



International Civil Aviation Organization

WORKING PAPER

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DANGEROUS GOODS PANEL (DGP)

TWENTY-SEVENTH MEETING

Montréal, 16 to 20 September 2019

Agenda Item 10: Other business

**REPORT OF THE DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/18)**

Montréal, 1 to 5 October 2018

1. INTRODUCTION

1.1 The Dangerous Goods Panel Working Group Meeting (DGP-WG/18) was convened from 1 to 5 October 2018 under the chairmanship of Ms. M. Paquette.

2. ATTENDANCE

2.1 The meeting was attended by the following panel members, advisers and observers:

Members	Advisers	Nominated By
S. Bitossi		Australia
L. Cascardo		Brazil
M. Paquette	M. Béland S. Cumberbirch D. Evans M. Risco Quiroz A. Sultan	Canada
Jin Junhao	P. Mu Q. Yang C. Chan (Hong Kong SAR) S.K. Law (Hong Kong SAR)	China
Pascal Tatin	J.-M. Dauphant	France

Members	Advisers	Nominated By
H. Brockhaus	P. Düncher S. Sauerbier B. Weiner U. Wienecke	Germany
P. Privitera	C. Carboni A. Pellas M. Tortorici	Italy
H. Sugimoto	M. Fujita K. Nakano K. Takeda A. Uchizawa	Japan
T. Muller	E. Boon R. Dardenne K. Vermeersch	the Netherlands
	S.M. Yoo	Republic of Korea
D. Mirko	D. Kurdchenko	Russian Federation
	M.Á. De Castro	Spain
H. Al Muhairi	K. Al Blooshi T. Howard A. Wagih	United Arab Emirates (UAE)
E. Gillett	D. Warden	United Kingdom
D. Pfund	M. Givens K. Leary E. Petrie	United States
D. Brennan	P. Horner P. Oppenheimer	International Air Transport Association (IATA)
D. Ferguson		International Coordinating Council of Aerospace Industries Associations (ICCAIA)
S. Schwartz		International Federation of Air Line Pilots' Associations (IFALPA)
	M. Boehm	Austria
	J.W. Bengtsson	Denmark
	S. Hakola	Finland
	F. Hamilton Carroll	Rwanda
	R. Cataldo	Switzerland
	B. Carrara H. Guedes	The Regional Oversight Safety System (SRVSOP)

Members	Advisers	Nominated By
	E. Sigrist	European Chemical Industry Council (CEFIC)
7	C. Borda B. McClelland A. McCulloch T. Rogers	Global Express Association (GEA)
	E. Remy	North Atlantic Treaty Organization (NATO)
	G. Kerchner	PRBA — The Rechargeable Battery Association
	W. Eitan	Universal Postal Union (UPU)
	A. Altemos G. Leach N. McCulloch	Dangerous Goods Advisory Council (DGAC)

3. REVIEW OF THE REPORT

3.1 Agenda Item 1: Harmonizing ICAO dangerous goods provisions with UN Recommendations on the Transport of Dangerous Goods

3.1.1 Agenda Item 1.1: Develop proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*

3.1.1.1 There were no amendments to Annex 18 proposed under this agenda item.

3.1.2 Agenda Item 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 2021-2022 Edition

3.1.2.1 Application of Outer Packaging Table for Packing Instruction 620 (DGP-WG/18-WP/4)

3.1.2.1.1 Packing Instruction 620, which applied to UN 2814 — **Infectious substance, affecting humans** and UN 2900 — **Infectious substance, affecting animals**, did not contain a list of permissible outer packagings in the Technical Instructions. It was noted that Packing Instruction 620 in the Technical Instructions was almost identical to the corresponding packing instruction for UN 2814 and UN 2900 in the UN Model Regulations (P620), and the packing instruction in the Model Regulations did include a list of permissible outer packagings. These had been added to the 17th revised edition of the Model Regulations. It was suggested that not including the list in the Technical Instructions was an oversight. A proposal to add the list from P620 of the UN Model Regulations to Packing Instruction 620 of the Technical Instructions was therefore proposed. The amendment was agreed.

3.1.2.2 **Marking with UN or ID Number (5;2,2.4.1.1)** **(DGP-WG/18-WP/11)**

3.1.2.2.1 Exceptions from the minimum height requirement for the UN number and the letters “UN” or “ID” were provided in Part 5;2.4.1.1. While it was clear that the lower height limit applied to packages of 30 litres capacity or less, whether it applied to packagings of less than 30 kg maximum net mass or to cylinders of less than 60 litres water capacity was not clear, because the words “or less” were missing after each of these. An amendment was proposed to correct this apparent anomaly.

3.1.2.2.2 While there was agreement that the provision was unclear as written, and there was no opposition to clarifying it, it was aligned with the UN Model Regulations, so any revision would first need to be adopted by the United Nations Committee of Experts on the Transport of Dangerous Goods. The chairman of the UN Sub-Committee of Experts on the Transport of Dangerous Goods (TDG) noted that it was too late to submit working papers for its next session (Fifty-fourth session, 26 November to 4 December 2018), but that it was not too late to submit an informal document. He also noted that the Sub-Committee had sometimes accepted amendments through informal documents if they were considered editorial.

3.1.2.2.3 A revision to the original proposal was agreed. The secretary would bring it to the Fifty-fourth session of the UN Sub-Committee of Experts on TDG in an informal document. It was noted that a similar provision was contained in Part 6;2.1.1 and Part 6;6.4.1. The secretary would ensure it was aligned with the proposed revision to Part 5;2,2.4.1.1 in the paper to the Sub-Committee.

3.2 **Agenda Item 2: Managing air-specific safety risks and identifying anomalies**

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

3.2.1.1 There were no amendments to Annex 18 proposed under this agenda item.

3.2.2 **Agenda Item 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 2021-2022 Edition**

3.2.2.1 **Addition of Special Provision A5 Against UN 3535** **(DGP-WG/18-WP/5)**

3.2.2.1.1 Special Provision A5 identified that solids with an inhalation toxicity of Packing Group I were forbidden on passenger aircraft. This special provision had been assigned to all Division 6.1 entries assigned a PG I packing group. A new entry for UN 3535 — **Toxic solid, flammable, inorganic, n.o.s.** was introduced into the 20th revised edition of the UN Model Regulations and subsequently to the 2019-2020 Edition of the Technical Instructions through the harmonization process. The substance was classified as Division 6.1, Packing Group I. However, while the same packing instruction number and net quantity per package limits were assigned to the new substance as had been assigned to all other Division 6.1 substances, Special Provision A5 had not. It was agreed that this had been an oversight which would be corrected through a corrigendum to the 2019-2020 Edition of the Technical Instructions.

3.2.2.2 Maximum Capacity of Metal Receptacles (Aerosols), Non-Refillable (IP.7 & IP.7A) (DGP-WG/18-WP/10)

3.2.2.2.1 The inner packaging construction requirements for non-refillable metal receptacles (aerosols) (IP.7 and IP.7A) in Part 6;3.2.7.1 established a maximum capacity of 820 mL. It was noted that the maximum capacity for non-refillable metal aerosols and non-refillable receptacles containing gas (gas cartridges) established in Packing Instruction 203 was greater than this at 1 000 ml. An amendment to Packing Instruction 203, which was also included in the Supplement, and Packing Instruction Y203 was proposed to remove this apparent anomaly.

3.2.2.2.2 There was support for aligning the quantities, although it was thought that a better approach might be to align the quantity limitations in Part 6 with the 1 000 ml limit established in the packing instructions. It was noted that the 820 mL limit was introduced into the first edition of the Technical Instructions based on industry practices at that time which no longer existed. It was suggested that the provisions may need a more comprehensive review, noting also that the references to codes for aerosols may no longer be needed. It had been considered premature to remove the references from the Technical Instructions at the time when the packing instructions were reformatted, with the recognition that the UN Sub-Committee was reviewing provisions related to gases at the time which might have had a consequential affect. The codes did not appear in the UN Model Regulations, making their value in the Technical Instructions questionable.

3.2.2.2.3 The proposer would review the provisions with interested members with the intent of bringing a proposed amendment to the next working group meeting (DGP-WG/19).

3.2.2.3 Emergency Response Information (DGP-WG/18-WP/16)

3.2.2.3.1 An amendment to the provisions for information related to consignments for which a dangerous goods transport document was required to be immediately available to the pilot-in-command for use in emergency response was proposed to align with the terminology for dangerous goods accidents and dangerous goods incidents. The provisions referred simply to accidents and incidents, and it was suggested that this was inappropriate as the definitions for these differed from what was defined in Part 1;3 of the Technical Instructions for dangerous goods accidents and incidents.

3.2.2.3.2 Although the need for consistent terminology was supported, it was agreed that referring simply to accidents and incidents and not dangerous goods accidents and dangerous goods incidents was deliberate to account for the fact that an accident or incident could involve dangerous goods without being caused by them. Having the dangerous goods information available to the pilot-in-command was critical regardless of whether the accident was caused by or involved dangerous goods. The amendment was therefore not agreed.

3.2.2.4 Segregation and Separation during Different Stages of Air Transport (DGP-WG/18-W/17)

3.2.2.4.1 The working group was invited to discuss whether there was a need to include requirements for segregation of dangerous goods and separation of explosives during different stages of air transport and not solely for when stowing on the aircraft. It was suggested that dangerous goods incidents could occur before or after loading on the aircraft and that these could affect the aircraft and/or its occupants.

3.2.2.4.2 There was general agreement that including stowage requirements for stages of transport phases other than when on the aircraft was outside the scope of the Technical Instructions. The different phases of transport involved different entities and different modes of transport, and stowage requirements were normally implemented through national and sometimes regional legislation. There was, however, support for stowage guidance. It was noted that the Supplement to the Technical Instructions included stowage provisions, and that in some cases they were erroneously worded as requirements instead of recommendations, and there were cases of inconsistent terminology being used. There was agreement that the provisions in the Supplement should be reviewed. The presenter expressed his appreciation for the comments raised, noting that he had been looking for the views of others and had not proposed any amendments. He would further consider the issue based on the discussions.

3.2.2.5 **Self-Inflating Personal Safety Devices Carried by Passengers or Crew (DGP-WG/18-WP/18)**

3.2.2.5.1 An amendment to the passenger provisions was proposed extending the allowance of one self-inflating personal safety device per person, with the approval of the operator, to four. An increase in the application of these safety devices was noted, which had resulted in passengers seeking to travel with multiple devices. It was argued that the amendment would not introduce any additional safety risk, as the current provisions did not limit the number of approvals an operator could grant passengers to carry a self-inflating personal safety device, making it theoretically possible for every passenger on an aircraft to carry one. It was suggested that the total number of devices on board the aircraft should the proposed amendment be adopted would realistically not exceed what was currently theoretically possible. The proposal limited the number of spare cartridges to a total of two, regardless of the number of devices being carried.

3.2.2.5.2 There was support for the proposal in principle, although not everyone supported the justification given. It was suggested that supporting such a justification could set a precedent and result in increases to other entries in the passenger provisions and that this would be unfavourable. There were also concerns raised with the lack of a limit on the cylinder size and the potential for the provision to be applied for purposes other than personal use.

3.2.2.5.3 The proposer would consider a new proposal for DGP-WG/19 taking the comments raised into account.

3.2.2.6 **Revisions to Packing Instructions 378 and 972 (DGP-WG/18-WP/20)**

3.2.2.6.1 Packing Instruction 950, which applied to UN 3166 — **Vehicle, fuel cell, flammable liquid powered**, included an exception from the requirement for fuel tanks to be drained for vehicles equipped with diesel engines and a provision allowing fuel tanks to have some residual fuel when it was not possible to handle the vehicle in any way other than in the upright position. Packing Instruction 950 applied to engines and vehicles prior to the 2017-2018 Edition of the Technical Instructions but only to vehicles since then. New packing instructions for engines and machinery were included in the 2017-2018 Edition and assigned to either Packing Instruction 378 or 972 depending on the classification of the fuel powering them. Although most of the provisions of these packing instructions aligned with Packing Instruction 950, the exceptions from fuel tank draining were not. It was reported that large machines were being transported that could only be transported in the upright position and suggested that the exceptions provided for vehicles should apply to machinery. An amendment introducing the exceptions into Packing Instruction 378 and 972 was therefore proposed.

3.2.2.6.2 There were concerns raised with including an exception from the requirement to drain diesel engine fuel tanks powered by flammable liquids. Although it was recognized that this was permitted prior to the 2017-2018 Edition of the Technical Instructions when all engines and machinery were assigned to Class 9, there had been an assumption that most diesel fuel would not be classified as a flammable liquid. Now that there was a distinction between flammable liquid powered and non-flammable liquid powered engines, it did not seem appropriate to allow the exception in Packing Instruction 378.

3.2.2.6.3 The working paper provided pictures as examples of large machines that were being transported that could only be positioned in the upright position, which raised concerns with the potential for them to contain high volumes of flammable liquids. The proposer noted that these machines were often refrigeration units that were powered during transport to the airport, shut down during air transport, and restarted when moved from the destination airport. He explained that it would be difficult to drain the units immediately prior to and to refuel immediately after transport by air. He reminded the meeting that the practice was already permitted for vehicles and had been permitted when these machines were assigned to the same Class 9 packing instruction prior to 2017. He did not see justification for treating them differently now and suggested that any additional concerns would be more appropriately raised in a separate working paper.

3.2.2.6.4 A revised amendment which removed the proposed exception for diesel engines in Packing Instruction 378 was agreed.

3.2.2.7 **Addition of Special Provision A87 Against UN 3530 (DGP-WG/18-WP/21)**

3.2.2.7.1 Special Provision A87 permitted articles, such as vehicles and engines, to be offered for transport without the marks and labels that would normally be required in accordance with Part 5;2 and Part 5;3 of the Technical Instructions when the articles were shipped unpackaged. The special provision was assigned to all entries for engines and machinery of Divisions 2.1, Class 3 and Class 9. It was not assigned to UN 3530 — **Machinery, internal combustion** or to UN 3530 — **Engine, internal combustion**, both of which were assigned to Class 9. It was agreed that this was an oversight that should be corrected through a corrigendum to the 2019-2020 Edition of the Technical Instructions.

3.2.2.8 **Dangerous Goods Training (DGP-WG/18-WP/24)**

3.2.2.8.1 Revisions to the training provisions were proposed in an effort to address concerns expressed regarding the removal of the tables in Part 1;4 (Tables 1-4 and 1-5) that identified subject matter in the Technical Instructions for which various categories of personnel should be familiar. While the Twenty-Sixth Meeting of the Dangerous Goods Panel (DGP/26, 16 to 27 October 2017) had agreed to remove the tables, and this had been supported by the Air Navigation Commission (ANC) during its review of the DGP/26 Report, difficulties as a result of their removal had been voiced in cases when the tables were used as a tool to qualify training. While additional guidance had been developed to address these concerns, which had been supported by DGP/26 and the ANC, the new proposal was seen by the proposer as a better method to address the concerns. The training provisions recommended by DGP/26 had focused on functions instead of job title, but the proposer believed there was benefit in maintaining job titles and therefore re-introduced them with relevant tasks from the task list agreed by DGP/26. The proposal also included prescriptive requirements for instructor qualifications. A table identifying subject matter for which various categories of personnel should be familiar was also re-introduced, with an added column indicating the minimum amount of time required to be spent on each subject matter.

3.2.2.8.2 There was little support for the amendment proposed. The proposed provisions were considered to be too prescriptive and conflicted with the competency-based approach to training and assessment. There was some disappointment expressed that such significant changes were being proposed after the many years it had taken to develop the competency-based provisions agreed at DGP/26 and supported by the ANC.

3.2.2.8.3 A few did express support for the intent of the proposal, maintaining that a standard approach to validating training programmes with the removal of the tables had been lost. Others thought that these concerns were better addressed at the national level and through guidance material. The whole concept of competency-based training was to allow an approach that could be adapted to suit a wide range of training needs within different-sized States and organizations. The prescriptive approach proposed would have an opposite effect.

3.2.2.8.4 The proposer expressed appreciation for the discussion and would consider the comments raised. It was suggested that some of the issues raised could be discussed through the DGP working group on training.

3.2.2.8.5 The amendment was not agreed.

3.2.2.9 Amendment to the “Window Period” of Recurrent Training (DGP-WG/18-WP/26)

3.2.2.9.1 An amendment to the recurrent training requirements in Part 1;4.2.3 was proposed which would replace the three-month “window period” for recurrent training with a one-month window period before or after the calendar month on which the previous training was taken, i.e.:

Recurrent training must be provided within 24 months of previous training to ensure knowledge is current. However, if recurrent training is completed within one month before or after the calendar month on which the ~~the final three months of validity of~~ previous training was taken, the period of validity extends from the month on which the recurrent training was completed until 24 months from the expiry month of that previous training.

3.2.2.9.2 The amendment was not supported. The three-month window period had been in place for many years and was working well; changing it would be unnecessarily disruptive. While there was some sympathy for applying a one-month window period for entities that were specific to aviation such as crew members and flight dispatchers, there was a multi-modal implication for other entities that needed to be taken into account. It was suggested that there was nothing to stop organizations from implementing a shorter window period, as this would be more restrictive than the three-month requirement. The proposer understood and expressed appreciation for the comments raised.

3.2.2.10 Harmonizing the Definitions of the Technical Instruction for the Safe Transport of Dangerous Goods by Air (Doc 9284) with Annex 18 (DGP-WG/18-WP/27)

3.2.2.10.1 Revisions to the definitions for “UN number” in Annex 18 and the Technical Instructions and “packaging” in Annex 18 were proposed for the sake of consistency.

UN Number

3.2.2.10.2 The proposed amendment to UN number was made to address the following two suggested inconsistencies between Annex 18 and the Technical Instructions that were identified with respect to the definition for UN number. These were:

- a) While the definition in the Technical Instructions referred to 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*, the Technical Instructions referred only to the United Nations Committee of Experts on the Transport of Dangerous Goods. The latter was proposed to be more appropriate, with the suggestion that the Globally Harmonized System of Classification and Labelling of Chemicals portion of the committee did not use UN numbers. An amendment to Annex 18 was therefore proposed which removed this reference.
- b) While the definition in Annex 18 referred to the four-digit number identifying an article or substance or a particular group of articles or substances, the definition in the Technical Instructions referred only to substances. An amendment to the definition in the Technical Instructions was therefore proposed to include references to articles.

3.2.2.10.3 There was support for aligning the definition for UN Number between the two documents, but it was considered more appropriate to align the definition in the Technical Instructions with the definition in Annex 18. The Annex 18 definition did include a reference to the *Globally Harmonized System of Classification and Labelling of Chemicals*, but this was not incorrect as the reference formed part of the official title of the UN Committee responsible for adopting amendments to the UN Model Regulations, including the modifications to UN numbers. It was also a simpler approach, since States were not consulted on proposed changes to the Technical Instructions as was the case for changes to the Annex.

Packaging

3.2.2.10.4 While the definition for packaging in the Technical Instructions referred to components or materials necessary for performing their containment and other safety functions, the definition in Annex 18 did not refer to safety functions. An amendment to Annex 18 was therefore proposed to align with the Technical Instructions. This was agreed, recognizing that the definition in the Technical Instructions aligned with the definition in the UN Model Regulations. A suggestion to also amend a reference to a definition specific for radioactive material in the note under the definition was also agreed.

3.2.2.11 Self-Heating Food and Beverage Containing a Flameless Ration Heater (DGP-WG/18-WP/28)

3.2.2.11.1 Provisions to prohibit self-heating of food and beverages containing a flameless ration heater in carry-on or checked baggage were proposed through an amendment to Table 8-1, with the recognition that they posed fire and explosion risks and were a health hazard.

3.2.2.11.2 While there was agreement that these articles should be forbidden to be carried by passengers and crew, there was little support for the proposal as it went against the principles used in developing the passenger provisions whereby all dangerous goods were prohibited with the exception of those listed in Table 8-1. There was concern that adding these articles to Table 8-1 and designating them

as forbidden would result in the misperception that anything not listed in the table was not forbidden. There was a suggestion that the article could be added to Note 1 under Part 8;1.1.9, which listed certain dangerous goods commonly carried by passengers on other modes of transport, but which were prohibited to be carried by passengers and crew. However, it was also questioned whether the items listed in that note met any defined criteria for being included and whether self-heating food and beverages containing a flameless ration heater would meet this criteria.

3.2.2.11.3 The amendment was not agreed. The proposer expressed appreciation for the comments raised and would consider bringing a revised proposal to the next working group meeting (DGP-WG/19).

3.2.3 Agenda Item 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 2021-2022 Edition

3.2.3.1 Separation of Explosive Substances and Articles (DGP-WG/18-WP/6)

3.2.3.1.1 An amendment was proposed which introduced more prescriptive separation provisions in the Supplement to assist competent authorities in the granting of approvals or exemptions to transport explosives normally forbidden for transport by air. Table S-7-1 provided guidance for the separation of packages containing explosives with different compatibility groups, but did not specify specific distances or methods of separation. The provisions in the Supplement left it to the competent authority to approve the method of separation between incompatible explosives, but it was suggested this was difficult to implement because different authorities often set differing conditions.

3.2.3.1.2 While there were some who thought the status quo to be acceptable, most believed there was value in introducing a more prescriptive approach as it would allow for consistent implementation of safe separation methods and eliminate the potential for conflicting requirements among States. There were some difficulties raised with respect to the amendment as written, but agreement that efforts to refine the text should be made. Several volunteered to assist the proposer in doing so. Members were invited to provide comments to the proposer via e-mail and to also provide information on the conditions under which exemptions were granted in their States. Work would continue via correspondence and through virtual meetings. It was envisaged that a new proposal would be brought to the next working group meeting (DGP-WG/19).

3.2.3.2 Competency Framework for State Employees — Grant of Shipment Approvals and Exemptions (DGP-WG/18-WP/7)

3.2.3.2.1 A proposal to add competencies related to the granting of approvals and exemptions for shipping dangerous goods normally forbidden for transport into the competency framework for dangerous goods States employees was discussed. The need for State employees to be competently trained to develop and implement processes and procedures for the granting of approvals and exemptions was recognized, and it was agreed the competency framework did not make this clear. However, the proposed approach for including these competencies was not agreed. The Secretariat suggested that the DGP Working Group on Training (DGP-WG /Training) be tasked with considering how best to address the training need. It was noted that Amendment 5 to the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868), which would become applicable in November 2020, introduced revised definitions and terminology that would require consequential changes to the provisions in the Supplement. It was envisaged that these changes would be proposed at the next working group meeting

(DGP-WG/19). DGP-WG/Training would endeavour to include provisions for the granting of approvals and exemptions as part of its proposed amendments.

3.2.4 Agenda Item 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 2021-2022 Edition

3.2.4.1 Emergency Response for Dangerous Goods Carried by Passengers and Crew (DGP-WG/18-WP/15)

3.2.4.1.1 The working group was invited to discuss whether there was a need to strengthen and/or align provisions for emergency response between Annex 6 — *Operation of Aircraft*, Annex 18 and the Technical Instructions. It was suggested there was a need for clarity with respect to who the procedures were aimed at and whether they applied to dangerous goods as cargo, dangerous goods carried by passengers and crew, or both. While Annex 6 included a general requirement for the operations manual to contain emergency procedures on board an aircraft, Annex 18, paragraph 9.2 contained more specific requirements for the operations manual to include information for the flight crew to carry out their responsibilities with regard to the transport of dangerous goods, and the Technical Instructions referred to this information being necessary only for consignments of goods for which a dangerous goods transport document was required. Annex 6 and the Technical Instructions referred to emergency response procedures contained in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481). However, although Doc 9481 included guidance for cabin crew dealing with incidents in the cabin, there was no reference to cabin crew dealing with incidents involving dangerous goods carried by passengers and crew in Annex 18 or the Technical Instructions. It was suggested that there was a need to clarify the intent and ensure consistency among the various Annexes and supporting documents.

3.2.4.1.2 Members expressed appreciation for the analysis done and agreed there was a lack of consistency that needed to be rectified. There were also suggestions to expand upon the guidance provided in Doc 9481, noting that new methods for responding to incidents involving lithium batteries were available and should be addressed. The secretary of the Flight Operations Panel (FLTOPSP) was present and noted that Annex 6 included a reference to the *Preparation of an Operations Manual* (Doc 9376) and that a major revision to that document had been undertaken. Although still in draft form, the revised version included guidance on what should be included in the manual with respect to emergency response procedures for cabin and flight crew and it did refer to dangerous goods. Guidance for training of cabin crew dealing with emergencies was also provided in the *Cabin Crew Safety Training Manual* (Doc 10002). He suggested a coordinated effort between operations and dangerous goods experts be taken to ensure alignment of emergency response procedures among the various documents and to ensure the information was being effectively communicated.

3.2.4.1.3 There was support for work on harmonizing the provisions, but it was suggested further review was needed to understand the implications before taking on the task. Volunteers offered to help the presenter conduct such a review with support from the Secretariat. A report of this review would be presented at the next working group meeting (DGP-WG/19).

3.2.4.2 Proposed amendments to the Emergency Response for Dangerous Goods Carried by Passengers and Crew (DGP-WG/18-WP/32)

3.2.4.2.1 A proposal to include flowcharts in Section 3 of the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) was presented to DGP/26 (see paragraph 4.2 of the DGP/26 Report). The proposal was reviewed by the ICAO Cabin Safety Group (ICSG), which happened to be meeting at the same time as the panel. ICSG proposed revising the proposed flowchart to align with their methodology following DGP/26. The ICSG also proposed replacing references to “checklist(s)” with “procedure(s)” in Section 3 of Doc 9481, with the recognition that the material was used to build policies and procedures for dealing with dangerous goods incidents and not used as checklists. The panel supported the ICSG’s recommendations, and agreed that revised flowcharts developed by the group could be incorporated in Section 3 of Doc 9481, pending a more thorough review through correspondence. That review resulted in suggestions for additional amendments and questions as to whether or not it was really necessary to introduce the flowcharts into Doc 9481. It was decided that a decision would best be made at a face-to-face meeting, and the flowcharts were not introduced into the 2019-2020 Edition. Accordingly, DGP-WG/18 was invited to determine in principle whether the addition of the flowcharts was necessary. The meeting was also invited to agree to the replacement of references to “checklist(s)” with “procedure(s)”.

3.2.4.2.2 There was no opposition to the addition of the flowcharts provided it was clear that they were intended as guidance for developing policies and procedures for dealing with dangerous goods incidents. However, it was noted that cabin safety experts had been consulted who did not believe the flowcharts added any value. It was suggested that a decision as to whether or not they should be introduced be left to cabin safety experts, as they were in a better position to know how the provisions were used. This was agreed. The Secretariat would coordinate with the secretary of ICSG and report back to the DGP.

3.2.4.2.3 The Secretary reported via email, prior to this report being finalized, that the ICSG had met in Montréal in December 2018 and discussed the flowcharts. The group concluded that it was not necessary to include them in Doc 9481 but that they may provide value in a different document. With the acknowledgement that the flowcharts could be useful for training purposes, ICSG would consider including them in the *Cabin Crew Safety Training Manual* (Doc 10002). DGP would be informed of progress in this regard.

3.2.4.2.4 The proposal to replace references to “checklist(s)” with “procedure(s)” was agreed by DGP-WG/18.

3.3 Agenda Item 3: Managing safety risks posed by the carriage of lithium batteries by air

3.3.1 Agenda Item 3.1: Consider how lithium battery package standard under development by SAE G27 Committee (AS6413) can be incorporated into ICAO provisions (Job card DGP.003.02)

3.3.1.1 Presentation of Status of SAE G-27 Lithium Battery packaging performance standard (DGP-WG/18-IP/13)

3.3.1.1.1 The co-chairman of the SAE G-27 Lithium Battery Packaging Performance Committee presented an update on the status of the standard. A fifth draft standard would be reviewed at a face-to-face meeting of the G-27 committee from 5 to 8 November 2018 in Bremen, Germany. It was anticipated that comments from that meeting would be incorporated in a standard ready for the formal approval process (balloting) in early 2019. The need for validating testing of the standard in multiple testing facilities had been identified and plans for doing so were underway. There remained some issues that were still being discussed, including tests for oversized batteries, “generic” packaging to allow for a wide variety of cells and batteries to be shipped in a given package without testing each package and cell/battery combination, and packaging containing different configurations of cells from the ones that had been subject to the test standard. An issue of particular interest to the aviation industry was the threat of an external fire on packages of lithium batteries. There were mixed views on whether or not the threat needed to be taken into account in the standard. An external fire sub-group was established to consider the threat and recommend a course of action. A report of the sub-group would be provided to the full committee at the meeting in November.

3.3.1.1.2 DGP-WG/18 was invited to discuss how the standard might be incorporated in the Technical Instructions when completed, recognizing that it would need to be evaluated to determine whether it provided an acceptable level of safety before agreeing to implement it. The discussion would therefore in no way imply that the standard or any part of it would be adopted. Some thought such a discussion was premature and should be delayed until the standard was complete. It was clarified that the discussion was simply intended to generate ideas on how to implement the standard if it were adopted for the purpose of being ready if and when the time came; no decisions would be made. Comments were particularly encouraged with respect to marking, labelling and the need for traceability.

3.3.1.1.3 The following points were raised:

- a) A mark on the package to indicate which specific test the battery/cell/packaging combination had passed would be necessary.
- b) Provisions were being proposed as part of the SAE standard for cells and batteries to be shipped at a tested state of charge in any type of packaging if the cells or batteries did not produce hazardous consequences when tested unpackaged. If adopted, a specific mark on the package would be needed to indicate that such cells or batteries were contained within.
- c) An indication of the State under which the package was approved would need to be marked on the package, similar to what was already required for UN-tested packaging.
- d) Requiring additional information to be communicated to the operator that would indicate the degree of risk and provide a level of confidence that the package had passed the test and was in full compliance with the regulations may need to be considered. One suggestion was for the test summary to accompany the package.
- e) Concerns were expressed with respect to whether anything additional would be required of the operator, recognizing that the operator was limited to looking at the documentation, the package and its markings, i.e. the package could not be opened.
- f) An opinion that the existing framework for dangerous goods transport was sufficient, and that no additional requirements would be necessary, was expressed.

3.3.1.1.4 Members were encouraged to provide any additional comments to the Secretariat.

3.3.2 Agenda Item 3.2: Consider marking, labelling and documentation requirements for lithium battery packages meeting the SAE G27 Committee draft standard AS6413 (Job card DGP.003.02)

3.3.2.1 This agenda item was considered in conjunction with Agenda Item 3.1 and reported on under that item (see paragraph 3.3.1 of this report).

3.3.3 Agenda Item 3.3: Consider the need for amendments to address impact from proposed amendment to Annex 6, Volume I on cargo compartment safety (Job cards DGP.003.02 and FLTOPSP.043)

3.3.3.1 There were no discussions under this this agenda item.

3.3.4 Agenda Item 3.4: Consider measures to mitigate safety risks posed by lithium batteries carried and/or used by passengers, crew and the operator (Job card DGP.005.01)

3.3.4.1 Summary of Discussions Related to Risks Associated with the Carriage of Portable Electronic Devices Containing Lithium Batteries and Consideration of way Forward (DGP-WG/18-WP/2), Risks associated with the carriage of portable electronic devices (PEDs) in checked baggage (DGP-WG/18-IP/5) and Passenger Information Developed to Address the Carriage of PEDs (DGP-WG/18-IP/7)

3.3.4.1.1 The working group was provided a summary of discussions related to risks associated with the carriage of portable electronic devices containing lithium batteries which lead to the development of ANC job card DGP.006.01 on lithium batteries carried and/or used by passengers, crew and the operator. The working group was also provided a summary of data collected from States and international organizations on the same subject. The issue of lithium batteries and lithium battery-powered portable electronic devices (PEDs) carried and/or used by passengers, crew and the operator had been raised by the Air Navigation Commission (ANC) during its review of an amendment proposed by the 2017 Working Group Meeting of the DGP (DGP-WG/17) related to power banks (ANC Min 203, 204 and 205) and indirectly through the recommendations of the Multidisciplinary Cargo Safety Group (CSG), which had been tasked with identifying safety hazards posed by the carriage of portable electronic devices in checked baggage, assessing the associated safety risks, and developing mitigation strategies to reduce the safety risk (C 212/5). The working group was invited to consider whether it was necessary to establish interim measures to address identified safety risks until the work identified on the job card was complete.

Power banks

3.3.4.1.2 The amendment proposed by DGP-WG/17 introduced requirements in the passenger provisions prohibiting spare batteries and power banks from being recharged or from being electrically connected or providing power to an external device. The need for the amendment was prompted by a number of reported incidents involving power banks in the cabin and the fact that manufacturing and use of them was on the rise. The amendment, although supported by the ANC, was later withdrawn after

consequential difficulties for some operators should the amendment be adopted were reported. These operators were using power banks as a secondary or emergency power supply for electronic flight bags (EFBs) and other devices used during flight through the use of the operator exception in Part 1;2.2.1 d). It was assumed that because this exception required the batteries to meet the provisions of the entry for PEDs in Table 8-1, the operator would no longer be permitted to use the power banks during flight should the amendment be adopted. The ANC decided that the amendment should be withdrawn to allow time for the panel to re-consider how best to address the risks posed. The ANC also tasked the DGP with ensuring that meaningful criteria be developed to avoid the potential for misinterpretation of the provisions or unintended consequences. This was factored into the job card.

Recommendations of the CSG

3.3.4.1.3 The CSG was established to respond to concerns of increased safety risks resulting from security measures which restricted the carriage of PEDs to checked baggage that were introduced by some States in March 2017. Although alternate measures were subsequently introduced to address the security threat, the CSG did identify hazards through testing at the Federal Aviation Administration (FAA) Technical Center (see paragraph 6.1.1 of the DGP/26 Report). Among the hazards identified was the potential for an explosion if certain personal items containing permitted dangerous goods, such as aerosol cans, were placed in the same checked baggage as a PED. The FAA testing also revealed limitations with the respect to the ability of cargo compartment fire suppressions to effectively contain an event, particularly when occurring in a Class D compartment. The CSG developed recommendations for addressing the identified hazards, including the following four that were directed to the DGP:

- a) that the DGP evaluate whether the Technical Instructions should be amended to restrict the carriage of PEDs as carry-on baggage unless otherwise approved by the operator;
- b) that the DGP review the items permitted to be carried by passengers in checked baggage and establish whether certain combinations should be forbidden;
- c) that the DGP together with the battery manufacturing industry develop a clear definition of what was meant by PEDs; and
- d) that the AIRP, FLTOPSP and DGP review the issue of operators placing charged PEDs in the cabin for use in flight, utilising the provisions of the Technical Instructions rather than seeking airworthiness certification approval.

3.3.4.1.4 Amendments to the Technical Instructions restricting the carriage of PEDs to carry-on baggage were proposed to DGP/26, but they were not agreed as the meeting could not reach a consensus. One of the arguments against the amendments was the belief that there was insufficient data to thoroughly analyse the likelihood of an incident involving PEDs occurring in the cargo compartment. The Council reviewed the CSG report after DGP/26 and instructed the ANC, in consultation with DGP and other relevant technical panels, to consider the CSG's recommendations while the collection of more complete data was being undertaken.

3.3.4.1.5 A DGP working group held three virtual meetings following DGP/26 to further discussions on the two issues. Two opposing views on whether amendments to the Technical Instructions to address the hazards with respect to portable electronic devices in checked baggage should be made were maintained. One was that the likelihood of an event was so remote, no action was necessary and that in any event, the issue was no longer relevant since the security restrictions had been removed. The other

was that while the risk of an incident involving a PED in checked baggage was lower because the security measures were no longer in place, the hazard identified remained and the risk, however low, needed to be mitigated because of the potential for a single event to lead to an uncontrolled fire. All supported taking measures to communicate the risk and to recommend simple ways to mitigate it. In this regard, a State letter (M 16/1-18/2) sent seeking data for the purpose of more precisely determining the safety risks also highlighted the identified risk and referred to notices issued by the FAA and the European Aviation Safety Agency (EASA) alerting operators of the safety concerns.

Data collected

3.3.4.1.6 A summary of data collected through a questionnaire distributed to States (State letter M 16/1-18/2) was provided to DGP-WG/18. Fifty-eight States and two international organizations responded to the questionnaire, although a number of responses were found to be incomplete. Some responders reported challenges in providing reliable data, particularly with respect to the types, quantities and combinations of dangerous goods carried by passengers. Limited data was also provided on the number of aircraft with Class D compartments registered in States, as several States indicated they did not have information to support this request. States were able to provide data with respect to the number of incidents involving PEDs reported since 2007. A total of one-thousand and thirty five incidents were reported by fifty-five States, three hundred and thirty-two of which occurred in the cabin, one hundred and seventeen of which occurred in checked baggage and five hundred and eighty-six of which occurred at airports.

3.3.4.1.7 Specific data was sought from the International Coordinating Council of Aerospace Industries Associations (ICCAIA) and the International Air Transport Association (IATA) through separate questionnaires. ICCAIA reported that six manufacturers indicated there had been no aircraft equipped with Class D compartments delivered since 2007. ICCAIA also explained the assumptions used by aircraft manufacturers when calculating a fire probability of $1E-7$ per flight hours. The information collected from ICCAIA was intended for the Airworthiness Panel (AIRP) and would be provided to that panel, along with all other data collected, in accordance with the CSG's recommendations.

3.3.4.1.8 IATA reported that it considered the questions to the ICAO questionnaire too subjective to be answered accurately by airlines. It therefore developed two customized surveys to collect reliable data. One surveyed airline members, and the other adults from the general population in three regions who had travelled by air during the previous year.

3.3.4.1.9 The questions for airlines were related to the number of incidents involving PEDs and the airlines' operational practices for allowing passengers to carry them in carry-on and/or checked baggage, including the types they permitted. Thirty-six airlines responded to this survey. IATA's overall conclusion after analysing responses was that the airlines were well aware of regulatory requirements and were alerting and informing their customers of these requirements and that there was a low rate of incidents involving PEDs. A total of twenty-nine incidents involving PEDs between the years of 2013 and 2017 were reported by seventeen airlines, twenty-six of which occurred in the cabin, one of which occurred in checked baggage, and two of which occurred at airports. Nineteen airlines declined to provide incident data, and it was unknown if this was due to zero incidents or to a decision not to report. It was noted during discussions at DGP-WG/18 that there was a higher number of incidents reported by States to ICAO than was provided by airlines to IATA.

3.3.4.1.10 The questions for travellers were related to the quantity and types of PEDs, power banks, spare batteries and other dangerous goods carried, whether they were packed in carry-on or checked baggage, and whether they were familiar with carriage restrictions. Two-hundred and fifty business

travellers and 250 leisure travellers in each of the United States, the United Kingdom and Hong Kong were surveyed. Despite the fact that the majority of travellers surveyed believed they were well informed of the rules, thirty-five percent reported carrying spare batteries in checked baggage and thirty-six percent reported carrying power banks in checked baggage, with the average number being two. This raised concerns and prompted IATA to launch an awareness and education campaign on the safe carriage of lithium batteries and power banks, which was aimed at the travelling public and travel agents. The report of the findings included a recommendation for operators to assess the potentially high number of power banks and spare batteries in checked baggage as part of their safety risk assessment process.

3.3.4.1.11 The Secretariat would seek advice from the CSG on next steps and, if considered necessary, methods for collecting more substantial data.

DGP-WG/18 discussions

3.3.4.1.12 There were some who felt strongly that the incident data coupled with FAA test results supported the need for immediate action. While introducing regulations prohibiting PEDs from checked baggage or requirements prohibiting combinations of dangerous goods would seem like a logical approach, it was recognized that this alone would have limited effect without heightened awareness of the regulations and the risks by the travelling public. This idea was supported by the results of the IATA survey which revealed that many passengers did not comply with regulations despite stating they were aware of them.

3.3.4.1.13 There were some who did not believe the data supported the need for regulatory changes. The data's level of usefulness for conducting risk assessments was questioned, particularly with respect to the number of PED incidents reported to ICAO, as there was no data provided on which to measure the incident rate (e.g. number of flight hours over which the incidents occurred) and no indication of what kind of incidents occurred. The validity of data related to the numbers and types of PEDs carried by passengers and crew provided to ICAO, without knowing how the numbers were determined, was also questioned. One member noted that 100 checked bags had been screened in his State for the purpose of data collection and that the results suggested that most baggage containing PEDs did not contain other dangerous goods and that there was an acceptable separation between those that did. He therefore suggested that the risk of an incident involving PEDs and aerosols was low. Many believed that introducing any additional requirements was futile, as it was impossible for operators to verify that passengers complied. Others, while acknowledging the difficulties, believed there would be more people carrying PEDs in the cabin if this was required rather than simply recommended. They acknowledged that there would always be non-compliance, but that this was the case for all of the passenger provisions as well as other regulatory requirements for passengers on aircraft. They believed education and outreach, coupled with requirements, would improve compliance.

3.3.4.1.14 The meeting was asked to consider the status of the safety risk related to the use of spare batteries and power banks. Recognizing that the risk identified had been considered high enough to warrant an emergency addendum to the Technical Instructions when the amendment was first proposed, the group was invited to consider whether alternate measures had been introduced to mitigate the risk in the absence of the addendum or whether short-term, interim measures needed to be introduced until all of the work items on ANC job card DGP.006 were complete. The meeting concluded that introducing any new requirements related to passengers or crew use during flight was inappropriate at this time. DGP had taken a proactive approach in recommending an addendum in 2017, based on incident data that indicated a rise in the number of incidents involving power banks in the cabin and concerns with the number of low-quality products being manufactured. There was insufficient data to definitely determine whether there had been an increased trend in incidents occurring since that time, but some were of the opinion that

there had not been and that outreach and awareness campaigns had helped reduce the frequency. Incidents were still occurring, but emergency response procedures in the cabin had been effective at successfully dealing with them. Some felt stopping passengers from using power banks would be impossible, making any restrictions futile, although it was suggested requirements did have the benefit of giving cabin crew authority to ask passengers to stop. There also remained concerns that amending Table 8-1 to prohibit the use of the devices by passengers would introduce a conflict for operators using power banks to charge their own devices based on the exceptions in Part 1;2.2.1 d), which required the batteries to meet the provisions of the entry for PEDs in Table 8-1. It was concluded that the issue needed to be addressed comprehensively through the job card, that an interim amendment was not justified, and that the risks should continue to be mitigated by the operator through their risk assessment procedures.

3.3.4.1.15 The meeting concluded that:

- a) a greater level of awareness of the risks and measures needed to address them was necessary;
- b) there was a need for more comprehensive incident data in terms of quantity, quality and granularity; and
- c) criteria for determining an acceptable level of safety with regard to the carriage of dangerous goods needed to be established to facilitate decisions of the panel.

3.3.4.1.16 The Secretariat would work with panel members to develop outreach and guidance material for States. Panel members were encouraged to share material developed in their States which could be provided through the ICAO public website. The Secretariat would take the need for additional incident data with regard to power banks and spare battery into consideration through its work with the CSG.

3.3.4.1.17 A report of this discussion would be provided to AIRP and FLTOPSP.

3.3.4.2 Provisions for Incidents Involving Dangerous Goods in the Cockpit (DGP-WG/18-WP/29)

3.3.4.2.1 The use of electronic flight bags (EFBs) and other devices powered by lithium batteries was on the rise, as was the use of power banks to re-charge EFBs. The need for guidance on responding to a thermal runaway event involving these devices in the cockpit was suggested. Although there was guidance for responding to incidents involving portable electronic devices in the cabin in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481), the document did not contain any specific guidance for responding to lithium battery incidents in the cockpit. It was suggested that this was necessary, since the procedures for the cabin might not be appropriate in the cockpit.

3.3.4.2.2 The secretary of FLTOPSP suggested the working group allow his panel to consider whether there was a need for material and where the most effective place for it would be. He acknowledged that Doc 9481 provided valuable guidance, but that operators were not required to have it and would therefore not necessarily see the provisions. He stressed the importance of the material being in a document at a high enough level to be visible to all operators, as it would need to be incorporated in their operations manuals. He noted that the fifth meeting of FLTOPSP would be meeting later in the month and suggested the subject be raised at that time. The secretary of AIRP invited the working group to consider submitting a paper to her panel as well, noting that there may be airworthiness considerations that needed to be addressed.

3.3.4.2.3 Some members maintained that Doc 9481 was the appropriate place for the material. While there was no opposition to including material in Doc 9481, the importance of having it in a document that was visible to all operators in the first instance was recognized. There was also recognition that emergency response procedures in the cockpit were more complex than those in the cabin and would be dependent on number of variables including the aircraft type. A multidisciplinary approach involving operations and airworthiness expertise would therefore be necessary to ensure effective guidance was developed.

3.3.4.2.4 The meeting agreed that working papers should be submitted to the upcoming meetings of FLTOPSP (FLTOPSP/5, 22 to 26 October, 2018) and AIRP (AIRP/6, 5 to 9 November 2018). The Secretariat would coordinate the submission of working papers and report back to the DGP via correspondence following the respective panel meetings.

3.3.4.2.5 The working paper included a reference to the Egypt Air accident that occurred in May 2016 which resulted in sixty-six fatalities. The French Bureau of Enquiry and Analysis for Civil Aviation Safety (BEA) issued a statement that there may have been a fire in the cockpit which resulted in the crash. BEA did not state the cause of the fire, but some aviation experts had considered a laptop computer to be the likely cause. While recognizing the need for caution before reacting to one incident without knowing if the fire did emanate from the laptop, the incident raised concerns. The secretary was asked to refer to the incident in the working papers to FLTOPSP and AIRP.

3.3.5 Agenda Item 3.5: Consider the need for specific measures to mitigate safety risks posed by lithium batteries packed with or contained in equipment

3.3.5.1 There were no working papers presented under this agenda item.

3.3.6 Agenda Item 3.6: Develop provisions aimed at improving compliance throughout the transport supply chain, including simplification of provisions, guidance on State oversight and outreach, and responsibilities of entities outside the aviation stream (Job card DGP.003.02)

3.3.6.1 Lithium Battery Mark –Telephone Number for Further Information (DGP-WG/18-WP/8)

3.3.6.1.1 A “telephone number for additional information” was required on the mark for lithium batteries prepared in accordance with Section II of Packings Instructions 965 to 970 and Section IB of Packing Instructions 965 and 968. It was suggested that the requirement was vague in that it did not specify the entity for which the number was needed, the circumstances under which additional information would be required, or what additional information might be required. The working group was invited to determine what the intent of the marking requirement was.

3.3.6.1.2 Most considered the telephone number to be a number that could be used to contact the shipper for further information regarding the lithium battery consignment during regular working hours and not twenty-four seven. How to handle a damaged shipment was suggested as the type of information the shipper could provide. An observer from the battery industry noted that most large shippers were providing the number as a twenty-four seven emergency response line, although infrequent shippers were not. The chairman of the UN Sub-Committee reminded the working group that the marking requirement was a product of an earlier version of Special Provision 188 of the UN Model Regulations, the special

provision which provided relief from lithium battery requirements. The original UN provisions did not require a mark, but did require a phone number for additional information, but not twenty-four seven. The UN eventually adopted the mark based on the handling label that had been required by the air mode.

3.3.6.1.3 It was evident that the interpretation of what was intended by the requirement for the telephone number was based on assumptions. There were no amendments proposed, but the presenter would consider bringing a proposal that would remove ambiguity at the next working group meeting (DGP-WG/19).

3.3.6.2 Proposed amendments to Special Provision A88 and Packing Instruction 910

3.3.6.2.1 Special Provision A88 and Packing Instruction 910 applied to pre-production prototypes of lithium batteries or cells to be transported for testing without having been tested in accordance with subsection 38.3 of the UN *Manual of Tests and Criteria*, subject to the approval of the appropriate authority of the State of Origin. Three proposals related to these provisions were proposed as described below.

Proposed Amendment to Special Provision A88 and Insertion of Packing Instruction 910 in the Technical Instructions (DGP-WG/18-WP/12)

3.3.6.2.2 The first proposal was to move Packing Instruction 910, which was contained in the Supplement as guidance to States when considering the granting of an approval, to the Technical Instructions to allow more visibility to the shipper. It was suggested that making the minimum requirements transparent to the shipper would allow for more efficient and timely processing of approvals.

3.3.6.2.3 While the justification for the proposal was understood, there was little support for it. The State was responsible for setting the conditions under which an acceptable level of safety could be established, and there was concern that including the packing instruction in the Technical Instructions would lead to the false conclusion that the conditions set out in it were all that was necessary to accomplish this. While the provisions in the Supplement were provided as guidance to States, provisions in the Technical Instructions were requirements. Putting the packing instruction in the Technical Instructions could limit the State and industry from establishing conditions that would best achieve this under their specific scenario. Including the packing instruction in the Technical Instructions also went against the general principles under which the two documents were maintained. If it were agreed to move Packing Instruction 910 to the Technical Instructions, the same would need to be done with all packing instructions contained in the Supplement, and it would need to be made clear in the Technical Instructions that transport was only permitted with the approval of the appropriate State authority.

3.3.6.2.4 The working group did not agree to the amendment, but there was support for developing a framework that would facilitate the issuance of approvals by allowing for more transparency of the conditions under which they were granted throughout the transport chain. There was also support for clarifying the role of the State in granting approvals and exemptions. It was agreed that this would be considered by the DGP Working Group on Clarifying State oversight responsibilities.

Amendment to Packing Instruction 910 (DGP-WG/18-WP/13)

3.3.6.2.5 The second proposal was to extend the provision in Packing Instruction 910, which permitted lithium batteries with a mass of 12 kg or greater to be packed in strong outer packagings or protective enclosures, to equipment containing lithium cells or batteries. It was suggested that the heading of the section in the packing instruction implied that the exception did apply to equipment and batteries, yet the actual provisions only referred to lithium batteries with a mass of 12 kg and not to the equipment. It was possible for a battery of less than 12 kg to be contained in equipment with a mass greater than 12 kg, and it was suggested that the provisions would exclude such equipment from the exception.

3.3.6.2.6 There was no agreement for the amendment as written, but agreement that the packing instruction needed clarification. There was concern that the lack of a clear limit on the number of batteries that could be contained in the equipment or the lack of a requirement for the battery to power the equipment could lead to an unlimited number of batteries larger than 12 kg to be consigned in packagings not subject the testing requirements of Part 6. Review of the packing instruction also revealed a potential gap in that there were provisions in the packing instructions in the Technical Instructions for batteries contained in equipment that were not reproduced in Packing Instruction 910.

3.3.6.2.7 It was agreed that a full review of Packing Instruction 910 was needed. A new proposal would be presented at the next working group meeting (DGP-WG/19).

Allowance in Packing Instruction 910 for the Use of Large Packagings (DGP-WG/18-WP/14 (revised))

3.3.6.2.8 The third proposal related to the use of large packagings in Packing Instruction 910. It was reported that there was a need to ship pre-production prototype or low production run lithium cells and batteries with a mass well in excess of 35 kg, which was permitted under Special Provision A88. Packagings with a gross mass in excess of 400 kg were considered large packagings in accordance with the Technical Instructions, and there was a need for batteries in excess of 400 kg to be shipped. Packing Instruction 910 did not, however, allow for large packagings. An amendment was proposed which introduced provisions for rigid large packagings in Packing Instruction 910.

3.3.6.2.9 The amendment was not agreed. A number of inconsistencies between the proposed provisions and the provisions for large packagings in Part S-4;13 of the Supplement were noted. The packing instruction was based on the corresponding provisions in the UN Model Regulations. While these provisions may be adequate for other modes of transport, there was uncertainty as to whether they were for the air mode. This, in addition to the inconsistencies and potential inadequacies identified during the discussions of the other amendments proposed to Packing Instruction 910, made consideration of the proposal premature.

3.3.6.3 Amendment of Special Provision A154 (DGP-WG/18-WP/19)

3.3.6.3.1 Special Provision A154 applies to lithium batteries identified by the manufacturer as being defective for safety reasons. It had been identified at DGP/26 that the special provision did not align with the corresponding special provision in the UN Model Regulations (SP 376) and that the Technical Instructions were potentially less restrictive (see paragraph 6.3.9 of the DGP/26 Report). DGP/26 agreed to an amendment to correct the gap that made the Technical Instructions less restrictive, but did not fully align the two special provisions, with the recognition that work was underway to revise the provision at the UN. Amendments to SP 376 in UN Model Regulations were agreed at the fifty-third session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods (Geneva, 25 June to 4 July 2018). A

proposal to align Special Provision A154 with revised SP 376 was therefore proposed. The meeting was invited to consider whether the amendment should be incorporated in the 2019-2020 Edition of the Technical Instructions by way of an addendum, with the recognition that it provided clarity which could have a positive impact on safety.

3.3.6.3.2 There were no objections to the proposal in principle. The chairman of the UN Sub-Committee provided background information related to the intent of the provisions. They were first introduced to differentiate between defective batteries, i.e. those that did not meet design type criteria, and those that were damaged. The provisions for defective batteries would be identified by the manufacture, and would be applied when dealing with recalled batteries. Damaged batteries could be identified by entities other than the manufacturer. He suggested it may be premature for the DGP to incorporate the amendments in an addendum as they would only be finalized by the UN Sub-Committee at its next session (Fifty-fourth session, 26 November to 4 December 2018). It was noted that the changes to the UN Model Regulations adopted by the UN Committee would be proposed for inclusion in the Technical Instructions through the harmonization process at the next working group meeting (DGP-WG/19). It was therefore agreed to wait until that time to consider whether or not the revisions should be incorporated early by way of an addendum.

3.3.6.3.3 It was noted that Packing Instructions 965 to 970 contained provisions for damaged and defective batteries that would need to be aligned with any changes to Special Provision A154. The Secretariat would ensure alignment in the UN harmonization working papers.

3.3.6.3.4 The proposed amendment to Special Provision A154 included a paragraph specifying that cells and batteries liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours under normal conditions of transport were forbidden for transport. The text was added to align with the UN special provision, which allowed transport of these batteries, albeit under different circumstances than other damaged or defective batteries. It was questioned whether this was necessary in the Technical Instructions, since all damaged and defective batteries were forbidden for transport by air. It was concluded that further research was needed. The Secretariat would collect background information on the historical development of the provision in the Technical Instructions, including the reasons DGP decided to differentiate from the UN provision. A proposal would be prepared for the next working group meeting (DGP-WG/19) to address the inconsistency.

3.3.6.4 Reporting Requirements for UN 3245, UN 3373 and Section II Lithium Batteries (DGP-WG/18-WP/22)

3.3.6.4.1 Exceptions from the reporting of undeclared and misdeclared dangerous goods requirements were included in Packing Instructions 650, which applied to UN 3373 — **Biological substance, Category B**, Packing Instruction 959, which applied to UN 3245 — **Genetically modified micro-organisms**, UN 3245 — **Genetically modified organisms**, and Section II of Packing Instructions 965 to 970, which applied to lithium batteries. It was suggested that this exception be removed, recognizing that undeclared and misdeclared dangerous goods posed a risk to aviation safety and should therefore be reported. Amendments to Packing Instructions 650, 959 and 965 to 970 were proposed which removed this exception.

3.3.6.4.2 There were no objections to removing the exceptions from the reporting requirements. While supporting the amendment, one member questioned whether including provisions for reporting in packing instructions was the appropriate place, specifically when it came to requirements for operators. He suggested that the current exception would only apply to the shipper, which was futile with respect to

undeclared or misdeclared dangerous goods. There were no proposals to address this, but the apparent anomaly would be given future consideration.

3.3.6.4.3 The amendment was agreed.

3.3.6.5 **Amendment to Packing Instruction 952 (DGP-WG/18-WP/25)**

3.3.6.5.1 A note was proposed for inclusion in Packing Instruction 952, which applied to UN 3171 — **Battery-powered equipment** and **Battery-powered vehicle**, to clarify how spare batteries packed with a vehicle should be classified. The proposed note suggested that lithium batteries packed separately and then placed in the same outer packaging as the vehicle would be classified as UN 3481 — **Lithium batteries packed with equipment**, and spare lithium batteries packed with the vehicle with installed batteries in one outer package would be classified as UN 3171 — **Battery-powered vehicle**. The note further explained that in the latter case, only one spare battery would be permitted and would need to meet the requirements of Packing Instruction 966 in addition to being secured to prevent movement, damage and short circuits.

3.3.6.5.2 The amendment was not supported as it was considered contradictory to the existing requirements. If a battery was removed from the vehicle and packed in the same outer package as the vehicle, the vehicle and the battery needed to be classified as UN 3481 — **Lithium ion batteries packed with equipment** or UN 3091 — **Lithium metal batteries packed with equipment**. There were no provisions for spare batteries for UN 3171 — **Battery-powered vehicle**, so spare batteries consigned with the battery-powered vehicle needed to be packed separately as UN 3480 — **Lithium ion batteries** or UN 3090 — **Lithium metal batteries**. The amendment was not agreed.

3.3.6.6 **Clarification of the Applicability of Sections in Lithium Battery Packing Instructions (DGP-WG/18-WP/30)**

3.3.6.6.1 Clarification on the applicability of Packing Instruction 965 was sought for cases when the watt-hour rating of the battery was within the limits of Section IB but where the rating for each component cell in the battery was not. Similar clarification was sought for Packing Instruction 968. The need for clarification had been raised several times at the UN Sub-Committee, and the explanation had always been that cell and battery limits were intended to be applied independently. A battery would therefore be classified in accordance with the limitations established for batteries regardless of the watt-hour rating of each component cell. The need for clarification was recognized. A member volunteered to propose an amendment to the UN Model Regulations that would provide clarity at the UN Sub-Committee.

3.3.7 **Agenda Item 3.7: Monitor UN Committee's work on hazard- based system for classification of lithium batteries and consider impact on ICAO provisions (Job card DGP.003.02)**

3.3.7.1 There were no working papers presented under this agenda item.

3.4 **Agenda Item 4: Clarifying State oversight responsibilities in Annex 18 (Job card DGP.005.01)**

3.4.1 **Report of the DGP Working Group on Clarifying States' Responsibilities in Annex 18 (DGP-WG/18 IP/3)**

3.4.1.1 The meeting was provided an update on the work of the DGP Working Group on clarifying States' responsibilities in Annex 18 (DGP-WG/Annex 18) by its chairman. DGP-WG/Annex 18 met in London from 16 to 17 July 2018 to begin work on the items included in ANC Job Card DGP.005 — Clarifying State oversight responsibilities in Annex 18. The meeting was hosted by the United Kingdom Civil Aviation Authority.

3.4.1.2 The need to clearly outline States' Annex 18 responsibilities and the interrelationship of responsibilities between dangerous goods and other aviation activities was identified through the work of the DGP Working Group on Reporting. Although the philosophy of keeping high-level requirements in the Annex and more detailed requirements in the Technical Instructions was recognized as being necessary, the group noted that there were some cases where more detailed requirements in the Annex would facilitate implementation. The DGP Working Group on Reporting also identified a need to more closely align Annex 18 with Annex 19 — *Safety Management* and to consider interrelationships with other Annexes. While Amendment 12 to Annex 18 introduced notes to clarify that the scope of an operator's safety management system included the carriage of dangerous goods, nothing was introduced to clarify States' safety management responsibilities. It was apparent that States were aware of the eight critical elements identified as the essential components of a State safety oversight system in Annex 19 and the need to establish a State safety programme, but States were not necessarily aware of how these applied to States' responsibilities in relation to the safe transport of dangerous goods by air. It was believed that establishing a relationship between Annex 18 and Annex 19 with respect to State safety management responsibilities would provide clarity.

3.4.1.3 DGP-WG/Annex 18 conducted a preliminary review of dangerous goods and cargo-related provisions in all ICAO Annexes with the intent of identifying common terminology, interrelationships, and potential ambiguities, inconsistencies or gaps. The meeting was provided with a draft document summarizing this work which would be further refined by DGP-WG/Annex 18 through coordination with relevant subject matter experts. DGP-WG/Annex 18 also reviewed the critical elements of a State's safety oversight system and determined that they were not all adequately addressed in Annex 18. Finally, the group conducted a preliminary review of ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) protocol questions for Aircraft Operations — OPS to determine whether questions related to dangerous goods had associated provisions in Annex 18 and/or the Technical Instructions that made the inferred responsibilities in the questions clear. In doing so, some potential anomalies and need for clarification were identified. The protocol questions will be reviewed again once amendments to Annex 18 are developed.

3.4.1.4 DGP-WG/Annex 18 would endeavour to develop recommendations for future amendments to Annex 18 which clarify dangerous goods safety management responsibilities, including links between dangerous goods oversight responsibilities and the eight critical elements of a State oversight system, and provide enough detail to enable States to discharge their dangerous goods oversight properly. Draft amendments would be presented at the next DGP working group meeting.

3.5 Agenda Item 5: Dangerous good accident and incident reporting system (Job card DGP.005.01)

3.5.1 Report of the DGP Working Group on Reporting (DGP-WG/18-WP/3)

3.5.1.1 Draft guidance material developed by the DGP Working Group on Reporting (DGP-WG/Reporting) was presented by the chairman of the group. The material was the output of a face-to-face meeting hosted by the United Kingdom Civil Aviation Authority in London from 18 to 20 July

2018. It was divided into two chapters: the first contained guidance material for dangerous goods reporting and the second for dangerous goods investigations. It was based on the revised reporting and investigation provisions for Annex 18 and the Technical Instructions developed by the working group that were presented to DGP/26 (see paragraph 6.2.1 of the DGP/26 Report). The chairman noted that there would be a potential need for further refinement based on the work to clarify State oversight responsibilities in Annex 18 (ANC job card DGP.005.01). DGP-WG/Reporting would continue to work on the provisions in coordination with the DGP Working Group on Annex 18 with the goal of presenting a finalized package to the twenty-seventh meeting of the DGP in the Fall of 2019.

3.5.1.2 There were no comments.

3.6 **Agenda Item 6: Dangerous goods training for entities handling general cargo (Secretariat job card)**

3.6.1 **Responsibilities of Freight Forwarders (DGP-WG/18-WP/9)**

3.6.1.1 The working group was invited to consider whether freight forwarder responsibilities should be introduced into the Technical Instructions and whether a working group should be established to develop provisions. The need for the operator to consider the safety of the supply chain when accepting cargo for transport had been emphasized in new safety risk assessment provisions proposed for inclusion in Annex 6, Volume I that had been developed by the FLTOPSP Cargo Safety Sub-Group (see paragraph 3.8.1.1). It was noted that cargo could be handled by several different freight forwarders throughout the transport cycle, making it difficult for operators to assess the ability of all to identify and intercept undeclared dangerous goods. It was suggested that provisions requiring freight forwarders to have adequate processes aimed at identifying and rejecting undeclared dangerous goods at the earliest opportunity would improve the safety of the supply chain.

3.6.1.2 The same arguments for and against introducing training provisions into Annex 18 for entities not intending to carry dangerous goods that were raised during discussions at DGP/26 were made (see paragraph 6.4.1 of the DGP/26 report). While everyone recognized the role freight forwarders played in preventing undeclared dangerous goods from entering the air transport stream, those who opposed the amendment maintained that responsibilities for entities not handling dangerous goods were beyond the scope of the Technical Instructions. They also opposed referring to job titles, since this went against the function-based approach applied when developing the provisions for Annex 18 and the Technical Instructions and the newly-developed competency-based training provisions. It was noted that some freight forwarders performed functions typically performed by shippers or operators. Assigning responsibilities to job titles could therefore increase the risk of such freight forwarders performing functions they had not been trained to do. It was noted that the function-based approach was applied in the UN Model Regulations, and that the UN regulations did not include any specific reference to freight forwarder responsibilities. It was suggested introducing job-title responsibilities would therefore need to be discussed at the UN Sub-Committee in the first instance.

3.6.1.3 Those who supported introducing provisions maintained that assigning responsibilities to freight forwarders was key to reducing the amount of undeclared dangerous goods introduced into air transport and that the Technical Instructions was the place to do it. It was noted that air transport processes had changed substantially since Annex 18 and the Technical Instructions were first introduced and that freight forwarders were now performing many of the functions that were originally performed by operators. Operators had limited ability to track consignments through this more complex supply chain. Undeclared dangerous goods were routinely discovered by operators, and it was believed assigning

responsibilities to freight forwarders not intending to handle dangerous goods would help reduce these occurrences.

3.6.1.4 The secretary of the FLTOPSP Cargo Safety Sub-Group (CSSG) referred to the new provision proposed for inclusion in Annex 6, Volume I that would require the operator to consider the safety of the supply chain as part of its safety risk assessment. This had been one of the triggers for developing the proposal to include freight forwarder provisions in the Technical Instructions and the establishment of a working group for developing them. Recognizing that there was no opposition to the intent of the proposal, only to the method proposed for achieving it, he suggested the issue be discussed in a wider forum such as the CSSG. Such a group could consider including provisions in a different document with a wider scope than the Technical Instructions. The chief of the Flight Operations Section added that another document might be more effective at reaching the intended audience than the Technical Instructions would, since entities not handling dangerous goods would not be compelled to look there. He suggested that a document that was wide enough to cover the scope of these entities and that was also subject to State consultation would be more effective, as the consultation process had the added benefit of raising awareness. A multidisciplinary group could consider different Annexes or associated documents such as Annex 6 and *Procedures for Air Navigation Services — Aircraft Operations* (Doc 8168). He disagreed with an opinion that the scope of Annex 6 did not cover entities upstream from operations, stressing that anything loaded on an airplane was an operational responsibility. The secretary of FLTOPSP supported a multidisciplinary approach to addressing the issue and believed the subject would be of significant interest among his panel members. He noted the success the CSSG had achieved and suggested it might be an appropriate body to take on the task.

3.6.1.5 The proposer supported a multidisciplinary approach to addressing the issue, but believed the subject was within the remit of the DGP to debate and that a working group should therefore be led by that panel. Others believed it would be more efficient to refer it to the already established CSSG. The secretary would consult with senior officials at ICAO for direction on the way forward and report back to DGP via e-mail. It was suggested that the normal protocol would be for the panel to develop a job card that would be reviewed by the ANC. The Secretariat noted that a job card had been developed following DGP/26. It had been concluded through the peer review process that the work could be undertaken by the Secretariat. This approach had been supported by the ANC. A Secretariat job card was developed, which had been provided to DGP members. Members were invited to review it to ensure it addressed the issues raised at DGP-WG/18 (see Appendix E). The Secretary reported via email, prior to this report being finalized, that senior officials at ICAO advised that the CSSG should be tasked to consider the issue of responsibilities of freight forwarders.

3.7 Agenda Item 7: Aviation Security/Dangerous Goods Coordination (Job Card DGP.001.02)

3.7.1 Agenda Item 7.1: Develop proposals, if necessary, for amendments to Annex 18 and/or Doc 9284 for the sake of alignment with Annex 17 — Security and the Aviation Security Manual (Doc 8973)

3.7.1.1 There were no working papers presented under this agenda item.

3.7.2 Agenda Item 7.2: Consider control measures for the cargo supply chain that addresses both safety and security concerns

3.7.2.1 There were no working papers presented under this agenda item.

3.7.3 Agenda Item 7.3: Review guidance material on chemical, biological or radiological attack (DGP-WG/18-WP/33)

3.7.3.1 Guidance material on dealing with chemical, biological or radiological events (CBR) was developed by the Aviation Security Panel (AVSECP) for inclusion as appendices in the *Aviation Security Manual* (Restricted) (Doc 8973). Annex 1, which dealt with responses to CBR incidents/attacks on civil aviation facilities on the ground, had been finalized. AVSECP was seeking additional feedback on Annex 2, which dealt with crew members' response to a suspected chemical or biological event during flight. Members of the DGP had reviewed the document via correspondence prior to DGP-WG/18 and provided comments. A. Doazan, Technical Officer, Aviation Security joined DGP-WG/18 for continued discussions on the matter. General comments included:

- a) Consideration could be given to addressing incidents during cargo/baggage loading.
- b) Some of the prescriptive guidance and checklists would not be appropriate for all operations or aircraft types.
- c) Whether or not a CBR event was deliberate or unintentional was irrelevant in terms of emergency response. The flight crew would likely not be able to distinguish between the two. There were existing procedures for emergency response in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481). Some believed a better approach would be to update this document with procedures not already covered by it.

3.7.3.2 The meeting was advised that some of these issues were being addressed by FLTOPSP. The checklists had generated a lot of comments from other groups and would be further updated in the future. They were intended as a baseline for building checklists for specific operations. It was stressed that the material was not intended for a new document but rather for incorporation in the existing *Aviation Security Manual* (Restricted) (Doc 8973), with the recognition that CBR events were becoming a credible security threat. The document would be published on ICAONET for all stakeholders and would be continuously updated in the future.

3.8 Agenda Item 8: Coordination with other panels

3.8.1 Agenda Item 8.1: Flight Operations Panels (FLTOPSP)

**3.8.1.1 Presentation on the Flight Operations Panel (FLTOPSP)
Cargo Safety Sub-Group (CSSG) Activities
(DGP-WG/18-IP/9)**

3.8.1.1.1 The secretary of the FLTOPSP Cargo Safety Sub-Group (CSSG) provided an update on the sub-group's work on safety risk assessment provisions for the carriage of items in the cargo compartment in accordance with ANC job card FLTOPSP.043 (see paragraph 7.3.1 of the DGP/26 Report). The ANC had conducted a preliminary review of a new chapter on cargo compartment safety developed by the group for inclusion in Annex 6. The chapter contained Standards and Recommended Practices (SARPs) for operators to conduct a specific safety risk assessment on transporting items in the cargo compartment and included a list of elements that needed to be taken into account. It also contained requirements for manufacturers to provide technical information on the capabilities of the aircraft to

support the operator's safety risk assessment. The CSSG was also developing guidance material to support the SARPs with input from AIRP regarding the aircraft's capabilities. A final version of the guidance material was expected to be presented to a working group meeting of FLTOPSP in May 2019. The SARPs were sent to States and international organizations for comments (State Letter 18/80) following the ANC's preliminary review. The table of contents and introductory chapter of the guidance material was also sent to States. The deadline date for comments was 24 November 2018.

3.8.1.2 Presentation on the Flight Operations Panel (FLTOPSP) work related clarifying terminology related authorizations, acceptances and approvals (DGP-WG/18-IP/10)

3.8.1.2.1 The secretary of the FLTOPSP briefed the working group on proposed amendments to Annex 6 that were developed to clarify the level of authorization by the State of the Operator or the State of Registry required for operations. He noted that the terms "authorization", "acceptance" and "approval" were used throughout Annex 6, and that the amendments clarified their intent and ensured consistent use of them. He explained that an authorization was considered the overarching activity which entitled an operator, owner or pilot-in-command to undertake the operations. Specific approvals, approvals, and acceptances were subsets of this authorization. The panel developed definitions for each type of authorization and standardized text linking them to the authorization level. The work resulted in amendments to the dangerous goods provisions in Annex 6 to clarify that the operator required a "specific approval" to transport dangerous goods as cargo. The amendments were sent to States and international organizations for comment (State Letter 18/80).

3.8.1.2.2 One member referred to cases of States requiring foreign operators to seek a separate approval from them to carry dangerous goods, including the need for a separate review and approval of the operator's dangerous goods training programme, despite having already been approved to transport dangerous goods by the State of the Operator. He noted that this went against Annex 6 provisions and questioned whether this had been discussed during the process of developing the "authorization", "acceptance" and "approval" amendments. The FLTOPSP secretary affirmed that operations specifications were supposed to be recognized by other States in accordance with Annex 6. He acknowledged that States not accepting this was an issue that went beyond dangerous goods. Although it had not been discussed specifically in relation to the work on clarifying authorization terminology, it had been the subject of FLTOPSP discussions.

3.8.1.3 Carriage of "Not Regulated" Dangerous Goods by "No-Carry" Operators (DGP-WG/18-WP/31)

3.8.1.3.1 The meeting was invited to consider whether provisions were needed to clarify if operators not approved to carry dangerous goods as cargo could accept dangerous goods that were not required to be formally identified by way of marks, labels or documentation such as mail that may contain dangerous goods permitted by the Technical Instructions and other dangerous goods offered as cargo that are not fully subject to the Technical Instructions. The meeting was also invited to consider whether provisions should be proposed to FLTOPSP stating that mail containing dangerous goods were excluded from the dangerous goods provisions of Annex 6, Chapter 14 and that operators not having specific approval to carry dangerous goods could accept dangerous goods not fully subject to the Technical Instructions.

3.8.1.3.2 There was support for clarifying the responsibilities of the operator when it came to dangerous goods not fully subject to the Technical Instructions. The need to clarify without being too prescriptive was raised, noting that it was up to the State to determine whether adequate controls were in

place before authorizing an operator to conduct air transport operations. Specific mention was made of dangerous goods in the mail, and the lack of clarity on what was expected of operators without approval to transport dangerous goods.

3.8.1.3.3 Several voiced a lack of support for any provisions relieving responsibility from operators when it came to dangerous goods not fully subject to the Technical Instructions. Flight operations experts raised concerns with the suggestion that operators were loading dangerous goods on aircraft that they were not aware of. It was suggested this would contradict the draft safety risk provisions proposed for inclusion as a new chapter in Annex 6 that were developed by the CSSG (see paragraph 3.9.1.1). It was agreed to defer work on the issue until comments from States and international organizations on the new safety-risk provisions were received and reviewed, as they might affect how to address the gaps identified.

3.8.2 Agenda Item 8.2: Airworthiness Panel (AIRP)

3.8.2.1 Secretariat presentation (DGP-WG/18-IP/8)

3.8.2.1.1 The secretary of the Airworthiness Panel (AIRP) provided an update on her panel's activities under ANC job cards AIRP.011 and AIRP.012. These included:

- a) Clarification of the intent of the current Annex 8 — *Airworthiness of Aircraft* requirement for the effects of an explosive or incendiary device or dangerous goods to be taken into account in the design of cargo compartment fire suppression systems in large aeroplanes was underway. This requirement was impossible to fully comply with, because a number of variables needed to quantify the risk of an occurrence involving dangerous goods were unknown during the design phase. The amendment to Annex 6 and supporting guidance material developed by the CSSG on safety risk assessments for items transported in cargo compartments included provisions to address this (see paragraph 3.9.1.1) and amendments to Annex 8 were being considered.
- b) A review of cargo compartment design requirements and whether or not cargo accessibility was a valid emergency response measure was underway. The need for this work was raised at DGP/26 (see paragraph 2.7.3 of the DGP/26 Report).
- c) An assessment of electromagnetic interference risks associated with the carriage of active battery-powered devices inside aircraft cargo compartments was underway. The lack of specialized expertise necessary to accomplish this task delayed its completion. The work would support the request for guidance from DGP in relation to the risks associated with active baggage tags carried by passengers and crew (see paragraph 2.8.1.2 of the DGP/26 Report)

3.8.2.1.2 AIRP would continue to collaborate with the DGP as necessary.

3.8.2.2 Dangerous Goods Training of Personnel Employed by or Interacting with the Aviation Industry in Areas of Engineering and Maintenance (DGP-WG/18-WP/34)

3.8.2.2.1 DGP/26 was advised of a dangerous goods incident involving an aviation maintenance organization (AMO) which revealed a potential weakness in awareness of responsibilities related to

dangerous goods. The incident involved ten passenger services units that should have been classified as UN 3356 — **Oxygen generator, chemical**, which is forbidden for transport on passenger aircraft. They were wrongly classified as UN 1072 — **Oxygen compressed** and offered for transport on a passenger aircraft by an aviation maintenance entity, in coordination with freight forwarding agencies. The generator was labelled as unserviceable, which, in accordance with Special Provision A111 of the Technical Instructions, is forbidden for transport by air. There were also discrepancies between the documentation, marking and labelling. The investigation of the incident revealed that none of the employees had ever received any dangerous goods training. DGP/26 was invited to consider whether the training provisions in the Technical Instructions were sufficient and whether a clear requirement for aviation engineering and maintenance employees to be trained should be added. There was sympathy for the issue raised at DGP/26, with other panel members noting challenges in ensuring aviation maintenance personnel were aware that certain aircraft parts were subject to dangerous goods requirements when transported as cargo. It was suggested, however, that addressing the issue in another Annex might be a more effective approach. DGP-WG/18 was invited to collaborate with flight operations and airworthiness experts to determine how the issue could best be addressed.

3.8.2.2.2 A number of members stressed the importance of making it clear that training was required commensurate with responsibilities. The need for guidance on preventing employees who may not know what dangerous goods are from performing dangerous goods functions was also identified. The AIRP secretary suggested that dangerous goods training requirements for AMOs was clear for operators approved to perform maintenance activities through the application of Annex 6, but acknowledged that this might not be the case for independent AMOs. She suggested the issue be brought to the attention of the AIRP, noting that a working group of that panel was already working on clarifying AMO responsibilities. The panel could discuss the issue and offer options for addressing it at its sixth meeting, which was scheduled from 5 to 9 November 2018 (AIRP/6). A report of the discussions would be provided to the DGP by the Secretariat via correspondence. The meeting agreed to this approach.

3.8.3 **Agenda Item 8.3: Safety Management Panel (SMP)**

3.8.3.1 **Secretariat presentation (DGP-WG/18-IP/12)**

3.8.3.1.1 Ms. N. Li, Safety Officer in ICAO's Operational Safety Section, provided an update on safety management programme activities. She noted that the 4th Edition of the *Safety Management Manual (SMM)* (Doc 9859) had been published which was supported by a safety management implementation website. Samples and tools for implementing safety management that had been included in the 3rd edition of Doc 9859 had been moved to this website. The website provided a mechanism for collecting and sharing additional practical examples, tools and educational material to support the implementation of State safety programmes (SSP) and safety management systems (SMS). She also provided an overview of the safety management training programme, which included online training and specialized courses. Finally, she provided an overview of new and updated SSP tools available on the ICAO integrated safety trend analysis and reporting system (iStars).

3.8.4 **Agenda Item 8.4 Remotely Piloted Aircraft Systems Panel (RPASP)**

3.8.4.1 **Secretariat presentation**

3.8.4.1.1 Ms. Leslie Cary, Chief of the Remotely Piloted Aircraft Systems Section and Mr. Frédéric Malaud, secretary of the Remotely Piloted Aircraft Systems Panel (RPASP) updated the working group on the progress of RPASP to date and plans for future work. The key points made were:

- a) Unmanned aircraft (UA) included model aircraft, unmanned free balloons, remotely piloted aircraft (RPA) and small UA commonly referred to as drones.
- b) RPAs are subject to ICAO Standards and Recommended Practices (SARPs).
- c) RPASP's primary focus is international instrument flight rules (IFR) operations.
- d) RPASP has seven working groups and one RPASP/SMP joint task force to deal with various Annexes, Procedures for Air Navigation Services (PANS) and guidance material through coordination with ANC panels.
- e) RPASP interacts with groups beyond the ANC, e.g. the Legal Committee, Committee on Aviation Environmental Protection (CAEP), AVSECP, the Air Navigation Services Economics Panel (ANSEP) and the Airport Economics Panel (AEP).
- f) A three-tiered, risk-based categorization approach is used to assist in regulatory development.
- g) An unmanned aircraft systems (UAS) toolkit was developed allowing for an exchange of best practices, lessons learned, and effective domestic regulatory oversight.
- h) Guidance material is contained in the *Manual on Remotely Piloted Aircraft Systems (RPAS)* (Doc 10019).

3.8.4.2 Remotely Piloted Aircraft Systems (RPAS) Operations — Annex 6, (DGP-WG/18-WP/1)

3.8.4.2.1 Co-Rapporteurs of a working group of the Remotely Piloted Aircraft Systems Panel (RPASP) invited the DGP to review a not-yet-final draft of a proposed new Part IV to Annex 6 relating to the international operation of remotely piloted aircraft systems (RPAS). It would be the first of a two-part consultation process planned to take place over an eleven-month period. The scope of the new part to Annex 6 would be international, instrument flight rules (IFR) RPAS operations within controlled airspace and not the operation of smaller unmanned aircraft. Other types of operations may be considered at a later date. The goal was to produce performance-based SARPs when possible, although it was accepted that a more prescriptive approach would be necessary in some cases. The draft was developed using source material from the *Manual on Remotely Piloted Aircraft Systems (RPAS)* (Doc 10019), the *Remotely Piloted Aircraft System (RPAS) Concept of Operations (CONOPS) for International IFR Operations* document, and applicable parts of Annex 6, Parts I — *International Commercial Air Transport — Aeroplanes*, II — *International General Aviation — Aeroplanes* and III — *International Operations — Helicopters*. The draft was divided into three sections, each of which referenced dangerous goods. These were:

- a) Section I — General;
- b) Section II — RPAS operator requirements (including responsibilities, organizational requirements and the RPAS operator certificate);

- c) Section III — RPAS Operations (general requirements, equipment requirements, flight operations requirements, limitations, maintenance and flight crew requirements).

3.8.4.2.2 Consolidated comments would be provided to the twelfth meeting of RPASP (RPASP/12, Montréal, 29 October to 2 November 2018). An updated version of the document would be provided to the DGP for further review at the 2019 working group meeting (tentatively scheduled for 1 to 5 April 2019). Consolidated comments from that review would be provided to the fourteenth meeting of RPASP (RPASP/14, Montréal, 17 to 21 June 2019).

3.8.4.3 DGP-WG/18 discussion

3.8.4.3.1 The presentation, coupled with the review of proposed new Part IV to Annex 6 — *Operation of Aircraft* on RPAS, prompted much discussion. Key discussion points were:

- a) Whether or not UAVs would have cargo compartment safety features to deal with dangerous goods incidents was a concern. The Secretariat explained that the same Annex 8 design and construction requirements would generally apply to RPAs, although there may be some issues related to pressurization that would likely need to be considered. Small UAVs not subject to aircraft certification would need to be dealt with differently.
- b) Dangerous goods were already being transported domestically on small UA, i.e. typically aircraft under 25 kg, particularly for the purpose of humanitarian relief. Whether or not they could be transported internationally was a quandary in that requiring States to certify 25 kg drones seemed excessive, but at the same time impeding these humanitarian relief efforts was not desirable. Drone operations extending beyond national borders was a reality in some parts of the world, particularly between regions close to national borders. Guidance material, at a minimum, was needed.
- c) Compliance with the general requirement in the draft Part IV to Annex 6 for the transport of dangerous goods by air to be carried out in accordance with the Technical Instructions (paragraph 3.1.5.6 of the draft document) might not always be possible, e.g. there were provisions in the Technical Instructions directed to the pilot-in-command on board the aircraft. Additionally, there were dangerous goods requirements in other documents which might not be captured by this provision, e.g. Annex 6, Part I requirements for operators without specific approval to carry dangerous goods to be able to identify and reject them and to report dangerous goods occurrences.
- d) A requirement for documents to be readily accessible on board each RPA did not seem logical (see draft Part IV to Annex 6, paragraph 1.4.2). The Secretariat acknowledged that this did not seem sensible, but that it aligned with the Convention. Discussions on how to adapt the provision to RPA were still underway.
- e) Occurrence reporting provisions did not include dangerous goods accidents and incidents (see draft Part IV to Annex 6, paragraph 2.2.1.7).

- f) The general operating rules for dangerous goods were open to interpretation and needed to be clarified (see draft Part IV to Annex 6, paragraph 3.1.5.5).
- g) Where a UA could land needed to be taken into account, recognizing that it would not necessarily be at an airport, and the aircraft could be exposed to humans not aware of the potential hazards on-board (e.g. radioactive material, infectious substances).
- h) The absence of a pilot-in-command being able to provide information on dangerous goods to first responders would need to be taken into account.
- i) Pressurization and temperature control features would need to be taken into account.
- j) The ability for humans to detect spills, leaks or smoke on unmanned aircraft may need to be compensated. Cargo accessibility was used as justification for allowing certain types and quantities of dangerous goods on a cargo-only aircraft that would not be permitted on passenger aircraft. Cargo accessibility would not apply to RPA. Table 3-1 of the Technical Instructions, which based limitations on whether cargo was intended for passenger or cargo aircraft, might need to be completely restructured.
- k) Security of dangerous goods would need to be considered.

3.8.4.3.2 The DGP secretary would provide a consolidated list of comments, including comments that were sent via e-mail, to the RPASP secretary.

3.8.4.3.3 The intended applicability date for the new Part IV to Annex 6 was November 2024. The need for close coordination between the RPASP and DGP was recognized in order to establish comprehensive provisions for dangerous goods among the applicable documents.

3.8.4.4 Unmanned Aircraft Systems (Drones) (DGP-WG/18-WP/23)

3.8.4.4.1 A definition for unmanned aircraft systems (drones) was proposed for inclusion in Part 1;3 of the Technical Instructions. The use of unmanned aircraft systems was being used increasingly by industry to transport packages or other cargo for door-to-door services, and there were intentions to transport dangerous goods by drones. It was suggested that provisions for transporting dangerous goods on unmanned aircraft systems would need to be developed for the Technical Instructions, and that a definition needed to be added as a starting point. The proposed definition stipulated that dangerous goods were not permitted to be carried on unmanned aircraft systems, with the exception of dropping in connection with agricultural, horticultural, forestry, avalanche control, ice jam control and landslide clearance or pollution control systems.

3.8.4.4.2 There was a general opinion that if there were to be a definition, it should be developed by RPAS experts. The Secretariat noted that a definition had been proposed to the ANC but was never agreed, and that work was progressing without one. The stipulation that dangerous goods were not permitted to be carried on unmanned aircraft that was included in the proposal was deemed to be inappropriate, as this went beyond defining the term and could have unintended consequences.

3.8.4.4.3 The amendment was not agreed.

3.8.5 **Agenda Item 8.5: Any other panels**

3.8.5.1 There were no working papers presented under this agenda item.

3.9 **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**

3.9.1 There were no working papers presented under this agenda item.

3.10 **Agenda Item 10: Other business**

3.10.1 **Report of the ICAO/Universal Postal Union (UPU) Contact Committee Meeting Held on 2 March 2018 in Berne, Switzerland (DGP-WG/18-IP/1)**

3.10.1.1 The working group was provided with a report of the ICAO/Universal Postal Union (UPU) Contact Committee Meeting held on 2 March 2018 in Berne, Switzerland. DGP member E. Gillet co-chaired the meeting. The committee was established to provide an open forum between the two organizations on shared interests. This was the first face-to-face meeting of the committee. Included in the discussions were:

- a) The committee's terms of reference were modified and would be reviewed by legal counsel of both organizations.
- b) There were challenges with regard to security screening and detecting dangerous goods prohibited in the mail, recognizing that measures to identify security threats may not be effective at detecting safety threats.
- c) Success in one State was reported with regard to CAA/designated postal operator (DPO) coordination and DPO controls to prevent dangerous goods from entering the airmail stream.
- d) An update on progress related to a UPU global postal model for electronic advance data was provided. The need for close collaboration and agreement with ICAO was recognized as was the benefit of harmonizing models used for mail and cargo.
- e) Challenges the UPU face with screening and risk assessments because of privacy laws in many States were raised.
- f) Methods of identifying lithium batteries in the mail and the low number of DPOs that have received CAA approval to accept lithium batteries contained in equipment in the mail was discussed. The UPU would be conducting a survey to collect data in this regard.
- g) A UPU customs declaration system was described, which had the ability to identify and automatically reject certain postal items based on keyword descriptions. ICAO would work with UPU in collecting key words which could reveal potential dangerous goods.

- h) The two organizations would collaborate in the development of best practices and training material.
- i) A proposal to extend the international provisions for dangerous goods in the post to include low quantities of less-hazardous consumer dangerous goods such as perfume and nail polish was discussed. It was proposed that exempting these would free up resources to focus on more hazardous goods such as lithium batteries. The committee thought it premature to consider such a proposal, since many DPOs were still implementing controls and there were still inconsistencies globally.

3.10.1.2 An observer from Global Express Association (GEA) noted the rigorous standards express operators were held to and suggested there would be an unfair advantage to the post should any additional exceptions be provided to DPOs. The secretary noted that any proposal to extend the exceptions would need to be considered both at the UPU and at ICAO through the DGP. Another member noted the need for clarification of what was expected of the CAA with regard to approval of DPOs and whether or not this was a one-time approval or if continued surveillance was expected. He suggested closer surveillance was necessary. The secretary advised that this could be something discussed at the next contact committee meeting.

3.10.2 United States Department of Transportation Dangerous Goods Public Awareness Campaign “Check The Box” (DGP-WG/18-IP/6)

3.10.2.1 An outreach campaign launched in the United States to raise public awareness of undeclared dangerous goods with the goal of increasing compliance was described. The working group recognized the benefit of sharing such information. Members were encouraged to advise the DGP of measures taken in their State to improve compliance at the next working group meeting (DGP-WG/19). They were also encouraged to provide the Secretariat with material available on public websites and links to the material for inclusion on the ICAO public website.

APPENDIX A

AMENDMENTS TO ANNEX 18 AGREED BY DGP-WG/18 FOR THE SAKE OF HARMONIZATION WITH UN RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1. DEFINITIONS

...

DGP-WG/18-WP/27 (see paragraph 3.2.2.10 of this report):

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

Note.— For radioactive material, see Part 2, paragraph ~~7.2~~ 7.1.3 of the Technical Instructions.

...

APPENDIX B

AMENDMENTS TO THE TECHNICAL AGREED AT DGP-WG/18 FOR THE SAKE OF
HARMONIZATION WITH UN RECOMMENDATIONS ON THE TRANSPORT OF
DANGEROUS GOODS

...

Part 4

PACKING INSTRUCTIONS

...

Chapter 8

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

DGP-WG/18-WP/4 (see paragraph 3.1.2.1 of this report):

Packing Instruction 620

This packing instruction applies to UN 2814 and UN 2900.

...

Special packing provisions

...

- d) Before an empty packaging is returned to the shipper, or sent elsewhere, it must be disinfected or sterilized to nullify any hazard, and any label or mark indicating that it had contained an infectious substance must be removed or obliterated.

...

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)
Plywood (1D)
Steel (1A1, 1A2)

Jerricans

Aluminium (3B1, 3B2)
Plastics (3H1, 3H2)
Steel (3A1, 3A2)

...

Part 5

SHIPPER'S RESPONSIBILITIES

...

Chapter 2

MARKING

...

2.4 MARKING SPECIFICATIONS AND REQUIREMENTS

2.4.1 Marking with proper shipping name and UN or ID number

DGP-WG/18-WP/11 (see paragraph 3.1.2.2 of this report):

2.4.1.1 Unless otherwise provided in these Instructions, the proper shipping name of the dangerous goods (supplemented with the technical name(s) if appropriate, see Part 3, Chapter 1) and, when assigned, the corresponding UN or ID number preceded by the letters "UN" or "ID", as appropriate, must be displayed on each package. The UN or ID number and the letters "UN" or "ID" must be at least 12 mm high, except for packagings of 30 ~~litres L~~ capacity or less or of 30 kg maximum net mass and for cylinders of 60 ~~litres L~~ water capacity or less, when they must be at least 6 mm in height and except for packagings of 5 ~~litres L~~ capacity or less or of 5 kg maximum net mass ~~or less~~ when they must be of an appropriate size. In the case of unpackaged articles, the mark must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package mark would be:

"Corrosive liquid, acidic, organic, n.o.s. (caprylyl chloride) UN 3265".

...

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

...

Chapter 2

MARKING OF PACKAGINGS OTHER THAN INNER PACKAGINGS

...

2.1 MARKING REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS


DGP-WG/18-WP/11 (see paragraph 3.1.2.2 of this report):

2.1.1 Each packaging intended for use according to these Instructions must bear marks which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the marks, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L capacity or less or of 30 kg ~~capacity or less~~ maximum net mass, when they must be at least 6 mm in height and except for packagings of 5 L capacity or less or of 5 kg maximum net mass ~~or less~~ when they must be of an appropriate size. The marks must show:

...

Chapter 6**PACKAGINGS FOR INFECTIOUS SUBSTANCES OF CATEGORY A**

DGP-WG/18-WP/11 (see paragraph 3.1.2.2 of this report):

6.4.1 Each packaging intended for use according to these Instructions must bear marks which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible. For packages with a gross mass of more than 30 kg the marks, or a duplicate thereof, must appear on the top or on a side of the packaging. Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L ~~capacity or less~~ or ~~of 30 kg capacity or less~~ maximum net mass, when they must be at least 6 mm in height and except for packagings of 5 L ~~capacity or less~~ or ~~of 5 kg~~ or less maximum net mass, when they must be of an appropriate size. 

...

APPENDIX C

AMENDMENTS TO THE TECHNICAL AGREED AT DGP-WG/18 TO ADDRESS AIR-SPECIFIC SAFETY RISKS AND IDENTIFIED ANOMALIES

Part 1

GENERAL

...

DGP-WG/18-WP/27 (see paragraph 3.2.2.10 of this report):

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.

...

Part 3

DANGEROUS GOODS LIST,
SPECIAL PROVISIONS AND
LIMITED AND EXCEPTED QUANTITIES

...

Chapter 2

ARRANGEMENT OF THE
DANGEROUS GOODS LIST (TABLE 3-1)

...

Table 3-1. Dangerous Goods List

Name	UN No.	Class or division	Subsidiary hazard	Labels	State variations	Special provisions	UN packing group	Excepted quantity	Passenger aircraft		Cargo aircraft	
									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
DGP-WG/18-WP/21 (see paragraph 3.2.2.7 of this report) (incorporated in the 2019-2020 Edition by way of a corrigendum):												
Engine, internal combustion	3530	9		Miscellaneous		A87 A208		E0	972	No limit	972	No limit
Machinery, internal combustion	3530	9		Miscellaneous		A87 A208		E0	972	No limit	972	No limit

DGP-WG/18-WP/5 (see paragraph 3.2.2.1 of this report) (incorporated in the 2019-2020 Edition by way of a corrigendum):

Toxic solid, flammable, inorganic, n.o.s.*	3535	6.1	4.1	Toxic & Solid flammable		A5	I II	E5 E4	665 668 Y644	1 kg 15 kg 1 kg	672 675	15 kg 50 kg
...												

...

Part 4

PACKING INSTRUCTIONS

...

Chapter 5

CLASS 3 — FLAMMABLE LIQUIDS

...

DGP-WG/18-WP/20 (see paragraph 3.2.2.6 of this report):

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)

...

ADDITIONAL PACKING REQUIREMENTS

...

Flammable liquid fuel tanks

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, machinery must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

...

...

Chapter 8**CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES**

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 650

This packing instruction applies to UN 3373.

...

11) Infectious substances assigned to UN 3373 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

- a) the name and address of the shipper and of the consignee must be provided on each package;
- b) the name and telephone number of a person responsible must be provided on a written document (such as an air waybill) or on the package;
- c) classification must be in accordance with 2;6.3.2;
- d) the incident reporting requirements in 7;4.4 [and 7;4.5](#) must be met;

...

...

Chapter 11**CLASS 9 — MISCELLANEOUS DANGEROUS GOODS**

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 959

Passenger and cargo aircraft for UN 3245 only

...

GMOs or GMMOs assigned to UN 3245 which are packed and marked in accordance with this packing instruction are not subject to any other requirement in these Instructions except for the following:

- 1) the name and address of the shipper and of the consignee must be provided on each package;
- 2) classification must be in accordance with 2;9.2.1 c);
- 3) the incident reporting requirements in 7;4.4 [and 7;4.5](#) must be met;
- 4) the inspection for damage or leakage requirements in 7;3.1.3 and 7;3.1.4;
- 5) passengers and crew members are prohibited from transporting UN 3245 either as, or in, carry-on baggage or checked baggage or on their person.

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 965

Cargo aircraft only for UN 3480

...

II. SECTION II

Lithium ion cells and batteries, 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;1.1 g) and j) (Shipper's responsibilities — General requirements);
- Part 7;2.1 (Operator's responsibilities — Loading restrictions on the flight deck and for passenger aircraft);
- Part 7;2.4.1 (Operator's responsibilities — Loading of cargo aircraft);
- 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

...

II. SECTION II

Lithium ion cells and batteries, 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 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

...

II. SECTION II

Lithium ion cells and batteries, 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 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 968

Cargo aircraft only for UN 3090

...

II. SECTION II

Lithium metal or lithium alloy cells and batteries, 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;1.1 g) and j) (Shipper's responsibilities — General requirements);
- Part 7;2.1 (Operator's responsibilities — Loading restrictions on the flight deck and for passenger aircraft);
- Part 7;2.4.1 (Operator's responsibilities — Loading of cargo aircraft);
- 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

...

II. SECTION II

Lithium metal or lithium alloy cells and batteries, 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 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/22 (see paragraph 3.3.6.4 of this report):

Packing Instruction 970

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

...

II. SECTION II

Lithium metal or lithium alloy cells and batteries, 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 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 crew); and
- Paragraphs 1 and 2 of this packing instruction.

...

...

DGP-WG/18-WP/20 (see paragraph 3.2.2.6 of this report):

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)

...

ADDITIONAL PACKING REQUIREMENTS

...

Liquid fuel tanks

Except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, machinery must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity.

...

APPENDIX D

AMENDMENTS TO THE *EMERGENCY RESPONSE GUIDANCE FOR AIRCRAFT INCIDENTS INVOLVING DANGEROUS GOODS* (DOC 9481) AGREED AT DGP-WG/18

DGP-WG/18-WP/32 (see paragraph 3.2.4.2 of this report):

Section 3

EXAMPLES OF DANGEROUS GOODS INCIDENTS **PROCEDURES** CHECKLISTS

3.1 CHECKLIST **PROCEDURES** FOR DANGEROUS GOODS INCIDENTS

<i>Step</i>	<i>Action</i>
1.	FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR FIRE OR SMOKE 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
6.	FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW CHECKLIST 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
<i>After landing</i>	
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-CHECKLIST PROCEDURES FOR DANGEROUS GOODS INCIDENTS

Amplified-checklist <u>procedures</u> for dangerous goods incidents	
<i>Step</i>	<i>Action</i>
1.	FOLLOW THE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES FOR FIRE OR SMOKE REMOVAL (self-explanatory)
2.	NO SMOKING SIGN ON A smoking ban should be introduced 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 / FIRE 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.
6.	FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN, SEE CABIN CREW CHECKLIST <u>PROCEDURES</u> AND COORDINATE COCKPIT / CABIN CREW ACTIONS Incidents in the passenger cabin should be dealt with by the cabin crew using the appropriate checklist and 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.

Amplified-checklist <u>procedures</u> for dangerous goods incidents	
<i>Step</i>	<i>Action</i>
7.	<p>DETERMINE EMERGENCY RESPONSE DRILL CODE</p> <p>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.</p> <p><i>Note.— The alphabetical and numerical lists referred to are those in Section 4 of this document.</i></p>
8.	<p>USE GUIDANCE FROM AIRCRAFT EMERGENCY RESPONSE DRILLS CHART TO HELP DEAL WITH INCIDENT</p> <p>The drill code assigned to an item of dangerous goods consists of a number from 1 to 11, plus a single letter. Referring to the chart of emergency response drills, each drill number corresponds to a line of information concerning the risk 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.</p>
9.	<p>IF THE SITUATION PERMITS, NOTIFY ATC OF THE DANGEROUS GOODS BEING CARRIED</p> <p>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 risk(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.</p>

Amplified-checklist <u>procedures</u> for dangerous goods incidents	
<i>Step</i>	<i>Action</i>
<i>After landing</i>	
1.	<p>DISEMBARK PASSENGERS AND CREW BEFORE OPENING ANY CARGO COMPARTMENT DOORS</p> <p>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.</p>
2.	<p>INFORM GROUND PERSONNEL / EMERGENCY SERVICES OF NATURE OF ITEM AND WHERE STOWED</p> <p>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.</p>
3.	<p>MAKE APPROPRIATE ENTRY IN MAINTENANCE LOG</p> <p>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 (e.g. fire extinguishers, emergency response kit, etc.) may need replenishing or replacing.</p>

3.3 CABIN CREW ~~CHECKLISTS~~ PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of cabin crew ~~checklists~~ procedures for dangerous goods incidents in the passenger cabin during flight involving:

- a) battery / portable electronic device (PED) fire / smoke (see 3.3.1);
- b) overhead bin battery / portable electronic device (PED) fire / smoke (see 3.3.2);
- c) overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke (see 3.3.3);
- d) PED inadvertently crushed or damaged in electrically adjustable seat (see 3.3.4);
- e) fire involving dangerous goods (see 3.3.5); and
- f) spillage or leakage of dangerous goods (see 3.3.6)

3.3.1 Battery / portable electronic device (PED) fire / smoke

Checklist <u>Procedures</u> for battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>IDENTIFY THE ITEM</p> <p><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></p> <p>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.</p>
2.	<p>APPLY FIRE-FIGHTING PROCEDURE</p> <ol style="list-style-type: none"> 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. <p><i>Note.— Actions should occur simultaneously in a multi-crew operation.</i></p>

Checklist <u>Procedures</u> for battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
3.	<p>REMOVE POWER</p> <p>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.</p> <p>Caution: Do not attempt to remove the battery from the device.</p>
4.	<p>DOUSE THE DEVICE WITH WATER (OR OTHER NON-FLAMMABLE LIQUID)</p> <p><i>Note.— Liquid may turn to steam when applied to the hot battery.</i></p>
5.	<p>LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION</p> <p>a) If smoke or flames reappear, repeat Steps 2 and 4.</p> <p>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.</p>
6.	<p>WHEN THE DEVICE HAS COOLED (e.g. approximately 10 to 15 minutes)</p> <p>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.</p>
7.	<p>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</p>
8.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>a) Apply operator's post-incident procedures.</p>

3.3.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Checklist of <u>Procedures</u> for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>APPLY FIRE-FIGHTING PROCEDURE</p> <p>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.</p> <p><i>Note.— Actions should occur simultaneously in a multi-crew operation.</i></p>
2.	<p>IDENTIFY THE ITEM</p> <p>If the device is visible and accessible, or, if the device is contained in baggage and flames are visible:</p> <p>a) Re-apply Step 1 to extinguish the flames, if applicable. b) Apply Steps 3 to 5.</p> <p>If smoke is coming from the overhead bin, but the device is not visible or accessible:</p> <p>c) Remove other baggage from the overhead bin to access the affected baggage/item. d) Identify the item. e) Apply Steps 3 to 5.</p> <p>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.</p>
3.	<p>DOUSE THE DEVICE (BAGGAGE) WITH WATER (OR OTHER NON-FLAMMABLE LIQUID)</p> <p><i>Note.— Liquid may turn to steam when applied to the hot battery.</i></p>
4.	<p>WHEN THE DEVICE HAS COOLED</p> <p>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.</p>
5.	<p>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</p>

Checklist of <u>Procedures</u> for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
6.	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 or smoke

Checklist <u>Procedures</u> for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
<i>Step</i>	<i>Cabin crew action</i>
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 checklist <u>procedures</u> (see 3.3.1).
6.	AFTER LANDING AT THE NEXT DESTINATION a) Apply operator's post-incident procedures.

3.3.4 PED inadvertently crushed or damaged in electrically adjustable seat

Checklist <u>Procedures</u> for PED inadvertently crushed or damaged in electrically adjustable seat	
<i>Step</i>	<i>Cabin crew action</i>
1.	NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS
2.	OBTAIN INFORMATION FROM PASSENGER, BY ASKING HIM/HER a) To identify the item. b) Where he/she suspects that the item may have dropped or slipped into. c) If the seat was moved since misplacing the item.
3.	RETRIEVE AND USE PROTECTIVE EQUIPMENT, IF AVAILABLE
4.	RETRIEVE THE ITEM Caution: Do not move the seat electrically or mechanically when attempting to retrieve the item.
5.	IF SMOKE OR FLAMES APPEAR a) Apply BATTERY / PED FIRE / SMOKE checklist <u>procedures</u> (see 3.3.1).
6.	AFTER LANDING AT THE NEXT DESTINATION a) Apply operator's post-incident procedures.

3.3.5 Fire involving dangerous goods

Checklist <u>Procedures</u> for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
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.

Checklist <u>Procedures</u> for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
2.	<p>APPLY FIRE-FIGHTING PROCEDURE</p> <p>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.</p> <p><i>Note.— Actions should occur simultaneously in a multi-crew operation.</i></p>
3.	<p>MONITOR FOR ANY REIGNITION</p> <p>a) If smoke/flames reappear, repeat Step 2.</p>
4.	<p>ONCE THE FIRE HAS BEEN EXTINGUISHED</p> <p>a) Apply SPILLAGE OR LEAKAGE OF DANGEROUS GOODS checklist <u>procedures</u>, if required (see 3.3.6).</p>
5.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>a) Apply operator's post-incident procedures.</p>

3.3.6 Spillage or leakage of dangerous goods

Checklist <u>Procedures</u> 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
2.	IDENTIFY THE ITEM
3.	COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS
4.	DON RUBBER GLOVES AND SMOKE HOOD
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 ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS

Checklist <u>Procedures</u> for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
11.	AFTER LANDING AT THE NEXT DESTINATION a) Apply operator's post-incident procedures.

3.4 AMPLIFIED CABIN CREW-CHECKLISTS PROCEDURES FOR DANGEROUS GOODS INCIDENTS IN THE PASSENGER CABIN DURING FLIGHT

This section consists of amplified cabin crew-checklists procedures for dangerous goods incidents in the passenger cabin during flight involving:

- a) battery / portable electronic device (PED) fire / smoke (see 3.4.1);
- b) overhead bin battery / portable electronic device (PED) fire / smoke (see 3.4.2);
- c) overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke (see 3.4.3);
- d) PED inadvertently crushed or damaged in electrically adjustable seat (see 3.4.4);
- e) fire involving dangerous goods (see 3.4.5); and
- f) spillage or leakage of dangerous goods (see 3.4.6).

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 / smoke

Amplified checklist <u>procedures</u> for battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>IDENTIFY THE ITEM</p> <p>It may not be possible 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, fire-fighting 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.</p> <p>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.</p>
2.	<p>APPLY FIRE-FIGHTING PROCEDURE</p> <p>Any occurrence concerning a fire 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 are kept fully informed of the other's actions and intentions.</p> <p>Appropriate fire-fighting and emergency procedures must be used to deal with any fire. In a multi-cabin crew operation, the actions detailed in the fire-fighting 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.</p> <p>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 (e.g. protective breathing equipment, fire gloves) when fighting a fire.</p> <p>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 is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>

Amplified-checklist <u>procedures</u> for battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
3.	<p>REMOVE POWER</p> <p>It is important to 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.</p> <p>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.</p> <p>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.</p> <p>The removal of power may occur simultaneously to other cabin crew actions (e.g. 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.</p> <p>Caution: Do not attempt to remove the battery from the device.</p>
4.	<p>DOUSE THE DEVICE WITH WATER (OR OTHER NON-FLAMMABLE LIQUID)</p> <p>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.</p> <p><i>Note.— Liquid may turn to steam when applied to the hot battery.</i></p>
5.	<p>LEAVE THE DEVICE IN ITS PLACE AND MONITOR FOR ANY REIGNITION</p> <p>A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery. Therefore, the device must be monitored regularly to identify if there is any indication that a fire risk may still exist. If there is any smoke or indication of fire, the device must be doused with more water (or other non-flammable liquid).</p>

Amplified-checklist <u>procedures</u> for battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
	<p>Caution:</p> <ul style="list-style-type: none"> a) Do not attempt to pick up or move the device; batteries may explode or burst into flames without warning. The device must 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.
6.	<p>WHEN THE DEVICE HAS COOLED (E.G. APPROXIMATELY 10-15 MINUTES)</p> <p>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 (e.g. after approximately 10-15 minutes). The waiting period may vary based on the device and its size. The different circumstances (e.g. types of devices, phase of flight, etc.) should be addressed in the operator's training programme.</p> <p>A suitable empty container, such as a pot, jug, galley unit or toilet waste bin, must be filled with enough water or non-flammable liquid to completely submerge the device. It is important to wear available protective equipment (e.g. 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.</p>
7.	<p>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</p> <p>Monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further risk.</p>
8.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, 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.</p> <p>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.</p>

3.4.2 Overhead bin battery / portable electronic device (PED) fire / smoke

Amplified checklist <u>procedures</u> for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>APPLY FIRE-FIGHTING PROCEDURE</p> <p>Any occurrence concerning a fire 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 are kept fully informed of the other's actions and intentions.</p> <p>Appropriate fire-fighting and emergency procedures must be used to deal with an overhead bin fire. In a multi-cabin crew operation, the actions detailed in the fire-fighting 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.</p> <p>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 (e.g. protective breathing equipment, fire gloves) when fighting a fire.</p> <p>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.</p> <p>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 is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>
2.	<p>IDENTIFY THE ITEM</p> <p>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.</p> <p>If the device is visible and accessible or if the device is contained in baggage and flames are visible, the fire-fighting procedures should be applied as a first step.</p> <p>If smoke is coming from the overhead bin, but the device is not visible or accessible, or there is no indication of fire, the fire-fighting procedures should be applied as a first step. Afterwards, all baggage should be removed from the overhead bin with caution until the item can be identified. Once the item is identified, apply Steps 3 to 5.</p>

Amplified checklist <u>procedures</u> for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
	<p>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.</p>
3.	<p>DOUSE THE DEVICE (BAGGAGE) WITH WATER (OR OTHER NON-FLAMMABLE LIQUID)</p> <p>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.</p> <p><i>Note.— Liquid may turn to steam when applied to the hot battery.</i></p>
4.	<p>WHEN THE DEVICE HAS COOLED</p> <p>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 (e.g. types of devices, phase of flight, etc.) should be addressed in the operator's training programme.</p> <p>A suitable empty container, such as a pot, jug, galley unit or toilet waste bin, must be filled with enough water or non-flammable liquid to completely submerge the device. It is important to wear available protective equipment (e.g. 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.</p>
5.	<p>MONITOR THE DEVICE AND THE SURROUNDING AREA FOR THE REMAINDER OF THE FLIGHT</p> <p>Monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further risk.</p>

Amplified-checklist <u>procedures</u> for overhead bin battery / portable electronic device (PED) fire / smoke	
<i>Step</i>	<i>Cabin crew action</i>
6.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, 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.</p> <p>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.</p>

3.4.3 Overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke

Amplified-checklist <u>procedures</u> for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>IDENTIFY THE ITEM</p> <p>Identify the source of overheat or electrical smell. Ask the passenger concerned to identify the item.</p>
2.	<p>INSTRUCT THE PASSENGER TO TURN OFF THE DEVICE IMMEDIATELY</p> <p>It is important to instruct the passenger to turn off the device immediately.</p>
3.	<p>REMOVE POWER</p> <p>It is important to 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.</p> <p>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.</p> <p>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.</p>

Amplified checklist <u>procedures</u> for overheated battery / electrical smell involving a portable electronic device (PED) — no visible fire or smoke	
<i>Step</i>	<i>Cabin crew action</i>
	<p>The removal of power may occur simultaneously to other cabin crew actions (e.g. 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.</p> <p>It is important to verify that the device remains turned off for the duration of the flight.</p> <p>Caution: Do not attempt to remove the battery from the device.</p>
4.	<p>INSTRUCT THE PASSENGER TO KEEP THE DEVICE VISIBLE AND MONITOR CLOSELY</p> <p>The device must 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. Verify that the device is stowed for landing.</p>
5.	<p>IF SMOKE OR FLAMES APPEAR</p> <p>If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE-checklist <u>procedures</u> (see 3.4.1).</p>
6.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, 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.</p> <p>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.</p>

3.4.4 PED inadvertently crushed or damaged in electrically adjustable seat

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 risk of fire.

Amplified checklist <u>procedures</u> for PED inadvertently crushed or damaged in electrically adjustable seat	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</p> <p>Any occurrence concerning a risk of fire 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 are kept fully informed of the other's actions and intentions.</p>
2.	<p>OBTAIN INFORMATION FROM PASSENGER</p> <p>Ask the passenger concerned to identify the item, and where he/she suspects it may have dropped or slipped into, and if he/she has moved the seat since misplacing the item.</p>
3.	<p>RETRIEVE AND USE PROTECTIVE EQUIPMENT, IF AVAILABLE</p> <p>If available, cabin crew members should don fire gloves before trying to retrieve the item.</p>
4.	<p>RETRIEVE THE ITEM</p> <p>To prevent crushing of the PED and reduce the potential fire risk to the device and the surrounding area, cabin crew members and/or passengers must not use the electrical or mechanical seat functions in an attempt to retrieve the item. Move the passenger and, if applicable, the passenger seated next to the affected seat from the area, to facilitate the search. Do not move the seat. If the cabin crew member is unable to retrieve the item, it may be necessary to move the passenger to another seat.</p>
5.	<p>IF SMOKE OR FLAMES APPEAR</p> <p>If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE checklist <u>procedures</u> (see 3.4.1).</p>

Amplified-checklist <u>procedures</u> for PED inadvertently crushed or damaged in electrically adjustable seat	
<i>Step</i>	<i>Cabin crew action</i>
6.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, apply the operator’s post-incident procedures. These may include identifying to ground personnel where the item is located and providing all information about the item.</p> <p>Complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and any aircraft equipment used is replenished or replaced, if applicable.</p>

3.4.5 Fire involving dangerous goods

Amplified-checklist <u>procedures</u> for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>IDENTIFY THE ITEM</p> <p>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.</p> <p>It may not be possible 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, fire-fighting procedures should be applied as a first step. Once it is possible to do so, identify the item after the fire is under control. 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.</p> <p>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.</p>
2.	<p>APPLY THE FIRE-FIGHTING PROCEDURE</p> <p>Any occurrence concerning a fire 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 are kept fully informed of the other’s actions and intentions.</p>

Amplified-checklist <u>procedures</u> for fire involving dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
	<p>Appropriate fire-fighting and emergency procedures must be used to deal with any fire. In a multi-cabin crew operation, the actions detailed in the fire-fighting 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.</p> <p>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.</p> <p>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.</p> <p>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 is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>
3.	<p>MONITOR FOR ANY REIGNITION</p> <p>Monitor the area regularly to identify if there is any indication that a fire risk may still exist. If there is any smoke or indication of fire, continue to apply the fire-fighting procedure.</p>
4.	<p>ONCE THE FIRE HAS BEEN EXTINGUISHED</p> <p>In the event of a fire involving dangerous goods, the SPILLAGE OR LEAKAGE INVOLVING DANGEROUS GOODS-checklist <u>procedures</u> (see 3.4.6) may need to be applied once the fire has been extinguished.</p>
5.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, 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.</p> <p>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.</p>

3.4.6 Spillage or leakage of dangerous goods

Amplified checklist <u>procedures</u> for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
1.	<p>NOTIFY THE PILOT-IN-COMMAND / OTHER CABIN CREW MEMBERS</p> <p>Any incident concerning dangerous goods should be notified immediately to the pilot-in-command who should be kept informed of all actions taken and of their effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each are kept fully informed of the other's actions and intentions.</p> <p>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 is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>
2.	<p>IDENTIFY THE ITEM</p> <p>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.</p> <p>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.</p>
3.	<p>COLLECT EMERGENCY RESPONSE KIT OR OTHER USEFUL ITEMS</p> <p>Collect emergency response kit, if provided, or collect for use in dealing with the spillage or leakage:</p> <ul style="list-style-type: none"> — a supply of paper towels or newspapers or other absorbent paper or absorbent fabric (e.g. seat cushion covers, head rest protectors); — oven gloves or fire-resistant gloves, if available; — at least two large polyethylene waste bin bags; and — at least three smaller polyethylene bags, such as those used for duty-free or bar sales or, if none available, airsickness bags.
4.	<p>DON RUBBER GLOVES AND SMOKE HOOD</p> <p>The 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.</p> <p>Gas-tight breathing equipment should always be worn when attending to an incident involving smoke, fumes or fire.</p>

Amplified checklist <u>procedures</u> for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
5.	<p>MOVE PASSENGERS AWAY FROM AREA AND DISTRIBUTE WET TOWELS OR CLOTHS</p> <p>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.</p>
6.	<p>PLACE DANGEROUS GOODS ITEM IN POLYETHYLENE BAGS</p> <p><i>Note.— In the case of a spill of known or suspected dangerous goods in powder form:</i></p> <ul style="list-style-type: none"> — <i>leave everything undisturbed;</i> — <i>do not use fire agent or water;</i> — <i>cover area with polyethylene or other plastic bags and blankets;</i> — <i>keep area isolated until after landing.</i> <p>With emergency response kit</p> <p>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. Place the item in a polyethylene bag as follows:</p> <ul style="list-style-type: none"> — prepare two bags by rolling up the sides and placing them on the floor; — 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; — take off the rubber gloves while avoiding skin contact with any contamination on them; — place the rubber gloves in the second bag; — close the first bag while squeezing out the excess air; — 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; — 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.

Amplified checklist <u>procedures</u> for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
	<p>With no emergency response kit</p> <p>Pick up the item and place it in a polyethylene bag. Ensure the receptacle containing the dangerous goods is kept upright or the area of leakage is at the top. Using paper towels, newspaper, etc., 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. Place the soiled towels, etc., in another polyethylene bag. Place the 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, place the towels, gloves, etc., in the same bag as the item. Expel excess air from the bags and close tightly so as to be secure but not so tight that pressure equalization cannot take place.</p>
7.	<p>STOW POLYETHYLENE BAGS</p> <p>If there is a catering or bar box on board, empty any contents and place the box on the floor, with the door upward. Place the bag(s) containing the item and any soiled towels, etc., in the box and close the door. 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 is fitted, consider taking the box or bag(s) there, unless it is close to the flight deck. Use a rear galley or toilet wherever possible, but do 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 is used, the box can be placed on the floor or the bag(s) stowed in an empty waste container. The toilet 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.</p> <p>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.</p> <p>Wherever the box or bag(s) have been located, wedge them firmly in place to prevent them from moving and to keep the item upright. Ensure that the position of the box or bags will not impede disembarkation from the aircraft.</p>
8.	<p>TREAT AFFECTED SEAT CUSHIONS / COVERS IN THE SAME MANNER AS DANGEROUS GOODS ITEM</p> <p>Seat cushions, seat backs or other furnishings which have been contaminated by a spillage should be removed from their fixtures and placed in a large bin bag or other polyethylene bag, together with any bags used initially to cover them. They should be stowed away in the same manner as the dangerous goods item causing the incident.</p>

Amplified checklist <u>procedures</u> for spillage or leakage of dangerous goods	
<i>Step</i>	<i>Cabin crew action</i>
9.	<p>COVER SPILLAGE ON CARPET / FLOOR</p> <p>Cover any spillage on the carpet or furnishings with a waste bag or other polyethylene bags, if available. If not, use airsickness bags opened out so that the plastic side covers the spillage or use the plastic covered emergency information cards.</p> <p>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 in a large bin bag or other polyethylene bag. It should be placed in a waste bin and stowed, when possible, either in the rear toilet 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.</p>
10.	<p>REGULARLY INSPECT ITEMS STOWED AWAY / CONTAMINATED FURNISHINGS</p> <p>Any dangerous goods, contaminated furnishings or equipment which have been removed and stowed away or covered for safety should be subject to regular inspection.</p>
11.	<p>AFTER LANDING AT THE NEXT DESTINATION</p> <p>Upon arrival, 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.</p> <p>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.</p>

APPENDIX E

SECRETARIAT JOB CARD — DANGEROUS GOODS TRAINING FOR ENTITIES HANDLING GENERAL CARGO

CSS.001	Dangerous goods training for entities handling general cargo
Source	ANC 207-5
Problem Statement	Entities in the transport chain handling or processing general cargo can play a role in preventing the introduction of undeclared dangerous goods into air transport. However, other than for the operator, there are currently no provisions requiring entities not intending to handle dangerous goods to be trained. This may pose a risk to aviation safety.
Specific Details	<p>The introduction of undeclared dangerous goods into general cargo poses a risk to aviation safety. One way of mitigating this risk is to ensure that entities processing or handling general cargo are able to identify and reject undeclared dangerous goods before they are offered for transport. Accordingly, a requirement for freight forwarders processing general cargo or mail to be trained in dangerous goods regardless of whether or not they intend to process dangerous goods is included in the Technical Instructions. However, it is not included in Annex 18 and was therefore never reviewed by States and international organizations before being introduced into the Technical Instructions (2003-2004 Edition). It has not been implemented in all States, which became evident during work undertaken by the Dangerous Goods Panel (DGP) to align the dangerous goods training provisions in the Technical Instructions with competency-based training and assessment principles (see DGP/25 Report, paragraph 1.2.1). It was discovered that some DGP members had not interpreted the training provision to be a requirement and considered it to be beyond the scope of Annex 18. For them, enforcing training for entities not intending to perform dangerous goods functions was not legally possible through Annex 18. Additionally, responses to State letter AN 11/2.1-16/91 suggest that approximately 40% of States (based on sixty-one replies) currently lack oversight authority over such entities. The ICAO Legal Bureau's position is that States can currently recommend but not require training for freight forwarders not handling dangerous goods through Annex 18. The ANC therefore tasked the DGP with establishing a mechanism to ensure a State's safety oversight system addresses all relevant entities handling dangerous goods, regardless of whether or not these entities intend to process or handle dangerous goods (ANC 201-5 and ANC job card DGP.004.01 — Scope of Annex 18).</p> <p>An amendment to the training provisions in Annex 18 (Chapter 10) was developed at DGP/26 in an attempt to accomplish this. The amendment introduced a requirement for the establishment of dangerous goods training programmes for not only entities handling or processing dangerous goods, but also for entities not intending to handle or process dangerous goods. Although it was supported by the majority of panel members, several opposed it as they maintained it was beyond the scope of Annex 18 and was not legally enforceable through that Annex in their States. They supported training, but believed there were other methods to achieve this objective that could be implemented globally. However, alternate proposals did not receive enough support. The majority of panel members ultimately recommended that comments from States be sought on the amendment proposed (DGP/26, Recommendation 6/4).</p> <p>The ANC conducted its preliminary review of the amendment (207-5). Although it supported training for all freight forwarders proportionate to their responsibilities, it considered the amendment as proposed unclear and raised concerns with the lack of consensus on the DGP and the potential that some States would be unable to legally implement the requirement. Specific concerns raised are contained in AN-WP/9184.PDP. The ANC tasked the Secretariat with developing this job card through the PCI process, recognizing a solution may involve other Annexes. The ANC emphasized that the solution should provide a distinction between entities that handle dangerous goods versus those that do not so that it is clear that the level of training required would not be the same for both.</p> <p>The ANC did support an associated amendment to the compliance provisions in Annex 18 (Chapter 11) developed by DGP/26 under the same recommendation, but agreed that it not be sent for comment until amendments to address the need for training of entities not handling dangerous goods were mature. The amendment introduces a</p>

CSS.001		Dangerous goods training for entities handling general cargo						
		requirement that States implement measures aimed at preventing undeclared dangerous goods from entering the air transport stream and to ensure operators establish procedures for preventing undeclared dangerous goods from entering it. It was proposed in an effort to address the fact that there are currently no provisions in Annex 18 to clearly indicate the need to mitigate against the risk of undeclared dangerous goods being introduced into general cargo. The proposed provisions are intended as high-level requirements so as to allow States and operators the flexibility to determine which measures would effectively mitigate the risks according to their risk profile and within their regulatory and operational environments. The ANC tasked the Secretariat with ensuring that these amendments align with the safety risk provisions being developed by the Flight Operations Panel (FLTOPSP) for the carriage of items in cargo compartments.						
Expected Benefits		Decrease in the amount of hidden dangerous goods carried on aircraft and subsequent decrease in risk to aviation safety.						
Reference Documents		Annex 18 <i>Technical Instructions for the Safe Transport of Dangerous Goods by Air</i> (Doc 9284) ANC Min. 207-5 AN-WP/9184 and AN-WP/9184.PDP DGP/26 Report (Recommendation 6/5) ANC job card DGP.004.01 ANC Min. 201-5 DGP/25 Report (paragraph 1.2)						
Primary Expert Group:		DGP						
	WPE No.	Document Affected or Actions Needed	Description of Amendment proposal or Action	Supporting Expert Group	Status	Expected dates:		
						Delivery	Effective	Applicability
✓		Annex 18	Clarify oversight responsibilities	FLTOPSP	On-schedule	Q4 2019	Jun 2021	Nov 2021
✓		Technical Instructions	Clarify scope of dangerous goods training requirements for entities handling/processing cargo	FLTOPSP	On-schedule	Q4 2019	Jan 2021	Jan 2021
✓		Annex 6	Clarify responsibilities of entities handling/processing cargo	FLTOPSP	On-schedule	Q4 2019	Jun 2021	Nov 2021
✓		Annex 19/Safety Management Manual	Consider guidance on safety interface management involving entities handling/processing cargo	SMP	On-schedule	Q4 2019	Jun 2021	Nov 2021