by RPA, see Part 7;8.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.2 of DGP-WG/24 report:

Table 7-2. Separation of explosive substances and articles

<i>Division and compatibility group</i>	1.3C	1.3G	1.4B	1.4C	1.4D	1.4E	1.4G	1.4S
1.3C		<u>x</u>	x				<u>x</u>	
1.3G	<u>x</u>		x	<u>x</u>	<u>x</u>	<u>x</u>		
1.4B	x	x		x	x	x	x	
1.4C		<u>x</u>	x				<u>x</u>	
1.4D		<u>x</u>	x				<u>x</u>	
1.4E		<u>x</u>	x				<u>x</u>	
1.4G	<u>x</u>		x	<u>x</u>	<u>x</u>	<u>x</u>		
1.4S								

An “x” at the intersection of a row and column indicates that explosives of these divisions and compatibility groups must be loaded into separate unit load devices and, when stowed aboard the aircraft, the unit load devices must be separated by other cargo with a minimum separation distance of 2 m. When not loaded in a unit load device, these explosives must be loaded into different, non-adjacent loading positions and separated by other cargo with a minimum separation distance of 2 m.

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

2.4 LOADING AND SECURING OF DANGEROUS GOODS

2.4.1 LOADING OF CARGO AIRCRAFT

2.4.1.1 Packages or overpacks of dangerous goods bearing the “Cargo aircraft only” label must be loaded for carriage by a cargo aircraft in accordance with one of the following provisions:

- a) in a Class C aircraft cargo compartment; or
- b) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority (a ULD that is determined by the appropriate national authority to meet the Class C aircraft cargo compartment standards must include “Class C compartment” on the ULD tag); or
- c) in such a manner that in the event of an emergency involving such packages or overpacks, a crew member or other authorized person can access those packages or overpacks, and can handle and, where size and mass permit, separate such packages or overpacks from other cargo; or
- d) external carriage by a helicopter or a remotely piloted helicopter; or

- e) with the approval of the State of the Operator, for helicopter operations, in the cabin (see Part S-7;2.4 of the Supplement).

Note.— Cargo compartment classification is described in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

...

2.9.6 Separation

2.9.6.1 Separation from persons

Categories II – Yellow and III – Yellow packages, overpacks or freight containers must be separated from persons. The minimum separation distances to be applied are shown in Tables 7-3 and 7-4 and these distances are from the surface of the packages, overpacks or freight containers to the nearest inside surface of the passenger cabin or flight deck partitions or floors, irrespective of the duration of the carriage of the radioactive material. Table 7-4 applies only when radioactive material is being carried by a cargo aircraft, and in those circumstances the minimum distances must be applied as above and also to any other areas occupied by persons.

Note.— The provisions of Tables 7-3 and 7-4 do not apply to the carriage of radioactive materials in an RPA if there are no persons onboard.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.1.2.2 of DGP-WG/24 report:

2.15 HANDLING AND LOADING OF INTERMEDIATE BULK CONTAINERS (IBCs)

During handling and loading of intermediate bulk containers (IBCs), account must be taken of the IBC markings specified in 6;~~2.4.3~~8.1.3, if present.

...

Amendments to manage aviation specific risks and address anomalies

Amendments to support remotely pilot aircraft systems operations

Paragraph 4.2.2.3 of DGP-WG/24 report and 6.1 of DGP/30 report:

Chapter 4

PROVISION OF INFORMATION

...

4.1 INFORMATION TO THE PILOT-IN-COMMAND OR REMOTE PILOT IN COMMAND

...

- 4.1.1.1 Except as otherwise provided, the information required by 4.1.1 must include the following:

...

- f) the number of packages and their exact loading location. For radioactive material see ~~g)~~ h) below;

...

- j) the aerodrome at which the package(s) is to be unloaded;

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.2.2.5 of DGP-WG/24 report:

...

4.1.3 For UN 3480 (**Lithium ion batteries**)~~and~~, UN 3090 (**Lithium metal batteries**)~~and~~ UN 3551 (**Sodium ion batteries**), the information required by 4.1.1 may be replaced by the UN number, proper shipping name, class, total quantity at each specific loading location, the aerodrome at which the package(s) is to be unloaded and whether the package must be carried on cargo aircraft only. UN 3480 (**Lithium ion batteries**)~~and~~, UN 3090 (**Lithium metal batteries**)~~and~~ UN 3551 (**Sodium ion batteries**) carried under a State exemption must meet all of the requirements of 4.1.

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 8.3 of DGP-WG/24 report:

4.2 INFORMATION TO BE PROVIDED TO EMPLOYEES

An operator must provide such information in the operations manual and/or other appropriate manuals as will enable flight crews and other employees to carry out the functions for which they are responsible with regard to the transport of dangerous goods. The operations manual and/or other appropriate manuals must be amended or revised as necessary to ensure that the information contained therein is kept up to date. This information must include instructions as to the action to be taken in the event of emergencies involving dangerous goods, and details of the location and numbering system of cargo compartments together with:

- a) the maximum quantity of dry ice permitted in each compartment; and
- b) if radioactive material is to be carried, instructions on the loading of such dangerous goods based on the requirements of 7.2.9.

Where applicable, this information must also be provided to ground handling agents.

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

Chapter 8

RPAS OPERATIONS

Note 1.— The requirements in this chapter are in addition to the other provisions of these Instructions that apply to all operators (such as Part 1;4 and Part 7).

Note 2. — For the purpose of this chapter, in addition to the State of the Operator, a State concerned may be the State where the operations are being conducted, the State of a Remote Pilot, or the State of the Remote Station (when different from the State of the Operator).

8.1 An RPA may only transport dangerous goods either:

- a) in a cargo compartment that meets all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment; or
- b) as external carriage in the case of a remotely piloted helicopter.

Note.— See 7;2.4.1 for additional restrictions for packages or overpacks of dangerous goods bearing the “Cargo aircraft only” label.

8.2 Where the cargo compartment of the RPA does not meet all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment, the State of the Operator and the State of Origin may grant an approval for the transport of those dangerous goods in accordance with part S-7;2.3 of the Supplement. The associated hazards must be addressed by the operator through a specific safety risk assessment.

8.3 Due to the nature or type of operations carried out by an RPA, there may be circumstances when the full provisions of the Technical Instructions are not appropriate or necessary. These circumstances include instances such as when no persons are carried on board an RPA, the RPA operations are conducted to and from unmanned sites and operations are conducted in remote locations or in mountainous areas. In such circumstances and when deemed appropriate, the State of the Operator may grant an approval to permit the carriage of dangerous goods without all of the normal requirements of the Technical Instructions being fulfilled. When States other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of Origin and destination, as appropriate, or from any other states concerned.

Note 1.— Doc 9859 contains general guidance on implementation of Annex 19, including the conduct of safety risk assessments.

Note 2.— Doc 10102 provides guidance on specific safety risk assessments on the transport of items in the cargo compartment, including dangerous goods.

8.4 When loading dangerous goods for open external carriage by a remotely piloted helicopter, consideration should also be given to the type of packaging used and to the protection of those packagings, where necessary, from the effects of airflow and weather (such as by damage from rain or extreme temperatures), in addition to the general loading provisions of 7;2. If such loads include dangerous goods suspended from a remotely piloted helicopter, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of the load.

...

Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

...

Chapter 1

PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS AND CREW

...

1.1 DANGEROUS GOODS CARRIED BY PASSENGERS AND CREW

Amendments to facilitate transport or State oversight

Paragraph 4.3.1 of DGP-WG/25 report and 3.1 of DGP/30 report:

1.1.1 Passengers and crew are forbidden to carry dangerous goods either as or in carry-on baggage, checked baggage or on their person unless the dangerous goods are:

- a) permitted in accordance with Table 8-1; and
- b) for personal use only.

Note 1.— In addition to items owned or used by a passenger, “personal use” may also include items for use by others such as gifts; portable electronic devices provided by employers to employees for their use in work-related activities; or medical devices carried by device providers or medical professionals for imminent patient care.

Note 2.— Personal use does not include items carried for sales or distribution.

Note 13.— The following dangerous goods may be commonly carried by passengers on other modes of transport, however, they are prohibited either as or in carry-on baggage, checked baggage or on the person:

- a) personal medical oxygen devices that utilize liquid oxygen;
- b) electroshock weapons (such as tasers) containing dangerous goods such as explosives, compressed gases, lithium batteries, etc.;
- c) “strike anywhere” matches;
- d) lighter fuel and lighter refills;
- e) premixing burner lighter (see the Glossary of Terms in Attachment 2) without a means of protection against unintentional activation; and
- f) battery-powered lighters powered by a lithium ion or lithium metal battery (such as laser plasma lighters, tesla coil lighters, flux lighters, arc lighters and double arc lighters) without a safety cap or means of protection against unintentional activation.

Note 24.— Exceptions found in these Instructions are not reproduced in Table 8-1. The following dangerous goods are not subject to these Instructions:

- a) Radio-pharmaceuticals contained within the body of a person as the result of medical treatment; and
- b) Energy efficient lamps when in retail packaging and intended for personal or home use (see 1;2.6).

Note 35.— States may implement additional restrictions in the interest of aviation security.

...

Amendments to manage safety risks posed by energy storage device provisions

Paragraph 4.3 of DGP/30 report:

...

Table 8-1. Provisions for dangerous goods carried by passengers and crew

<i>Dangerous Goods</i>	<i>Location</i>		<i>Approval of the operator(s) is required</i>	<i>Restrictions</i>
	<i>Checked baggage</i>	<i>Carry-on baggage</i>		
Batteries				
1) Lithium batteries (including <u>power banks</u> and portable electronic devices);	Yes (except for g) and h))	Yes	(see c) and d))	a) each battery must be of a type which meets the requirements of each test in the UN <i>Manual of Tests and Criteria</i>, Part III, subsection 38.3; b) each battery must not exceed the following: — for lithium metal batteries, a lithium content of 2 g; or — for lithium ion batteries, a Watt-hour rating of 100 Wh; c) each battery may exceed 100 Wh but not exceed 160 Wh Watt-hour rating for lithium ion with the approval of the operator; d) each battery may exceed 2 g but not exceed 8 g lithium content for lithium metal for portable medical electronic devices with the approval of the operator; <u>e) no more than two spare batteries meeting the requirements of c) or d) may be carried per person.</u> <u>ef)</u> for portable electronic devices containing batteries: — measures must be taken to prevent unintentional activation and to protect the devices from damage; — the devices should be carried as carry-on baggage; however, if carried as checked baggage, the devices must be completely switched off (not in sleep or hibernation mode) if the batteries exceed: — for lithium metal batteries, a lithium content of 0.3 g per device; or — for lithium ion batteries, a Watt-hour rating of 2.7 Wh per device; <u>fg)</u> batteries and heating elements must be isolated in portable electronic devices capable of generating extreme heat, which could cause a fire if activated, by removal of the heating element, battery or other components;

Dangerous Goods	Location		Approval of the operator(s) is required	Restrictions
	Checked baggage	Carry-on baggage		
				~~g~~h) spare batteries, ~~including power banks~~: — must be carried as carry-on baggage; and — must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); i) <u>power banks</u>: — <u>must be carried as carry-on baggage</u>; — <u>must not be recharged while onboard the aircraft</u>; — <u>should not be used to recharge a portable electronic device while onboard the aircraft; and</u> — <u>no more than two power banks may be carried per person</u>; ~~h~~i) baggage equipped with a lithium battery(ies) exceeding: — for lithium metal batteries, a lithium content of 0.3 g; or — for lithium ion batteries, a Watt-hour rating of 2.7 Wh must be carried as carry-on baggage unless the battery(ies) is removed from the baggage, in which case the battery(ies) must be carried in accordance with ~~g~~h); ~~i) no more than two spare batteries meeting the requirements of e) or d) may be carried per person.~~ <u>Note.— The restrictions in a) and the applicable limits in b), c), d) or e) apply to all batteries for this item, i.e. those contained in portable electronic devices, spare batteries, power banks and baggage equipped with lithium batteries.</u>

...

Attachment 1

LISTS OF PROPER SHIPPING NAMES

Editorial Note.— The list of UN numbers with associated proper shipping names in Attachment 1, Chapter 1 will be automatically generated and included in the 2027-2028 Edition of the Technical Instructions based on amendments to Table 3-1 approved by the ICAO Council.

...

Chapter 2

LIST OF N.O.S. AND GENERIC PROPER SHIPPING NAMES

...

THE MOST SPECIFIC APPLICABLE NAME MUST ALWAYS BE USED

UN harmonization amendments

Paragraph 4.1.2.1 of DGP-WG/25 report:

UN Model Regulations, Appendix A (see ST/SG/AC.10/52/Add.1)

Class or Division	Subsidiary hazard	UN No.	Proper shipping name
...			
CLASS 6			
Division 6.1			
<i>Specific entries</i>			
6.1		3140	Alkaloid salts, liquid, n.o.s.*
6.1		3140	Alkaloids, liquid, n.o.s.*
6.1		1544	Alkaloid salts, solid, n.o.s.*
6.1		1544	Alkaloids, solid, n.o.s.*
6.1		3141	Antimony compound, inorganic, liquid, n.o.s.*
6.1		1549	Antimony compound, inorganic, solid, n.o.s.*
6.1		1556	Arsenic compound, liquid, n.o.s.*
6.1		1557	Arsenic compound, solid, n.o.s.*
6.1		1564	Barium compound, n.o.s.*
6.1		1566	Beryllium compound, n.o.s.*
6.1		2570	Cadmium compound
6.1	8	3277	Chloroformates, toxic, corrosive, n.o.s.*
6.1	3 & 8	2742	Chloroformates, toxic, corrosive, flammable, n.o.s.*
<u>6.1</u>		<u>2020</u>	<u>Chlorophenols, toxic, solid, n.o.s.*</u>
<u>6.1</u>		<u>2021</u>	<u>Chlorophenols, toxic, liquid, n.o.s.*</u>
...			

<i>Class or Division</i>	<i>Subsidiary hazard</i>	<i>UN No.</i>	<i>Proper shipping name</i>
CLASS 8			
<i>Specific entries</i>			
8		3145	Alkylphenols, liquid, n.o.s. (including C ₂ -C ₁₂ homologues)
8		2430	Alkylphenols, solid, n.o.s. (including C ₂ -C ₁₂ homologues)
8		2735	Amines, liquid, corrosive, n.o.s.*
8	3	2734	Amines, liquid, corrosive, flammable, n.o.s.*
8		3259	Amines, solid, corrosive, n.o.s.*
8		2837	Bisulphates, aqueous solution
8		2693	Bisulphites, aqueous solution, n.o.s.
8		1719	Caustic alkali liquid, n.o.s.*
<u>8</u>	<u>6.1</u>	<u>3561</u>	<u>Chlorophenols, corrosive, toxic, solid, n.o.s.*</u>
<u>8</u>		<u>3562</u>	<u>Chlorophenols, corrosive, solid, n.o.s.</u>
...			

ATTACHMENT

PROPOSED AMENDMENTS TO TABLE 3-1

Proposed Amendments to Table 3-1 — Alphabetical Order

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
A												
Proposed amendment												
≠ Alkaloid salts, liquid, n.o.s.*	3140	6.1		Toxic		A3	I	E5	652	1 L	658	30 L
						A4	II	E4	654	5 L	662	60 L
						A6			Y641	1 L		
						A239	III	E1	655	60 L	663	220 L
									Y642	2 L		
2025–2026 Edition												
Alkaloid salts, liquid, n.o.s.*	3140	6.1		Toxic		A3	I	E5	652	1 L	658	30 L
						A4	II	E4	654	5 L	662	60 L
						A6			Y641	1 L		
							III	E1	655	60 L	663	220 L
									Y642	2 L		
Proposed amendment												
≠ Alkaloid salts, solid, n.o.s.*	1544	6.1		Toxic		A3	I	E5	666	5 kg	673	50 kg
						A5	II	E4	669	25 kg	676	100 kg
						A6			Y644	1 kg		
						A239	III	E1	670	100 kg	677	200 kg
									Y645	10 kg		
2025–2026 Edition												
Alkaloid salts, solid, n.o.s.*	1544	6.1		Toxic		A3	I	E5	666	5 kg	673	50 kg
						A5	II	E4	669	25 kg	676	100 kg
						A6			Y644	1 kg		
							III	E1	670	100 kg	677	200 kg
									Y645	10 kg		
Proposed amendment												
≠ Alkaloids, liquid, n.o.s.*	3140	6.1		Toxic		A3	I	E5	652	1 L	658	30 L
						A4	II	E4	654	5 L	662	60 L
						A6			Y641	1 L		
						A239	III	E1	655	60 L	663	220 L
									Y642	2 L		
2025–2026 Edition												
Alkaloids, liquid, n.o.s.*	3140	6.1		Toxic		A3	I	E5	652	1 L	658	30 L
						A4	II	E4	654	5 L	662	60 L
						A6			Y641	1 L		
							III	E1	655	60 L	663	220 L
									Y642	2 L		

										Passenger and cargo aircraft		Cargo aircraft only	
		UN No.	Class or division	Subsidiary hazard			Special provisions	UN packing group	Excepted quantity	Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
Name		2	3	4	5	6	7	8	9	10	11	12	13
≠					Proposed amendment								
	Alkaloids, solid, n.o.s.*	1544	6.1		Toxic		A3	I	E5	666	5 kg	673	50 kg
							A5	II	E4	669	25 kg	676	100 kg
							A6			Y644	1 kg		
							A239	III	E1	670	100 kg	677	200 kg
					2025–2026 Edition								
	Alkaloids, solid, n.o.s.*	1544	6.1		Toxic		A3	I	E5	666	5 kg	673	50 kg
							A5	II	E4	669	25 kg	676	100 kg
							A6			Y644	1 kg		
								III	E1	670	100 kg	677	200 kg
≠					Proposed amendment								
	Ammonium hydrogendifluoride, solid	1727	8	6.1	Corrosive & Toxic	US 4		II	E2	859	15 kg	863	50 kg
										Y844	5 kg		
	Ammonium hydrogendifluoride, solid	1727	8		Corrosive	US 4		II	E2	859	15 kg	863	50 kg
										Y844	5 kg		
≠					Proposed amendment								
	Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6			A2			FORBIDDEN		FORBIDDEN	
							A88						
							A225						
							A236						
					2025–2026 Edition								
	Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6			A2			FORBIDDEN		FORBIDDEN	
							A88						
							A225						
B													
≠					Proposed amendment								
	Battery-powered equipment	3171	9		Miscellaneous		A67		E0	952	No limit	952	No limit
							A87						
							A94						
							A154						
A182													
A199													
					2025–2026 Edition								
	Battery-powered equipment	3171	9		Miscellaneous		A67		E0	952	No limit	952	No limit
							A87						
							A94						
							A154						
							A164						
							A182						

	Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	Proposed amendment												
	Battery-powered vehicle	3171	9		Miscellaneous		A67 A87 A94 A154 A199 A214		E0	952	No limit	952	No limit
	2025–2026 Edition												
	Battery-powered vehicle	3171	9		Miscellaneous		A67 A87 A94 A154		E0	952	No limit	952	No limit
≠	Proposed amendment												
	Butyl acrylates, stabilized	2348	3		Liquid flammable		A209	II	E2	353 Y341	5 L 1 L	364	60 L
	2025–2026 Edition												
	Butyl acrylates, stabilized	2348	3		Liquid flammable		A209	III	E1	355 Y344	60 L 10 L	366	220 L
C													
+	Proposed new entry												
	Chlorophenols, corrosive, solid, n.o.s.	3562	8		Corrosive			II	E2	859 Y844	15 kg 5 kg	863	50 kg
+	Proposed new entry												
	Chlorophenols, corrosive, toxic, solid, n.o.s.*	3561	8	6.1	Corrosive & Toxic			II	E2	859 Y844	15 kg 5 kg	863	50 kg
≠	Proposed amendment												
	Chlorophenols, toxic, liquid, n.o.s.*	2021	6.1		Toxic	US 4		III	E1	655 Y642	60 L 2 L	663	220 L
	2025–2026 Edition												
	Chlorophenols, liquid	2021	6.1		Toxic	US 4		III	E1	655 Y642	60 L 2 L	663	220 L
≠	Proposed amendment												
	Chlorophenols, toxic, solid, n.o.s.*	2020	6.1		Toxic	US 4	A25	III	E1	670 Y645	100 kg 10 kg	677	200 kg
	2025–2026 Edition												
	Chlorophenols, solid	2020	6.1		Toxic	US 4	A25	III	E1	670 Y645	100 kg 10 kg	677	200 kg

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
D												
≠				Proposed amendment								
	Detonators, electric for blasting†	0030	1.1B						FORBIDDEN		FORBIDDEN	
	2025–2026 Edition											
	Detonators, electric for blasting†	0030	1.1B			A226			FORBIDDEN		FORBIDDEN	
≠				Proposed amendment								
	Detonators, electric for blasting†	0255	1.4B	Explosive 1.4				E0	FORBIDDEN		131	75 kg
	2025–2026 Edition											
	Detonators, electric for blasting†	0255	1.4B	Explosive 1.4		A226		E0	FORBIDDEN		131	75 kg
≠				Proposed amendment								
	Detonators, electric for blasting†	0456	1.4S	Explosive 1.4		A165		E0	131	25 kg	131	100 kg
	2025–2026 Edition											
	Detonators, electric for blasting†	0456	1.4S	Explosive 1.4		A165 A226		E0	131	25 kg	131	100 kg
≠				Proposed amendment								
	Detonators, electronic programmable for blasting†	0511	1.1B					E0	FORBIDDEN		FORBIDDEN	
	2025–2026 Edition											
	Detonators, electronic programmable for blasting†	0511	1.1B			A226		E0	FORBIDDEN		FORBIDDEN	
≠				Proposed amendment								
	Detonators, electronic programmable for blasting†	0512	1.4B	Explosive 1.4				E0	FORBIDDEN		131	75 kg
	2025–2026 Edition											
	Detonators, electronic programmable for blasting†	0512	1.4B	Explosive 1.4		A226		E0	FORBIDDEN		131	75 kg
≠				Proposed amendment								
	Detonators, electronic programmable for blasting†	0513	1.4S	Explosive 1.4		A165		E0	131	25 kg	131	100 kg
	2025–2026 Edition											
	Detonators, electronic programmable for blasting†	0513	1.4S	Explosive 1.4		A165 A226		E0	131	25 kg	131	100 kg
≠				Proposed amendment								
	1,2-Di-(dimethylamino) ethane	2372	3	6.1 8	Liquid flammable & Toxic & Corrosive		II	E2	353 Y341	5 L 1 L	364	60 L
	2025–2026 Edition											
	1,2-Di-(dimethylamino) ethane	2372	3		Liquid flammable		II	E2	353 Y341	5 L 1 L	364	60 L

	Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
#					Proposed amendment								
	2,4-Difluoroaniline, see Toxic liquid, organic, n.o.s.* (UN No. 2810)												
					2025–2026 Edition								
	2,4-Difluoroaniline, see Fluoroanilines												
E													
#					Proposed amendment								
	Environmentally hazardous substance, liquid, n.o.s.*	3082	9		Miscellaneous	DE 5 US 4	A97 A158 A197 A215 A238	III	E1	964 Y964	450 L 30 kg G	964	450 L
					2025–2026 Edition								
	Environmentally hazardous substance, liquid, n.o.s.*	3082	9		Miscellaneous	DE 5 US 4	A97 A158 A197 A215	III	E1	964 Y964	450 L 30 kg G	964	450 L
#					Proposed amendment								
	Ethylene oxide	1040	2.3	2.1 8		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A131			FORBIDDEN		FORBIDDEN	
					2025–2026 Edition								
	Ethylene oxide	1040	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A131			FORBIDDEN		FORBIDDEN	
#					Proposed amendment								
	Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide	1041	2.1	8	Gas flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	25 kg
					2025–2026 Edition								
	Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide	1041	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	25 kg

										Passenger and cargo aircraft		Cargo aircraft only	
Name		UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1		2	3	4	5	6	7	8	9	10	11	12	13
≠				Proposed amendment									
	Ethylene oxide and carbon dioxide mixture, with more than 87% ethylene oxide	3300	2.3	2.1 8		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
				2025–2026 Edition									
	Ethylene oxide and carbon dioxide mixture, with more than 87% ethylene oxide	3300	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
≠				Proposed amendment									
	Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1 8		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
				2025–2026 Edition									
	Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1		AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
F													
≠				Proposed amendment									
	p-Fluoroaniline, see Corrosive liquid, basic, organic, n.o.s.* (UN No. 3267)												
				2025–2026 Edition									
	p-Fluoroaniline, see Fluoroanilines												
≠				Proposed amendment									
	o-Fluoroaniline, see Flammable liquid, toxic, n.o.s.* (UN No. 1992)												
				2025–2026 Edition									
	o-Fluoroaniline, see Fluoroanilines												
≠				Proposed amendment									
	2-Fluoroaniline, see Flammable liquid, toxic, n.o.s.* (UN No. 1992)												
				2025–2026 Edition									
	2-Fluoroaniline, see Fluoroanilines												

	Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠					Proposed amendment								
	4-Fluoroaniline, see Corrosive liquid, basic, organic, n.o.s.* (UN No. 3267)												
					2025–2026 Edition								
	4-Fluoroaniline, see Fluoroanilines												
>					Proposed amendment								
					2025–2026 Edition								
	Fluoroanilines	2941	6.1		Toxic			III	E1	655 Y642	60 L 2 L	663	220 L
H													
+					Proposed new entry								
	Heating machines containing flammable, non-toxic, liquefied gas	3358	2.1				A103			FORBIDDEN		FORBIDDEN	
+					Proposed new entry								
	Heating machines containing non-flammable, non-toxic gases or ammonia solutions (UN 2672)	2857	2.2		Gas non-flammable		A26		E0	See 211		See 211	
≠					Proposed amendment								
	Hydrocarbon gas mixture, liquefied, n.o.s.*	1965	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A237		E0	FORBIDDEN		200	150 kg
					2025–2026 Edition								
	Hydrocarbon gas mixture, liquefied, n.o.s.*	1965	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
L												
≠	Proposed amendment											
	Lithium ion batteries (including lithium ion polymer batteries)	3480	9	Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A183 A201 A213 A235		E0	FORBIDDEN		See 965	
2025–2026 Edition												
	Lithium ion batteries (including lithium ion polymer batteries)	3480	9	Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A183 A201 A213		E0	FORBIDDEN		See 965	
≠	Proposed amendment											
	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9	Miscellaneous — Lithium or sodium ion batteries	US 3	A48 A88 A99 A154 A181 A185 A213 A220 A235		E0	967	5 kg	967	35 kg
2025–2026 Edition												
	Lithium ion batteries contained in equipment (including lithium ion polymer batteries)	3481	9	Miscellaneous — Lithium or sodium ion batteries	US 3	A48 A88 A99 A154 A181 A185 A213 A220		E0	967	5 kg	967	35 kg
≠	Proposed amendment											
	Lithium ion batteries installed in cargo transport unit	3536	9						FORBIDDEN		FORBIDDEN	
2025–2026 Edition												
	Lithium batteries installed in cargo transport unit lithium ion batteries or lithium metal batteries	3536	9						FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Sub-sidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	Proposed amendment												
	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A181 A185 A213 A235		E0	966	5 kg	966	35 kg
	2025–2026 Edition												
	Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	3481	9		Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A181 A185 A213		E0	966	5 kg	966	35 kg
+	Proposed new entry												
	Lithium metal batteries installed in cargo transport unit	3563	9							FORBIDDEN		FORBIDDEN	
P													
≠	Proposed amendment												
	Petroleum gases, liquefied	1075	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A237		E0	FORBIDDEN		200	150 kg
	2025–2026 Edition												
	Petroleum gases, liquefied	1075	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	FORBIDDEN		200	150 kg
S													
≠	Proposed amendment												
	Sodium ion batteries with organic electrolyte	3551	9		Miscellaneous — Lithium or sodium ion batteries		A88 A99 A154 A183 A201 A228 A235		E0	FORBIDDEN		See 976	
	2025–2026 Edition												
	Sodium ion batteries with organic electrolyte	3551	9		Miscellaneous — Lithium or sodium ion batteries		A88 A99 A154 A183 A201 A228		E0	FORBIDDEN		See 976	

	Name	UN No.	Class or division	Sub-sidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
≠	Proposed amendment												
	Sodium ion batteries contained in equipment with organic electrolyte	3552	9		Miscellaneous — Lithium or sodium ion batteries		A48 A88 A99 A154 A185 A228 A235		E0	978	5 kg	978	35 kg
+	2025–2026 Edition												
	Sodium ion batteries contained in equipment with organic electrolyte	3552	9		Miscellaneous — Lithium or sodium ion batteries		A48 A88 A99 A154 A185 A228		E0	978	5 kg	978	35 kg
+	Proposed new entry												
	Sodium ion batteries installed in cargo transport unit	3564	9							FORBIDDEN		FORBIDDEN	
≠	Proposed amendment												
	Sodium ion batteries packed with equipment with organic electrolyte	3552	9		Miscellaneous — Lithium or sodium ion batteries		A88 A99 A154 A185 A228 A235		E0	977	5 kg	977	35 kg
+	2025–2026 Edition												
	Sodium ion batteries packed with equipment with organic electrolyte	3552	9		Miscellaneous — Lithium or sodium ion batteries		A48 A88 A99 A154 A185 A228		E0	977	5 kg	977	35 kg
V													
≠	Proposed amendment												
	Vanadium pentoxide , non-fused form, containing less than 10% respirable particles	2862	6.1		Toxic			III	E1	670 Y645	100 kg 10 kg	677	200 kg
+	2025–2026 Edition												
	Vanadium pentoxide , non-fused form	2862	6.1		Toxic			III	E1	670 Y645	100 kg 10 kg	677	200 kg
+	Proposed new entry												
	Vanadium pentoxide , non-fused form, containing not less than 10% respirable particles	2862	6.1		Toxic			II	E4	669 Y644	25 kg 1 kg	676	100 kg

APPENDIX B**CONSOLIDATED AMENDMENTS TO THE SUPPLEMENT TO THE
TECHNICAL INSTRUCTIONS****Part S-3****DANGEROUS GOODS LIST,
SPECIAL PROVISIONS AND QUANTITY LIMITATIONS**

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See the attachment to this appendix for proposed amendments to Table S-3-1.

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Chapter 6**SPECIAL PROVISIONS**

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UN harmonization amendments

Paragraph 4.1.3.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 3.3, SP 379 (see ST/SG/AC.10/52/Add.1):

A329 (379) Anhydrous ammonia adsorbed or absorbed on a solid contained in ammonia dispensing systems or cylinders intended to form part of such systems may be transported on cargo aircraft only with the prior approval of the appropriate authority of the State of Origin and the State of the Operator under the written conditions established by those authorities in addition to the following:

- a) the adsorption or absorption presents the following properties:
 - 1) the pressure at a temperature of 20°C in the cylinder is less than 0.6 bar;
 - 2) the pressure at a temperature of 35°C in the cylinder is less than 1 bar;
 - 3) the pressure at a temperature of 85°C in the cylinder is less than 12 bar;
- b) the adsorbent or absorbent material must not have dangerous properties listed in Classes 1 to 8;
- c) the maximum contents of a cylinder must be 10 kg of ammonia; and
- d) cylinders containing adsorbed or absorbed ammonia must meet the following conditions:
 - 1) cylinders must be made of a material compatible with ammonia as specified in ISO 11114-1:2012 + A1:2017 2020 + Amd 1:2023;
 - 2) cylinders and their means of closure must be hermetically sealed and able to contain the generated ammonia;

- 3) each cylinder must be able to withstand the pressure generated at 85°C with a volumetric expansion no greater than 0.1%;
- 4) each cylinder must be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and
- 5) each cylinder must be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

When offered for transport in an ammonia dispenser, the cylinders must be connected to the dispenser in such a way that the assembly is guaranteed to have the same strength as a single cylinder.

The properties of mechanical strength mentioned in this special provision must be tested using a prototype of a cylinder and/or dispenser filled to nominal capacity, by increasing the temperature until the specified pressures are reached.

The test results must be documented, must be traceable and must be communicated to the relevant authorities upon request.

UN harmonization amendments

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.1.3.1 of DGP-WG/25 report and 1.3.1.1 a) of DGP/30 report (see also Special Provision A235 in the Technical Instructions):

UN Model Regulations, Chapter 3.3, SP 379 (see ST/SG/AC.10/52/Add.1):

A336 Hybrid batteries installed in a cargo transport unit in conformity with Part 2.9.3 h) of the Technical Instructions containing both lithium ion cells and sodium ion cells must be assigned to UN 3536.

Part S-4

PACKING INSTRUCTIONS

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Chapter 4

CLASS 2 – GASES

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4.1 SPECIAL PACKING PROVISIONS FOR DANGEROUS GOODS OF CLASS 2

4.1.1 General requirements

4.1.1.1 This section provides general requirements applicable to the use of cylinders and closed cryogenic receptacles for the transport of Class 2 gases (such as UN 1072 **Oxygen, compressed**). Cylinders and closed cryogenic receptacles must be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of transport, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

UN harmonization amendments

Paragraph 4.1.3.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.6.1.2 (see ST/SG/AC.10/52/Add.1)

4.1.1.2 Parts of cylinders and closed cryogenic receptacles that are in direct contact with dangerous goods must not be affected or weakened by those dangerous goods and must not cause a dangerous effect (such as catalysing a reaction or reacting with the dangerous goods). In addition to the requirements specified in the relevant packing instruction, which take precedence, the applicable provisions of [ISO 11114-1:2012 + A1:2017](#) and [ISO 11114-2:2013](#) [ISO 11114-1:2020 + Amd 1:2023](#) and [ISO 11114-2:2021](#) must be met.

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UN harmonization amendments

DGP-WG/UN Harmonization identified the need for further revisions to S-4;4.1.1.8 for the sake of alignment with 4;4.1.1.8 of the Technical Instructions and the UN Model Regulations.

UN Model Regulations, Chapter 4.1, 4.1.6.1.8 (see ST/SG/AC.10/52/Add.1)

4.1.1.8 Valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage, which could cause inadvertent release of the contents of the cylinder and closed cryogenic receptacle, by one of the following methods:

- a) Valves are placed inside the neck of the cylinder and closed cryogenic receptacle and protected by a threaded plug or cap;
- b) Valves are protected by caps or guards. Caps must possess vent holes of a sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
- c) Valves are protected by shrouds or guards permanent protective attachments;
- d) Not used; or

- e) Cylinders and closed cryogenic receptacles are transported in an outer packaging. The packaging as prepared for transport must be capable of meeting the drop test specified in 6;4.3 of the Technical Instructions at the Packing Group I performance level.

For cylinders and closed cryogenic receptacles with valves as described in b) ~~and c)~~, the requirements of ISO 11117:1998, ISO 11117:2008 + Cor 1:2009 or ISO 11117:2019 must be met. Requirements for valves with inherent protection, shrouds and permanent protective attachments used as valve protection under c) are given in the relevant pressure receptacle shell design standards, see 6;5.2.1. Valves with inherent protection used for refillable cylinders must meet the requirements of Annex A clause 4.6.2 of ISO 10297:2006, Annex A clause 5.5.2 of ISO 10297:2014 or Annex A, clause 5.5.2 of ISO 10297 +:2014 + Amd 1-A1:2017 must be met. For cylinders and closed cryogenic receptacles with or clause 5.4.2 of ISO 10297:2024 or, in the case of self-closing valves, of clause 5.4.2 of ISO 17879:2017. For valves with inherent protection used for non-refillable cylinders, the requirements of Annex A of ISO 17879:2017 must be met. For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 or ISO 16111:2018 clause 9.2.5 of ISO 11118:2015 or of clause 9.2.5 of ISO 11118:2015 + Amd 1:2019 must be met.

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Packing Instruction 200

For cylinders, the general packing requirements of 4;1.1 and 4;4.1.1 must be met.

Cylinders, constructed as specified in 6;5 are authorized for the transport of a specific substance when specified in the following tables (Table 1 and Table 2). Cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and marks conform to the requirements of the appropriate national authority in which they are approved and filled. The substances contained must be permitted in cylinders and permitted for air transport according to these Instructions. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed. Valves must be suitably protected or must be designed and constructed in such a manner that they are able to withstand damage without leakage as specified in Annex B of ISO 10297:1999. Cylinders with capacities of one litre or less must be packaged in outer packaging constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use, and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport. For some substances, the special packing provisions may prohibit a particular type of cylinder. The following requirements must be met:

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UN harmonization amendments

Paragraph 4.1.3.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P200 (see ST/SG/AC.10/52/Add.1)

- 5) The filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures. The procedures should include checks of:
- a) the conformity of cylinders and accessories with these Instructions;
 - b) their compatibility with the product to be transported;
 - c) the absence of damage which might affect safety;
 - d) compliance with the ~~degree or pressure of filling~~ filling ratio or pressure of filling, as appropriate;
 - e) marks and identification.

These requirements are deemed to be met if the following standards are applied:

ISO 10691: 2004	Gas cylinders – Refillable welded steel cylinders for liquefied petroleum gas (LPG) – Procedures for checking before, during and after filling.
ISO 11372: 2011	Gas cylinders – Acetylene cylinders – Filling conditions and filling inspection
ISO 11755: 2005	Gas cylinders – Cylinder bundles for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling
ISO 13088: 2011 + Amd 1:2020	Gas cylinders – Acetylene cylinder bundles – Filling conditions and filling inspection
ISO 24431:2016	Gas cylinders – Seamless, welded and composite cylinders for compressed and liquefied gases (excluding acetylene) – Inspection at time of filling

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Packing Instruction 221

Cargo aircraft only for UN 3537 and UN 3538 only

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

Amendments to facilitate transport or State oversight

Paragraph 4.3.6 of DGP-WG/24 report:

This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ which do not comply with the conditions as prescribed either in Part 2, Introductory Chapter, 6.0.a) or 6.0 b).

Amendments to facilitate transport or State oversight

Paragraph 4.2.3.2 of DGP-WG/25 report:

The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.

UN number and name		Net quantity ~~per package~~
UN 3537	Articles containing flammable gas, n.o.s.*	150 kg
UN 3538	Articles containing non-flammable, non toxic gas, n.o.s.*	150 kg

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Packing Instruction 379

Cargo aircraft only for UN 3540 only

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

Amendments to facilitate transport or State oversight

Paragraph 4.3.6 of DGP-WG/24 report:

This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ which do not comply with the conditions as prescribed either in Part 2, Introductory Chapter, 6.0.a) or 6.0 b).

Amendments to facilitate transport or State oversight

Paragraph 4.2.3.2 of DGP-WG/25 report:

The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.

UN number and name		Net quantity ~~per package~~
UN 3540	Articles containing flammable liquid, n.o.s.*	60 L

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Packing Instruction 400 Cargo aircraft only for UN 3541 only General requirements Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.					
Amendments to facilitate transport or State oversight					
Paragraph 4.3.6 of DGP-WG/24 report:					
This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ <u>which do not comply with the conditions as prescribed either in Part 2, Introductory Chapter, 6.0.a) or 6.0 b).</u>					
Amendments to facilitate transport or State oversight					
Paragraph 4.2.3.2 of DGP-WG/25 report:					
The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.					
<table border="1"> <thead> <tr> <th style="text-align: center;"><i>UN number and name</i></th><th style="text-align: center;"><i>Net quantity ~~per~~ package</i></th></tr> </thead> <tbody> <tr> <td>UN 3541 Articles containing flammable solid, n.o.s.*</td><td style="text-align: center;">50 kg</td></tr> </tbody> </table>		<i>UN number and name</i>	<i>Net quantity ~~per~~ package</i>	UN 3541 Articles containing flammable solid, n.o.s.*	50 kg
<i>UN number and name</i>	<i>Net quantity ~~per~~ package</i>				
UN 3541 Articles containing flammable solid, n.o.s.*	50 kg				

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Packing Instruction 600

Cargo aircraft only for UN 3546 only

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

Amendments to facilitate transport or State oversight**Paragraph 4.3.6 of DGP-WG/24 report:**

This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ which do not comply with the conditions as prescribed either in Part 2 Introductory Chapter, 6.0.a) or 6.0 b).

Amendments to facilitate transport or State oversight**Paragraph 4.2.3.2 of DGP-WG/25 report:**

The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.

UN number and name	Net quantity ~~per package~~	
	Liquid	Solid
UN 3546 Articles containing toxic substance, n.o.s.*	60 L	100 kg

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Packing Instructions 854 – 856

Cargo aircraft only

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS*Packing Group I*

- Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

- Packagings must meet the Packing Group II performance requirements.

UN harmonization amendments

Paragraph 4.1.3.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 4.1, 4.1.4.1, P001 (see ST/SG/AC.10/52/Add.1)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS*For UN 2029**When a cylinder is used, the internal pressure at 65°C must not exceed the test pressure.*

...

Packing Instruction 877

Cargo aircraft only for UN 3547 only

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

Amendments to facilitate transport or State oversight

Paragraph 4.3.6 of DGP-WG/24 report:

This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ which do not comply with the conditions as prescribed either in Part 2, Introductory Chapter, 6.0.a) or 6.0 b).

Amendments to facilitate transport or State oversight

Paragraph 4.2.3.2 of DGP-WG/25 report:

The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.

UN number and name	Net quantity ~~per~~ package	
	Liquid	Solid
UN 3547 Articles containing corrosive substance, n.o.s.*	30 L	50 kg

...

...

Packing Instruction 973

Cargo aircraft only for UN 3548 only

General requirements

Part 4;1.1.1, 4;1.1.3, 4;1.1.12 and 4;2 requirements must be met.

Amendments to facilitate transport or State oversight**Paragraph 4.3.6 of of DGP-WG/24 report:**

This entry applies to articles which do not have an existing proper shipping name and ~~which contain only dangerous goods permitted under Part 3;4.1.2 of the Technical Instructions, and exceed both the quantity limits for UN 3363 as prescribed in Special Provision A107 and the quantity limits permitted by Special Provision 301 of the UN Model Regulations~~ which do not comply with the conditions as prescribed either in Part 2, Introductory Chapter, 6.0.a) or 6.0 b).

Amendments to facilitate transport or State oversight**Paragraph 4.2.3.2 of DGP-WG/25 report:**

The following table provides the recommended maximum quantities of individual substances contained in a ~~single package or in an unpackaged~~ article.

<i>UN number and name</i>	<i>Net quantity ~~per~~ package</i>
UN 3548 Articles containing miscellaneous dangerous goods, n.o.s.*	As indicated for the substance in Table 3-1 of the Technical Instructions

...

Chapter 13

LARGE PACKAGINGS

Note.— This chapter has no corresponding chapter in the Technical Instructions.

13.1 GENERAL

UN harmonization amendments

DGP-WG/UN Harmonization recommends adding the following provision for the sake of alignment with the UN Model Regulations and to address a potential safety risk.

UN Model Regulations, Chapter 4.1, 4.1.3.4 and 4.2.5 of the Technical Instructions:

13.1.1 Large packagings may be used for the transport of articles in accordance with the provisions of this chapter only when the following conditions are met:

- a) transport is on cargo aircraft only;
- b) approval of the appropriate authority of the State of Origin and the State of the Operator is obtained; and
- c) there is a specific allowance for the use of large packagings provided for in Part S-4 or the value indicated in column 13 of Table 3-1 of the Technical Instructions shows “no limit”.

13.1.2 The following large packagings must not be used when the substances being transported are liable to become liquid during transport:

Flexible plastics: 51H (outer packaging)

...

Part S-5

STATE'S RESPONSIBILITIES WITH RESPECT TO SHIPPERS

(ADDITIONAL INFORMATION FOR PART 5 OF THE TECHNICAL INSTRUCTIONS)

...

Chapter 2

LABELLING

2.1 LABELS FOR ARTICLES CONTAINING DANGEROUS GOODS TRANSPORTED AS UN Nos. 3537, 3538, 3539, 3540, 3541, 3542, 3543, 3544, 3545, 3546, 3547 and 3548

UN harmonization amendments

Paragraph 4.1.3.1 of DGP-WG/25 report:

UN Model Regulations, Chapter 5.2, 5.2.2.1.13.1 (see ST/SG/AC.10/52/Add.1):

2.1.1 Packages containing dangerous goods in articles and dangerous goods in articles transported unpackaged must bear labels according to 5.3.1.1 of the Technical Instructions reflecting the hazards established according to Part 2, Introductory Chapter, paragraph 6 of the Technical Instructions. If the article contains one or more lithium batteries or sodium ion batteries with, for lithium metal batteries, an aggregate lithium content of 2 g or less, and for lithium ion batteries or sodium ion batteries, a Watt-hour rating of 100 Wh or less, the ~~lithium~~ battery mark (Figure 5-3 of the Technical Instructions) must be affixed to the package or unpackaged article. If the article contains one or more lithium batteries or sodium ion batteries with, for lithium metal batteries, an aggregate lithium content of more than 2 g, and for lithium ion batteries or sodium ion batteries, a Watt-hour rating of more than 100 Wh, the Class 9 label for lithium batteries or sodium ion batteries (Figure 5-26 of the Technical Instructions) must be affixed to the package or unpackaged article.

...

Part S-7

STATE'S RESPONSIBILITIES WITH RESPECT TO OPERATORS

(ADDITIONAL INFORMATION FOR PART 7 OF THE TECHNICAL INSTRUCTIONS)

...

Amendments to manage aviation specific risks and address anomalies

Paragraph 2.2.1 of DGP/30 report:

Chapter 2

STORAGE ~~[.] AND~~ LOADING ~~[.] AND~~ STOWAGE

...

2.2 LOADING ON PASSENGER AIRCRAFT

...

Amendments to support remotely pilot aircraft systems operations

Paragraph 6.1 of DGP/30 report:

2.3 LOADING ON REMOTELY PILOTED AIRCRAFT (RPA)

2.3.1 Part 7.8.1 of the Technical Instructions provides that an RPA may only transport dangerous goods either:

- a) in a cargo compartment that meets all the certification requirements for a Class C, Class D or Class E aircraft cargo compartment; or
- b) as external carriage.

For RPA operations, the State of the Operator may approve the carriage of the dangerous goods listed in 2.2.2 and 2.2.3 in a cargo compartment that does not meet all the applicable certification requirements, in accordance with 2.2.5, 2.2.6, 2.2.7 and 2.2.8. When such an approval is to be granted, States should consider the factors that may mean internal carriage is required or preferable, such as:

- the size/mass of packages making it impractical to carry them as an external load;

- the types and quantity of dangerous goods involved;
- the types of packaging used;
- the duration of the flight(s);
- the types of operation; and
- the ability to land quickly in the event of an emergency.

2.3.2 When States other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of Origin and Destination, as appropriate.

Renumber subsequent paragraphs accordingly

Amendments to manage aviation specific risks and address anomalies

Paragraph 4.2.2.5 of DGP-WG/25 report and paragraph 2.2.1 of DGP/30 report:

ATTACHMENT II TO CHAPTER 8

DANGEROUS GOODS MANUAL AND TRAINING PROGRAMME CHECKLISTS

...

Attachment B

Dangerous Goods Training Programme – Approval Checklist

...				
Questions:				
To meet the objective, the State should determine whether the dangerous goods training programme contains the following elements:				
...				
Limitations	Applicable citations	Yes	No	N/A
1. Dangerous goods forbidden on aircraft	1;2.1			
2. Exempt dangerous goods	1;1.1.5, 1;2.2, 1;2.4, 1;2.5			
3. Dangerous goods carried by passengers ~~or~~ <u>and</u> crew	8;1.1			
3. Reporting of accidents and incidents and undeclared or misdeclared dangerous goods	7;4.4, 7;4.5, 7;4.6, 7.4.7			
...				
Storage ~~and~~, loading <u>and</u> stowage procedures	Applicable citations	Yes	No	N/A
1. Unit load device and package inspection	7;2.8, 7;3.1.2			

2. Stowage compatibility	7;2.2			
3. Orientation of packages	7;2.3, 5;3.5.2			
4. Securing packages	7;2.4.2			
5. Loading of cargo aircraft	7;2.4.1			
6. Damages from shipments of dangerous goods	7;3			
...				

ATTACHMENT

PROPOSED AMENDMENTS TO TABLE S-3-1

DG PANEL Table S-3-1. Supplementary Dangerous Goods List (Class 1)

	Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
D													
					Proposed amendment								
≠	Detonators, electric for blasting†	0030	1.1B		Explosive					FORBIDDEN (131)		FORBIDDEN (131)	
					2025–2026 Edition								
	Detonators, electric for blasting†	0030	1.1B		Explosive		A226			FORBIDDEN (131)		FORBIDDEN (131)	
					Proposed amendment								
≠	Detonators, electric for blasting†	0255	1.4B		Explosive 1.4				E0	FORBIDDEN (131)		131	75 kg
					2025–2026 Edition								
	Detonators, electric for blasting†	0255	1.4B		Explosive 1.4		A226		E0	FORBIDDEN (131)		131	75 kg
					Proposed amendment								
≠	Detonators, electronic programmable for blasting†	0511	1.1B		Explosive				E0	FORBIDDEN (131)		FORBIDDEN (131)	
					2025–2026 Edition								
	Detonators, electronic programmable for blasting†	0511	1.1B		Explosive		A226		E0	FORBIDDEN (131)		FORBIDDEN (131)	
					Proposed amendment								
≠	Detonators, electronic programmable for blasting†	0512	1.4B		Explosive 1.4				E0	FORBIDDEN (131)		131	75 kg
					2025–2026 Edition								
	Detonators, electronic programmable for blasting†	0512	1.4B		Explosive 1.4		A226		E0	FORBIDDEN (131)		131	75 kg

DG PANEL Table S-3-1. Supplementary Dangerous Goods List (Class 2)

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
A												
Proposed amendment												
≠ Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6	Gas non-flammable		A2 A88 A225 A236 A333 A335			FORBIDDEN		(221)	No limit
2025–2026 Edition												
Articles containing non-flammable, non toxic gas, n.o.s.*	3538	2.2	See 2;0.6	Gas non-flammable		A2 A88 A225 A333 A335			FORBIDDEN		(221)	No limit
E												
Proposed amendment												
≠ Ethylene oxide	1040	2.3	2.1 8	Gas toxic & Gas flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A131			See 210		See 210	
2025–2026 Edition												
Ethylene oxide	1040	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2 A131			See 210		See 210	
Proposed amendment												
≠ Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide	1041	2.1	8	Gas flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	(200)	(5 kg)	200	25 kg
2025–2026 Edition												
Ethylene oxide and carbon dioxide mixture with more than 9% but not more than 87% ethylene oxide	1041	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	(200)	(5 kg)	200	25 kg

										Passenger and cargo aircraft		Cargo aircraft only	
		UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
Name		2	3	4	5	6	7	8	9	10	11	12	13
≠					Proposed amendment								
	Ethylene oxide and carbon dioxide mixture, with more than 87% ethylene oxide	3300	2.3	2.1 8	Gas toxic & Gas flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			See	210	See	210
					2025–2026 Edition								
	Ethylene oxide and carbon dioxide mixture, with more than 87% ethylene oxide	3300	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			See	210	See	210
≠					Proposed amendment								
	Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1 8	Gas toxic & Gas flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
					2025–2026 Edition								
	Ethylene oxide with nitrogen up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1	Gas toxic & Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3 US 4	A2			FORBIDDEN		FORBIDDEN	
H													
+					Proposed new entry								
	Heating machines containing flammable, non-toxic, liquefied gas	3358	2.1		Gas flammable		A103			FORBIDDEN		FORBIDDEN	
≠					Proposed amendment								
	Hydrocarbon gas mixture, liquefied, n.o.s.*	1965	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1 A237		E0	(200)	(5 kg)	200	150 kg
					2025–2026 Edition								
	Hydrocarbon gas mixture, liquefied, n.o.s.*	1965	2.1		Gas flammable	AU 1 CA 7 IR 3 NL 1 US 3	A1		E0	(200)	(5 kg)	200	150 kg

$\neq$

DG PANEL Table S-3-1. Supplementary Dangerous Goods List (Classes 3 to 9)

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
									Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
A												
Proposed amendment												
Articles containing flammable liquid, n.o.s.*	3540	3	See 2;0.6	Liquid flammable		A2 A88 A333			FORBIDDEN		(379)	(60 L)
2025–2026 Edition												
Articles containing flammable liquid, n.o.s.*	3540	3	See 2;0.6	Liquid flammable		A2 A88 A333			FORBIDDEN		(378)	(60 L)
B												
Proposed amendment												
≠ Butyl acrylates, stabilized	2348	3		Liquid flammable		A209 A330	II	E2	353 Y341	5 L 1 L	364	60 L
							III	E1	355 Y344	60 L 10 L	366	220 L
2025–2026 Edition												
Butyl acrylates, stabilized	2348	3		Liquid flammable		A209 A330	III	E1	355 Y344	60 L 10 L	366	220 L
L												
Proposed amendment												
≠ Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A183 A201 A213 A235 A331 A334		E0	FORBIDDEN		See 965	
2025–2026 Edition												
Lithium ion batteries (including lithium ion polymer batteries)	3480	9		Miscellaneous — Lithium or sodium ion batteries	US 3	A88 A99 A154 A183 A201 A213 A331 A334		E0	FORBIDDEN		See 965	

	Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger and cargo aircraft		Cargo aircraft only	
										Packing instruction	Max. net quantity per package	Packing instruction	Max. net quantity per package
	1	2	3	4	5	6	7	8	9	10	11	12	13
					Proposed amendment								
≠	Lithium ion batteries installed in cargo transport unit	3536	9		Miscellaneous — Lithium or sodium ion batteries		A336			FORBIDDEN		FORBIDDEN	
					2025–2026 Edition								
	Lithium batteries installed in cargo transport unit lithium ion batteries or lithium metal batteries	3536	9		Miscellaneous					FORBIDDEN		FORBIDDEN	
					Proposed new entry								
+	Lithium metal batteries installed in cargo transport unit	3563	9		Miscellaneous — Lithium or sodium ion batteries		A336			FORBIDDEN		FORBIDDEN	
	S												
					Proposed amendment								
≠	Sodium ion batteries with organic electrolyte	3551	9		Miscellaneous — Lithium or sodium ion batteries		A88 A99 A154 A183 A201 A228 A235 A331 A334		E0	FORBIDDEN		See 976	
					2025–2026 Edition								
	Sodium ion batteries with organic electrolyte	3551	9		Miscellaneous — Lithium or sodium ion batteries		A88 A99 A154 A183 A201 A228 A331 A334		E0	FORBIDDEN		See 976	
					Proposed new entry								
+	Sodium ion batteries installed in cargo transport unit	3564	9		Miscellaneous — Lithium or sodium ion batteries					FORBIDDEN		FORBIDDEN	

APPENDIX C

PROPOSED AMENDMENTS TO THE EMERGENCY RESPONSE GUIDANCE FOR AIRCRAFT INCIDENTS INVOLVING DANGEROUS GOODS RECOMMENDED UNDER AGENDA ITEM 2

FOREWORD

Annex 18 to the Convention on International Civil Aviation – *The Safe Transport of Dangerous Goods by Air* – requires that “The operator shall provide such information in the Operations Manual as will enable the flight crew to carry out its responsibilities with regard to the transport of dangerous goods and shall provide instructions as to the action to be taken in the event of emergencies arising involving dangerous goods.” This requirement is also included in the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284). Annex 6, Part I, Appendix 2 also requires that “information and instructions on the carriage of dangerous goods, including action to be taken in the event of an emergency” be included in the operations manual.

This document has been developed with the assistance of the Dangerous Goods Panel to provide guidance to States and operators for developing procedures and policies for dealing crew to deal with dangerous goods incidents on board aircraft. ~~It does not cover incidents which occur while the aircraft is on the ground, since emergency services should be available for such occurrences.~~ The guidance in this document focuses on incidents during flight. It can, however, be adapted to establish procedures to address the unique aspects that may be associated with incidents that occur while the aircraft is on the ground using a risk-based approach.

This document contains general information on the factors that may need to be considered when dealing with any dangerous goods incident. Guidance, in the form of checklists procedures, is given for both flight crew and cabin crew, and is intended to be used in association with existing emergency procedures established in the aircraft flight manual. In addition, a list of dangerous goods is presented, both alphabetically and by UN (United Nations) number. The list identifies an appropriate emergency response drill for each item and a chart gives details of the drill and identifies other relevant safety matters. The list of dangerous goods presented in this document is based on the Dangerous Goods List (Table 3-1) contained in the 2025–2026 edition of Doc 9284 and reflects, therefore, all additions, deletions and changes to Table 3-1 introduced in that edition of the Technical Instructions. ~~Operators may wish to develop their own material based on this document or they may include all or part of it, such as the list of dangerous goods and the associated drill chart, in their operations manual. The document may also be used in the required dangerous goods training programme for crew members.~~ Operators should use this document to develop procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approach should be used to support the development of these procedures. The mandatory dangerous programmes for flight crews and other relevant personnel should include the operator’s emergency response procedures.

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Section 1

GENERAL INFORMATION

1.1 CARGO COMPARTMENT CLASSIFICATION

Cargo compartments are classified in most many national airworthiness requirements ~~(such as FAR 25.857 and JAR 25.857)~~ as follows:

Class A. A Class A cargo or baggage compartment is one in which:

- a) the presence of a fire would be easily discovered by a crew member while at the crew member's station; and
- b) each part of the compartment is easily accessible in flight.

Class B. A Class B cargo or baggage compartment is one in which:

- a) there is sufficient access in flight to enable a crew member standing at any one access point and without stepping into the compartment, ~~to effectively reach~~ extinguish a fire occurring in any part of the compartment ~~with the contents of~~ using a hand fire extinguisher;
- b) when the access provisions are being used, no hazardous ~~quantity~~ quantities of smoke, flames or extinguishing agent will enter any compartment occupied by the crew or passengers; and
- c) there is a separate approved smoke detector or fire detector system to give warning at ~~the pilot or flight engineer station~~ a flight crew member station.

Class C. A Class C cargo or baggage compartment is one not meeting the requirements for either a Class A or B compartment but in which:

- a) there is a separate approved smoke detector or fire detector system to give warning at ~~the pilot or a flight engineer~~ crew member station;
- b) there is an approved built-in fire-extinguishing or suppression system controllable from the ~~pilot or flight engineer station~~ cockpit;
- c) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers; and
- d) there are means ~~of controlling~~ to control ventilation and ~~draughts~~ drafts within the compartment so that the extinguishing agent used can control any fire that may start within the compartment.

Class D. A Class D cargo or baggage compartment is one in which:

- a) a fire occurring in it will be completely confined without endangering the safety of the aeroplane or the occupants;
- b) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or other noxious gases from any compartment occupied by the crew or passengers;
- c) ventilation and ~~draughts~~ drafts are controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits; and
- d) ~~consideration is given to the effect of heat within the compartment on adjacent critical parts of the aeroplane~~ the compartment volume does not exceed 28.3 m³ (1 000 ft³).

~~For compartments of 14.2 m³ or less, an airflow of 42.5 m³ per hour is acceptable.~~

Note.— Certain Class D compartments are provided with ventilation, in which case a fire detector is also required. In addition, Class D compartments were historically permitted to be larger, if the volume and the ventilation rate per hour sum to less than 2 000 ft³.

Class E. A Class E cargo compartment is one on aeroplanes used only for the carriage of cargo and in which:

- a) there is a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station;
- b) there are means ~~of shutting~~ to shut off the ventilating airflow to or within the compartment, and the controls for these means are accessible to the flight crew in the crew compartment;
- c) there are means ~~of excluding~~ to exclude hazardous quantities of smoke, flames, or noxious gases, from the flight crew compartment; and
- d) the required crew emergency exits are accessible under any cargo loading conditions.

Class F. A Class F compartment must be located on the main deck and is one in which:

- a) there is a separate approved smoke detector or fire detector system to give warning at the pilot or flight engineer station;
- b) there are means to extinguish or control a fire without requiring a crew member to enter the compartment; and
- c) there are means to exclude hazardous quantities of smoke, flames, or extinguishing agent from any compartment occupied by the crew or passengers.

1.2 CARGO COMPARTMENT LOCATIONS

Typically, Class A cargo compartments are small cargo compartments that may be located between the flight deck and the passenger cabin or adjacent to the galley area or at the back of the aircraft.

A Class B cargo compartment is usually much larger than a Class A cargo compartment and can be located in an area remote from the flight deck. Class B cargo compartments are found on “combi” aircraft between the flight deck and the passenger cabin or behind the passenger cabin at the rear of the aircraft.

Note.— A “combi” aircraft is one in which both cargo and passengers are carried on the main deck.

The volume of a Class C cargo compartment is usually larger than Class A or B and such cargo compartments are generally found under the floor ~~in wide-bodied of the~~ aircraft. A Class C cargo compartment may have ~~two fire-extinguishing systems~~ more than one suppressant reservoir, enabling a second charge of extinguishant to be fired into the cargo compartment some time after the fire has initially been controlled by the first charge.

Instead of being equipped with fire detection and extinguishing systems, Class D cargo compartments are designed to control a fire by severely restricting the supply of oxygen. Class D cargo compartments are to be found under the passenger cabin floor on most jet transport aircraft. However, it must be appreciated that certain dangerous goods are themselves oxygen producers. Therefore, it cannot be assumed that a fire in a Class D cargo compartment will necessarily self-extinguish.

~~A Class E cargo compartment normally comprises the entire main deck compartment of a cargo aircraft.~~

A Class F cargo compartment is the main deck cargo compartment on a combi aeroplane, i.e. one where the main deck has both a passenger cabin and a cargo compartment.

A conventional passenger aeroplane is usually fitted with either Class C or Class D cargo compartments under the passenger cabin. A cargo aeroplane is usually fitted with a Class E main deck cargo compartment and with Class D ~~and/~~ Class C, or Class ~~C underfloor~~ E lower deck cargo compartments. A “combi” aeroplane is usually fitted with a Class B main deck cargo compartment, either in front or behind the passenger cabin and with a Class C and/or Class D cargo compartment under the floor. ~~The~~ A smaller commuter aeroplane, if not fitted as a conventional passenger aeroplane with a Class D cargo compartment, could be equipped with only a Class A cargo compartment, usually positioned in the area adjacent to the flight deck.

~~Helicopters are capable of carrying freight either in the main cabin (in a Class A cargo compartment) or under the cabin floor. The cargo compartment under the floor has no classification and the compartment is not capable of withstanding fire for any length of time. Some helicopters have cargo compartments which are at the rear of the aircraft and which are inaccessible from inside the helicopter. These cargo compartments are usually small and they are not fitted with any fire detection systems, extinguishing systems or liners.~~

1.3 FIRE EXTINGUISHERS

The most common fire extinguishers found on aircraft are those which have halon (BCF), halon replacement, dry agent, carbon dioxide (CO₂) or water as the firefighting agent. All ~~of~~ these types may not be present on any one aircraft. Guidance on the use of the fire extinguishers is contained in the

operations manual and may also appear on the extinguishers themselves. The emergency response drills, described in Section 4, indicate which firefighting agents should be used and the instances where the use of water is considered dangerous.

1.4 OXYGEN EQUIPMENT

Fixed and portable oxygen equipment is provided in pressurized aircraft for the use of the crew and passengers. The equipment available to the flight crew usually has a gas-tight mask and can supply 100 per cent oxygen. The ~~aircraft may carry portable smoke hoods but, in general, the~~ equipment available to the cabin crew consists of portable oxygen bottles fitted with therapeutic masks. Additional passenger drop-~~out~~down masks may be available for use by cabin crew in the passenger cabin and galley/~~toilet or lavatory~~ areas. Both the passenger drop-~~out~~down masks and the therapeutic masks are designed to allow a low flow of oxygen supplemented by air drawn in through valves or holes in the side of the mask. These masks are not intended to be gas-tight and, consequently, any toxic fumes or smoke present will be inhaled by passengers or crew using the masks. When smoke or fumes are present, or during firefighting, portable smoke hoods should be used to provide the necessary protection while supplying oxygen to the crew member.

1.5 ACCESSIBILITY OF DANGEROUS GOODS

Most ~~D~~dangerous goods bearing the “cargo aircraft only” label are required to be accessible in flight, except ~~for these~~ in cases identified in Part 7, Chapter 2 of the Technical Instructions.

~~a) loaded:~~

~~1) in a Class C aircraft cargo compartment;~~

~~2) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority;~~

~~3) as external carriage by a helicopter; and~~

~~b) classified as:~~

~~1) flammable liquids (Class 3), Packing Group III, other than those with a subsidiary hazard of Class 8;~~

~~2) toxic substances (Division 6.1) with no subsidiary hazard other than Class 3;~~

~~3) infectious substances (Division 6.2);~~

~~4) radioactive materials (Class 7);~~

~~5) miscellaneous dangerous goods (Class 9);~~

~~6) UN 3528 — Engine, internal combustion, flammable liquid powered or Engine, fuel cell,~~

~~flammable liquid powered or Machinery, internal combustion, flammable liquid powered or Machinery, fuel cell, flammable liquid powered; and~~

~~7) UN 3529 Engine, internal combustion, flammable gas powered or Engine, fuel cell, flammable gas powered or Machinery, internal combustion, flammable gas powered or Machinery, fuel cell, flammable gas powered.~~

~~Other dangerous goods (those which do not bear “cargo aircraft only” labels) are not required to be accessible.~~

~~Part 7, Chapter 2 of the Technical Instructions sets out the full requirements on the accessibility of dangerous goods on cargo aircraft.~~

1.6 EMERGENCY RESPONSE KIT

Some operators provide dangerous goods emergency response kits for use aboard aircraft and also provide training to crew members regarding the use of the kit in dangerous goods incidents. Typically, a dangerous goods emergency response kit contains:

- 1) large, good quality polyethylene bags;
- 2) bag ties; and
- 3) long rubber gloves.

When reference is made in this document to an “emergency response kit”, it is intended that the kit should be comprised of at least this equipment.

Note.— The word “polyethylene” as used in this manual has the same meaning as “polythene”.

Section 2

GENERAL CONSIDERATIONS

2.1 GENERAL

The following are considerations which may need to be taken into account in assessing an appropriate course of action to take in the event of an incident involving dangerous goods. These considerations apply whether the aircraft involved is carrying passengers, cargo or both.

- 1) Consideration should always be given to landing as soon as possible. If the situation permits, the relevant air traffic services should be informed of the dangerous goods on board, as indicated in Part 7, Chapter 4 of the Technical Instructions.
- 2) The appropriate fire or smoke removal emergency procedure approved for the aircraft type should always be carried out. Flight crew oxygen mask and regulators must be on and selected to the 100 per cent oxygen position to prevent the inhalation of smoke or fumes. Using the appropriate smoke removal emergency procedures should reduce the concentration of any contamination and help to avoid recirculation of contaminated air. Air conditioning systems should be operated at maximum capacity and all cabin air vented overboard (no recirculation of air) in order to reduce the concentration of any contamination in the air and to avoid recirculation of contaminated air.
- ~~3) Reducing altitude will reduce the rate of vaporization of liquid and may reduce the rate of leakage, but it may increase the rate of burning. Conversely, increasing altitude may reduce the rate of burning but may increase the rate of vaporization or leaking. If there is structural damage or an explosion hazard, consideration should be given to keeping the differential pressure as low as possible.~~
- 43) The rate of ventilation should not be reduced in an attempt to extinguish a fire, as this will have an incapacitating effect on the passengers without significantly affecting the fire. Passengers are likely to suffocate through lack of oxygen before a fire is extinguished. Passenger survival chances are greatly enhanced by ensuring maximum cabin ventilation.
- 54) Gas-tight breathing equipment should always be worn when attending an incident involving fire or fumes. The use of therapeutic masks with portable oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled cabin should not be considered, since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions to breathe through them.

- 65) In general, water should not be used on a spillage or when fumes are present, since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers, but see 10).
- 76) Besides the mandatory emergency equipment that is carried on an aircraft and the emergency response kit provided by some operators, many other items can be found that can be put to good use. These may include, but are not limited to:
- bar or catering boxes;
 - oven gloves;
 - ~~fire-resistant~~ fire-fighting gloves;
 - polyethylene bags;
 - blankets; ~~and~~
 - towels; and
 - fire containment devices/kits etc.
- 87) Hands should always be protected before touching suspicious packages or bottles. ~~Fire-resistant Rubber~~ gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.
- 8) Throughout this document, the term “fire-fighting gloves” describes gloves that are specifically designed for fire-fighting in the cabin or flight deck, rather than cleaning up spills or handling food. These gloves should be properly tested and rated to address fires likely to occur on an aircraft, such as fires involving lithium batteries.
- 9) Care should always be taken when mopping up any spillage or leakage to ensure there will be no reaction between what is to be used for mopping up and the dangerous goods. If it appears there could be a reaction, mopping up should not be attempted but the spillage should be covered with polyethylene bags. If polyethylene bags are not available, care should be taken to ensure there will be no reaction between whatever is used to contain the item and the item itself.
- 10) In case of a spill of known or suspected dangerous goods in powder form, everything affected should be left undisturbed. This type of spill should not be covered with a fire agent or diluted with water. Passengers should be moved away from the area. Switching off recirculation fans should be considered. The area of the spillage should be covered using polyethylene or other plastic bags and blankets. The area should be kept isolated. After landing, only qualified specialists should deal with the situation.
- 11) If a fire has been dealt with successfully and it is obvious that inner packagings are intact, consideration should be given to using water to cool the packages and thus avoid the possibility of reignition, but see 6).
- 12) ~~A smoking ban~~ Smoking should be ~~introduced~~ prohibited when fumes or vapours are present.
- 13) In any incident in which rescue and firefighting (RFF) personnel come to the aircraft, either when dangerous goods are the cause of the incident or when dangerous goods are being carried on the aircraft and are not directly involved in the incident, a procedure should be established to ensure that the pilot-in-command's dangerous goods notification form is immediately made available to the RFF services. Such a procedure might require the first flight crew member to

leave the aircraft in the event of an emergency evacuation to deliver the pilot-in-command's notification to the senior member of the RFF personnel.

- 14) If an incident involves a chemical substance which can be identified (by the UN proper shipping name or number, or by any other means), it may be possible, in some circumstances, to obtain helpful information from the various national chemical databanks. These databanks normally maintain 24-hour telephone accessibility and so can be reached by a phone-patch procedure. Examples of such databanks are:

United States – CHEMTREC

www.chemtrec.com

Canada – CANUTEC

www.tc.gc.ca/eng/canutec/menu.htm

2.2 DANGEROUS GOODS IN THE PASSENGER CABIN

Apart from the exceptions listed in Part 8 of the Technical Instructions, dangerous goods are not permitted in the passenger cabin- or on the flight deck. Nevertheless, dangerous goods may be carried into the cabin by passengers who are unaware of, or deliberately ignore, the requirements of the Technical Instructions concerning passengers and their baggage. It is also possible that an item to which a passenger is legitimately entitled (such as an item for medical purposes) may cause an incident.

To enable cabin crew to respond to an incident involving dangerous goods, the operator should equip its aircraft with firefighting and protective equipment, to include an adequate water supply and fire-fighting gloves that are rated to withstand the heat produced by lithium battery thermal runaway events. Some operators provide fire containment equipment for use by crew members as part of the procedures for battery / portable electronic device (PED) fire. The operator should develop detailed procedures for the use of all equipment provided and crews should be trained accordingly. Manufacturer's instructions and guidance should be considered in developing emergency response procedures. Manufacturer's claims of effectiveness should be verified by the airline or third party testing and should meet applicable industry standards.

Firefighting procedures should include precautions for the safety of the crew members involved. These should include the correct use of protective equipment, appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Equipment should be placed in a suitable location(s) easily accessible by the cabin crew, taking into account the various configurations of the aircraft (such as multi deck, crew rest areas). Cabin crew members should be drilled and capable of using the specific equipment carried on board the operator's aircraft.

Note.— See 3.3— and 3.4 – Cabin crew ~~checklists~~ procedures for dangerous goods incidents in the passenger cabin during flight.

2.3 DANGEROUS GOODS IN THE FLIGHT DECK

The flight crew's primary responsibility is the safe control of the aircraft. An immediate and decisive response to a dangerous goods incident that could impact the flight crew's ability to safely control the aircraft is therefore essential. The initial response should be to move the item involved in the incident from the flight deck to the cabin, if operationally feasible. This is especially critical for incidents involving a battery or a device containing a battery in thermal runaway because of the amount of smoke produced and the potential for a resulting fire to quickly become uncontrollable in a confined space. At the first signs of malfunction – such as slight bulging, screen discoloration, unusual odor, or excessive heat – priority should be given to the prompt removal of the device from the flight deck, if operationally feasible. Flight crew may act independently or request cabin crew assistance, when available, to manage fire on the flight deck.

2.3.2.4 DANGEROUS GOODS IN THE UNDERFLOOR CARGO COMPARTMENTS

Dangerous goods may be carried as cargo in the underfloor cargo compartments. Spillages or leakages are unlikely to be detected during flight unless they cause noticeable fumes in the passenger cabin or on the flight deck. In the event of leakage, the air in the passenger cabin and on the flight deck may have become flammable, irritating or toxic. Non-essential electrics should be turned off and smoking should be prohibited. Also, the crew should use full face masks, (100 per cent oxygen) or smoke hoods. Wherever possible, the passengers should be provided with wet towels or cloths for use over the nose and mouth.

Smoke or fire in an underfloor cargo compartment may not have originated from any dangerous goods loaded in that compartment. Such goods, however, may be affected by any fire. Standard aircraft emergency procedures should always be followed to deal with the smoke or fire.

In some aircraft there is access from inside the aircraft to underfloor Class D cargo compartments. In general, even if access is possible, an entry should not be made since this will allow air to enter the compartment, which may worsen the situation.

If an incident has arisen in an underfloor cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.4 DANGEROUS GOODS ON THE MAIN DECK OF “COMBI” AIRCRAFT

Note.— A “combi” aircraft is one in which both cargo and passengers are carried on the main deck.

Spillages or leakages of dangerous goods which cause fumes may be detected in the passenger cabin or on the flight deck. Smoke or fire which is detected may not have originated from any dangerous goods which are loaded in the cargo compartment but those goods may be affected by any fire.

The recommended aircraft emergency procedures for smoke and fire should always be followed. However, any action taken to evacuate smoke may not necessarily help to control a fire. Care must be taken to ensure the proper checklists are used since some smoke removal checklists are only for a transient generation of smoke and not for removing smoke from a continuous production source.

Although it may be possible to enter the cargo compartment from inside the aircraft, this should be done with great care so as not to allow smoke or fumes to enter the passenger cabin or flight deck.

However, if the decision is taken to enter the cargo compartment and the cause of the incident is discovered to be dangerous goods, reference should be made to Section 4 of this document, which contains a list of dangerous goods and the relevant emergency response drills and gives guidance for dealing with the incident.

Smoke or fumes may enter the passenger cabin or flight deck. If this happens, the crew should assume that the aircraft's atmosphere has possibly become contaminated with irritating, flammable or toxic fumes and appropriate action should be taken. This should include the use by the crew of full face masks (100 per cent oxygen) or smoke hoods, as appropriate. Wherever possible, passengers should be provided with wet towels or cloths with instructions to place them over the nose and mouth. All non-essential electrics should be turned off and smoking should be prohibited. Smoke evacuation emergency procedures should be carried out as soon as possible to ventilate the cabin to the maximum extent possible.

If an incident has arisen in a main deck cargo compartment, the passengers and crew should be evacuated from the aircraft before any attempt is made to open the cargo compartment doors. The cargo compartment doors should be opened with the emergency services in attendance.

2.5 DANGEROUS GOODS ON CARGO AIRCRAFT

Dangerous goods may be carried on cargo aircraft in either the underfloor cargo compartments or on the main deck.

Incidents in an underfloor cargo compartment. See 2.3.

Incidents in the main deck cargo compartment. Dangerous goods carried on the main deck of a cargo aircraft fall into two broad categories:

- a) those which are permitted either for carriage on a passenger aircraft, or which are cargo aircraft only (CAO) dangerous goods or quantities not subject to additional loading requirements applicable to other CAO dangerous goods. Depending on the circumstances (position on main deck, types of unit load devices (ULDs) used, etc.), these may be completely inaccessible.

- b) those which may only be carried on a cargo aircraft and are subject to additional loading requirements which are set out in Part 7;2.4.1 of the Technical Instructions. These dangerous goods may be required to be accessible which means they must be loaded so that the crew can handle and, where size and mass permit, separate such packages or overpacks from other cargo. In the event of an incident involving these dangerous goods, an assessment will have to be made of the practicality of attempting direct physical intervention. In any event, both for accessible and non-accessible dangerous goods, standard aircraft emergency procedures should always be followed.

An attempt should be made to establish the cause of an incident occurring on the main deck. The following actions can be considered:

- Attempt to locate the source of the incident and identify whether there are fumes or smoke or evidence of spillage or leakage.
 - Follow the appropriate aircraft emergency procedures for fire or for smoke removal if fumes or smoke are present.
 - Identify the dangerous goods involved and use the notification to pilot-in-command (see Technical Instructions, Part 7, Chapter 4) to ~~confirm~~ determine the proper shipping name and/or UN or ID number of the goods.
 - After establishing the identity of the dangerous goods, refer to Section 4 and from either the alphabetical or numerical list of dangerous goods note the drill assigned to the particular item.
 - Refer to the chart in Section 4 and use the guidance given ~~against~~ according to the appropriate emergency response drill to deal with the incident.
-

Section 3

EXAMPLES OF DANGEROUS GOODS INCIDENT PROCEDURES

Operators should use these example procedures to develop specific procedures that take into account the type of aircraft, type of operation, and available emergency response equipment. A risk-based approach should be used to support the development of the specific procedures.

Note 1.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When “fire” is referred to on its own, it is intended to capture any of the other events. When “smoke”, “fumes” or “flames” are specifically referred to, it is intended to highlight that specific hazard.

Note 2.— The following procedures are composed of numbered steps. In some cases, the steps are sequential, while in others the steps can occur simultaneously, by one or more crew members, or in a different order. Operators must consider the specifics of their operation before adapting them into their own procedures.

3.1 **FLIGHT CREW** PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Step	<u>Flight crew</u> action
1.	FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR ~~FIRE OR~~ SMOKE, ~~FUMES~~ or ~~FLAME~~ REMOVAL
2.	NO SMOKING SIGN ON
3.	CONSIDER LANDING AS SOON AS POSSIBLE
4.	CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER
5.	DETERMINE SOURCE OF SMOKE / FUMES / ~~FIRE~~FLAMES
6.	FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS
7.	DETERMINE EMERGENCY RESPONSE DRILL CODE
8.	USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT
9.	IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED

Step	<u>Flight crew</u> action
After landing	
1.	DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS
2.	INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED
3.	MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG

3.2 AMPLIFIED FLIGHT CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Amplified <u>flight crew</u> procedures for dangerous goods incidents	
Step	<u>Flight crew</u> <u>Action</u>
1.	FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR <u>FIRE OR SMOKE, FUMES, OR FLAMES</u> REMOVAL (self-explanatory)
2.	NO SMOKING SIGN ON A ~~no~~ smoking ~~ban~~ should be ~~introduced~~ <u>prohibited</u> when fumes or vapours are present and ~~be continued~~ for the remainder of the flight.
3.	CONSIDER LANDING AS SOON AS POSSIBLE Because of the difficulties and possibly disastrous consequences of any dangerous goods incident, consideration should be given to landing as soon as possible. The decision to land at the nearest suitable aerodrome should be made early rather than late, when an incident may have developed to a very critical point, severely restricting operational flexibility.
4.	CONSIDER TURNING OFF NON-ESSENTIAL ELECTRICAL POWER As the incident may be caused by electrical problems or as electrical systems may be affected by any incident, and particularly as firefighting activities, etc., may damage electric systems, turn off all non-essential electrical items. Retain power only to those instruments, systems and controls necessary for the continued safety of the aircraft. Do not restore power until it is positively safe to do so.
5.	DETERMINE SOURCE OF SMOKE / FUMES / <u>FIRE FLAMES</u> The source of any ~~smoke / fumes /~~ fire may be difficult to determine. Effective firefighting or containment procedures can best be accomplished when the source of the incident is identified.

Amplified <u>flight crew</u> procedures for dangerous goods incidents	
<i>Step</i>	<i><u>Flight crew</u> <u>Action</u></i>
6.	FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW PROCEDURES AND COORDINATE COCKPIT / CABIN CREW ACTIONS Incidents in the passenger cabin should be dealt with by the cabin crew using the appropriate procedures. It is essential that the cabin crew and the flight crew coordinate their actions and that each be kept fully informed of the other's actions and intentions.
7.	DETERMINE EMERGENCY RESPONSE DRILL CODE When the item has been identified, the corresponding entry on the pilot-in-command's dangerous goods notification form should be found. The applicable emergency response drill code may be given on the notification form, or if not given, can be found by noting the proper shipping name or the UN number on the notification form and using the alphabetical or numerical list of dangerous goods. If the item causing the incident is not listed on the notification form, an attempt should be made to determine the name or the nature of the substance. The alphabetical list can then be used to determine the emergency response drill code. <i>Note.— The alphabetical and numerical lists referred to are those in Section 4 of this document.</i>
8.	USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT The drill code assigned to an item of dangerous goods consists of a number plus one or two letters. Referring to the chart of emergency response drills, each drill number corresponds to a line of information concerning the hazard posed by that substance and guidance on the preferable action that should be taken. The drill letter is shown separately on the drill chart; it indicates other possible hazards of the substance. In some cases, the guidance given by the drill number may be further refined by the information given by the drill letter.
9.	IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED If an in-flight emergency occurs and the situation permits, the pilot-in-command should inform the appropriate air traffic services unit of the dangerous goods on board the aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and for Class 1 the compatibility group, any identified subsidiary hazard(s), the quantity and the location on board the aircraft. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances should be given.

Amplified <u>flight crew</u> procedures for dangerous goods incidents	
<i>Step</i>	<i><u>Flight crew</u> <u>Action</u></i>
<i>After landing</i>	
1.	DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS Even if it has not been necessary to complete an emergency evacuation after landing, passengers and crew should disembark before any attempt is made to open the cargo compartment doors and before any further action is taken to deal with a dangerous goods incident. The cargo compartment doors should be opened with the emergency services in attendance.
2.	INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED Upon arrival, take the necessary steps to identify to the ground staff where the item is stowed. Pass on by the quickest available means all information about the item including, when appropriate, a copy of the notification to pilot-in-command.
3.	MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG An entry should be made in the maintenance log that a check needs to be carried out to ensure that any leakage or spillage of dangerous goods has not damaged the aircraft structure or systems and that some aircraft equipment (such as fire extinguishers, emergency response kit) may need replenishing or replacing.

3.3 CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

- a) battery / portable electronic device (PED) fire ~~flame~~ (see 3.3.1);
- b) overhead bin battery / portable electronic device (PED) fire ~~flame~~ (see 3.3.2);
- c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~flame~~ or smoke (see 3.3.3);
- d) PED ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat (see 3.3.4);
- e) battery / portable electronic device (PED) fire on the flight deck (see 3.3.5);
- f) fire involving dangerous goods (see 3.3.6); and
- g) spillage or leakage of dangerous goods (see 3.3.7)

Note 1.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members in a multi-cabin crew operation.

Note 2.— The operator should ensure its aircraft are equipped with appropriate firefighting and protective equipment for use by crew members.

Note 3.— The operator should ensure the crew is trained to use all firefighting and protective equipment including the donning and removal of protective equipment. Firefighting procedures should include precautions for the safety of the crew member(s) involved. These should include the correct use of protective equipment that is appropriate and relevant to the immediate risks presented by the stage to which the fire or thermal runaway has progressed. Unprotected firefighting should be minimized where possible.

Note 4.— In a single cabin crew member operation, some of the actions listed in this section should be carried out with the assistance of other persons (e.g., able-bodied passengers). The operating cabin crew member should assign those persons to communicate with the flight crew and provide back-up, while the cabin crew member fights the fire.

Note 5.— The terms fire, smoke, fumes and flames are referred to throughout these procedures. When “fire” is referred to on its own, it is intended to capture any of the other events. When “smoke”, “fumes” or “flames” are specifically referred to, it is intended to highlight that specific hazard.

3.3.1 Battery / portable electronic device (PED) fire ~~+~~smoke

Procedures for battery / portable electronic device (PED) fire ~~+~~ smoke	
Step	Cabin crew action
1.	IDENTIFY THE ~~ITEM~~ <u>SOURCE OF THE FIRE</u> <i>Note. — It may not be possible to identify the item (source of fire) immediately. In this case, apply Step 2 first, and then attempt to identify it.</i> Caution: In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.
<u>2.</u>	<u>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</u>
<u>23.</u>	APPLY FIREFIGHTING PROCEDURE <u>TO EXTINGUISH FLAMES</u> a) ~~Obtain and use the appropriate fire extinguisher.~~ b) ~~Retrieve and use protective equipment, as applicable to the situation.~~ c) ~~Move passengers away from the area, if possible.~~ d) ~~Notify pilot-in-command / other cabin crew members.~~ <i>Note. — Actions should occur simultaneously in a multi-crew operation.</i>
<u>34.</u>	REMOVE POWER a) ~~Disconnect the device from the power supply, if safe to do so.~~ b) ~~Turn off in-seat power, if applicable.~~ c) ~~Verify that power to the remaining electrical outlets remains off, if applicable.~~ Caution: ~~Do not attempt to remove the battery from the device.~~
<u>45.</u>	~~DOUSE THE DEVICE WITH~~ <u>POUR</u> WATER (OR OTHER NON-FLAMMABLE LIQUID) <u>ON THE DEVICE</u> <i>Note. — Liquid may turn to steam when applied to the hot battery.</i>
<u>56.</u>	~~LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION~~ <u>OBTAIN A SUITABLE EMPTY CONTAINER</u> a) ~~If smoke or flames reappear, repeat Steps 2 and 4.~~ Caution: — ~~Do not attempt to pick up or move the device.~~ — ~~Do not cover or enclose the device.~~ — ~~Do not use ice or dry ice to cool the device.~~

Procedures for battery / portable electronic device (PED) fire ~~+~~ smoke	
<i>Step</i>	<i>Cabin crew action</i>
~~6~~ 7.	~~WHEN THE DEVICE HAS COOLED~~ SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID) IN THE CONTAINER (such as approximately 10 to 15 minutes) ~~a) Obtain a suitable empty container.~~ ~~b) Fill the container with enough water (or other non-flammable liquid) to submerge the device.~~ ~~c) Using protective equipment, place the device in the container and completely submerge in water (or other non-flammable liquid).~~ ~~d) Stow and secure (if possible) the container to prevent spillage.~~
~~8~~ .	STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE
~~7~~ 9.	MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT
~~8~~ 10.	APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION ~~a) Apply operator's post incident procedures.~~

3.3.2 Overhead bin battery / portable electronic device (PED) fire ~~+~~ smoke

Procedures for ~~e~~Overhead bin battery / portable electronic device (PED) fire ~~+~~ smoke	
<i>Step</i>	<i>Cabin crew action</i>
~~1~~ .	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS
~~4~~ 2.	APPLY FIREFIGHTING PROCEDURE <u>TO EXTINGUISH FLAMES</u> ~~a) Obtain and use the appropriate fire extinguisher.~~ ~~b) Retrieve and use protective equipment, as applicable to the situation.~~ ~~c) Move passengers away from the area, if possible.~~ ~~d) Notify pilot in command / other cabin crew members.~~ <i>Note. — Actions should occur simultaneously in a multi-crew operation.</i>

Procedures for ~~an~~ overhead bin battery / portable electronic device (PED) fire ~~and smoke~~	
Step	Cabin crew action
~~23.~~	IDENTIFY THE ~~ITEM~~ <u>SOURCE OF THE FIRE</u> ~~If the device is visible and accessible, or, if the device is contained in baggage and flames are visible:~~ ~~a) Re-apply Step 1 to extinguish the flames, if applicable.~~ ~~b) Apply Steps 3 to 5.~~ ~~If smoke is coming from the overhead bin, but the device is not visible or accessible:~~ ~~c) Remove other baggage from the overhead bin to access the affected baggage/item.~~ ~~d) Identify the item.~~ ~~e) Apply Steps 3 to 5.~~ Caution: In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.
~~4.~~	<u>REMOVE POWER</u>
~~35.~~	<u>DOUSE THE DEVICE (BAGGAGE) WITH <u>POUR</u> WATER (OR OTHER NON-FLAMMABLE LIQUID) <u>ON THE DEVICE (BAGGAGE)</u></u> ~~Note. Liquid may turn to steam when applied to the hot battery.~~
~~6.~~	<u>OBTAIN A SUITABLE EMPTY CONTAINER</u>
~~47.~~	<u>WHEN THE DEVICE HAS COOLED <u>SUBMERGE THE DEVICE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), IN THE CONTAINER</u></u> ~~a) Obtain a suitable empty container.~~ ~~b) Fill the container with enough water (or other non-flammable liquid) to submerge the device.~~ ~~c) Using protective equipment, place the device in the container and completely submerge in water (or other non-flammable liquid).~~ ~~d) Stow and secure (if possible) the container to prevent spillage.~~
~~8.~~	<u>STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE</u>
~~59.~~	MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT
~~610.~~	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION ~~a) Apply operator's post incident procedures.~~

3.3.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke

Procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ <u>flame</u> or smoke	
Step	Cabin crew action
	<u>If there are signs of fire (smoke, fumes, flames), APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)</u>
1.	IDENTIFY THE ITEM
2.	INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY
3.	REMOVE POWER ~~a) Disconnect the device from the power supply, if safe to do so.~~ ~~b) Turn off in-seat power, if applicable.~~ ~~c) Verify that power to the remaining electrical outlets remains off, if applicable.~~ ~~d) Verify that the device remains off for the remainder of the flight.~~ Caution: ~~Do not attempt to remove the battery from the device.~~
4.	INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY Caution: ~~Unstable batteries may ignite even after the device is turned off.~~
~~5.~~	~~IF SMOKE OR FLAMES APPEAR~~ ~~a) Apply BATTERY / PED FIRE / SMOKE procedures (see 3.3.1).~~
~~6.~~ 5.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION ~~a) Apply operator's post incident procedures.~~

3.3.4 ~~PORTABLE ELECTRONIC DEVICE (PED) inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke

Procedures for PED ~~inadvertently crushed or damaged in electrically adjustable~~ <u>fallen into / trapped in a passenger seat</u> – no visible flame or smoke	
Step	Cabin crew action
	<u>If there are signs of fire (smoke, fumes, flames), APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.3.1)</u>
~~1.~~	~~NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS~~

Procedures for PED ~~inadvertently crushed or damaged in electrically adjustable~~ fallen into / trapped in a passenger seat – no visible flame or smoke	
<i>Step</i>	<i>Cabin crew action</i>
~~2~~ <u>1.</u>	OBTAIN INFORMATION FROM THE PASSENGER, ~~BY ASKING THE PASSENGER~~ ~~a) To identify the item.~~ ~~b) Where the passenger suspects that the item may have dropped or slipped into.~~ ~~c) If the seat was moved since misplacing the item.~~
~~3~~ <u>2.</u>	RETRIEVE AND USE PROTECTIVE EQUIPMENT, ~~IF AVAILABLE~~
<u>3.</u>	<u>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</u>
4.	RETRIEVE THE ITEM, <u>IF SAFE TO DO SO</u> Caution: ~~Do not move the seat electrically or mechanically when attempting to retrieve the item.~~
5.	~~IF SMOKE OR FLAMES APPEAR~~ <u>MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</u> ~~a) Apply BATTERY / PED FIRE / SMOKE procedures (see 3.3.1).~~
6.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION ~~a) Apply operator's post incident procedures.~~

3.3.5 BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE ON THE FLIGHT DECK

<u>Procedures for battery / PED fire on the flight deck</u>	
<i>Step</i>	<i>Cabin crew action</i>
<u>1.</u>	<u>RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK</u>
<u>2.</u>	<u>APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES</u>
<u>3.</u>	<u>POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE</u>
<u>4.</u>	<u>REMOVE THE DEVICE FROM THE FLIGHT DECK</u>
<u>5.</u>	<u>CLOSE THE FLIGHT DECK DOOR</u>
<u>6.</u>	<u>APPLY PROCEDURES FOR BATTERY / PED FIRE (see 3.3.1)</u>
<u>7.</u>	<u>APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION</u>

Note.— Procedures presented in this section are not applicable to incidents involving electronic flight bags (EFBs) that cannot be removed from the flight deck (e.g. installed via airworthiness approval).

3.3.56 Fire involving dangerous goods

Procedures for fire involving dangerous goods	
Step	Cabin crew action
1.	IDENTIFY THE ITEM <i>Note.— It may not be possible to identify the item (source of fire) immediately. In this case, apply Step 2 first, and then attempt to identify it.</i> Caution: In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.
2.	APPLY FIREFIGHTING PROCEDURE a) Obtain and use the appropriate fire extinguisher / check use of water. b) Retrieve and use protective equipment, as applicable to the situation. c) Move passengers away from the area, if possible. d) Notify pilot-in-command / other cabin crew members. <i>Note.— Actions should occur simultaneously in a multi-crew operation.</i>
3.	MONITOR FOR ANY <u>INDICATION OF</u>-REIGNITION a) If smoke/flames reappear, repeat Step 2.
4.	<u>ONCE THE FIRE HAS BEEN EXTINGUISHED</u> a) Apply APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS procedures, if required, <u>IF REQUIRED, ONCE THE FIRE HAS BEEN EXTINGUISHED</u> (see 3.3-6.7).
5.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION a) Apply operator's post incident procedures.

3.3.6.7 Spillage or leakage of dangerous goods

Procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
1.	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS

Procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
2.	IDENTIFY THE ITEM
3.	COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS
4.	~~DON RUBBER GLOVES AND SMOKE HOOD~~ <u>RETRIEVE AND USE PROTECTIVE EQUIPMENT</u>
5.	MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS
6.	PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS
7.	STOW POLYETHYLENE BAGS
8.	TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM
9.	COVER SPILLAGE ON CARPET / FLOOR
10.	~~REGULARLY INSPECT~~ <u>MONITOR</u> ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS
11.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION ~~a) Apply operator's post incident procedures.~~

3.4 AMPLIFIED CABIN CREW PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of amplified cabin crew procedures for dangerous goods incidents in the passenger cabin during flight involving:

- a) battery / portable electronic device (PED) fire ~~fire~~ ~~smoke~~ (see 3.4.1);
- b) overhead bin battery / portable electronic device (PED) fire ~~fire~~ ~~smoke~~ (see 3.4.2);
- c) overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ ~~flame~~ or smoke (see 3.4.3);
- d) ~~portable electronic device (PED)~~ ~~inadvertently crushed or damaged in electrically adjustable~~ ~~fallen into / trapped in a passenger~~ seat (see 3.4.4);
- e) ~~battery / portable electronic device (PED) fire on the flight deck (see 3.4.5);~~
- ef) fire involving dangerous goods (see 3.4-~~5.6~~); and
- fg) spillage or leakage of dangerous goods (see 3.4-~~6.7~~).

~~—Note.— Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by crew members.~~

3.4.1 Battery / portable electronic device (PED) fire ~~fire~~ ~~smoke~~

Amplified procedures for battery / portable electronic device (PED) fire ~~fire~~ ~~smoke~~	
Step	Cabin crew action
1.	IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE It may not be possible <u>for cabin crew</u> to identify the item (source of fire) right away, especially if the fire has started in a ~~seat pocket or the device is not readily accessible. In this case, firefighting procedures should be applied as a first step. If the item is contained in baggage, the crew's actions would be similar to the actions for a device that is visible or readily accessible~~ <u>passenger bag. Identify the location and any other appropriate details of the hazard. Bring appropriate equipment and protective equipment to the area to assist with finding the source and to prepare for firefighting.</u> Caution: ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/smoke~~	
Step	Cabin crew action
2.	~~APPLY FIREFIGHTING PROCEDURE~~ <u>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</u> ~~During~~ <u>A</u>ny occurrence concerning a fire in the cabin, <u>the cabin crew</u> should ~~be notified immediately~~ <u>notify</u> to the pilot-in-command ~~who should be kept immediately~~ <u>and keep the flight crew</u> informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. ~~Appropriate firefighting and emergency procedures must be used to deal with any fire. In a multi cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ ~~Halon, Halon replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (such as protective breathing equipment, fire gloves) when fighting a fire.~~ ~~If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.~~ Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication ~~unless the interphone system fails~~ <u>between crew members, unless the interphone system fails.</u>

Amplified procedures for battery / portable electronic device (PED) fire ~~and smoke~~	
Step	Cabin crew action
3.	<u>APPLY FIREFIGHTING PROCEDURES TO EXTINGUISH FLAMES</u> a) <u>use appropriate protective equipment;</u> b) <u>use appropriate firefighting equipment;</u> c) <u>extinguish flames; and</u> d) <u>manage passengers and cabin, as required.</u> <u>It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire.</u> <u>Cabin crew should use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-resistant gloves) when fighting a fire.</u> <u>Cabin crew should move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.</u> <u>Caution:</u> <u>In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.</u>

Amplified procedures for battery / portable electronic device (PED) fire ~~/smoke~~	
Step	Cabin crew action
34.	REMOVE POWER a) <u>Disconnect the device from the power supply, if safe to do so.</u> b) <u>Turn off in-seat power, if applicable.</u> c) <u>Verify that power to the remaining electrical outlets remains off, if applicable.</u> Caution: <u>Do not attempt to remove the battery from the device.</u> It is important ~~to~~ <u>that cabin crew</u> instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. <u>Cabin crew should turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices.</u> <u>Cabin crew should visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to pour on the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew.</u> ~~Turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices.~~ ~~Visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in.~~ ~~The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew members.~~ Caution: ~~Do not attempt to remove the battery from the device.~~

Amplified procedures for battery / portable electronic device (PED) fire ~~/smoke~~	
Step	Cabin crew action
45.	~~DOUSE THE DEVICE WITH~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use ~~W~~water (or other non-flammable liquid) ~~must be used~~ to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~If water is not available, any non-flammable liquid may be used to cool the device. Pour liquid onto the device until signs of steam and crackling have subsided completely.~~ <i>Note.—</i> Liquid may turn to steam when applied to the hot battery. The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently.
5.	~~LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION~~ A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, ~~cabin crew should the device must be~~ monitored ~~the device~~ regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, ~~the device must be doused with~~ <u>crew should pour</u> more water (or other non-flammable liquid) <u>on the device</u>. <u>Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device.</u> Caution: - Do not attempt to pick up or move the device <u>until completing this step</u>; batteries may explode or burst into flames without warning. The device ~~must~~ <u>should</u> not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. - Do not cover or enclose the device as it could cause it to overheat. - Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.

Amplified procedures for battery / portable electronic device (PED) fire ~~/smoke~~	
<i>Step</i>	<i>Cabin crew action</i>
6.	<u>WHEN THE DEVICE HAS COOLED (such as APPROXIMATELY 10-15 MINUTES) OBTAIN A SUITABLE EMPTY CONTAINER</u> ~~The device can be moved with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire (such as after approximately 10-15 minutes). The waiting period may vary based on the device and its size. The different circumstances (such as types of devices, phase of flight) should be addressed in the operator's training programme.~~ A suitable empty container, ~~such as~~ <u>may include</u> a pot, jug, galley unit or ~~toilet~~ <u>lavatory</u> waste bin, ~~must~~ <u>or fire containment equipment (only when they are designed to contain water)</u>. When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should <u>select a container which can</u> be filled with enough ~~water or non-flammable~~ liquid to completely submerge the device. ~~It is important to wear available protective equipment (such as protective breathing equipment, fire gloves), when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and, if possible, secured to prevent spillage.~~
7.	<u>PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT</u> <u>It is important that cabin crew wear protective equipment such as protective breathing equipment and fire-fighting gloves when moving any device involved in a fire.</u> <u>Place the device in the container and pour water or a non-flammable liquid into the container until the device is completely submerged. It is also possible to put the device in the container once the container already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water.</u>
8.	<u>STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE</u> <u>Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.</u>
79.	<u>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</u> <u>Cabin crew should ~~M~~monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.</u>

Amplified procedures for battery / portable electronic device (PED) fire ~~/ smoke~~	
Step	Cabin crew action
810.	<u>APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION</u> Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These ~~may~~ <u>should</u> include identifying to ground personnel where the item is stowed and providing ~~all~~ <u>relevant</u> information about the item. <u>Crew need to</u> ~~be~~ complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event~~ <u>able to comply with mandatory reporting requirements and can ensure</u>, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	Cabin crew action
1.	<u>APPLY FIREFIGHTING PROCEDURE</u><u>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</u> <u>During</u> ~~A~~ any occurrence concerning a fire in the cabin, <u>the cabin crew</u> should ~~be notified immediately to~~ <u>notify</u> the pilot-in-command ~~who should be kept immediately and keep the flight crew~~ informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. ~~Appropriate firefighting and emergency procedures must be used to deal with an overhead bin fire. In a multi-cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ ~~Halon, Halon replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (such as protective breathing equipment, fire gloves) when fighting a fire.~~ ~~If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
	Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ <u>until the hazard is no longer present</u> . Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication <u>between crew members</u> , unless the interphone system fails.

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	Cabin crew action
2.	<u>APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES</u> a) <u>use appropriate protective equipment;</u> b) <u>use appropriate firefighting equipment;</u> c) <u>extinguish flames; and</u> d) <u>manage passengers and cabin, as required.</u> <u>It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire.</u> <u>Use halon, halon replacement, or water to extinguish the flames. This should be accomplished as soon as possible to prevent the flames from spreading to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames or when other nearby materials have become involved in the fire, but do not provide any cooling properties to the battery. It is important to move past this step to the cooling step as soon as possible once flames are gone. If deemed more efficient or expedient, water may be used instead of halon for knocking down small flames and imparting a cooling effect in one step. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place).</u> <u>Due to the weight and size of some overhead bins, and their opening movement, the cabin crew member who is fighting the fire may require assistance in opening and controlling the overhead bin. When fighting an overhead bin fire, the cabin crew member should position themselves at the opposite end of the overhead bin, where the smoke / flames are visible. This action prevents further spreading embers due to the force of the extinguishing agent as it is discharged and comes into contact with the overhead bin.</u> <u>Cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.</u> <u>Note.— If the origin of the fire / smoke cannot be confirmed visually, cabin crew should use the back of the hand to search for hot overhead bin surfaces.</u> <u>Caution:</u> 1) <u>Use the back of the hand and not the palm of the hand to search for hot overhead bin surfaces, because the back of the hand is more sensitive to temperature differences.</u> 2) <u>In certain firefighting situations cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. To avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.</u>

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	Cabin crew action
23.	IDENTIFY THE ~~ITEM~~ SOURCE OF THE FIRE ~~It may not be possible to identify the item right away, especially if the fire has started in the overhead bin and the device is not readily accessible.~~ If the device is visible and accessible or if the device is contained in baggage and flames are visible, ~~the firefighting procedures should be applied as a first step.~~ <u>a) reapply Step 2 to extinguish the flames, if applicable; and</u> <u>b) apply Steps 4 to 10.</u> If smoke is coming from the overhead bin, but the device is not visible or accessible, ~~or there is no indication of fire, the firefighting procedures should be applied as a first step. Afterwards, all:~~ <u>a) remove other baggage should be removed from the overhead bin with caution until to access the affected baggage/item can be identified.</u> <u>b) Once the item is identified identify the item.</u> <u>c) apply Steps 34 to 510.</u> <u>It may not be possible for cabin crew to identify the item (source of fire or smoke) right away, especially if the fire has started in an overhead bin or the device is not readily accessible.</u> Caution: ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	Cabin crew action
34.	~~DOUSE THE DEVICE (BAGGAGE) WITH~~ POUR WATER (OR OTHER NON-FLAMMABLE LIQUID) ON THE DEVICE (BAGGAGE) If the device is smoking but does not show signs of flame, water needs to be applied to cool the device and prevent flames. Use ~~W~~water (or other non-flammable liquid) ~~must be used~~ to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. ~~If water is not available, any non-flammable liquid may be used to cool the device.~~ Pour liquid onto the baggage or device until signs of steam and crackling have subsided completely. Note.— Liquid may turn to steam when applied to the hot battery. ~~The action of pouring water or non-flammable liquid on the device cools the device and can prevent thermal runaway from propagating to nearby cells. It may also lower the risk of a cell that is venting, but not yet in full thermal runaway, from reacting more violently.~~ A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, cabin crew should monitor the device regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, crew should pour more water (or other non-flammable liquid) on the device. Monitor for any indication of reignition and continue to pour water (or other non-flammable liquid) on the device. Caution: a) Do not attempt to pick up or move the device until completing this step; batteries may explode or burst into flames without warning. The device should not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device. b) Do not cover or enclose the device as it could cause it to overheat. c) Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.
45.	~~WHEN THE DEVICE HAS COOLED~~ OBTAIN A SUITABLE EMPTY CONTAINER ~~The device should be moved from the overhead bin to prevent a hidden fire from potentially developing. The device can be moved with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire. The waiting period may vary based on the device and its size. The different circumstances (such as types of devices, phase of flight) should be addressed in the operator's training programme.~~

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
	A suitable empty container, ~~such as~~ may include a pot, jug, galley unit or ~~toilet~~lavatory waste bin, ~~must~~ or fire containment equipment (only when they are designed to contain water). When selecting a suitable empty container, cabin crew should consider the size of the device to be submerged in it. Cabin crew should select a container which can be filled with enough ~~water or non-flammable~~ liquid to completely submerge the device. ~~It is important to wear available protective equipment (such as protective breathing equipment, fire gloves), when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and, if possible, secured to prevent spillage.~~
<u>6.</u>	<u>PLACE THE DEVICE IN THE CONTAINER AND COMPLETELY SUBMERGE IN WATER (OR OTHER NON-FLAMMABLE LIQUID), USING PROTECTIVE EQUIPMENT</u> <u>Place device in the container and pour water or a non-flammable liquid in the container until the device is completely submerged. It is also possible to put the device in the container once the device already contains water. Efforts should be taken to minimize splashing of water in the aircraft when dropping the device in a container that already contains water.</u> <u>It is important that cabin crew wear protective equipment (such as protective breathing equipment and firefighting gloves) when moving any device involved in a fire.</u>
<u>7.</u>	<u>STOW AND SECURE (IF POSSIBLE) THE CONTAINER TO PREVENT SPILLAGE</u> <u>Once the device is completely submerged, cabin crew should stow the container and, if possible, secure it to prevent spillage.</u>
<u>58.</u>	<u>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</u> <u>Cabin crew should Mmonitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.</u>

Amplified procedures for overhead bin battery / portable electronic device (PED) fire / smoke	
Step	Cabin crew action
69.	<u>APPLY POST-INCIDENT PROCEDURES AFTER LANDING AT THE NEXT DESTINATION</u> Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These ~~may~~ <u>should</u> include identifying to ground personnel where the item is stowed and providing ~~all~~ <u>relevant</u> information about the item. <u>Crew need to</u> ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event~~, <u>able to comply with mandatory reporting requirements and can ensure</u> proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.3 Overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ <u>flame</u> or smoke	
Step	Cabin crew action
	<u>If there are signs of fire (smoke, fumes, flames), APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)</u>
1.	IDENTIFY THE ITEM <u>Cabin crew should</u> ~~i~~identify the source of overheat or electrical smell ~~or~~ <u>A</u>ask the passenger concerned to identify the item.
2.	INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY It is important ~~to~~ <u>that cabin crew</u> instruct the passenger to turn off the device immediately <u>and, if possible and safe to do so, to remove the power supply to prevent further overheating or a fire.</u>

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ flame or smoke	
Step	Cabin crew action
3.	REMOVE POWER a) <u>Disconnect the device from the power supply, if safe to do so.</u> b) <u>Turn off in-seat power, if applicable.</u> c) <u>Verify that power to the remaining electrical outlets remains off, if applicable.</u> d) <u>Verify that the device remains off for the remainder of the flight</u> Caution: <u>Do not attempt to remove the battery from the device.</u> It is important ~~to~~ <u>that cabin crew</u> instruct the passenger ~~or crew member~~ to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire.
	<u>Cabin crew should</u> ~~turn off~~ the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' portable electronic devices. <u>Cabin crew should</u> ~~visually~~ check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. <u>Depending on the aircraft type, in-seat power may have to be turned off by the flight crew.</u> ~~The removal of power may occur simultaneously to other cabin crew actions (such as obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew members.~~ It is important ~~to~~ <u>that cabin crew</u> verify that the device remains turned off for the duration of the flight. Caution: ~~Do not attempt to remove the battery from the device.~~
4.	INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY The device ~~must~~ <u>should</u> remain visible (not stowed such as in baggage or seat pocket or on a person (pocket)) and should be monitored closely. Unstable batteries may ignite even after the device is turned off. <u>Cabin crew should</u> ~~verify~~ that the device is stowed <u>only</u> for landing.

Amplified procedures for overheated battery / electrical smell involving a portable electronic device (PED) – no visible ~~fire~~ <u>flame</u> or smoke	
Step	Cabin crew action
~~5.~~	~~IF SMOKE OR FLAMES APPEAR~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~
~~65.~~	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These ~~may~~ <u>should</u> include identifying to ground personnel where the item is stowed and providing ~~all~~ <u>relevant</u> information about the item. <u>Crew need to</u> ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ <u>able to comply with mandatory reporting requirements, and can ensure</u> proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4.4 Portable electronic device (PED) inadvertently crushed or damaged in electrically adjustable fallen into / trapped in a passenger seat – no visible flame or smoke

Due to the design of some electrically adjustable passenger seats, a PED can slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard.

Amplified procedures for <u>portable electronic device (PED) inadvertently crushed or damaged in electrically adjustable fallen into / trapped in a passenger seat – no visible flame or smoke</u>	
Step	Cabin crew action
	If there are signs of flames or smoke, APPLY PROCEDURES FOR BATTERY/PED FIRE (SEE 3.4.1)
~~1.~~	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.
~~2.1.~~	OBTAIN INFORMATION FROM <u>THE</u> PASSENGER a) ~~Ask~~ the passenger ~~concerned~~ to identify the item; b) ~~and Ask~~ where the passenger suspects ~~it~~ <u>that the item</u> may have dropped or slipped into, ~~and if the passenger has moved~~ c) <u>Ask if</u> the seat <u>was moved</u> since misplacing the item. <u>Cabin crew should ask the passenger concerned to identify the item, and where the passenger suspects it may have dropped or slipped into, and if the passenger has moved the seat since misplacing the item.</u>
~~3.2.~~	RETRIEVE AND USE PROTECTIVE EQUIPMENT, ~~IF AVAILABLE~~ <u>Due to the design of some passenger seats, a PED can slip under a seat covering and / or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a fire hazard.</u> <u>If available, ~~e~~Cabin crew ~~members~~ should don fire ~~fighting~~ gloves before trying to retrieve the item.</u>
~~3.~~	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS <u>Any occurrence concerning a fire hazard in the cabin should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions.</u>

Amplified procedures for <u>portable electronic device (PED)</u> ~~inadvertently crushed or damaged in electrically adjustable~~ <u>fallen into / trapped in a passenger seat – no visible flame or smoke</u>	
Step	Cabin crew action
4.	RETRIEVE THE ITEM, <u>IF SAFE TO DO SO</u> Caution: <u>Do not move the seat electrically or mechanically when attempting to retrieve the item.</u> To prevent crushing of the PED and reduce the potential fire hazard to the device and the surrounding area, cabin crew ~~members~~ and/or <u>the passengers</u> ~~must~~ <u>should</u> not use the electrical or mechanical seat functions in an attempt to retrieve the item. <u>Move Cabin crew should move</u> the passenger and, if applicable, the passenger(s) seated next to the affected seat from the area, to facilitate the search. ~~Do Cabin crew should~~ not move the seat. If the cabin crew ~~member~~ is unable to retrieve the item <u>without moving the seat</u>, it may ~~be necessary~~ <u>need</u> to <u>be retrieved by personnel on the ground, after landing at the next destination.</u> <u>If the item cannot be retrieved, cabin crew should</u> move the passenger to another seat, <u>if available.</u> <u>Cabin crew should turn off the individual in-seat power, if possible to do so. Depending on the aircraft type, in-seat power may have to be turned off by the flight crew.</u>
5.	~~IF SMOKE OR FLAMES APPEAR~~ ~~If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE procedures (see 3.4.1).~~ <u>MONITOR THE SEAT AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</u> <u>Cabin crew should monitor the seat and the surrounding area for the remainder of the flight to verify that the device does not pose further hazard.</u>
6.	<u>APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION</u> Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These ~~may~~ <u>should</u> include identifying to ground personnel where the item is ~~located~~ <u>stowed</u> and providing ~~all~~ <u>relevant</u> information about the item. <u>Crew need to</u> ~~C~~complete the required documentation, as per operator procedures, so that the operator is ~~notified of the event,~~ <u>able to comply with mandatory reporting requirements, and can ensure</u> proper maintenance action is undertaken and <u>the emergency response kit or</u> any aircraft equipment used is replenished or replaced, if applicable.

3.4.5 Battery / portable electronic device (PED) fire on the flight deck

<u>Amplified procedures for battery / portable electronic device (PED) fire on the flight deck</u>	
<u>Step</u>	<u>Cabin crew action</u>
<u>1.</u>	<u>RECOGNIZE SIGNAL FOR FIRE ON THE FLIGHT DECK</u> a) Receive call out from the flight deck (such as “back up assistance P-E-D!”); b) Retrieve and use protective equipment, as applicable to the situation; c) Obtain the appropriate fire extinguisher; and d) Enter the flight deck. <i><u>Note.— Given the urgency of incidents in the flight deck, close coordination with the flight crew is essential, and following flight crew directives can be vital.</u></i> The flight crew’s main responsibility during any occurrence is to maintain control of the aircraft. Therefore, removing an item emitting flames or smoke from the flight deck, as soon as possible, is the priority. To do so, flight crew may call upon the cabin crew to assist in the event of flame / smoke on the flight deck. As notifying the cabin crew of the flame / smoke occurrence on the flight deck by interphone may delay the response, the use of the public address (PA) system is considered the preferred method of notification. The flight crew should use phraseology that clearly explains the type of emergency situation to the cabin crew without creating panic amongst the passengers. The first cabin crew member who is ready to act should enter the flight deck.

<u>Amplified procedures for battery / portable electronic device (PED) fire on the flight deck</u>	
Step	Cabin crew action
<u>2.</u>	<u>APPLY FIREFIGHTING PROCEDURE TO EXTINGUISH FLAMES</u> a) <u>If the item is on fire, in coordination with the flight crew, extinguish the fire.</u> b) <u>Once the fire has been extinguished or the device is not on fire (it may emit visible smoke, or show signs of bulging/overheating), remove it from the flight deck, if possible.</u> c) <u>If the device cannot be moved, pour water (or other non-flammable liquid) on it.</u> The joint action between the flight crew and the cabin crew depends on the location and type of the affected device. The flight crew may have started the appropriate emergency procedures to deal with the fire before the arrival of the cabin crew, including removing the device from any power source. In that case, cabin crew should join the firefighting actions according to the situation. When the decision is taken to fight the fire on the flight deck, in coordination with the flight crew, the cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials. Halon and halon replacement fire extinguishers are optimal for the extinguishing of flames, but do not provide any cooling properties to the battery. It is critical that once any flames are extinguished that the cabin crew progress to apply Step 4 (Pour water on the device in place). It is important that cabin crew wear protective equipment (such as protective breathing equipment and fire-fighting gloves) when fighting a fire in a confined space, such as the flight deck. <u>Caution:</u> <u>In certain firefighting situations (such as to prevent flight crew incapacitation or a loss of control in-flight), crew may assess and deem it necessary to remove the device immediately from the flight deck even if it is still emitting smoke or flames are present. In such case, cabin crew should apply the firefighting procedure in 3.4.1, after the device is removed from the flight deck.</u>
<u>3.</u>	<u>REMOVE THE DEVICE FROM THE FLIGHT DECK</u> <u>Once the fire has been extinguished or the device is no longer on fire (even if it is still emitting visible smoke or feels overheated), cabin crew should remove it from the flight deck, if possible. Minimizing the spreading of smoke and fumes in the flight deck is critical for the continued safe operation of the aircraft. If it cannot be moved, cabin crew should use water (or other non-flammable liquid) to cool a battery that has ignited to prevent the spread of heat to other cells in the battery.</u> <u>After the device is removed from the flight deck, the cabin crew should apply the firefighting procedure, as described in 3.4.1, if it is still on fire. Water (or other non-flammable liquid) should be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery.</u>

<u>Amplified procedures for battery / portable electronic device (PED) fire on the flight deck</u>	
<i>Step</i>	<i>Cabin crew action</i>
<u>4.</u>	<u>CLOSE THE FLIGHT DECK DOOR</u> <u>Upon removal of the device, the flight deck door should be maintained closed until the hazard is no longer present. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless that system fails.</u>
<u>5.</u>	<u>APPLY PROCEDURES FOR BATTERY / PED FIRE</u> <u>After the device is removed from the flight deck, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE procedures (see 3.4.1).</u>
<u>6.</u>	<u>APPLY POST-INCIDENT PROCEDURES, AFTER LANDING AT THE NEXT DESTINATION</u> <u>Upon arrival, cabin crew should apply the operator's post-incident procedures. These should include identifying to ground personnel where the item is stowed and providing relevant information about the item. Crew need to complete the required documentation, as per operator procedures, so that the operator is able to comply with mandatory reporting requirements, and can ensure proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.</u>

3.4.56 Fire involving dangerous goods

Amplified procedures for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
1.	IDENTIFY THE ITEM <u>Cabin crew should Ask the passenger concerned to identify the item. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill.</u> <u>It may not be possible for cabin crew to identify the item right away, especially if the source of the fire is unknown or the item is not readily accessible. In this case, cabin crew should apply firefighting procedures ~~should be applied~~ as a first step (Step 2). ~~Once it is possible to do so, and then attempt to~~ identify the item ~~after the fire is under control~~ (Step 1). If the item is contained in baggage, the crew's actions would be similar to the actions for an item that is visible or readily accessible.</u>

Amplified procedures for fire involving dangerous goods	
Step	Cabin crew action
	Caution: ~~In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. However, in certain situations cabin crew members may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.~~
2.	APPLY ~~THE~~ FIREFIGHTING PROCEDURE <u>a) Apply communication procedures.</u> <u>b) Use appropriate firefighting equipment and protective equipment, as required.</u> <u>c) Fight fire.</u> <u>d) Manage passengers and cabin, as required.</u> ~~During A~~any occurrence concerning a fire in the cabin, <u>the cabin crew</u> should ~~be notified immediately to~~ <u>notify</u> the pilot-in-command ~~immediately who should be kept and keep the flight crew~~ informed of all actions taken and of the effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. <u>The following is moved from the last paragraph of this step</u> Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed ~~at all times~~ <u>until the hazard is no longer present</u>. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication <u>between crew members</u>, unless the interphone system fails. Appropriate firefighting ~~and emergency~~ procedures ~~must~~ <u>should</u> be used to deal with any fire. ~~In a multi-cabin crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crew member, the aid of a passenger should be sought in dealing with the situation.~~ <u>Cabin crew should use firefighting equipment to extinguish the fire and prevent its spread to additional flammable materials.</u> ~~In general,~~ <u>Cabin crew should not use</u> water ~~should not be used~~ on a spillage or when fumes are present since it may spread the spillage or increase the rate of fuming. Consideration should also be given to the possible presence of electrical components when using water extinguishers. <u>It is important that cabin crew use protective equipment (such as protective breathing equipment and fire-fighting gloves/oven gloves), as required, when fighting a fire.</u>

Amplified procedures for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
	If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them. The following is moved to the end of the first paragraph after the letter list of this step. ~~Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.~~ Caution: In certain firefighting situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. In order to avoid injury from a flash fire, cabin crew should use caution when opening the affected baggage when there is any indication of smoke or flames. This should only be done after donning appropriate protective equipment.
3.	MONITOR FOR ANY <u>INDICATION OF</u> REIGNITION ~~Monitor the area regularly to identify if there is any indication that a fire hazard may still exist. If there is any smoke or indication of fire, continue to apply the firefighting procedure. If smoke or flames reappear, cabin crew should repeat Step 2.~~
4.	<u>APPLY PROCEDURES FOR SPILLAGE OR LEAKAGE OF DANGEROUS GOODS, IF REQUIRED,</u> ONCE THE FIRE HAS BEEN EXTINGUISHED In the event of a fire involving dangerous goods, <u>cabin crew may need to apply</u> the SPILLAGE OR LEAKAGE INVOLVING DANGEROUS GOODS procedures (see 3.4.67) ~~may need to be applied~~ once the fire has been extinguished.
5.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. <u>Crew should</u> ~~C~~complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

3.4-6.7 Spillage or leakage of dangerous goods

Amplified procedures for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
1.	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS ~~During Any incident occurrence~~ concerning dangerous goods, ~~the cabin crew should be notified immediately to~~ <u>notify</u> the pilot-in-command ~~immediately who should be kept~~ <u>and keep the flight crew</u> informed of all actions taken and of ~~their the~~ effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each is kept fully informed of the other's actions and intentions. Minimizing the spreading of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft, therefore it is essential to keep the flight deck door closed at all times <u>until the hazard is no longer present</u>. Crew communication and coordination are of utmost importance. The use of the interphone is the primary means of communication <u>between crew members</u>, unless the interphone system fails.
2.	IDENTIFY THE ITEM <u>Cabin crew should</u> ~~Ask~~ the passenger concerned to identify the item ~~and indicate its potential hazards~~. The passenger may be able to give some guidance on the hazard(s) involved and how these could be dealt with. If the passenger can identify the item, refer to Section 4 of this document for the appropriate emergency response drill. ~~On aircraft with only one cabin crew member, consult with the pilot-in-command as to whether the aid of a passenger should be sought in dealing with the incident.~~
3.	COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS <u>Cabin crew should</u> ~~C~~collect emergency response kit, if provided, or collect for use in dealing with the spillage or leakage: ~~—a)~~ <u>a</u>~~A~~ supply of paper towels or newspapers or other absorbent paper or absorbent fabric (e.g. seat cushion covers, head rest protectors); ~~—b)~~ <u>even</u> ~~Rubber~~ gloves or fire-resistant gloves <u>even gloves covered by polyethylene bags, if available;</u> ~~—c)~~ <u>a</u>~~A~~t least two large polyethylene waste bin bags; ~~and~~ ~~—d)~~ <u>a</u>~~A~~t least three smaller polyethylene bags, such as those used for duty-free or bar sales or, if none available, airsickness bags.

Amplified procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
4.	~~DON RUBBER GLOVES AND SMOKE HOOD~~ RETRIEVE AND USE PROTECTIVE EQUIPMENT It is important that cabin crew use protective equipment (such as protective breathing equipment, rubber gloves or fire-resistant gloves/oven gloves covered by polyethylene bags) when handling a spillage or leakage of dangerous goods. ~~The Cabin crew should always protect their hands should always be protected before touching suspicious packages or items. Fire-resistant gloves or oven gloves covered by polyethylene bags are likely to give suitable protection.~~ ~~Gas tight breathing equipment should always be worn when attending to an incident involving smoke, fumes or fire.~~
5.	MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS The use of therapeutic oxygen bottles or the passenger drop-out oxygen system to assist passengers in a smoke- or fume-filled passenger cabin should not be considered since considerable quantities of fumes or smoke would be inhaled through the valves or holes in the masks. A more effective aid to passengers in a smoke- or fume-filled environment would be the use of a wet towel or cloth held over the mouth and nose. A wet towel or cloth aids in filtering and is more effective at doing this than a dry towel or cloth. Cabin crew should take prompt action if smoke or fumes develop and move passengers away from the area involved and, if possible, provide wet towels or cloths and give instructions to breathe through them.
6.	PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS ~~Note.~~—In the case of a spill of known or suspected dangerous goods in powder form, <u>cabin crew should:</u> ~~—a)~~ <u>L</u>leave everything undisturbed;. ~~—b)~~ <u>d</u>Do not use fire agent or water;. ~~—c)~~ <u>C</u>over area with polyethylene or other plastic bags and blankets;. ~~—d)~~ <u>K</u>keep area isolated until after landing.

Amplified procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
	With emergency response kit If it is ~~absolutely~~ certain that the item will not create a problem, the decision may be made not to move it. In most circumstances, however, it will be better to move the item, and this should be done as suggested below. <u>Cabin crew should</u> ~~P~~place the item in a polyethylene bag as follows: ~~a)~~ ~~P~~Prepare two bags by rolling up the sides and placing them on the floor. ~~b)~~ ~~P~~Place the item inside the first bag with the closure of the item, or the point from which it is leaking from its container, at the top. ~~c)~~ ~~T~~Take off the rubber gloves while avoiding skin contact with any contamination on them. ~~d)~~ ~~P~~Place the rubber gloves in the second bag. ~~e)~~ ~~C~~Close the first bag while squeezing out the excess air. ~~f)~~ ~~T~~Twist the open end of the first bag and use a bag tie to tie it sufficiently tight to be secure but not so tight that pressure equalization cannot take place. ~~g)~~ ~~P~~Place the first bag (containing the item) in the second bag, which already contains the rubber gloves and secure the open end in the same manner as that used for the first bag. With no emergency response kit <u>Cabin crew should</u> ~~P~~pick up the item and place it in a polyethylene bag. <u>They should</u> ~~E~~ensure the receptacle containing the dangerous goods is kept upright or the area of leakage is at the top. Using paper towels, newspaper, etc., <u>cabin crew should</u> mop up the spillage, after having ascertained there will be no reaction between what is to be used to mop up and the dangerous goods. <u>They should</u> ~~P~~place the soiled towels, etc., in another polyethylene bag. <u>Cabin crew should</u> ~~P~~place the <u>rubber</u> gloves and bags used to protect the hands either in a separate small polyethylene bag or with the soiled towels. If extra bags are not available, <u>cabin crew should</u> place the towels, <u>rubber</u> gloves, etc., in the same bag as the item. <u>They should</u> ~~E~~expel excess air from the bags and close tightly so as to be secure but not so tight that pressure equalization cannot take place.

Amplified procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
7.	STOW POLYETHYLENE BAGS If there is a catering or bar box on board, <u>cabin crew should</u> empty any contents and place the box on the floor, with the door upward. <u>They should</u> ~~P~~place the bag(s) containing the item and any soiled towels, etc., in the box and close the door. <u>Cabin crew should</u> ~~T~~take the box or, if there is no box, the bag(s) to a position as far away as possible from the flight deck and passengers. If a galley or ~~toilet lavatory~~ is fitted, <u>cabin crew should</u> consider taking the box or bag(s) there, unless it is close to the flight deck. <u>Cabin crew should</u> ~~U~~use a rear galley or ~~toilet lavatory~~ wherever possible, but ~~do should~~ not place the box or bag(s) against the pressure bulkhead or fuselage wall. If a galley is used, the box or bag(s) can be stowed in an empty waste bin container. If a ~~toilet lavatory~~ is used, the box can be placed on the floor or the bag(s) stowed in an empty waste container. The ~~toilet lavatory~~ door should be locked from the outside. In a pressurized aircraft, if a toilet is used, any fumes will be vented away from passengers. However, if the aircraft is unpressurized there may not be positive pressure in a toilet to prevent fumes from entering the passenger cabin. <u>Cabin crew should</u> ~~E~~ensure when moving a box that the opening is kept upward or when moving a bag that either the receptacle containing the dangerous goods is kept upright or the area of leakage is kept at the top. Wherever the box or bag(s) have been located, <u>cabin crew should</u> wedge them firmly in place to prevent them from moving and to keep the item upright. <u>They should</u> ~~E~~ensure that the position of the box or bags will not impede disembarkation from the aircraft.
8.	TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM <u>Cabin crew should remove</u> ~~S~~seat cushions, seat backs or other furnishings which have been contaminated by a spillage ~~should be removed~~ from their fixtures and placed <u>them</u> in a large bin bag or other polyethylene bag, together with any bags used initially to cover them. ~~They~~ <u>Cabin crew</u> should ~~be~~ stowed <u>them</u> away in the same manner as the dangerous goods item causing the incident.

Amplified procedures for spillage or leakage of dangerous goods	
Step	Cabin crew action
9.	COVER SPILLAGE ON CARPET / FLOOR <u>Cabin crew should</u> ~~C~~cover any spillage on the carpet or furnishings with a waste bag or other polyethylene bags, if available. If not, <u>cabin crew should</u> use airsickness bags opened out so that the plastic side covers the spillage or use the plastic covered emergency information cards. <u>If possible, cabin crew should roll up</u> ~~C~~carpet which has been contaminated by a spillage and which is still causing fumes despite being covered, ~~should be rolled up, if possible,~~ and placed <u>it</u> in a large bin bag or other polyethylene bag. ~~It~~ <u>Cabin crew</u> should ~~be placed~~ <u>it</u> in a waste bin and stowed <u>it</u>, when possible, either in the rear ~~toilet~~ <u>lavatory</u> or rear galley. If the carpet cannot be removed it should remain covered by a large bin bag or polyethylene bags, etc., and additional bags should be used to reduce the fumes.
10.	~~REGULARLY INSPECT~~ <u>MONITOR</u> ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS <u>Cabin crew should monitor</u> ~~A~~any dangerous goods, contaminated furnishings or equipment which have been removed and stowed away or covered ~~for safety should be subject to regular inspection.~~
11.	<u>APPLY POST-INCIDENT PROCEDURES</u> AFTER LANDING AT THE NEXT DESTINATION Upon arrival, <u>cabin crew should</u> apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item. <u>Crew should</u> ~~C~~complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

ATTACHMENT

AMENDMENTS TO THE DRILL CODES IN THE EMERGENCY RESPONSE GUIDANCE

Proposed Amendments to Table 4-2: Alphabetical List of Dangerous Goods with Drill Codes

<i>UN No.</i>	<i>Proper shipping name</i>	<i>Drill Code</i>
Proposed amendment		
1727	Ammonium hydrogendifluoride, solid	8P
2025–2026 Edition		
1727	Ammonium hydrogendifluoride, solid	8L
Proposed amendment		
3562	Chlorophenols, corrosive, solid, n.o.s.	8L
2025–2026 Edition		
—		
Proposed amendment		
3561	Chlorophenols, corrosive, toxic, solid, n.o.s.*	8P
2025–2026 Edition		
—		
Proposed amendment		
2021	Chlorophenols, toxic, liquid, n.o.s.*	6L
2025–2026 Edition		
2021	Chlorophenols, liquid	6L
Proposed amendment		
2020	Chlorophenols, toxic, solid, n.o.s.*	6L
2025–2026 Edition		
2020	Chlorophenols, solid	6L
Proposed amendment		
2372	1,2-Di-(dimethylamino) ethane	3CP
2025–2026 Edition		
2372	1,2-Di-(dimethylamino) ethane	3L
Proposed amendment		
1040	Ethylene oxide	10CP
2025–2026 Edition		
1040	Ethylene oxide	10P
Proposed amendment		
1041	Ethylene oxide and carbon dioxide mixture	10C
2025–2026 Edition		
1041	Ethylene oxide and carbon dioxide mixture	10L

<i>UN No.</i>	<i>Proper shipping name</i>	<i>Drill Code</i>
Proposed amendment		
3300	Ethylene oxide and carbon dioxide mixture	10CP
2025–2026 Edition		
3300	Ethylene oxide and carbon dioxide mixture	10P
Proposed amendment		
1040	Ethylene oxide with nitrogen	10CP
2025–2026 Edition		
1040	Ethylene oxide with nitrogen	1P
Proposed amendment		
—		
2025–2026 Edition		
2941	Fluoroanilines	6L
Proposed amendment		
3358	Heating machines	10L
2025–2026 Edition		
—		
Proposed amendment		
2857	Heating machines	2L
2025–2026 Edition		
—		
Proposed amendment		
3536	Lithium ion batteries installed in cargo transport unit	12FZ
2025–2026 Edition		
3536	Lithium batteries installed in cargo transport unit	12FZ
Proposed amendment		
3563	Lithium metal batteries installed in cargo transport unit	12FZ
2025–2026 Edition		
—		
Proposed amendment		
3564	Sodium ion batteries installed in cargo transport unit	12FZ
2025–2026 Edition		
—		

<i>UN No.</i>	<i>Proper shipping name</i>	<i>Drill Code</i>
Proposed amendment		
2862	Vanadium pentoxide	6L
2025–2026 Edition		
—		