



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)**

**TWENTY-SIXTH MEETING**

**Montréal, 16 to 27 October 2017**

**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 2019-2020 Edition**

**DRAFT AMENDMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS — PART 7**

(Presented by the Secretary)

**SUMMARY**

This working paper contains draft amendments to Part 7 of the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its eighth session (Geneva, 9 December 2016). It also reflects amendments agreed by DGP-WG/16 (Montréal, 17 to 21 October 2016) and DGP-WG/17 (Montréal, 24 to 28 April 2017).

The DGP is invited to agree to the draft amendments in this working paper.

## Part 7

### OPERATOR'S RESPONSIBILITIES

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DGP-WG/17 (see paragraph 3.5.1.1 of DGP/26-WP/3)

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#### Chapter 1

#### ACCEPTANCE PROCEDURES

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##### 1.7 CONDUCTING SAFETY RISK ASSESSMENTS

1.7.1 Operators engaged in commercial air transport operations should include a safety risk assessment process for the transport of dangerous goods as part of their approved safety management system to comply with Annexes 6 — *Operation of Aircraft* and 19. This safety risk assessment should include appropriate information to result in implementation of safety measures that ensure the safe transport of dangerous goods including lithium batteries and cells as cargo.

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The ANC considered DGP-WG/17's request to incorporate the following amendment in the 2017-2018 Edition of the Technical Instructions by way of an addendum (DGP-WG/17-WP/3, paragraph 3.5.1.1). The ANC concluded that the text as written should not be added to the Technical Instructions as this requirement was already covered by Annex 19. It asked the Secretariat to seek guidance from the DGP through correspondence on whether the provision should be expanded to refer specifically to security restrictions (see DGP-WG/17-WP/3, paragraph 3.5.1.1 for background information on the original proposal). The majority of members who responded to the Secretariat request did not support adding a reference to security restrictions for the reasons discussed at DGP-WG/17 (see DGP/25-WP/3, paragraph 3.5.1.1). Based on this feedback, the ANC concluded that the amendment should not be adopted.

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~~— 1.7.2 — Operators should undertake a safety risk assessment when there is a change in the operational environment.~~

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#### Chapter 2

#### STORAGE AND LOADING

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##### 2.2 INCOMPATIBLE DANGEROUS GOODS

###### 2.2.1 Segregation

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UN Model Regulations, 7.1.2.3 c) (see ST/SG/AC.10/44/Add.1) and DGP-WG/17 (see paragraph 3.5.3.1 of DGP/26-WP/3)

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2.2.1.1 Packages containing dangerous goods which might react dangerously one with another must not be stowed on an aircraft next to each other or in a position that would allow interaction between them in the event of leakage. As a minimum, the segregation scheme shown in Table 7-1 must be followed in order to maintain acceptable segregation between packages containing dangerous goods having different hazards. The scheme applies irrespective of whether the hazard is the primary or subsidiary-risk hazard.

2.2.1.2 Packages and overpacks containing lithium ion batteries prepared in accordance with Section IA or Section IB of Packing Instruction 965 and packages and overpacks containing lithium metal batteries prepared in accordance with Section IA or Section IB of Packing Instruction 968 must not be stowed on an aircraft next to, or in a position that would allow interaction in the event of [damage/fire] with packages or overpacks containing dangerous goods which bear a

Class 1, other than Division 1.4S, Division 2.1, Class 3, Division 4.1 or Division 5.1 hazard label. To maintain acceptable segregation between packages and overpacks, the segregation requirements shown in Table 7-1 must be observed. The segregation requirements apply based on all hazard labels applied on the package or overpack, irrespective of whether the hazard is the primary or subsidiary risk.

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**2.2.2 Separation of explosive substances and articles**

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DGP-WG/16 (see paragraph 3.2.7.7 of DGP/26-WP/2):

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~~2.2.2.4 Except as provided for in 2.2.2.5, explosives of different compatibility groups may be stowed together whether or not they belong to the same division.~~

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DGP-WG/16 (see paragraph 3.2.7.6 of DGP/26-WP/2) (para numbering changed consequential to deletion of 2.2.2.4 above):

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~~2.2.2.5~~ 2.2.2.4 For explosives of different division numbers and compatibility groups, the ~~segregation~~-separation scheme shown in Table 7-2 must be followed in order to maintain acceptable distances between such packages.

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DGP-WG/17 (see paragraphs 3.2.7.1 and 3.5.3.1 of DGP/26-WP/3):

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**Table 7-1. Segregation between packages**

Hazard label	Class or division										
	1	<u>2.1</u>	<u>2.2, 2.3</u>	3	<u>4.1</u>	4.2	4.3	5.1	5.2	8	<sup>9</sup> <u>see 2.2.1.2</u>
1	Note 1	Note 2	<u>Note 2</u>	Note 2	<u>Note 2</u>	Note 2	<u>Note 2</u>				
<u>2.1</u>	Note 2	—	=	—	=	—	—	—	—	—	x
<u>2.2, 2.3</u>	<u>Note 2</u>	=	=	=	=	=	=	=	=	=	=
3	Note 2	—	=	—	=	—	—	x	—	—	x
<u>4.1</u>	<u>Note 2</u>	=	=	=	=	=	=	=	=	=	x
4.2	Note 2	—	=	—	=	—	—	x	—	—	=
4.3	Note 2	—	=	—	=	—	—	—	—	x	=
5.1	Note 2	—	=	x	=	x	—	—	—	—	x
5.2	Note 2	—	=	—	=	—	—	—	—	—	=
8	Note 2	—	=	—	=	—	x	—	—	—	=
<sup>9</sup> <u>see 2.2.1.2</u>	<u>Note 2</u>	x	—	x	x	—	—	x	—	—	=

An “x” at the intersection of a row and column indicates that packages containing these classes of dangerous goods may not be stowed next to or in contact with each other, or in a position which would allow interaction in the event of leakage of the contents. Thus, a package containing Class 3 dangerous goods may not be stowed next to or in contact with a package containing Division 5.1 dangerous goods.

*Note 1.— See 2.2.2.2 through 2.2.2.5.*

*Note 2.— This class or division must not be stowed together with explosives other than those in Division 1.4, Compatibility Group S.*

*Note 3.— Packages containing dangerous goods with multiple hazards in the class or divisions which require segregation in accordance with Table 7-1 need not be segregated from other packages bearing the same UN number.*

*Note 4.— UN 3528, **Engines, internal combustion, flammable liquid powered, Engines, fuel cell, flammable liquid powered, Machinery internal combustion, flammable liquid powered and Machinery, fuel cell, flammable liquid powered** need not be segregated from packages containing dangerous goods in Division 5.1.*

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## 2.4 LOADING AND SECURING OF DANGEROUS GOODS

### 2.4.1 Loading of cargo aircraft

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DGP-WG/16 (see paragraph 3.2.7.4 of DGP/26-WP/2):

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2.4.1.2 The requirements of 2.4.1.1 a), b or c) do not apply to:

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Alignment with the UN agreement that the word “risk” was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word “hazard” (see ST/SG/AC.10/C.3/98).

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- a) flammable liquids (Class 3), Packing Group III, other than those with a subsidiary ~~risk~~ hazard of Class 8;
- b) toxic substances (Division 6.1) with no subsidiary ~~risk~~ hazard other than Class 3;
- c) infectious substances (Division 6.2);
- d) radioactive material (Class 7);
- e) miscellaneous dangerous goods (Class 9).

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DGP-WG/17 (see paragraph 3.2.7.2 of DGP/26-WP/3):

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*Note — When transporting goods in a non-pressurized cargo ~~hold~~ compartment, there will be a large pressure differential up to 75 kPa at cruise altitudes. Packages that are filled at a normal atmospheric pressure may not be capable of withstanding this pressure differential. Confirmation of the suitability of the packagings from the shipper should be obtained.*

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## 2.9 SPECIAL PROVISIONS APPLICABLE TO THE CARRIAGE OF RADIOACTIVE MATERIAL

### 2.9.1 LIMITATION OF EXPOSURE OF PERSONS TO RADIATION

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### 2.9.3 STOWAGE DURING TRANSPORT AND STORAGE IN TRANSIT

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2.9.3.3 Loading of freight containers and accumulation of packages, overpacks and freight containers must be controlled as follows:

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DGP-WG/16 (see paragraph 3.2.7.6 of DGP/26-WP/2):

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- b) Where a consignment is transported under exclusive use, there is no limit on the sum of the transport indexes aboard a single aircraft, but the requirement on minimum ~~segregation~~-separation distances established in 2.9.6 applies;

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DGP-WG/17 (see paragraph 3.2.7.2 of DGP/26-WP/3):

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**2.12 LOADING OF UN 2211, POLYMERIC BEADS, EXPANDABLE OR  
UN 3314, PLASTICS MOULDING COMPOUND**

A total of not more than 100 kg net mass of expandable polymeric beads (or granules), or plastic moulding materials, referenced to Packing Instruction 957, may be carried in any inaccessible ~~hold~~ cargo compartment on any aircraft.

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UN Model Regulations, 7.1.5 and 7.1.6 (see ST/SG/AC.10/44/Add.1)

The UN Model Regulations have extensive provisions on temperature control with respect to transport operations in 7.1.5. The Technical Instructions contain only the following provisions (amendments proposed are in alignment with changes to the Model Regulations). DGP is invited to consider whether some of the provisions in the UN Model Regulations should be included in the Supplement as guidance when issuing exemptions.

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**2.13 HANDLING OF SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES AND SUBSTANCES STABILIZED BY TEMPERATURE CONTROL (OTHER THAN SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES)**

During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 ~~or~~ organic peroxides of Division 5.2 and polymerizing substances must be shaded from direct sunlight, stored away from all sources of heat in a well-ventilated area.

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## Chapter 4

### PROVISION OF INFORMATION

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#### 4.1 INFORMATION TO THE PILOT-IN-COMMAND

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DGP-WG/16 (see paragraph 3.2.7.2 of DGP/26-WP/2):

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4.1.1.1 Except as otherwise provided, the information required by 4.1.1 must include the following:

a) the date of the flight;

a**b**) the air waybill number (when issued);

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Alignment with the UN agreement that the word “risk” was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word “hazard” (see ST/SG/AC.10/C.3/98).

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- ~~b~~c) the proper shipping name (the technical name(s) shown on the dangerous goods transport document is not required) 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”.
- ~~e~~d) the class or division, and subsidiary-~~risk~~ hazard(s) corresponding to the subsidiary-~~risk~~ hazard label(s) applied, by numerals, and in the case of Class 1, the compatibility group;
- ~~e~~e) the packing group shown on the dangerous goods transport document;
- ~~e~~f) the number of packages and their exact loading location. For radioactive material see g) below;
- ≠ ~~f~~g) the net quantity, or gross mass if applicable, of each package, except that this does not apply to radioactive material or other dangerous goods where the net quantity or gross mass is not required on the dangerous goods transport document (see 5;4.1.4) or, when applicable, alternative written documentation. For a consignment consisting of multiple packages containing dangerous goods bearing the same proper shipping name and UN number or ID number, only the total quantity and an indication of the quantity of the largest and smallest package at each loading location need to be provided. For consumer commodities, the information provided may be either the gross mass of each package or the average gross mass of the packages as shown on the dangerous goods transport document;
- ~~g~~h) for radioactive material the number of packages, overpacks or freight containers, their category, their transport index (if applicable) and their exact loading location;
- ~~h~~i) whether the package must be carried on cargo aircraft only;
- ~~i~~j) the aerodrome at which the package(s) is to be unloaded;
- ~~j~~k) where applicable, an indication that the dangerous goods are being carried under a State exemption; and
- ~~k~~l) the telephone number where a copy of the information provided to the pilot-in-command can be obtained during the flight if the operator allows the pilot-in-command to provide a telephone number instead of the details about the dangerous goods on board the aircraft, as specified in 4.3.

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DGP-WG/17 (see paragraph 3.2.7.2 of DGP/26-WP/3):

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4.1.2 For UN 1845 — **Carbon dioxide, solid** (dry ice), the information required by 4.1.1 may be replaced by the UN number, proper shipping name, class, total quantity in each ~~held~~ cargo compartment on the aircraft and the aerodrome at which the package(s) is to be unloaded.

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DGP-WG/17 (see paragraph 3.2.7.5 of DGP/26-WP/3):

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**Table 7-9. Dangerous goods not required to appear in the information to the pilot-in-command**

<i>UN Number</i>	<i>Item</i>	<i>Reference</i>
n/a	Dangerous goods packed in excepted quantities	3;5.1.1
UN 2807	<b>Magnetized material</b> <u>with field strengths causing a compass deflection of not more than 2 degrees at a distance of 4.6 m</u>	Packing Instruction 953
UN 2908	<b>Radioactive material, excepted package — empty packaging</b>	1;6.1.5.1 a)
UN 2909	<b>Radioactive material, excepted package — articles manufactured from natural uranium or depleted uranium or natural thorium</b>	1;6.1.5.1 a)
UN 2910	<b>Radioactive material, excepted package — limited quantity of material</b>	1;6.1.5.1 a)
UN 2911	<b>Radioactive material, excepted package — instruments or articles</b>	1;6.1.5.1 a)
UN 3090	<b>Lithium metal batteries</b> (including lithium alloy batteries) when meeting the requirements of Packing Instruction 968, Section II	Packing Instruction 968, Section II
UN 3091	<b>Lithium metal batteries contained in equipment</b> (including lithium alloy batteries) when meeting the requirements of Packing Instruction 970, Section II	Packing Instruction 970, Section II

<i>UN Number</i>	<i>Item</i>	<i>Reference</i>
UN 3091	<b>Lithium metal batteries packed with equipment</b> (including lithium alloy batteries) when meeting the requirements of Packing Instruction 969, Section II	Packing Instruction 969, Section II
UN 3245	<b>Genetically modified micro-organisms</b>	Packing Instruction 959
UN 3245	<b>Genetically modified organisms</b>	Packing Instruction 959
UN 3373	<b>Biological substance, Category B</b>	Packing Instruction 650, sub-paragraph 11
UN 3480	<b>Lithium ion batteries</b> (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 965, Section II	Packing Instruction 965, Section II
UN 3481	<b>Lithium ion batteries contained in equipment</b> (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 967, Section II	Packing Instruction 967, Section II
UN 3481	<b>Lithium ion batteries packed with equipment</b> (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 966, Section II	Packing Instruction 966, Section II

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Alignment with the UN agreement that the word “risk” was inappropriately used in many paragraphs of the Model Regulations and should be replaced by the word “hazard” (see ST/SG/AC.10/C.3/98).

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#### **4.3 INFORMATION TO BE PROVIDED BY THE PILOT-IN-COMMAND IN CASE OF IN-FLIGHT EMERGENCY**

If an in-flight emergency occurs, the pilot-in-command must, as soon as the situation permits, inform the appropriate air traffic services unit, for the information of aerodrome authorities, of any dangerous goods carried as cargo on board an aircraft. Wherever possible this information should include the proper shipping name and/or UN number, the class/division and, for Class 1, the compatibility group, any identified subsidiary ~~risk~~ **hazard**(s), the quantity and the location on board the aircraft, or a telephone number where a copy of the information provided to the pilot-in-command can be obtained. When it is not considered possible to include all the information, those parts thought most relevant in the circumstances or a summary of the quantities and class or division of dangerous goods in each cargo compartment should be given.

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— END —