



DANGEROUS GOODS PANEL (DGP) MEETING OF THE WORKING GROUP OF THE WHOLE

Montréal, 15 to 19 April 2013

REPORT OF THE MEETING OF THE WORKING GROUP OF THE WHOLE (DGP-WG/12)

1. INTRODUCTION

1.1 The meeting of the Dangerous Goods Panel Working Group of the Whole (DGP-WG/12) was opened by Mr. Vincent Galotti, Deputy Director, Standardization and Infrastructure of ICAO's Air Navigation Bureau (ANB), on 15 October 2012. Mr. Geoff Leach was elected Chairperson of the meeting and Ms. Janet McLaughlin was elected Vice-Chairperson.

2. ATTENDANCE

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

Members	Advisers/Observers	State/International Organization
	M. Böhm Z. Welsersheimb	Austria
	B. Firkins	Australia
	F. H. Carroll	Bahamas
B. Carrara	P. Fabricio Macário S. Silvia Dias	Brazil
M. Paquette	T. Howard D. Lamarche D. Sylvestre	Canada
	J. Abouchaar F. Liu G. Liu Z. Qiu P. Shan Chan(Hong Kong SAR) A. Song F. Zhuo	China
J. Le Tonqueze		France

Members	Advisers/Observers	State/International Organization
H. Brockhaus	G. Closhen M. Lamb B.-U. Wienecke	Germany
	C. Carboni	Italy
	M. Machida I. Uehara K. Yanagawa	Japan
S-W. Park		Republic of Korea
T. Muller	D. W. Antonius Kampman H. van der Maat K. Vermeersch	the Netherlands
M. Evans		New Zealand
D. Mirko	D. Kurdchenko I. Manakhov A. Zelenova	Russian Federation
H. Al Muhairi	W. Al Obaidli P. Balasubramanian R. Jarvis P. King A. Wagih	United Arab Emirates
G. Leach	D. Davies J. Hart R. McLachlan D. Warden	United Kingdom
J. McLaughlin	M. Givens S. Kelley K. Miller D. Pfund	United States
D. Brennan	N. Hanif	International Air Transport Association (IATA)
M. Rogers	S. Schwartz	International Federation of Air Line Pilots' Associations (IFALPA)
K. Rooney	X. Chen L. Kong L. McGuigan D. Robert	International Civil Aviation Organization (ICAO)
	E. Sigrist	European Chemical Industry Council (CEFIC)
	A. Altemos B. Barrett J. Johnson N. McCulloch	Dangerous Goods Advisory Council (DGAC)
	L. Calleja-Barcena	European Aviation Safety Agency (EASA)

Members	Advisers/Observers	State/International Organization
	P. Wildschut	International Federation of Freight Forwarders Associations (FIATA)
	A. McCulloch	Global Express Association (GEA)
	F. Bognar	North Atlantic Treaty Organization (NATO)
	G. Kerchner	The Rechargeable Battery Association (PRBA)
	A. Stukas	Fuel Cell Council

3. REVIEW OF THE REPORT

3.1 Agenda Item 1: Development of proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*

3.1.1 Recommendation Pertaining to Airmail in Annex 18 (DGP-WG/12-WP/1)

3.1.1.1 The working group was reminded of the new provisions for lithium batteries contained in equipment in the mail which were developed for inclusion in the Technical Instructions and its Supplement. It was recalled that the development of the provisions was prompted by a request from the Universal Postal Union (UPU) to align the Technical Instructions with the UPU convention so that lithium batteries contained in equipment would be permitted in airmail. Before discussion on the working paper began, the Secretary advised the panel that the UPU had recently moved the specific provisions for lithium batteries from their Convention to their parcel post and letter post regulations.

3.1.1.2 The focus of discussion at the DGP/23 and DGP-WG/LB meetings was on amending the Technical Instructions. It was noted that paragraph 11.4 of Annex 18 contained a recommendation for States to establish procedures for controlling the introduction of dangerous goods into air transport through its postal services. The group was asked to consider whether the status of this recommendation should change, based on the fact that designated postal operators’ procedures would now be subject to civil aviation authority review and approval.

3.1.1.3 It was apparent that there were still areas that needed clarification in relation to the postal provisions. The roles and responsibilities of the civil aviation administrations (CAAs) and the designated postal operators (DPOs) in relation to legal and oversight authority needed to be clearly defined. Difficulties in interpreting the new provisions were also raised in DGP-WG/12-WP/44 (see paragraph 3.6.5); it was decided to continue discussions on these issues once that paper was presented.

3.1.1.4 Although the meeting agreed that the recommendation in Annex 18 should be changed into a Standard, no formal amendment was proposed. A proposal would be developed based on continued discussions at DGP-WG/12 and presented at DGP-WG/13. It was suggested that when developing the amendment, consideration be given to relocating the Standard to Chapter 2, the applicability chapter, which was more in line with the location of the postal provisions in the Instructions. It was also suggested

that consideration be given to removing reference to the UPU Convention in Part 1;2 of the Technical Instructions.

3.2 Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2015-2016 Edition

Part 1 — General

3.2.1 Establishment and Maintenance of Training Programmes (DGP-WG/12-WP/3)

3.2.1.1 Part 1;4.1.1 requires the establishment of dangerous goods training programmes by or on behalf of dangerous goods personnel. A proposal to add a reference to independent training centres in this requirement was made.

3.2.1.2 Some members understood the proposal to be a requirement for training to be provided by specialized training centres, which they could not support. The presenter explained that this was not the intent; instead, it was to recognize new sources of training which might not have been common when the training requirements were introduced. Some panel members felt that the wording of the existing provisions did not preclude the use of training centres and that no change was needed. Others felt that adding a note to 1;4.1.1 to clarify that training centres could be considered would be useful.

3.2.1.3 A revised proposal was prepared during the meeting. Some questioned whether the revised proposal implied that the actual training centre needed to be approved or if dangerous goods training programmes needed to be approved. It was suggested to include independent training organizations as a separate entity in 1;4.1.1. There was another suggestion to include text in an introductory note similar to the one at the beginning of Part 7 which refers to ground handling agents.

3.2.1.4 Although there was agreement that specialized training centres should be covered in the Technical Instructions, there was no agreement on specific text. Members who dealt with independent training centres in their States were invited to provide comments to the presenter. The presenter would continue to work on text in consultation with other members and bring a new proposal to the DGP-WG/13 meeting.

3.2.2 Keys Identifying Different Categories of Personnel Listed in Tables 1-4 and 1-5 of the Technical Instructions (DGP-WG/12-WP/4)

3.2.2.1 It was noted that the same numbers (“keys”) were used in Tables 1-4 and 1-5 to distinguish between different categories of operator and ground handling agent personnel. Table 1-4 listed the subject matter which different categories of personnel of operators carrying dangerous goods should be familiar with, while Table 1-5 listed the subject matter which different categories of personnel of operators not carrying dangerous goods as cargo should be familiar with. The subject matter listed for three of the five categories (7, 9, and 11) was the same in both tables, making the use of the same key appropriate. It was suggested that using the same key for the categories of personnel which had different training requirements, however, could lead to confusion. A proposal to assign different keys to categories 8 and 10 in Table 1-5 was therefore made. An amendment to the title of Category 10 in Table 1-5 was also proposed, in order to distinguish it from the similar category in Table 1-4. The titles for Category 8 were already different, therefore no change was proposed to it.

3.2.2.2 It was noted that when Table 1-5 was added to the Instructions, the panel made a conscious decision to keep the numbers the same as in Table 1-4 because they were assigned to the same staff. The only difference was that staff in Table 1-4 worked for airlines which carried dangerous goods while those in Table 1-5 did not. Some members felt that this philosophy should be reconsidered and that a different set of numbers should be used for Table 1-5. This would make it very clear to which table a particular category applied. Accordingly, it was agreed to renumber the categories in Table 1-5 from 7, 8, 9, 10 and 11 to 13, 14, 15, 16 and 17.

3.2.2.3 It was felt that the new text proposed at the end of the title for Category 10 was not appropriate and also redundant, therefore it was not agreed. It was suggested that text in the title for Category 7 might also be considered redundant. This could be considered under a separate proposal.

3.2.3 Training for COMAT Shippers (DGP-WG/12-WP/16)

3.2.3.1 It was suggested that some operators did not think training was required for staff shipping dangerous goods as company material (COMAT). A proposal to include operator's staff preparing dangerous goods for shipment as company material (COMAT) in Table 1-4 was therefore made. The proposal also included a note for Table 1-5 referring to dangerous goods training requirements.

3.2.3.2 There was much sympathy for the intent of the proposal in that operators not understanding that they took on the role of a shipper when they shipped their company material was a common problem. The working group did not feel, however, that the proposal would solve this problem. It was suggested that the problem was part of a larger one related to the lack of reference to dangerous goods requirements in Annex 6 — *Operation of Aircraft*. It was agreed to revisit the COMAT problem when considering draft dangerous goods material for incorporation in Annex 6 (see paragraph 3.6.4).

3.2.4 Training Nomenclature (DGP-WG/12-WP/17)

3.2.4.1 It was noted that the terms “key” and “category” were used interchangeably to refer to the subject matter different categories of personnel should be familiar with in Part 1;4. For the sake of consistency, it was proposed that one term be used throughout. Replacing “Key” with “Category” was agreed. It was also agreed to add a row above the category numbers in Tables 1-4, 1-5 and 1-6 to clarify that these referred to categories of staff.

3.2.5 Definition of Dangerous Goods Event and Discrepancy (DGP-WG/12-WP/19)

3.2.5.1 The DGP Working Group on Training held in Montreal in August 2012 developed a new definition for dangerous goods events for inclusion within the competency framework for designated postal operators (see paragraph 3.6.1). In addition to dangerous goods incidents and accidents, the dangerous goods event would account for the discovery of postal items containing dangerous goods not permitted in the mail, and the discovery of postal items containing dangerous goods permitted in the mail but which were improperly prepared.

3.2.5.2 A suggestion to simplify this definition was made which involved the addition of a new definition for dangerous goods discrepancy. This definition would be similar to the definition for dangerous goods events developed by the training working group, but would eliminate reference to incidents and accidents. The definition for dangerous goods event would then be simplified by referring only to incidents, accidents, and discrepancies. Corresponding amendments to the reporting requirements in Part 7 of the Instructions, the reporting requirements in Part S-7 of the Supplement and the enforcement chapter in the Supplement were made.

3.2.5.3 A member of the DGP Working Group on Training cautioned that “dangerous goods event” was originally defined by that working group for the purpose of the competency framework for designated postal operators and might not be suitable for incorporation in the Instructions.

3.2.5.4 Although there was support for the intent of the amendments proposed, many members felt the changes would present challenges, particularly in relation to the definition for discrepancy and the reporting requirements. It was anticipated there would be a massive increase in reporting for relatively trivial discrepancies such as a torn label.

3.2.5.5 Others felt that reporting discrepancies could be a useful tool from an SMS perspective. A panel member from one State indicated that a mechanism for reporting discrepancies existed in their national regulations for quite some time. Although they did not investigate every discrepancy, the reporting system provided useful information which had been used to reveal problem areas which needed to be focused on. Another panel member felt that an internal reporting system could be a valuable tool for operators to have in place.

3.2.5.6 The meeting appreciated the work undertaken by the panel member in developing the proposal. Although it was not supported as presented, it was felt that the ideas it raised were worthy of further discussion. The presenter would continue to work on the proposal in consultation with other members and bring a new proposal to the DGP-WG/13 meeting.

3.2.6 **Net Quantity for Unpackaged Articles** (DGP-WG/12-WP/36)

3.2.6.1 The definition for net quantity was amended at DGP/23 to clarify what quantity must be stated on the dangerous goods transport document for articles containing dangerous goods such as fire extinguishers. The revised definition specified that the mass or volume should refer to the proper shipping name of the article or substance. In the case of fire extinguishers, since the proper shipping name was “**Fire extinguishers**”, the net quantity on the transport document would refer to the mass of the fire extinguisher and not the dangerous goods within.

3.2.6.2 It was suggested that a discrepancy was inadvertently introduced when revising the definition in that referring to dangerous goods “contained in a package” excluded articles, such as vehicles, which would not be contained in a package. An amendment to the definition was proposed to eliminate this discrepancy. This was agreed.

PART 2 — Classification

3.2.7 Exceptions for Medical Devices or Equipment Containing Infectious Substances **(DGP-WG/12-WP/23)**

3.2.7.1 The working group was asked to consider whether a proposed amendment to the UN Model Regulations by the Council on Safe Transportation of Hazardous Articles, Inc. (COSTHA) addressed concerns raised at DGP/23 related to new exceptions for medical devices or equipment containing infectious substances. These exceptions were introduced in the 17th Revised Edition of the UN Model Regulations and, for the sake of harmonization, the 2013-2014 Edition of the Technical Instructions. The concerns included:

- a) the possibility of applying the exceptions to smaller-sized equipment with Category B infectious substances present (since there was no definition limiting the size of medical devices and equipment);
- b) ambiguity with the intent of the drop test, i.e. what was meant by “capable of retaining the medical devices and equipment”;
- c) the feasibility of performing the drop test on large equipment; and
- d) the possibility of infectious substances being shipped unregulated when applying the exception in the note under paragraph 2.6.3.2.3.3 of the Model Regulations; this note was not adopted in the Technical Instructions.

3.2.7.2 A representative from industry provided a summary of the paper prepared for the UN Sub-Committee. The working group appreciated the work undertaken, but several concerns remained, including:

- a) The structure of the provisions was felt to be too complex. A distinction was made between surface-contaminated equipment and equipment or devices containing free liquid. A more consolidated approach should be considered.
- b) The proposal as written allowed for all used equipment or medical devices (big and small) known to be or potentially contaminated with Category B infectious substances to be transported under this exception. It was questioned whether this was adequate or if smaller pieces should still be transported under the provisions of Packing Instruction 650. It was felt a clear decision needed to be taken.
- c) Issues related to the drop test did not appear to be addressed. Surface contaminated medical devices were still required to be capable of withstanding a drop test from 1.2 m. Whether or not this would be feasible for very heavy devices was questioned.
- d) The note related to the exception for medical devices drained of free liquid remained in proposal 3. The working group strongly believed this note should be removed.

3.2.7.3 The meeting felt that more consideration needed to be given to the provisions at the Sub-Committee meeting in December. Recognizing that the agenda for that meeting was very full, it was recommended that an informal paper consolidating comments from panel members be prepared for the meeting to facilitate the review. Members were asked to submit their comments to the Secretary which would be incorporated in an informal paper to the Sub-Committee.

3.2.8 **Use of the Term "Net Mass"** (DGP-WG/12-WP/47)

3.2.8.1 It was recalled that the term “net mass” was used in Part 2; Introductory Chapter 5.3 d) when referring to the requirements for transporting samples. It was not clear, however, whether the definition for “maximum net mass” or “net quantity” should be applied. An amendment clarifying that the quantity referred to was maximum net mass was proposed. Although there was sympathy for the proposal, it was felt that it should first be considered by the UN Sub Committee, since it was UN Model Regulation text. It was suggested that the amended text could also be simplified by reading “with a maximum net mass per package not exceeding 2.5 kg”.

3.2.8.2 The presenter agreed to raise the issue to the UN Sub-Committee.

Part 3 — Dangerous Goods List, Special Provisions and Limited and Excepted Quantities

3.2.9 **UN 2796 sulphuric acid with not more than 51% acid and UN 1790 hydrofluoric acid not more than 60% strength** (DGP-WG/12-WP/8)

3.2.9.1 A proposal to assign Special Provision A3 to UN 1790, **Hydrofluoric acid** with not more than 60% strength and UN 2796, **Sulphuric acid** with not more than 51% acid for Packing Group II was made. It was suggested that a corrosive hazard would not apply to Packing Group II when these substances contained lower concentrations of acid.

3.2.9.2 It was noted that the values assigned to these substances in Table 3-1 aligned with those in the UN Model Regulations and that it would be inappropriate to make any changes before asking for the UN Sub-Committee’s consideration. The presenter would raise the issue to the Sub-Committee.

3.2.10 **UN3242 — Azodicarbonamide** (DGP-WG/12-WP/9)

3.2.10.1 It was noted that UN 3242, **Azodicarbonamide**, was forbidden for transport on both passenger and cargo aircraft. It was suggested that this was unjustified, on the basis that formulations of azodicarbonamide classified as UN 3224 or UN 3226 were permitted on both passenger and cargo aircraft, even though they each have a lower self-accelerating decomposition temperature (SADT). It was also noted that the maximum net quantity per package when shipped as a limited quantity listed in the UN Model Regulations for UN 3224 and UN 3226 was higher than the quantities listed for regular shipments in the Instructions. A proposal to amend Table 3-1 to permit UN 3242 was made, along with a corresponding amendment to Packing Instruction 459.

3.2.10.2 It was suggested that the SADT value was not the determining factor in making these substances forbidden. The determining factor was the fact that these substances had desensitized explosive properties. Permitting them could therefore not be supported without further analysis and review. It was noted that the UN packing provisions for these substances were more restrictive than those in Packing Instruction 459; this packing instruction would therefore be inappropriate even if UN 3242 were permitted for transport by air.

3.2.10.3 The proposer would consider the comments from the working group and present a new proposal to DGP-WG/13 if it was determined appropriate.

3.2.11 **Clarification on Limited Quantity Allowances** (DGP-WG/12-WP/10)

3.2.11.1 It was suggested that the criteria for determining whether the provisions for dangerous goods in limited quantities could be applied (Part 3;4.1.2) was not up-to-date. An amendment adding UN 3473, UN 3476, UN 3477 and ID 8000 to the list was proposed. It was agreed, subject to a minor change to the note.

3.2.12 **Certain 1.4S Articles in Limited Quantities** (DGP-WG/12-WP/12)

3.2.12.1 A proposal to allow certain 1.4S articles to be shipped in limited quantities was discussed. The proposal was considered at DGP/23 but was not accepted on the basis that the requirement for UN package testing was retained. Recognizing that the only benefit in transporting dangerous goods in limited quantities for the air mode was an exception from the package testing, it was unclear what benefit limited quantities would provide. Adopting the proposal would cause confusion in training and potentially delay acceptance checks. The panel felt very strongly that the general philosophy applied to limited quantities should not be changed. It was noted that in accordance with Part 5;2.4.13, packages bearing the limited quantity mark of other modes could still be accepted for air transport provided the requirements of the Instructions were complied with.

3.2.12.2 It was reported that since DGP/23, there had been difficulties shipping limited quantities of 1.4S articles by both surface and air modes. Surface enforcement authorities were questioning the presence of hazard labels on limited quantity packages, and operators sometimes rejected packages containing a surface limited quantity mark together with hazard marks. The working group was therefore asked to reconsider the proposal presented at DGP/23.

3.2.12.3 The working group did not ignore that the problems raised in the working paper existed, but it was felt that the problems should be solved in a manner which would not involve changing the philosophy of the limited quantity provisions. It was believed these problems would affect shippers of all classes of dangerous goods, not just 1.4S articles, and that they needed to be solved more comprehensively.

3.2.12.4 It was recalled that the new limited quantity markings were developed with the intention of facilitating intermodal transport. This was demonstrated through a short presentation showing how all shippers shipping dangerous goods under limited quantity provisions for road or sea could benefit from allowing the road/sea limited quantity mark in addition to all markings and labels required by the Technical Instructions for a fully regulated package.

3.2.12.5 It was evident that some shippers and operators were not aware of this. To solve the problem, each entity would need to be distinctly addressed:

- a) **For operators refusing surface limited quantity marking:** The Technical Instructions allow for additional labels required by other international or national transport regulations. The working group believed the fact that certain operators were not accepting them could be attributed to misinformation, a lack of awareness, and a lack of proper training. It was felt that developing good guidance material for publication on the ICAO website would help. The panel member nominated by IATA reported that explanatory text and illustrations were developed for the next edition of the IATA Dangerous Goods Regulations in order to clarify the issue.

- b) **For inspectors of the road and sea mode not willing to accept packages bearing a surface limited quantity mark when hazard labels were also present:** It was suggested that some additional text may be needed in the UN Model Regulations and in the ADR/IMDG to explain that fully regulated packages for air transport may travel under the limited quantity provisions for road and sea. It was believed that this could easily be solved by adding a paragraph in section 3.4 of the UN Model Regulations.

The working group believed that these steps would benefit all shippers of dangerous goods, not only those shippers shipping 1.4S articles.

3.2.12.6 The proposer appreciated that the working group did recognize the problems and accepted the decision not to adopt limited quantity provisions for 1.4S articles. However, the presenter believed that some airlines had a policy of not accepting packages bearing the road/sea limited quantity mark and that this policy would be difficult to change. Some operator representatives present at the meeting were of the opinion that the education of their staff would indeed be a challenge but were optimistic it would be feasible.

3.2.13 **Review of Certain Division 4.2 Substances** (DGP-WG/12-WP/21)

3.2.13.1 The working group was asked to consider permitting certain self-heating substances of Division 4.2, Packing Group III on passenger and/or cargo aircraft. Based on classification criteria and the criteria for assignment of packing groups, it was suggested that the forbidden/forbidden status could be removed. It was noted that although these substances were forbidden in excepted quantities in the Technical Instructions, they were permitted in excepted quantities by other modes of transport. The working group was also asked to consider if the current packing instruction provisions for other Division 4.2 solids in Packing Group III were appropriate, specifically Packing Instructions 469 and 471.

3.2.13.2 Recognizing that the danger posed by these substances might not be present in smaller quantities, the meeting was asked to consider permitting the substances for transport under the excepted quantity provisions while maintaining the forbidden status for regular quantities. Although there was sympathy for the idea, it was strongly felt that straying from the general philosophy of the excepted quantity provisions would not be appropriate. This argument against was strengthened during the discussion on DGP-WG/12-WP/25 (see paragraph 3.2.15).

3.2.13.3 The working group was then asked to consider developing a special provision whereby a safe limit for transport would be set. Since no criteria existed for setting such a limit, the idea was not supported. It was noted that the quantities set in the UN Model Regulations had been around for a really long time, and it was suggested determining the values was based on human experience. Criteria would need to be determined at the UN before any changes were made. In the same vein, removing the forbidden/forbidden status of these substances was not supported.

3.2.14 **Harmonization of Excepted Quantity Codes in the UN Model Regulations and the Technical Instructions** (DGP-WG/12-WP/25)

3.2.14.1 It was reported that a number of substances which are forbidden on passenger aircraft were permitted in excepted quantities in the Model Regulations. A paper which listed these substances along with other anomalies was presented at the Forty-first session of the Sub-Committee of Experts on the Transport of Dangerous Goods (Geneva, 25 June – 4 July 2012) (ST/SG/AC.10/C.3/2012/25). A review of the differences was performed by the Secretariat and would be presented at the December

meeting of the Sub-Committee. The working group was invited to provide comments to the Secretary on this review. The results of the working group's discussion would be provided in an informal paper to the Forty-second Session of the UN Sub-Committee.

3.2.14.2 Background information on how the excepted quantity provisions were incorporated into the Model Regulations was provided during discussion of the working paper. It was explained that excepted quantity provisions had been unique to air transport for quite some time. The UN decided to incorporate the provisions into the Model Regulations to facilitate transport between modes. They developed a rationalized approach to assigning excepted quantity codes which was based on the provisions of the 2005-2006 Edition of the Technical Instructions. Any inconsistencies in the Model Regulations were not intentional. The Sub-Committee was prepared to address these inconsistencies, but asked that the DGP consider whether there was a need to be more restrictive in the air mode.

3.2.14.3 It was noted that when packages were shipped in excepted quantities, there was no way to identify what that package contained. The only identification on the package was the excepted quantity mark and an indication of the class or division. If a package was shipped using excepted quantity provisions permitted by other modes but not by air, there would be no way for an air operator to know that that package was not in compliance with the air mode. For this reason, the excepted quantity provisions needed to be harmonized.

3.2.14.4 It was strongly agreed that the criteria used by the DGP to assign excepted quantity codes should not change. Harmonization of the codes for the other modes with the air mode was crucial, but it was also recognized that it was difficult for the other modes to keep up-to-date with the Technical Instructions. Excepted quantity codes assigned to substances may change and it would be up to the DGP via the Secretariat to inform the Sub-Committee of these changes.

3.2.15 Compatibility Requirements for Excepted Quantities (DGP-WG/12-WP/28) and Packagings Forbidden in Packing Instructions but not in Excepted Quantities (DGP-WG/12-WP/35)

3.2.15.1 It was noted that a number of packing instructions for various Class 8 substances contained a specific "compatibility requirement" for hydrofluoric acid but that there was no equivalent requirement when substances assigned to these packing groups were shipped as excepted quantities. Two different proposals were presented to address this issue. The first added a requirement for compliance with the compatibility requirements of Part 4;1.1.3.3 by way of a reference in Part 3;5.1.1 e). The second added a requirement in Part 3;5.5.1 for inner packagings to be of a type permitted by the packing instruction applicable to the substance.

3.2.15.2 The meeting preferred the proposal to add a reference to the compatibility requirements in Part 3;5.1.1 e) over referring to the packing instructions on the basis that a shipper might not be familiar with the packing instructions if they were accustomed to only shipping using the excepted quantity provisions. The shipper should, however, be very familiar with the compatibility requirements. The fact that there was potential for more than one packing instruction (passenger/cargo/limited quantity) for a particular substance might also cause confusion. Finally, referring to the packing instructions could complicate multimodal transport in that the applicable packing instruction in the Technical Instructions might not be the same for the other modes.

3.2.15.3 The proposal in DGP-WG/12-WP/28 was agreed. A suggestion to refer more generally to 4;1.1.3 instead of 4;1.1.3.3 was not supported since the applicable sub-paragraphs had already been referenced in 3;5.1.1 e) and the ones which weren't referenced applied only to the air mode.

3.2.16 UN Numbers not Included in the List of Dangerous Goods (DGP-WG/12-WP/29) and Dangerous Goods not Listed in Table 3-1 (DGP-WG/12-WP/34)

3.2.16.1 The working group was asked to consider adding entries to Table 3-1 which, although assigned UN numbers and listed in the UN Model Regulations were not currently listed in the Instructions. It was suggested that their absence in the Instructions was based on the belief that there would never be a need to transport the items by air. However, enquiries about the air transport of some of these items had been received. In order to eliminate the potential for confusion, it was proposed to add these items to the Technical Instructions. It was recognized that some of the items should be forbidden for transport by air and others, while considered dangerous goods by other modes of transport, might not be considered dangerous when transported by air. A new special provision, based on special provision 960 in the IMDG code, was proposed for these substances.

3.2.16.2 A second paper on the same subject was presented which included an itemized list of the substances which the working group was asked to review.

3.2.16.3 There was strong support for adding these substances to the Technical Instructions. The presenters agreed to analyse each substance and prepare a proposal for the DGP-WG/13 meeting. In addition, the Secretariat was asked to research when the decisions were taken to remove these substances from the list of dangerous goods.

3.2.17 Excepted Quantity Provisions — Absorbent Material — Count of Packages (DGP-WG/12-WP/39)

3.2.17.1 The working group was presented with a proposal prepared for consideration by the UN Sub-Committee on the placement of absorbent material when applying the excepted quantity provisions. It was noted that the current provisions required that intermediate packaging for liquid dangerous goods contain sufficient absorbent material to absorb the entire contents of the inner packagings. It was argued that this was cumbersome for some end users who wished to unpack the intermediate packagings from the outer packaging and store them. The proposal suggested that the absorbent material could also be placed in the outer packaging without compromising safety. An alternate proposal was also presented whereby the absorbent material could be placed in the outer packaging subject to the intermediate packaging containing the inner package passing a drop test. The working group was asked to comment on the proposals.

3.2.17.2 Although one member showed some support for one of the alternatives there was no support expressed by other members. The presenter, recognizing that there was some sympathy for the problem, asked that members give it further consideration and provide ideas for alternative solutions.

Part 4 — Packing Instructions

3.2.18 Provisions for Cylinders (DGP-WG/12-WP/11)

3.2.18.1 A number of inconsistencies between the Model Regulations and the Technical Instructions were identified during a review of the provisions for cylinders. The meeting was invited to consider amendments to remove these inconsistencies.

3.2.18.2 Some of the general provisions for cylinders contained in paragraph 4.1.3.6 of the UN Model Regulations were not incorporated in the equivalent Part 4;2.7.1 of the Technical Instructions. Provisions for cylinders were instead included in applicable packing instructions of the Technical

Instructions. The meeting was asked to consider whether the text in the Model Regulations should be incorporated in Part 4;2.7.1.

3.2.18.3 The meeting was also asked to consider whether Packing Instruction 361 was mistakenly assigned to UN 3983, **Ethylene oxide and propylene oxide mixture**. This packing instruction permitted the use of both combination and single packagings, whereas the Model Regulations permitted only the use of cylinders. A new packing instruction requiring the use of cylinders was therefore proposed

3.2.18.4 Finally, it was reported that the Model Regulations permitted the use of cylinders as single packagings for UN 2881, **Metal catalyst, dry**, but they were not listed as a permitted packaging type in the Instructions. An amendment to Packing Instruction 473 was therefore proposed.

3.2.18.5 The amendment to Part 4;2.7 was not supported on the basis that it would introduce the possibility of using a cylinder even if it was not listed in the applicable packing instruction and even if single packagings were not permitted. It was felt that the current provision in 2.7 permitting cylinders for liquids and solids when indicated in a packing instruction was sufficient. It was noted that Part 4;2.8 could provide for the use of a cylinder or any other packaging not listed in a packing instruction with the approval of the appropriate national authority of the State of Origin.

3.2.18.6 There was initial support for the amendment to Packing Instruction 361 on the basis that it was currently less restrictive than the UN Model Regulations. It was noted, however, that there was a current lack of harmonization between other regulations as well and that the Model Regulations was the most restrictive. It was suggested that UN 3983 had been transported safely for years and that there did not seem to be any justification to change the requirements. It was agreed that the issue would be instead raised at the UN.

3.2.18.7 The proposal to amend Packing Instruction 473 to allow for cylinders was agreed, but the other amendments proposed in the paper were not.

3.2.19 **Fuel Cell Industry Update (DGP-WG/12-WP/13) and its addendum**

3.2.19.1 The meeting was asked to add a reference in Packing Instructions 216, 375, 496, 874 and Table 8-1 to Amendment 1 to IEC 62282-6-100, the international standard for fuel cell technologies and micro fuel cell power systems. This proposal was made at DGP/23, but the reference was not included in the 2013-2014 Edition of the Technical Instructions since IEC members had yet to vote on adopting it. It was reported that Amendment 1 to IEC 62282-6-100 had since been unanimously approved by all IEC voting member nations. The working group was also asked to consider incorporating the reference in the 2013-2014 Edition of the Instructions by way of an addendum.

3.2.19.2 The meeting supported the addition of a reference to Amendment 1 to IEC 62282-601-100. Those who expressed concerns with the content of the addendum at DGP/23 reported that their concerns were addressed. They felt the changes made the standard more technically sound and accurate.

3.2.19.3 Recognizing that the IEC standard added clarifications which would enhance safety, it was felt an addendum to the 2013-2014 Edition of the Technical Instructions was justified. It was also felt that the Instructions should align with the most up-to-date standard. The Secretary reported that the fall schedule for the Air Navigation Commission (ANC) and the Council was very full. She would bring the request for an addendum to the ANC during its winter 2013 Session.

3.2.20 **Review of Packing Instruction Y963** (DGP-WG/12-WP/22)

3.2.20.1 An amendment to Packing Instruction Y963 was proposed for the sake of alignment with the limited quantity provisions in Part 3;4. The working group was reminded that Packing Instruction Y963 for consumer commodities was structured as a self-contained packing instruction with minimal reference to other parts of the Technical Instructions. It was discovered, however, that certain provisions related to the drop test in the packing instruction were inconsistent with the drop test requirement in Part 3;4.4.1. An amendment to remove these inconsistencies was agreed.

3.2.21 **Period of Use for Plastic Drums, Jerricans and IBCs** (DGP-WG/12-WP/30)

3.2.21.1 It was noted that the period of use requirement in Part 4;1.1.20 did not apply to UN 3291 (**Biomedical waste, n.o.s., Medical waste, n.o.s., Clinical waste, unspecified, n.o.s. and Regulated medical waste, n.o.s.**). Although this exception was specified in Packing Instruction 622, there was no indication of it in paragraph 1.1.20. A new note in Part 4;1.1.20 referring to the exception was proposed.

3.2.21.2 Although there was sympathy for the proposal, it was not accepted on the basis that introducing a note would be redundant and would set a precedence whereby redundant provisions would be expected elsewhere.

Part 5 — Shipper's Responsibilities

3.2.22 **Label Dimensions** (DGP-WG/12-WP/5)

3.2.22.1 It was reported that changes to the UN Model Regulations to more clearly specify the required design and dimensions of labels and markings were being considered by the UN Sub-Committee. It was expected that these changes would be adopted, and that the corresponding changes to the Technical Instructions would be considered at DGP-WG/13. Noting that there were a number of labels specific to air transport in Part 5;3 of the Instructions, it was proposed that these be also amended.

3.2.22.2 The proposal was agreed, subject to the following revisions:

- a) a minor editorial amendment to 3;5.2.1 to improve the readability;
- b) the dimension for the width of the cryogenic liquid label in Figure 5-28 was modified for the sake of alignment with the other handling labels;
- c) measurement for the spacing between the dashed lines and the solid border of the keep away from heat label in Figure 5-29 was added; and
- d) provision for a smaller label size as provided for in 5;3.5.2.2 was added to the lithium battery handling label in Figure 5-31.

3.2.23 **Dangerous Goods Transport Information — Documentation — Indication of a Country** (DGP-WG/12-WP/14)

3.2.23.1 It was reported that dangerous goods shipments were often rejected because of incorrect references to the destination country in the address (e.g. using the abbreviation "US" for "United States").

The working group was asked to consider whether new provisions in the Technical Instructions were justified to address this problem, such as requiring the use of an ISO two-digit codes for countries.

3.2.23.2 Although there was sympathy for the problem, the working group felt that adding any new specific requirement to the Instructions would only create further rejected shipments. It was felt that the problem could only be solved through proper training.

3.2.24 Overpacks Containing “Cargo Aircraft Only” Dangerous Goods (DGP-WG/12-WP/32)

3.2.24.1 A proposal to remove the provisions under which an overpack can contain “cargo aircraft only” dangerous goods in Part 5;1.1 e) was discussed at DGP-WG/08. At that time, it was agreed that further consideration was needed and that a new proposal would be brought to DGP-WG09. The subject was, however, never revisited. DGP-WG/12 was invited to reconsider the proposal. The group was reminded that it was originally developed on the basis that earlier changes made to the provisions concerning label visibility and accessibility of packages and overpacks containing cargo aircraft only dangerous goods made the provisions in Part 5;1.1 e) unnecessary. The current provisions required accessibility to the overpack, not the individual packages contained within, making reference to packages in 5;1.1.1 e) redundant.

3.2.24.2 It was noted that there was hesitation in supporting the proposal when it was originally presented at DGP-WG/08 on the basis that the loading requirements were new and time was needed to ensure they did not introduce any problems. Since they did not, the proposal was agreed.

Part 6 — Packaging Nomenclature, Marking, Requirements and Tests

No papers were submitted under this agenda item.

Part 7 — Operator’s Responsibilities

3.2.25 Stowage of Toxic and Infectious Substances (DGP-WG/12-WP/20)

3.2.25.1 The working group was asked to consider a revision to the stowage of toxic and infectious substances requirements in Part 7;2.9. It was noted that the provisions limit the loading of these substances to separate compartments unless loaded into separate unit load devices (ULDs) which were not adjacent to each other or loaded into separate closed ULDs. It was explained that the aft hold of containerized aircraft was typically divided between a forward portion, designed to hold ULDs, and a smaller aft portion, designed for bulk loading (non-containerized). The bulk hold was often used to transport pets checked in as part of passenger baggage. The restrictions set out in Part 7;2.8 created issues in being able to transport the animals, as there was no provision made for goods or animals that were not loaded into a ULD. A note was therefore proposed to clarify that for the purposes of 7;2.9, this bulk hold could be considered an open unit load device.

3.2.25.2 It was also noted that although the UN Model Regulations have similar segregation provisions for toxic substances, no such provisions exist for infectious substances. An amendment to remove the segregation requirement for infectious substances was therefore proposed.

3.2.25.3 There was support for the intent of the proposed note, but the wording needed to be clarified. Some of the terms in it were not clearly defined anywhere in the Instructions.

3.2.25.4 Removing the reference to infectious substances while keeping reference to toxic substances was not supported. It was felt that the two should be considered in tandem. Perhaps the segregation requirements were no longer necessary, but further study was needed. This would need to be addressed at the UN.

3.2.25.5 Based on the discussion, a new proposal would be prepared for DGP-WG/13.

3.2.26 **Acceptance Checks (DGP-WG/12-WP/31)**

3.2.26.1 It was suggested that although a consignment of dangerous goods might be transported on more than one aircraft or by more than one operator on its journey to its destination, an acceptance check was only required prior to the dangerous goods first being accepted for carriage. Prior to loading on subsequent aircraft, the operator should be responsible for ensuring a consignment continues to be compliant, but that verifying those parts of 7;1.3 which cannot change since initial acceptance would not be necessary (e.g. quantity limits were respected, packaging used was appropriate, etc.). A proposal to clarify this was made by way of an amendment to 7;1.3.1 and a new note to that paragraph.

3.2.26.2 Some members were strongly opposed to the proposal. Referring to Part 1;2 of the Instructions, the meeting was reminded that it was the responsibility of the operator to transport dangerous goods in compliance with the Instructions. Whether or not an acceptance check was performed did not relieve the operator of any responsibility to transport dangerous goods in compliance with the Instructions. These members also believed that not requiring an acceptance check was contrary to safety management principles. They referred to incidents where packages which weren't prepared properly were discovered during a second acceptance check.

3.2.26.3 The majority felt that the amendment was a necessary clarification. Once an acceptance check had been done, there was no need for it to be repeated. They believed that repeated acceptance checks could result in damage in the case where a pallet or container would need to be unpacked. Rechecking would be inefficient and seriously affect some operator's operations. It was noted that dangerous goods moving through the system were continuously scrutinized by operators. They checked for damage, leakage, labels falling off etc.

3.2.26.4 The amendment was agreed.

3.2.27 **Requirement for the Technical Name on the Written Information to the Pilot-In-Command (DGP-WG/12-WP/50)**

3.2.27.1 Eliminating the requirement to provide the technical name with the information to the pilot-in-command was proposed. It was suggested that the names provided little benefit to safety, particularly during the initial stage of emergency response. Providing the names was becoming an increasingly cumbersome task for operators; an increase in substances requiring a technical name, particularly in relation to environmentally hazardous material, only added to this. It was noted that the technical name was not provided for in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) nor was it provided for in the North American Emergency Response Guidebook. It was not needed to determine the drill code and the associated emergency response procedures to be followed in the event of an incident.

3.2.27.2 Some members felt that the additional information was important and that the requirement should remain. The member nominated by IFALPA reported that in his experience, pilots were interested in having as much information as possible. Others reported talking to pilots and

emergency responders who indicated the information they needed was the class or division and the UN number and that the technical name was not needed.

3.2.27.3 It was acknowledged that the technical name would be required by emergency responders in the phases following initial emergency response, but it was suggested that they would be looking for more detailed information that could only be provided by the shipper. This argument was countered by members who suggested that in some States, it was difficult to obtain timely information and the NOTOC provided a mechanism to obtain information more quickly.

3.2.27.4 Some members felt that a decision should not be taken on adopting the proposal until the next working group meeting on the basis it was a late proposal. Others felt that even though it was a late submission it was a subject that had been previously discussed at length. The counterargument was that previous discussions were more general and did not specifically address the technical name.

3.2.27.5 Although there were some members who did not support the proposal, the majority did. It was agreed, subject to a small editorial amendment.

Part 8 — Provisions Concerning Passengers and Crew

3.2.28 Information about Dangerous Goods Carried by Passengers and Crew (DGP-WG/12-WP/15)

3.2.28.1 It was recalled that the pilot-in-command must be informed of the location of certain dangerous goods permitted for carriage by passengers and crew when they are carried. There were no provisions, however, on how this information should be conveyed to the pilot-in-command. A new paragraph 8;1.1.5 was proposed which would require this information to be included on the NOTOC. A consequential amendment to Table 1-5 adding “Pilot notification” to the list of subject matter which applicable personnel should be familiar was also proposed.

3.2.28.2 Although there was support for creating a mechanism for informing the pilot-in-command, members were uncomfortable with providing it on a NOTOC. A NOTOC applied to dangerous goods carried as cargo and required information that would not apply to passengers.

3.2.28.3 A revised proposal would be developed for DGP-WG/13 based on the discussion.

3.2.29 Gas Cartridges Carried by Passengers (DGP-WG/12-WP/33)

3.2.29.1 An amendment to the passenger provisions in Table 8-1 was proposed in order to restrict the carriage of small gas cartridges to only those without a subsidiary risk. It was noted that the introduction of small cartridges containing carbon dioxide or other suitable gases in Division 2.2 was made to allow for equipment such as safety vests and bicycle tyre inflators. One panel member reported cases of passengers carrying small gas cartridges containing nitrous oxide with a subsidiary risk of Division 5.1 and that these items were used as a legal narcotic. The amendment was agreed. The group considered whether the amendment should be incorporated into the 2013-2014 Edition of the Technical Instructions. The group felt there was no strong justification for an addendum, on the basis that it was not a significant safety issue. If at a later time it was determined an addendum was justified to address a separate safety issue, the amendment to Table 8-1 would be included.

3.2.30 **Pacemakers (DGP-WG/12-WP/37)**

3.2.30.1 It was noted that some cardiac pacemakers were externally fitted on a patient but that the provision in Part 8 of the Technical Instruction referred to pacemakers implanted into a person. An amendment to allow for externally fitted pacemakers was therefore proposed.

3.2.30.2 It was noted that the provisions for portable medical electronic devices would apply to externally fitted pacemakers, but these provisions were subject to operator approval. It was also felt that although it was apparent to members of the DGP that portable medical electronic devices would apply, it might not be to anyone else. A more descriptive entry would be more appropriate.

3.2.30.3 One panel member suggested that the provision for cardiac pacemakers was intended to apply to any device implanted in a person; cardiac pacemakers were simply provided as an example. However, the proposed amendment would provide for any device powered by lithium batteries fitted externally on a person.

3.2.30.4 The amendment as presented was not supported; a revised proposal would be prepared for DGP-WG/13.

3.2.31 **Electric Mobility Aids (DGP-WG/12-WP/43)**

3.2.31.1 A small amendment to the recently-agreed provisions for electric mobility aids in paragraphs 5), 6) and 7) of Table 8-1 was proposed in order to clarify what must be done to immobilize the mobility device. It was noted that batteries should not be routinely disconnected or removed, as this was difficult to do and if not done correctly could increase the risk of fire. On reflection it was felt that the requirements in the provisions for the electrical circuits to be “isolated” could be interpreted to mean a battery had to be disconnected at the terminals, something that the new text was trying to avoid.

3.2.31.2 It was suggested that a very simple way of preventing the drive mechanism of an electric mobility aid from inadvertently operating was the insertion of an inhibiting plug. When it is used, the term “isolated” used in the current provisions would not be appropriate. The amended text therefore replaced the word “isolated” with “inhibited”.

3.2.31.3 Although there was support for the intent of the proposal, panel members had difficulties with the use of the term “inhibit”, particularly in some languages where it could be interpreted to mean “slow down”.

3.2.31.4 The presenter would develop a new proposal based on the discussion for DGP-WG/13.

3.2.32 **Marking of Fuel Cells (DGP-WG/12-WP/48)**

3.2.32.1 It was suggested that the “APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY” manufacturer marking requirement for fuel cells was inconsistent with the provision in Table 8-1 for spare fuel cell cartridges in checked baggage. Removing “CABIN ONLY” was therefore proposed.

3.2.32.2 It was clarified that the marking applied to fuel cells and not to the fuel cell cartridges. Fuel cells were not permitted in checked baggage, making the marking appropriate.

3.2.32.3 The presenter withdrew the amendment proposal.

3.3 Agenda Item 3: Development of recommendations for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2015-2016 Edition

No papers were submitted under this agenda item.

3.4 Agenda Item 4: Development of recommendations for amendments to the *Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc 9481) for incorporation in the 2015-2016 Edition

**3.4.1 Emergency Response Drill Number 4, Letter "W",
Firefighting Procedure
(DGP-WG/12-WP/2)**

3.4.1.1 A proposal to recommend using a dry fire extinguishing agent for drill code "4W" was proposed. It was noted that "all agents according to availability" was specified for drill number 4, along with "no water" when drill letter "W" was assigned. Drill code "4W" was assigned to substances which included alkali metals such as UN 1415, **Lithium**. It was suggested that halon and carbon dioxide would not extinguish a fire involving such substances, making it necessary to amend the firefighting procedure.

3.4.1.2 There were some concerns with the proposal:

- a) Dry agents were not usually available on board an aircraft. It might be appropriate to use halon if that was all that was available.
- b) It was felt that more information on the effects of halon on these fires was needed.
- c) Some members were uncomfortable with the use of the term "dry agents" since it was not defined.

It was felt more consideration was needed before an amendment could be agreed. A new proposal would be brought to DGP-WG/13.

**3.4.2 Emergency Response and Portable Electronic Devices
(DGP-WG/12-WP/46)**

3.4.2.1 An amendment to the amplified cabin crew checklist for fires involving portable electronic devices during flight was proposed. It was recalled that the checklist included an instruction to not move the device, and it was suggested that this might not be an appropriate instruction under all circumstances. An example of an electronic device catching fire in the flight deck was given; moving the device would be important so as to prevent electronic instruments from being exposed to flames, smoke, or fire fighting agents. Clarifying that the device should only be moved to prevent an additional safety hazard was therefore proposed, along with instructions on how to move the device.

3.4.2.2 There was sympathy for the proposal, but members felt the wording needed to be strengthened. It was recalled that the recommendation at one time was to move the device. It became apparent that this was not always safe as it was not always possible to guarantee that a fire was completely out. The text, therefore, was changed to recommend people move away from the device.

3.4.2.3 A revised proposal which would make it clear that the device should only be moved if absolutely necessary would be prepared for DGP-WG/13.

3.5 **Agenda Item 5: Issues related to lithium batteries**

3.5.1 **Secondary Lithium Batteries (DGP-WG/12-WP/40)**

3.5.1.1 A new special provision was proposed to allow for the transport of lithium ion batteries larger than 35 kg on cargo aircraft without an approval as currently required pursuant to Special Provision A99. The provision would be restricted to one battery per package, and the package would be subject to all requirements in the Instructions in addition to some specific requirements such as Packing Group I performance requirements, fire and flame resistant packaging, and specific marking and documentation requirements. The working group was asked to consider incorporating this special provision in the 2013-2014 Edition of the Technical Instructions by way of an addendum.

3.5.1.2 There was general support for the amendment in that it would provide a uniform way of transporting what was now being transported through State approvals. It was felt, however, that the amendment was not yet mature enough to be incorporated in the Instructions. Some of the concerns raised were:

- a) Some of the terms used (e.g. impact resistant, fire and flame resistant, non-combustible) were not clearly defined; this would cause the potential for confusion and a lack of consistency in implementation.
- b) Whether or not the maximum size permitted (400 kg) was appropriate would need to be considered. It was questioned whether there was a need for this large a battery. Some felt a lower limit, based on current experience with approvals, should be established. The size could be adjusted in the future based on new data and new experience.
- c) Reduced state of charge was not included as a requirement in the special provision and some members felt it should be. A lower state of charge provided an extra level of safety.

3.5.1.3 In addressing the concerns raised, the presenter explained that these batteries were robust and constructed to extremely high standards. They were designed to be safe at 100% state of charge. The maximum size was based on Packing Group I packaging types; there was much experience in the industry with batteries above 150 kg and it was felt that larger batteries would still be safe based on the high safety standards they were required to meet.

3.5.1.4 A representative from the battery industry convened a lunchtime working group meeting to discuss the issues raised in DGP-WG/12-WP/40. The group agreed to establish a correspondence working group, distribute information on Special Provision A99 approvals issued by competent authorities and begin developing a new proposal for DGP-WG/13.

3.5.2 **Application of Provisions for Lithium Batteries (DGP-WG/12-WP/45)**

3.5.2.1 The working group was reminded of the new provisions in Part 2;9.3 which required that lithium batteries must be manufactured under a quality management programme. Although references to this paragraph were added to the specific packing instructions for lithium batteries (Packing Instructions 965 to 970), none were added to other packing instructions which referenced lithium batteries

(i.e. Packing Instruction 950 for flammable liquid-powered vehicles, Packing Instruction 951 for flammable gas-powered vehicles and Packing Instruction 952 for battery-powered vehicles). Adding references to Part 2;9.3 in these packing instructions was therefore proposed. The amendment was agreed subject to a minor editorial revision.

3.5.2.2 It was also noted that the paragraph specifying the requirements for lithium batteries in Packing Instruction 952 (assigned to UN 3171) made reference to “equipment” containing lithium batteries. Recognizing that Special Provision A21 was assigned to UN 3171 and that this special provision required equipment powered only by lithium batteries to be consigned under UN 3090 or UN 3481, it was proposed that the reference to equipment be deleted. This was agreed.

**3.5.3 Packing Instructions 966, 967, 969 and 970
(DGP-WG/12-WP/7) and Lithium Ion and Lithium Metal
Button Cells Installed in Equipment (DGP-WG/12-WP/51)**

3.5.3.1 The meeting was reminded of the exception in Section II of Packing Instructions 967 (lithium ion batteries contained in equipment) and 970 (lithium metal batteries contained in equipment) whereby button cell batteries installed in equipment did not need to be considered in determining whether a lithium battery handling label needed to be applied. It was queried whether this exception also applied to the other lithium battery packing instructions and that if it did, this should clearly be stated.

3.5.3.2 A representative from the battery industry explained that the vast majority of lithium button cell batteries were non-rechargeable lithium metal and were found in thousands of electronic and electrical devices. They were generally designed to provide backup power for real time clocks and BIOS configuration data in devices such as cellular phones, computers, printers, watches and calculators. He explained that they contained a very small amount of lithium metal and suggested that when installed in equipment, they presented virtually no risk in transportation. He also explained that it was often impossible for shippers to know if equipment contained a button cell battery.

3.5.3.3 The meeting was asked to consider adding a note to the end of the additional requirements in Section II of Packing Instructions 966, 967, 969 and 970 to clearly state that the lithium battery handling label, documentation and air waybill requirements did not apply to button cell batteries installed in equipment or on circuit boards.

3.5.3.4 There was support for the proposal in that it clarified the original intent of the provisions. The effectiveness of including the text in a note was questioned, and it was suggested it be included as a separate bullet under the additional requirements of Section II in Packing Instructions 967 and 970. A revision to the proposal specifying that the exception did not apply to button cell batteries which were not the primary power source to operate the equipment was not supported, as this would conflict with the existing exceptions in Packing Instructions 967 and 970 for devices such as radio frequency identification tags, watches and temperature loggers.

3.5.3.5 A new proposal based on the discussion would be prepared for DGP-WG/13.

**3.5.4 30-Day Transition Period for New Lithium Battery
Regulations (DGP-WG/12-WP/52)**

3.5.4.1 A transition period for the new lithium battery provisions was proposed. It was reported that large quantities of lithium batteries currently qualified for the exceptions in Section II of Packing Instructions 965 and 968. Starting 1 January 2013, many of these would be subject to full regulation. It was expected that a large amount would be offered for transport in December 2012 under the current exceptions but would not reach their final destination until January 2013 when the exceptions would no

longer apply. The working group was asked to consider an addendum to the 2013-2014 Edition allowing for a thirty-day transition period for batteries shipped in December 2012.

3.5.4.2 It was generally felt that current practices would allow for shipments offered for transport under the 2011-2012 exceptions to be accepted in January 2013. But some members felt a transition period in January 2013 should be provided, recognizing that it would take some time for shippers to familiarize themselves with the new requirements. This would be especially true of shippers who were currently shipping under the exceptions and might never have been exposed to dangerous goods regulations.

3.5.4.3 It was agreed that a thirty-day transitional period would be recommended through a guidance document on the ICAO public website.

3.5.4.4 Noting that a transition period had been introduced when other significant changes were introduced into the Instructions in the past, it was suggested that the meeting develop criteria and a mechanism for considering transition periods for future editions of the Technical Instructions.

3.5.5 Hazard Communication for Energy Storage Devices (DGP-WG/12-WP/53)

3.5.5.1 The working group was informed of discussions at the 41st Session of the UN Sub-Committee on hazard communication related to energy storage devices. Discussions were based on a paper presented by the DGP Secretary informing the Sub-Committee of concerns raised at the DGP Working Group of the Whole on Lithium Battery Meeting (DGP-WG/LB/1) that the hazard labels on packages containing lithium batteries did not provide appropriate hazard communication. The Sub-Committee agreed that hazard communication for energy devices would be considered during the next biennium.

3.5.5.2 The working group was asked to form a working group tasked with developing material for consideration at the 43rd Session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods. Recognizing that the deadline for submission of working papers to the UN for consideration was 27 March 2013 and that the Spring DGP working group of the whole meeting might only take place after this date, it was proposed that this working group meet through correspondence.

3.6 Agenda Item 6: Resolution, where possible, of the non-recurrent work items identified by Air Navigation Commission or the Dangerous Goods Panel

Agenda item 6.1: Competency-based training

3.6.1 Competency Framework for Operators (DGP-WG/12-WP/27) and Competency Framework for Designated Postal Operators (DGP-WG/12-WP/41)

3.6.1.1 The working group was informed of the progress made in developing competency frameworks for designated postal operators (DPOs) and for operators at the DGP Working Group on Training (Montreal, 13 to 16 August 2012). The chairman of the working group reported that the focus of its work at that meeting was on developing a mature competency framework for designated postal operators. Although the group completed a framework for DPOs, it was recognized that this was a living document that could be modified based on work between CAAs and DPOs. The framework for operators was an initial draft.

3.6.1.2 The working group was invited to review the frameworks and to provide comments to the chairman of the training working group. A more mature framework for operators would be prepared for DGP-WG/13.

3.6.1.3 One member noted discussions in her State on how to systematically relate the training tables in Part 1;4 of the Technical Instructions to the competency frameworks. A training officer from the ICAO Secretariat recommended the development of guidance material explaining how to build a training programme using the two. This would be considered by the DGP Working Group on Training.

3.6.1.4 The meeting expressed its thanks to Mr. Teun Muller, the chairman of the working group on training, and its appreciation for the work done.

Agenda Item 6.2: Incident data collection

3.6.2 Dangerous Goods Incident and Accident Collection and Reporting System (DGP-WG/12-WP/24)

3.6.2.1 Guidance was sought from the working group on developing an ICAO dangerous goods incident reporting system. The Secretary reported that ICAO was placing considerable importance on data collection and analysis in support of safety management systems (SMS). During the Air Navigation Commission's review of the DGP/23 Report and the Report of the DGP Working Group of the Whole on Lithium Batteries, the Secretariat was asked to consider developing a dangerous goods incident reporting system with standardized methods and procedures for gathering and coordinating data.

3.6.2.2 There was strong support for the development of a global database system. There were concerns related to confidentiality, but the group was optimistic these could be addressed. The intent of the system would be to improve safety and not to punish. It was understood that the system would do more than simply collect data; it would provide information to identify risks. It was noted that identifying risks and eliminating them was key to SMS. Without information, risks would never be identified.

3.6.2.3 Identifying the needs and the scope would be the first step towards developing a global system. Recognizing that the needs of the global system might differ from the needs within a more localized system was important.

3.6.2.4 A demonstration of a reporting system developed and used in one State was provided to the panel. Other members described similar systems in their States. Members who had not already done so were encouraged to share designs of incident reporting systems used within their States. The group was encouraged by the amount of relevant information which already existed in some States and the potential for sharing it. It was recognized that this would be difficult for some unless a clear policy for maintaining confidentiality was developed.

3.6.2.5 Work on the system would continue through correspondence. A progress report would be presented at DGP-WG/13.

Agenda Item 6.3: State of overflight involvement in the exemption process

3.6.3 State of Overflight in the Exemption Process (DGP-WG/12-WP/18)

3.6.3.1 The working group was asked to revisit the subject of State of Overflight in the exemption process. This was discussed at length at DGP/23, at the Working Group of the Whole on Lithium Batteries Meeting, and through correspondence after those meetings. For ease of reference, the

proposals presented at the two meetings and through correspondence were presented to the working group. The meeting was asked to determine which of the proposals should be used as a basis for further discussion.

3.6.3.2 The meeting was also informed of ICAO's continuous monitoring approach (CMA) system and how it might support efforts to acquire and maintain an up-to-date list of appropriate authorities responsible for compliance with Annex 18. Not having this information was cited as a major hurdle in eliminating the difficulties encountered with obtaining exemptions from the State of Overflight.

3.6.3.3 The working group once again revisited many of the same issues. For some removing State of Overflight from the exemption process was the only solution, but most felt that this was not an option or at least something that should not be considered by a technical group such as the DGP. It was a legal issue which would need to be considered by legal experts. It was also suggested that the transport of dangerous goods by air was not the only aviation segment that needed to consider State of Overflight; it was felt that the issue should be considered on a wider scale.

3.6.3.4 The Secretary would report back to the ANC and seek guidance on whether another ICAO body could find a solution to the problem.

Agenda Item 6.4: Coordination with the Operations Panel with regard to Annex 6

3.6.4 Dangerous Goods Requirements for Annex 6 (DGP-WG/12-WP/42)

3.6.4.1 At DGP/23, the meeting was briefed by the Secretary of the Operations Panel (OPSP) on work being carried out by that panel to strengthen the relationship between Annex 6 — *Operation of Aircraft* and Annex 18 requirements. The work was prompted by safety oversight audits which revealed that some civil aviation authorities were not aware of the scope of their operational responsibilities for oversight of dangerous goods activities, particularly in relation to packers, shippers and handlers. DGP agreed to work with OPSP to develop dangerous goods material for Annex 6.

3.6.4.2 Since that time, a draft new chapter for Annex 6 had been developed which was presented to the Fourteenth Meeting of the OPSP (10 to 14 September 2012). The OPSP agreed to use the draft as a baseline for the development of a proposal for an amendment to Annex 6. It was agreed that a working group made up of OPSP would meet with DGP members to review the new chapter.

3.6.4.3 It was reported that the OPSP had nominated five members to work on a joint working group. The panel members nominated by Australia, Canada, Germany, the United Kingdom and IATA would make up the DGP portion of the joint working group.

3.6.4.4 It was noted that the next meeting of the OPSP would be in the fall of 2013. The joint working group would review the dangerous goods material for Annex 6 with the goal of developing a formal amendment proposal for that meeting. DGP members who were not part of the OPSP/DGP joint working group would be kept apprised of major developments throughout the process and their comments would be sought.

Agenda Item 6.5: Coordination with international organizations (e.g. UPU)

3.6.5 New Requirements for Designated Postal Operators (DGP-WG/12-WP/44)

3.6.5.1 Difficulties in interpreting the new provisions for dangerous goods in the post were reported; these were also raised during discussions on DGP-WG/12-WP/1 (see paragraph 3.1.1).

3.6.5.2 It was clear that the new requirement for CAA approval of DPO training programmes (Part 1;4.1.2) applied to all DPOs, regardless of whether they wished to accept lithium batteries in equipment in the mail. There were differences of opinion, however, in relation to whether all DPOs needed their procedures for controlling the introduction of dangerous goods in the mail approved. These issues were also raised during discussions on DGP-WG/12-WP/1 (see paragraph 3.1.1), and it was determined they would best be addressed through an ad hoc working group. The report of the group is presented in DGP-WG/12-IP/5.

3.6.5.3 Some members interpreted the provisions to mean that DPOs that did not have CAA approval would no longer be permitted to accept dangerous goods which were currently permitted in the mail. Others felt that the requirement for CAA approval only applied to those DPOs wanting to accept lithium batteries contained in equipment and that the note under 1;2.3.4 clarified this. Even if the latter was the case, it was acknowledged that it would be impossible to consider a DPO's procedures for controlling the introduction of lithium batteries in the mail without considering the procedures for controlling the introduction of *all* dangerous goods in the mail. Most agreed that CAA approval even for DPOs not electing to transport dangerous goods was essential. One member pointed out that having no controls for introducing dangerous goods by post was a danger to civil aviation and to postal operators.

3.6.5.4 It was also recognized that DPOs should already have systems in place to control the introduction of dangerous goods into air transport through the mail, based on the Universal Postal Convention and the recommendation in Annex 18 (paragraph 11.4). The approval process could therefore be considered a formalizing exercise.

3.6.5.5 Most agreed that in hindsight, a transition period for general DPO approval would have been helpful. However, it was recognized that any additional changes at this time would not be practicable. The most effective way forward would be through collaboration between ICAO and UPU and between CAAs and DPOs. In an effort to facilitate collaboration, the group developed guidance material which would be disseminated through a State letter and eventually in the Supplement to the Technical Instructions.

3.6.5.6 The working group was optimistic that collaborative efforts between all parties would impact positively on safety.

3.7 **Agenda Item 7: Other business**

3.7.1 **Guidance Material on Aircraft Fire Fighting and Rescue Procedures for Accidents Involving Dangerous Goods** (DGP-WG/12-WP/26)

3.7.1.1 The working group was invited to review guidance material on aircraft fire fighting and rescue procedures for accidents involving dangerous goods. The material was developed by ICAO's Rescue and Fire Fighting Working Group (RFFWG) for incorporation in the *Airport Services Manual*, Part 1 — *Rescue and Fire Fighting* (Doc 9137). Although it was agreed to review the material through correspondence following DGP/12, several preliminary comments were made:

- a) A reference to a NOTOC in paragraph 12.4.8 was made, but there was no explanation of what information was included with the NOTOC. It was suggested that this would be useful information and that an example could be given.
- b) References to hazard labels were also made, it was suggested examples of all should be provided.
- c) A careful review of paragraph 12.4.10.1 which dealt with dangerous goods loaded on cargo aircraft was needed.

The working group was asked to submit their comments by 30 November 2012.

3.7.2 **Cooperation with the Aviation Security Panel** (DGP-WG/12-WP/49)

3.7.2.1 The working group was informed of a letter sent to the chairmen of the Dangerous Goods and the Aviation Security (AVSEC) Panels by the ICAO Secretary General requesting the establishment of a small task force to develop guidance material on countering the potential use of dangerous goods, particularly those of high consequence, in an act of unlawful interference. The Secretary General's request was made following the review of the DGP/23 Report by the Council at which time the Council supported the President of the ANC's recommendation for increased coordination.

3.7.2.2 There was strong support for the establishment of this task force. The working group welcomed the opportunity to work more closely with AVSECP in order to strengthen the relationship between dangerous goods and security. It was suggested that a joint group should be established consisting of six DGP and six AVSECP members. Members who wished to be part of the group were invited to inform the Secretary.

APPENDIX

CONSOLIDATION OF AMENDMENTS TO THE TECHNICAL INSTRUCTIONS AGREED AT WG/12

FOREWORD

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DGP-WG/12-WP/36:

Part 1

GENERAL

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Chapter 3

GENERAL INFORMATION

Parts of this Chapter are affected by State Variation BE 1; see Table A-1

3.1 DEFINITIONS

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Net quantity. Either:

a) the mass or volume of the dangerous goods contained in a package excluding the mass or volume of any packaging material; or

b) the mass of an unpackaged article of dangerous goods (e.g. UN 3166).

For the purposes of this definition, “dangerous goods” means the substance or article as described by the proper shipping name shown in Table 3-1, e.g. for “Fire extinguishers”, the net quantity is the mass of the fire extinguisher. For articles packed with equipment or contained in equipment, the net quantity is the net mass of the article, e.g. for lithium ion batteries contained in equipment, the net quantity is the net mass of the lithium ion batteries in the package.

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Chapter 4

TRAINING

*Parts of this Chapter are affected by State Variations AE 2, BR 7, CA 18, HK 1;
see Table A-1*

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4.2 TRAINING CURRICULA

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DGP-WG/12-WP/4 and DGP-WG/12-WP/17

Table 1-4. Content of training courses

Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum	Shippers and packers		Freight forwarders			Operators and ground handling agents					Security staff	
	1	2	3	4	5	6	7	8	9	10	11	12
	Categories of staff											
General philosophy	x	x	x	x	x	x	x	x	x	x	x	x
Limitations	x		x	x	x	x	x	x	x	x	x	x
General requirements for shippers	x		x			x						
Classification	x	x	x			x						x
List of dangerous goods	x	x	x			x				x		
Packing requirements	x	x	x			x						
Labelling and marking	x	x	x	x	x	x	x	x	x	x	x	x
Dangerous goods transport document and other relevant documentation	x		x	x		x	x					
Acceptance procedures						x						
Recognition of undeclared dangerous goods	x	x	x	x	x	x	x	x	x	x	x	x
Storage and loading procedures					x	x		x		x		
Pilots' notification						x		x		x		
Provisions for passengers and crew	x	x	x	x	x	x	x	x	x	x	x	x
Emergency procedures	x	x	x	x	x	x	x	x	x	x	x	x

KEY CATEGORY

- 1 — Shippers and persons undertaking the responsibilities of shippers
- 2 — Packers
- 3 — Staff of freight forwarders involved in processing dangerous goods
- 4 — Staff of freight forwarders involved in processing cargo or mail (other than dangerous goods)
- 5 — Staff of freight forwarders involved in the handling, storage and loading of cargo or mail
- 6 — Operator's and ground handling agent's staff accepting dangerous goods
- 7 — Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)
- 8 — Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail and baggage
- 9 — Passenger handling staff
- 10 — Flight crew members, loadmasters and load planners
- 11 — Crew members (other than flight crew members)
- 12 — Security staff who are involved with the screening of passengers and their baggage and cargo or mail, e.g. security screeners, their supervisors and staff involved in implementing security procedures

Table 1-5. Content of training courses for operators not carrying dangerous goods as cargo or mail

Contents	Categories of staff				
	7 <u>13</u>	8 <u>14</u>	9 <u>15</u>	40 <u>16</u>	44 <u>17</u>
General philosophy	X	X	X	X	X
Limitations	X	X	X	X	X
Labelling and marking	X	X	X	X	X
Dangerous goods transport document and other relevant documentation	X				
Recognition of undeclared dangerous goods	X	X	X	X	X
Provisions for passengers and crew	X	X	X	X	X
Emergency procedures	X	X	X	X	X

KEY CATEGORY

~~7~~13— Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)

~~8~~14— Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo or mail (other than dangerous goods) and baggage

~~9~~15— Passenger handling staff

~~40~~16— Flight crew members, loadmasters and load planners

~~44~~17— Crew members (other than flight crew members)

Note 1.— Depending on the responsibilities of the person, the aspects of training to be covered may vary from those shown in Tables 1-4 and 1-5. For example, in respect of classification, staff involved in implementing security procedures (e.g. screeners and their supervisors) need only be trained in the general properties of dangerous goods.

Note 2.— The categories of personnel identified in Tables 1-4 and 1-5 are not all encompassing. Personnel employed by or interacting with the aviation industry in areas such as passenger and cargo reservation centres, and engineering and maintenance, except when acting in a capacity identified in Table 1-4 or 1-5, should be provided with dangerous goods training in accordance with 4.2.

4.2.8 Staff of designated postal operators must be trained commensurate with their responsibilities. The subject matter to which their various categories of staff should be familiar with is indicated in Table 1-6.

Table 1-6. Content of training courses for staff of designated postal operators

<i>Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum</i>	<i>Designated postal operators</i>		
	<u>Categories of staff</u>		
	A	B	C
General philosophy	x	x	x
Limitations	x	x	x
General requirements for shippers	x		
Classification	x		
List of dangerous goods	x		
Packing requirements	x		
Labelling and marking	x	x	x
Dangerous goods transport documents and other relevant documentation	x	x	
Acceptance of the dangerous goods listed in 1;2.3.2	x		
Recognition of undeclared dangerous goods	x	x	x
Storage and loading procedures			x
Provisions for passengers and crew	x	x	x
Emergency procedures	x	x	x

KEY CATEGORY

- A — Staff of designated postal operators involved in accepting mail containing dangerous goods
- B — Staff of designated postal operators involved in processing mail (other than dangerous goods)
- C — Staff of designated postal operators involved in the handling, storage and loading of mail

Note.— Guidance on the aspects of training to be covered by staff of designated postal operators can be found in S-1;3.

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Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

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Chapter 4

DANGEROUS GOODS IN LIMITED QUANTITIES

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4.1 APPLICABILITY

4.1.1 Limited quantities of dangerous goods may only be carried in accordance with the limitations and provisions of this chapter and must meet all the applicable requirements of the Technical Instructions unless otherwise provided for below.

4.1.2 Only dangerous goods which are permitted on passenger aircraft and which meet the criteria of the following classes, divisions and packing groups (if appropriate) may be carried under these provisions for dangerous goods in limited quantities:

DGP-WG/12-WP/10:

Class 2	Only UN 1950 in Divisions 2.1 and 2.2, UN 2037 in Divisions 2.1 and 2.2 without a subsidiary risk, UN 3478 (Fuel cell cartridges , containing liquefied flammable gas) and UN 3479 (Fuel cell cartridges , containing hydrogen in metal hydride)
Class 3	Packing Groups II and III <u>and UN 3473 (Fuel cell cartridges, containing flammable liquids)</u>
Division 4.1	Packing Groups II and III but excluding all self-reactive substances irrespective of packing group
Division 4.3	Packing Groups II and III, solids only <u>and UN 3476 (Fuel cell cartridges, containing water-reactive substances)</u>
Division 5.1	Packing Groups II and III
Division 5.2	Only when contained in a chemical kit or a first-aid kit
Division 6.1	Packing Groups II and III
Class 8	Packing Groups II and III <u>and UN 3477 (Fuel cell cartridges, containing corrosive substances)</u> but excluding UN 2794, UN 2795, UN 2803, UN 2809, UN 3028 and UN 3506.
Class 9	Only UN 1941, UN 1990, UN 2071, UN 3077, UN 3082, UN 3316, UN 3334, <u>and UN 3335 and ID 8000</u>

Note.— Many articles or substances, including the following, are NOT permitted under these limited quantity provisions:

- a) those permitted only on cargo aircraft;
- b) those in Packing Group I;
- c) those in Class 1 or 7 or Divisions 2.1 (~~other than aerosols~~ except as permitted above), 2.3 or 6.2;
- d) those in Division 4.2 or with a subsidiary risk 4.2.

4.1.3 The limitations and provisions of this chapter for the transport of dangerous goods in limited quantities apply equally to both passenger and cargo aircraft.

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Chapter 5

DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

Parts of this Chapter are affected by State Variation JP 23; see Table A-1

5.1 EXCEPTED QUANTITIES

5.1.1 Excepted quantities of dangerous goods of certain classes, other than articles, meeting the provisions of this chapter are not subject to any other provisions of these Instructions except for:

- a) the prohibition in post in 1;2.3;
- b) the definitions in 1;3;
- c) the training requirements in 1;4;
- d) the classification procedures and packing group criteria in Part 2;

DGP-WG/12-WP/28:

- e) the packaging requirements of 4;1.1.1, 4;1.1.3.1, [4;1.1.3.3](#), 4;1.1.5, 4;1.1.6, 4;1.1.7 and 4;1.1.8 (4;1.1.6 does not apply to UN 3082);
- f) the loading restriction in 7;2.1;
- g) the reporting requirements of dangerous goods accidents, incidents and other occurrences in 7;4.4 and 7;4.5; and
- h) the prohibition of dangerous goods in baggage in 8;1.1.

Note.— In the case of radioactive material, the requirements for radioactive material in excepted packages in 1;6.1.5 apply.

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Part 4

PACKING INSTRUCTIONS

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Chapter 4

CLASS 2 — GASES

...

DGP-WG/12-WP/13 and its Addendum:

Packing Instruction 216

Passenger and cargo aircraft for UN 3478 and 3479 (contained in equipment) only

...

ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
- Equipment must be securely cushioned in the outer packagings.
- Fuel cell systems must not charge batteries during transport.
- On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC 62282-6-100 Ed. 1, [including Amendment 1](#), or a standard approved by the appropriate authority of the State of Origin.

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Chapter 5

CLASS 3 — FLAMMABLE LIQUIDS

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Packing Instruction 375

Passenger and cargo aircraft for UN 3473 (contained in equipment) only

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ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
- Equipment must be securely cushioned in the outer packagings.
- Fuel cell systems must not charge batteries during transport.
- On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC 62282-6-100 Ed. 1, [including Amendment 1](#), or a standard approved by the appropriate authority of the State of Origin.

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Chapter 6

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES
LIABLE TO SPONTANEOUS COMBUSTION;
SUBSTANCES WHICH, IN CONTACT WITH WATER,
EMIT FLAMMABLE GASES

...

DGP-WG/12-WP/11:

Packing Instruction 473

Passenger and cargo aircraft for UN 1378 and UN 2881 only

General requirements

Part 4, Chapter 1 requirements must be met, including:

...

- 1) Compatibility requirements
 - Substances must be compatible with their packagings as required by 4;1.1.3.
- 2) Closure requirements
 - Closures must meet the requirements of 4;1.1.4.

SINGLE PACKAGINGS FOR PACKING GROUP III ONLY

[Cylinders](#)*Drums**Jerricans*[See 4;2.7](#)

Steel (1A1, 1A2)

Steel (3A1, 3A2)

...

DGP-WG/12-WP/13 and its Addendum:

Packing Instruction 496

Passenger and cargo aircraft for UN 3476 (contained in equipment) only

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ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
- Equipment must be securely cushioned in the outer packagings.
- The mass of each fuel cell cartridge must not exceed 1 kg.
- Fuel cell systems must not charge batteries during transport.
- On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC 62282-6-100 Ed. 1, [including Amendment 1](#), or a standard approved by the appropriate authority of the State of Origin.

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Chapter 10

CLASS 8 — CORROSIVE SUBSTANCES

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DGP-WG/12-WP/13 and its Addendum:

Packing Instruction 874

Passenger and cargo aircraft for UN 3477 (contained in equipment) only

...

ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation.
- Equipment must be securely cushioned in the outer packagings.
- The mass of each fuel cell cartridge must not exceed 1 kg.
- Fuel cell systems must not charge batteries during transport.
- On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC 62282-6-100 Ed. 1, [including Amendment 1](#), or a standard approved by the appropriate authority of the State of Origin.

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DGP-WG/12-WP/45:

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

Parts of this Chapter are affected by State Variation US 2; see Table A-1

Packing Instruction 950

Passenger and cargo aircraft for UN 3166 only
(See Packing Instruction 951 for flammable gas-powered vehicles and engines or
Packing Instruction 952 for battery-powered equipment and vehicles)

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ADDITIONAL PACKING REQUIREMENTS

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Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the ~~UN Manual of Tests and Criteria, Part III, subsection 38.3~~ meet the provisions of Part 2.9.3.1, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

...

Packing Instruction 951

Cargo aircraft only for UN 3166 only
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or
Packing Instruction 952 for battery-powered equipment and vehicles)

...

ADDITIONAL PACKING REQUIREMENTS

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Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed, they must be of a type that has successfully passed the tests specified in the ~~UN Manual of Tests and Criteria, Part III, subsection 38.3~~ meet the provisions of Part 2.9.3.1, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

...

Packing Instruction 952

Passenger and cargo aircraft for UN 3171 only
(See Packing Instruction 950 for flammable liquid-powered vehicles and engines or
Packing Instruction 951 for flammable gas-powered vehicles and engines)

...

Batteries

All batteries must be installed and securely fastened in the battery holder of the vehicle, machine or equipment and must be protected in such a manner so as to prevent damage and short circuits. In addition:

- 1) if spillable batteries are installed, and it is possible for the vehicle, machine or equipment to be handled in such a way that batteries would not remain in their intended orientation, they must be removed and packed according to Packing Instruction 492 or 870 as applicable;
- 2) if lithium batteries are installed in a vehicle, they must be of a type that has successfully passed the tests specified in the ~~UN Manual of Tests and Criteria, Part III, subsection 38.3~~ meet the provisions of Part 2.9.3.1, unless otherwise approved by the appropriate authority of the State of Origin, must be securely fastened in the vehicle, machinery or equipment and must be protected in such a manner so as to prevent damage and short circuits; and
- 3) if sodium batteries are installed they must conform to the requirements of Special Provision A94.

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DGP-WG/12-WP/22:

Packing Instruction Y963

Passenger and cargo aircraft for ID 8000 only

Consumer commodities are materials that are packaged and distributed in a form intended or suitable for retail sale for the purposes of personal care or household use. These include items administered or sold to patients by doctors or medical administrations. Except as otherwise provided below, dangerous goods packed in accordance with this packing instruction do not need to comply with 4;1 or Part 6 of these Instructions; they must, however, comply with all other applicable requirements.

- a) Each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transport.
- b) Inner packagings that are breakable (such as earthenware, glass or brittle plastic) must be packed to prevent breakage and leakage under conditions normally incident to transport. ~~These completed packagings~~ Each package offered for transport must be capable of withstanding a 1.2 m drop on solid concrete in the position most likely to cause damage. The criteria for passing the test is that the outer packaging must not exhibit any damage liable to affect safety during transport and there must be no leakage from the inner packaging(s). Each package offered for transport must be capable of withstanding, without breakage or leakage of any inner packaging and without significant reduction of effectiveness, a force applied to the top surface for a duration of 24 hours equivalent to the total weight of identical packages if stacked to a height of 3 m (including the test sample).

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DGP-WG/12-WP/32:

Part 5

SHIPPER'S RESPONSIBILITIES

Chapter 1

GENERAL

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1.1 GENERAL REQUIREMENTS

Before a person offers any package or overpack of dangerous goods for transport by air, that person must ensure that:

- a) the articles or substances are not forbidden for transport by air (see Part 1, Chapter 2);
- b) the goods are properly classified, marked and labelled and otherwise in a condition for transport as required by these Instructions;
- c) the dangerous goods are packaged in compliance with all the applicable air transport requirements including:
 - inner packaging and the maximum quantity per package limits;
 - appropriate types of packaging according to the packing instructions;
 - other applicable requirements indicated in the packing instructions including:

- single packagings may be forbidden;
- only inner and outer packagings indicated in the packing instructions are permitted;
- inner packaging may need to be packed in intermediate packagings; and
- certain dangerous goods must be transported in packagings meeting a higher performance level.

- appropriate closure procedures for inner and outer packagings (see 4;1.1.4);

- the compatibility requirements such as those in the particular packing requirements of the packing instructions and in Part 4, Chapter 1;

- the absorbent material requirements in the packing instructions when applicable; and

- the pressure differential requirement in 4;1.1.6.

- d) the dangerous goods transport document has been properly executed and the declaration signed;

- ~~e) an overpack is used for packages bearing the “Cargo aircraft only” label only if:~~
 - ~~1) the packages are assembled in such a way that clear visibility and easy access to them is possible; or~~
 - ~~2) the packages are not required to be accessible under 7;2.4.1; or~~
 - ~~3) not more than one package is involved;~~

- fe)** the overpack does not contain packages of dangerous goods which require segregation according to Table 7-1;

- gf)** when an overpack is used, packages must be secured within the overpack;

- hg)** the dangerous goods are not included in any freight container/unit load device except for radioactive material as specified in 7;2.9 (subject to the approval of the operator, this does not apply to a unit load device containing consumer commodities prepared according to Packing Instruction Y963 or dry ice used as a refrigerant for other than dangerous goods when prepared according to Packing Instruction 954 or magnetized material when prepared according to Packing Instruction 953);

- ih)** before a package or overpack is reused, all inappropriate dangerous goods labels and markings are removed or completely obliterated;

- ji)** each package contained within an overpack is properly packed, marked, labelled and is free of any indication that its integrity has been compromised and in all respects is properly prepared as required in these Instructions. The “overpack” marking described in 2.4.10 is an indication of compliance with this requirement. The intended function of each package must not be impaired by the overpack; and

- ki)** packages and overpacks containing dangerous goods are offered to the operator separately from cargo which is not subject to these Instructions, except as provided for in 7;1.4.1.

Note 1.— Packages and overpacks containing dangerous goods may be included on the same air waybill as cargo which is not subject to these Instructions.

Note 2.— The requirement in 1.1 k) also applies to consolidated shipments offered to the operator.

Note 3.— For cooling purposes, an overpack may contain dry ice, provided that the overpack meets the requirements of Packing Instruction 954.

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DGP-WG/12-WP/5:

Chapter 3

LABELLING

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3.5 LABEL SPECIFICATIONS

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3.5.2 Handling labels

3.5.2.1 Handling label specifications

An illustration of each of the handling labels showing the approved design and colour is given in Figures 5-24 to 5-26 and Figures 5-28 to 5-31. The minimum label dimensions are shown in the figures. Where dimensions or features are not specified, these must be in approximate proportion to those shown; however:

- a) labels having dimensions not smaller than half of those indicated may be used on packages containing infectious substances when the packages are of dimensions such that they can only bear smaller labels; and
- b) orientation labels may meet the specification of either Figure 5-26 or ISO Standard 780:1997.

3.5.2.2 Lithium battery handling label

Packages containing lithium batteries that meet the requirements of Section II of Packing Instructions 965 to 970 must bear a "Lithium battery" handling label shown in Figure 5-31, as required by the applicable packing instruction. The label must be a minimum dimension of 120 mm wide x 110 mm high except labels of ~~74~~105 mm wide x ~~40~~74 mm high may be used on packages containing lithium batteries where the packages are of dimensions such that they can only bear smaller labels. When the reduced size label is used, the label features must be in approximate proportion to those shown on the full-size label (Figure 5-31). The label must show "Lithium metal batteries" or "Lithium ion batteries", as applicable. Where the package contains both types of batteries, the label must show "Lithium metal and lithium ion batteries". Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 and 968 must bear both a "Lithium battery" handling label shown in Figure 5-31 and a Class 9 hazard label (Figure 5-23).

...

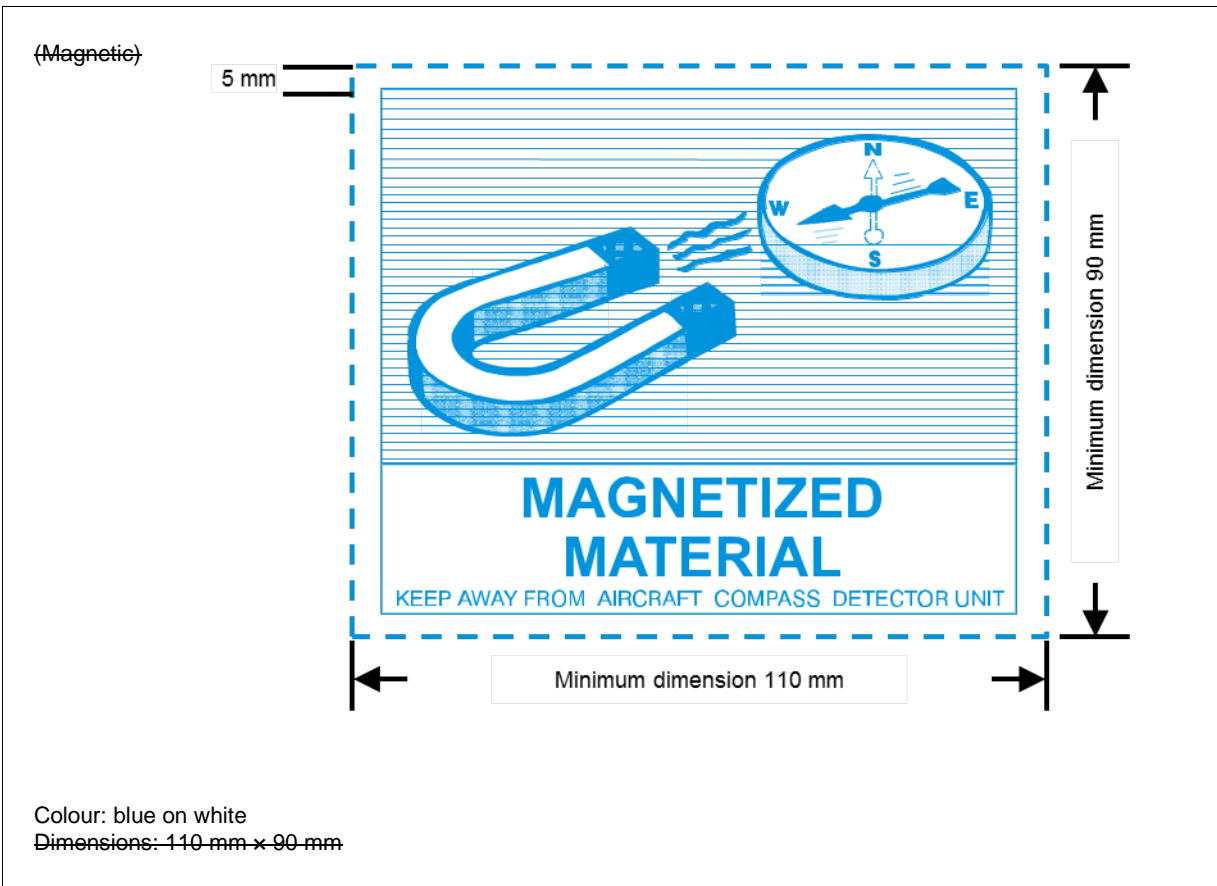


Figure 5-24. Magnetized material



Figure 5-25. Cargo aircraft only

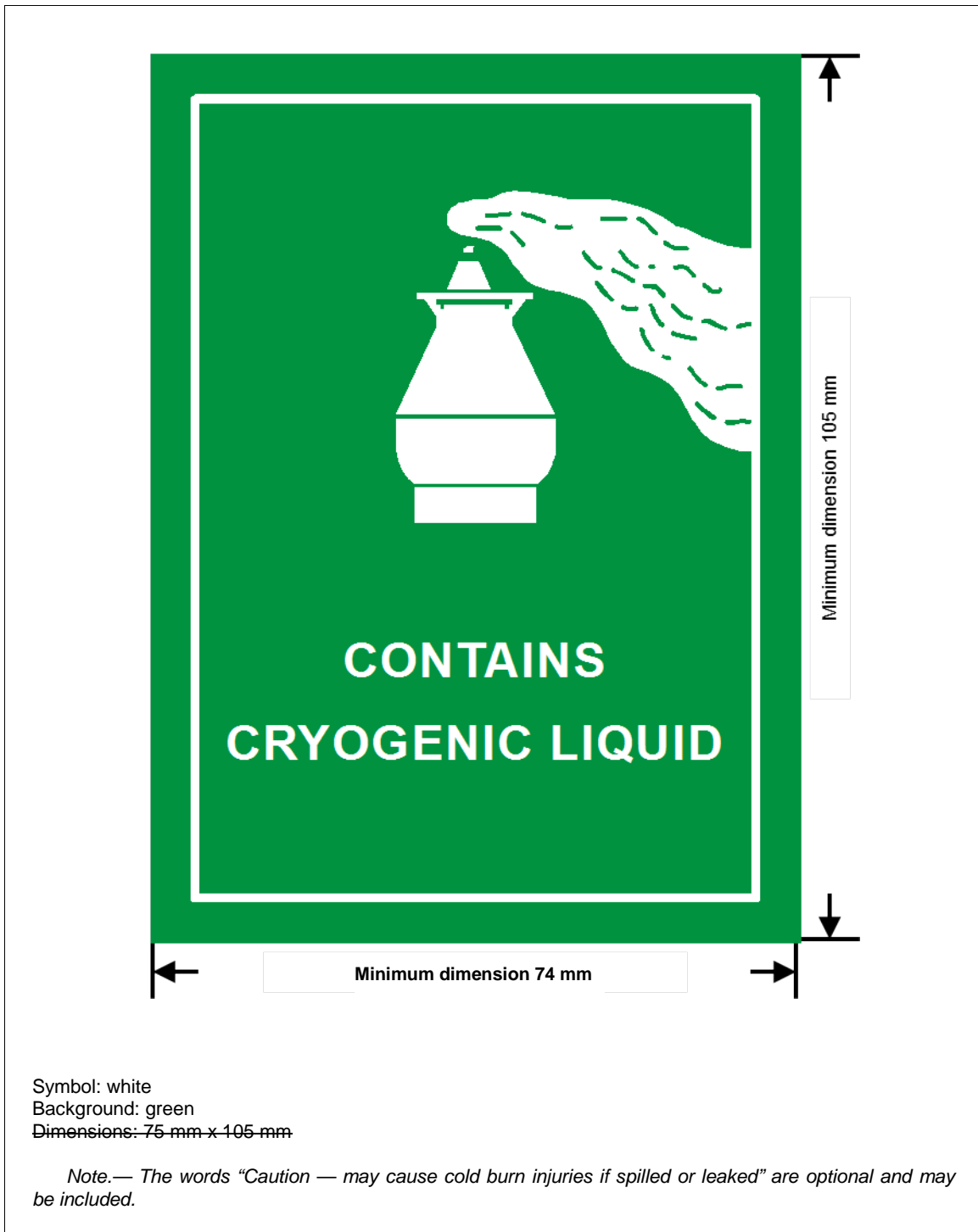


Figure 5-28. Cryogenic liquid label

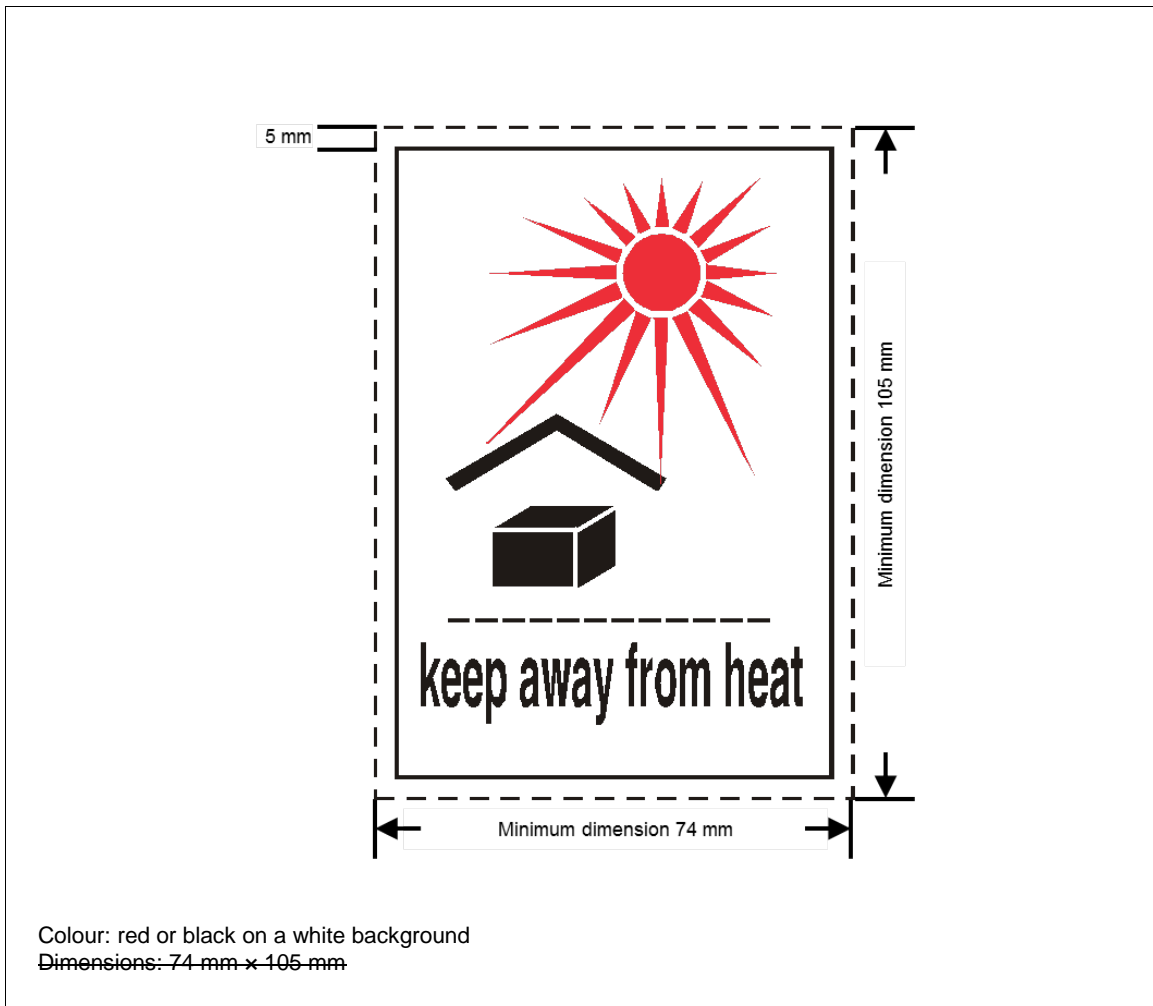


Figure 5-29. Keep away from heat

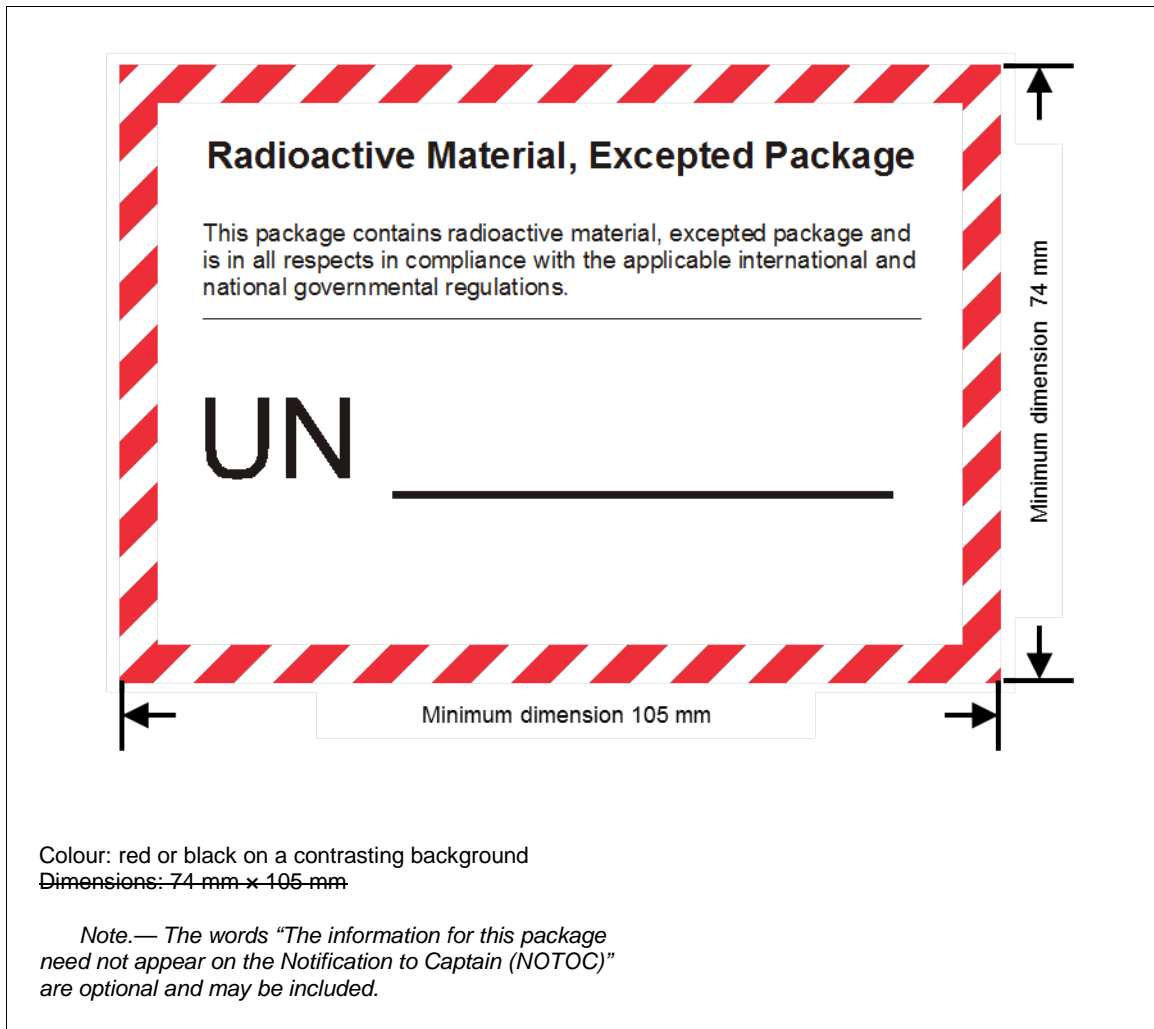


Figure 5-30. Radioactive material, excepted package



Figure 5-31. Lithium battery handling label

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DGP-WG/12-WP/31:

Part 7

OPERATOR'S RESPONSIBILITIES

...

Chapter 1

ACCEPTANCE PROCEDURES

...

1.3 THE ACCEPTANCE CHECK

1.3.1 ~~An operator must not accept for transport aboard an aircraft~~ Before a consignment consisting of a package or overpack containing dangerous goods ~~or~~ a freight container containing radioactive material or a unit load device or other type of pallet containing dangerous goods as described in 1.4 ~~unless~~ is first accepted for carriage by air the operator ~~has~~ must, by use of a checklist, ~~verify~~ verify the following:

...

DGP-WG/12-WP/32:

- ~~j) an overpack does not contain packages bearing the "Cargo aircraft only" label unless:~~
 - ~~1) the packages are assembled in such a way that clear visibility and easy access to them is possible; or~~
 - ~~2) the packages are not required to be accessible under 7.2.4.1; or~~
 - ~~3) not more than one package is involved;~~

DGP-WG/12-WP/31:

Note 1.— Minor discrepancies, such as the omission of dots and commas in the proper shipping name appearing on the transport document or on package markings, or minor variations in hazard labels which do not affect the obvious meaning of the label, are not considered as errors if they do not compromise safety and should not be considered as reason for rejecting a consignment.

Note 2.— Where packages are contained in an overpack or freight container, as permitted by 1.4, the checklist should establish the correct marking and labelling of such an overpack or other type of pallet or freight container and not the individual packages contained in them. Where packages are contained in a unit load device, as permitted by 1.4.1, the checklist should not require the checking of packages individually for the correct marking and labelling.

Note 3.— An acceptance check is not required for dangerous goods in excepted quantities and radioactive material in excepted packages.

Note 4.— Although the acceptance check required in 1.3.1 is only required to be conducted when a consignment of dangerous goods is first accepted for carriage by air, the operator of any subsequent aircraft used as part of the same journey should verify that packages, overpacks, freight containers and unit load devices continue to meet the requirements of these Instructions in respect of marking, labelling and inspection for damage.

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Chapter 4

PROVISION OF INFORMATION

...

4.1 INFORMATION TO THE PILOT-IN-COMMAND

4.1.1 As early as practicable before departure of the aircraft, but in no case later than when the aircraft moves under its own power, the operator of an aircraft in which dangerous goods are to be carried must:

- a) provide the pilot-in-command with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo; and
- b) from 1 January 2014, provide personnel with responsibilities for operational control of the aircraft (e.g. the flight operations officer, flight dispatcher, or designated ground personnel responsible for flight operations) with the same information that is required to be provided to the pilot-in-command (e.g. a copy of the written information provided to the pilot-in-command). Each operator must specify the personnel (job title or function) to be provided this information in their operations manual and/or other appropriate manuals.

...

Except as otherwise provided, this information must include the following:

- a) the air waybill number (when issued);
- b) the proper shipping name (~~supplemented with the technical name(s) if appropriate~~ **(the technical name(s) shown on the dangerous goods transport document is not required)** (see 3;1) and UN Number or ID number as listed in these Instructions. When chemical oxygen generators contained in protective breathing equipment (PBE) are being transported under Special Provision A144, the proper shipping name of "oxygen generator, chemical" must be supplemented with the statement "Aircrew protective breathing equipment (smoke hood) in accordance with Special Provision A144".

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Part 8

**PROVISIONS CONCERNING
PASSENGERS AND CREW**

Chapter 1

**PROVISIONS FOR DANGEROUS GOODS
CARRIED BY PASSENGERS OR CREW**

...

TABLE 8-1. PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

<i>Items or articles</i>	<i>Location</i>			Approval of the operator(s) is required	The pilot-in-command must be informed	<i>Restrictions</i>
	Checked baggage	Carry-on baggage	On the person			

...

DGP-WG/12-WP/33:

Consumer articles

18) ...

Small cartridges for other devices

Yes

Yes

Yes

Yes

No

- a) no more than four small cylinders of carbon dioxide or other suitable gas in Division 2.2, without subsidiary risk, per person; and
- b) the water capacity of each cylinder must not exceed 50 mL.

Note.— For carbon dioxide, a gas cylinder with a water capacity of 50 mL is equivalent to a 28 g cartridge.

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DGP-WG/12-WP/13 and its Addendum:

20)	Fuel cells used to power portable electronic devices (for example, cameras, cellular phones, laptop computers and camcorders)	No	Yes	Yes	No	No	...
	Spare fuel cell cartridges	Yes	Yes	Yes	No	No	
≠							d) each fuel cell and each fuel cell cartridge must conform to IEC 62282-6-100 Ed. 1, <u>including Amendment 1</u> , and must be marked with a manufacturer's certification that it conforms to the specification. In addition, each fuel cell cartridge must be marked with the maximum quantity and type of fuel in the cartridge;
≠							h) interaction between fuel cells and integrated batteries in a device must conform to IEC 62282-6-100 Ed. 1, <u>including Amendment 1</u> . Fuel cells whose sole function is to charge a battery in the device are not permitted;
							...

— END —