



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-THIRD MEETING

Montréal, 11 to 21 October 2011

Agenda Item 5: Resolution, where possible, of the non-recurrent work items identified by the Air Navigation Commission or the panel:

Agenda Item 5.2: Development of provisions for the carriage of dangerous goods on helicopters

CARRIAGE OF DANGEROUS GOODS BY HELICOPTERS

(Presented by G. A. Leach)

SUMMARY

This paper discusses the carriage of dangerous goods on helicopters.

Action by the DGP: The DGP is invited to consider the amendments to the Technical Instructions and the Supplement as explained below and shown in the appendix to this WP.

1. INTRODUCTION

1.1 The subject of the carriage of dangerous goods by helicopters was raised initially at the DGP Working Group of the Whole Meeting in The Hague (DGP-WG08, 3 to 7 November 2008) (DGP/22-WP/2, paragraph 3.2.8 refers). The subject has been further discussed at the following working group of the whole meetings:

- a) Auckland, 4 to 8 May 2009, DGP/22-WP/3, paragraph 3.5.1.19 refers;
- b) Abu Dhabi, 7 to 11 November 2010, DGP/23-WP/2, paragraph 3.5.6 refers;
- c) Atlantic City, 4 to 8 April 2011, DGP/23-WP/3, paragraph 3.5.4 refers.

1.2 It was explained that the Technical Instructions do not refer specifically to helicopter operations and therefore, currently, all of the provisions within the Technical Instructions apply to those operations. However, it was also explained that helicopter operations can differ greatly from fixed-wing operations, due to the nature of the aircraft involved and the types of operation being carried out. For example, helicopters can carry dangerous goods externally. Flights are often short in duration and repetitive, such as carrying cargo from the bottom of a mountain to the top, or they may be in remote

locations, where helicopters are the only quick means of transport and where fixed wing aircraft cannot operate.

1.3 The purpose of this working paper is to propose the introduction of text into relevant places within the Technical Instructions and the Supplement in order to make reference to some of the specific types of operations, where additional considerations need to be borne in mind, such as protecting dangerous goods from weather when being carried externally and to provide provisions under which operations such as those explained in paragraph 1.2 can take place, with the appropriate oversight of the States concerned.

2. EXPLANATION OF THE PROPOSED AMENDMENTS IN THE APPENDIX TO THIS WP

2.1 **Part 1; Chapter 1.1.1.** - An amendment is proposed in order to make it clear that the provisions of the Technical Instructions apply to dangerous goods carried by any aircraft, whether internally or externally.

2.2 **Part 1; Chapter 1.1.1. Note 2** – This note is proposed to explain that some additional considerations may be required for helicopter operations.

2.3 **Part 1; Chapter 1.1.4.1c)** – It is recognised that in many states, specialised operations take place, such as avalanche control, which are similar to the dropping of dangerous goods in connection with agricultural, horticultural, forestry or pollution control. It was previously discussed whether to amend the text to simply refer to ‘specialised operations’ but since this term was difficult to define, it is proposed to just add the term ‘avalanche control’ to the types of operation that are listed as excepted from the requirements of the Technical Instructions.

2.4 **Part 1; Chapter 3.1.1** – Since the term ‘external carriage’ is used in Part 1; Chapter 1.1.1, it is necessary to define that term.

2.5 **Part 4; Introductory Notes, Note 11** – The introductory notes to Part 4 contain subjects which shippers need to be aware of when preparing their packagings, such as temperature and pressure variations. It is suggested that it is appropriate to refer shippers to the fact that dangerous goods that are carried in open external carrying devices by a helicopter may be subject to weather conditions and additional air flow that would not affect the same packagings had they been carried internally. Therefore, Note 11 is proposed.

2.6 **Part 7; Chapter 2.1.3** – Some additional requirements for helicopter operations are contained in a proposed new Part 7;7. It is considered important that reference to those new provisions are made in Part 7;2.1.3 concerning loading restrictions on the flight deck and for passenger aircraft.

2.7 **Part 7; Chapter 2.4.1.1d)** – This text concerns the loading of ‘cargo aircraft only’ dangerous goods on cargo aircraft. It requires them to be either in a Class C cargo compartment or in a unit load device which equivalent to a Class C compartment, or in such a manner that the dangerous goods are accessible in an emergency. Clearly, when carried externally by a helicopter, this does not currently meet these provisions, however it is considered that such carriage is just as appropriate due to the fact that when carried beneath a helicopter, the load can be released in an emergency and in addition, a helicopter normally has the ability to land much sooner than a fixed wing aircraft. Therefore, 7;2.4.1d) is proposed.

2.8 **Part 7; Chapter 2.4.1.1e)** – It is also quite common for helicopters to operate with only one crew member, i.e., the pilot. Whilst dangerous goods carried in the cabin of the helicopter are in sight of the pilot, it is not appropriate for the pilot to leave their seat and therefore it cannot be said that the dangerous goods are truly ‘accessible’ in the intent of the current provisions. However, since the helicopter can land quickly in an emergency, and these flights tend to be of short duration, it is suggested that there may be situations where it is appropriate for those dangerous goods to be loaded in the cabin, although it is considered that this should only be done with the approval of the State of the operator. Therefore, 7;2.4.1e) is proposed and guidance to States is also provided in the Supplement in S-7;2.3.

2.9 **Part 7; Chapter 4.1.1** – This requires written or printed information to be provided to the pilot-in-command. For helicopters, there are some operations that are extremely short in duration, such as carrying equipment from the bottom of a mountain, or building, to the top. In some circumstances, the helicopter does not land; the dangerous goods are hooked on beneath the helicopter and so there is no possibility of the pilot-in-command being provided with a document. Equally, there are some circumstances when the helicopter will land, but it is the pilot in command who actually loads the helicopter and therefore, they will know what has been loaded, and where. Therefore it is suggested that there are circumstances when it is either impractical or unnecessary to provide the pilot-in-command with written or printed information. It is proposed that this should only be with the approval of the State of the Operator and consideration should be given to providing the pilot-in command with whatever information is appropriate in the circumstances. Additional guidance is also provided in the Supplement in S-7;4.8.

2.10 **Part 7; Chapter 4.8** – This requires either the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481), or any other document which provides similar information concerning the dangerous goods on board. For operations such as those explained in 2.10 above, there may be occasions when it is not considered necessary for the detailed information contained in Doc 9481 to be carried, but where abbreviated information would be acceptable. Previously, it was suggested that a separate provision be included to provide for this. It was suggested that this is also provided for by the existing text, however, the term ‘similar information’ indicates that the information needs to be almost equal in detail and length to Doc 9481. It is therefore proposed to amend 7;4.8b) to use the term ‘any other document which provides appropriate information concerning the dangerous goods on board’. An additional note is also proposed for helicopter operations to indicate that in some situations, the information may simply be a statement in the operations manual or some other document to land the helicopter as soon as possible.

2.11 **Part 7; Chapter 7** – As explained above, there are some situations where either the existing provisions of the Technical Instructions are not appropriate, or where additional considerations are required for helicopter operations that are not relevant to fixed-wing aircraft. Therefore a new Chapter within Part 7 is proposed with the following provisions:

2.11.1 **7;7.1.1** concerns the ability for a State to grant an approval for circumstances when all of the provisions of the Technical Instructions cannot be complied with. The DGP is asked to consider whether the States of origin and destination should also be able to require that approval is gained from those States, if they have notified ICAO that such approval is required.

2.11.2 **7;7.1.2** is proposed to require the operator to consider the effects of airflow and weather conditions on the packagings that are carried in open external carrying devices.

2.11.3 **7;7.1.3** proposes a requirement for an operator to consider the dangers of static discharge upon landing or release of the load when dangerous goods are suspended from a helicopter.

2.11.4 **7;7.1.4** – The cargo compartments on helicopters generally do not meet the certification requirements of a Class B or C cargo compartment. It is debatable whether or not these are the types of holds that are intended to be those described as ‘main deck cargo compartments’ in Part 7;2.1.1 of the Technical Instructions. Therefore, it is not clear whether or not helicopters are able to carry dangerous goods in their cargo compartments when passengers are being carried. However, this is routinely done and it is suggested that because of the ability for a helicopter to land quickly in an emergency, this is entirely appropriate. Provisions already exist within Part S-7;2.2 of the Supplement to permit fixed wing aircraft to carry certain dangerous goods in holds on the main deck when passengers are being carried, and so it is proposed that this should be extended to allow those and other dangerous goods to be carried by helicopters. 7;7.1.4 provides for this, with the approval of the State of the Operator.

2.12 **Supplement, Part S-7; Chapter 2.2.4** – As explained in 2.12.4 above, this proposed text allows for the State of the Operator to grant approval for dangerous goods to be carried in cargo compartments that do not meet the requirements of Part 7;2.1.1 of the Technical Instructions, when passengers are being carried. The proposed text includes some guidance as to what should be considered when granting such an approval. The DGP is asked to consider whether the States of origin and destination should also be able to require that approval is gained from those States, if they have notified ICAO that such approval is required.

2.13 **Supplement, Part S-7; Chapter 2.3** – This proposed text provides guidance to States when granting an approval for the carriage of ‘cargo aircraft only’ dangerous goods for carriage in the cabin of a helicopter when there is only one crew member on board, as explained in 2.9 above.

2.14 **Supplement, Part S-7; Chapter 4.8** – This proposed text provides guidance to States as explained in 2.10 above concerning the information to the pilot-in-command for helicopter operations.

APPENDIX

DANGEROUS GOODS AND HELICOPTERS

1. **ANNEX 18 — *THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR***
- 1.1. No amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air* are proposed.
2. ***TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (DOC 9284)***

Part 1

GENERAL

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Chapter 1

SCOPE AND APPLICABILITY

1.1 GENERAL APPLICABILITY

1.1.1 These *Technical Instructions for the Safe Transport of Dangerous Goods by Air*, referred to herein as the "Instructions", prescribe the detailed requirements applicable to the international civil transport of dangerous goods by air by any aircraft (including both internal and external carriage). Any addenda to this edition of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air issued by ICAO constitute part of these Instructions.

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1.1.3 In instances of extreme urgency or when other forms of transport are inappropriate or full compliance with the prescribed requirements is contrary to public interest, the States concerned may grant an exemption from the provisions of the Instructions provided that in such instances an overall level of safety in transport which is at least equivalent to the level of safety provided for in these Instructions is achieved. For the purposes of exemptions, "States concerned" are the States of Origin, Operator, transit, overflight and destination. For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

Note 1.— Refer to 1;2.1 for dangerous goods forbidden for transport by air under any circumstance.

Note 2.— Due to the differences in the type of operations carried out by helicopters compared with aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in 7;7.

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1.1.4 General exceptions

1.1.4.1 Except for 7;4.2, these Instructions do not apply to dangerous goods carried ~~on~~ by an aircraft where the dangerous goods are:

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c) for dropping in connection with agricultural, horticultural, forestry, avalanche control or pollution control activities;

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Chapter 3

GENERAL INFORMATION

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3.1 DEFINITIONS

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External carriage. Any load suspended from an aircraft or in equipment attached to an aircraft.

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Part 4

PACKING INSTRUCTIONS

INTRODUCTORY NOTES

Note 11.— Open External Carriage

When dangerous goods are prepared for open external carriage (e.g. suspended from an aircraft or in open external carrying devices), consideration should be given to the type of packaging used and protection of those packagings where necessary from the effects of airflow and weather (e.g. by damage from rain or snow).

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Part 7**OPERATOR'S RESPONSIBILITIES****Chapter 2****STORAGE AND LOADING**

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2.1 LOADING RESTRICTIONS ON THE FLIGHT DECK AND FOR PASSENGER AIRCRAFT

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2.1.3 For additional requirements concerning the loading of dangerous goods for carriage by helicopters, see Part 7;7.

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2.4 LOADING AND SECURING OF DANGEROUS GOODS**2.4.1 Loading ~~on~~ of cargo aircraft**

2.4.1.1 Packages or overpacks of dangerous goods bearing the "Cargo aircraft only" label must be loaded for carriage by ~~on~~ a cargo aircraft in accordance with one of the following provisions:

- a) in a Class C aircraft cargo compartment; or
- b) in a unit load device equipped with a fire detection/suppression system equivalent to that required by the certification requirements of a Class C aircraft cargo compartment as determined by the appropriate national authority (a ULD that is determined by the appropriate national authority to meet the Class C aircraft cargo compartment standards must include "Class C compartment" on the ULD tag); or
- c) in such a manner that in the event of an emergency involving such packages or overpacks, a crew member or other authorized person can access those packages or overpacks, and can handle and, where size and mass permit, separate such packages or overpacks from other cargo-or

d) external carriage by a helicopter; or

e) with the approval of the State of the Operator, for single crew helicopter operations, in the cabin (see Part S-7:2.3 of the Supplement).

Note.— Cargo compartment classification is described in the ICAO document Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481).

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Chapter 4

PROVISION OF INFORMATION

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4.1 INFORMATION TO THE PILOT-IN-COMMAND

4.1.1 The operator of an aircraft in which dangerous goods are to be carried must provide the pilot-in-command, as early as practicable before departure of the aircraft, with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo. For helicopter operations, with the approval of the State of the Operator, the notification to the pilot-in-command may be abbreviated or be by other means (e.g. radio communication, as part of the working flight documentation such as a Journey Log or Operational Flight Plan) where circumstances make it impractical to produce written or printed information or on a dedicated form (see Part S-7;4.8 of the Supplement).

Note.— This includes information about dangerous goods loaded at a previous departure point and which are to be carried on the subsequent flight.

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4.8 EMERGENCY RESPONSE INFORMATION

The operator must ensure that for consignments for which a dangerous goods transport document is required by these Instructions, appropriate information is immediately available at all times for use in emergency response to accidents and incidents involving dangerous goods in air transport. The information must be available to the pilot-in-command and can be provided by:

- a) the ICAO document *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481); or
- b) any other document which provides ~~similar~~ appropriate information concerning the dangerous goods on board.

Note.— For some helicopter operations, the emergency response information may simply be a statement in the operations manual, or some other document, to land the helicopter as soon as possible.

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Chapter 7

HELICOPTER OPERATIONS

7.1.1 Due to the differences in the type of operations carried out by helicopters compared with aeroplanes, there may be circumstances when the full provisions of the Technical Instructions are not appropriate or necessary, due to the operations involving un-manned sites, remote locations, mountainous areas or construction sites etc. In such circumstances and when appropriate, the State of the Operator may grant an approval in order to permit the carriage of dangerous goods without all of the normal requirements of the Technical Instructions being fulfilled. [When States, other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of origin and destination, as appropriate].

7.1.2 When loading dangerous goods for open external carriage by a helicopter, consideration should also be given to the type of packaging used and protection of those packagings, where necessary, from the effects of airflow and weather (e.g. by damage from rain or snow), in addition to the general loading provisions of 7:2.

7.1.3 When dangerous goods are carried as suspended from a helicopter, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of the load.

7.1.4 When helicopters are carrying passengers, the State of the Operator may grant an approval to permit the carriage of dangerous goods either in the cabin or in cargo compartments that do not meet the requirements of Part 7:2.1.1., in accordance with Part S-7.2.2.4 of the Supplement.

3. ***SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (DOC 9284SU)***

Part S-7

STATE'S RESPONSIBILITIES

**(ADDITIONAL INFORMATION
FOR PART 7 OF THE
TECHNICAL INSTRUCTIONS)**

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Chapter 2

STORAGE AND LOADING

2.2.3 Where a packing group is assigned, the dangerous goods in 2.2.2 are restricted to those in Packing Group III only.

2.2.4 For helicopter operations, the State of the Operator may approve the carriage of dangerous goods permitted for carriage on a passenger aircraft other than those in 2.2.2 and 2.2.3. When such an approval is to be granted, States should consider the factors that may mean carriage within the cabin is required, or preferable, such as the size/mass of packages making it impractical to carry them as an external load, accessibility to the packages, duration of the flight, and whether or not the passengers are associated with the dangerous goods. [When States, other than the State of the Operator have notified ICAO that they require prior approval of such operations, approval must also be obtained from the States of origin and destination, as appropriate.]

Renumber subsequent paragraphs accordingly

2.3 CARRIAGE OF CARGO AIRCRAFT ONLY DANGEROUS GOODS BY SINGLE CREW HELICOPTER OPERATIONS IN THE CABIN

2.3.1 Packages bearing the "Cargo aircraft only" label may be carried in the cabin of a helicopter operating as a cargo aircraft with only one crew member, with the approval of the State of the Operator.

2.3.2 When granting such an approval, States should consider:

- a) the type and quantity of dangerous goods involved;
- b) the type of packaging used;
- c) the duration of the flight; and
- d) the type of operation, etc.

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Chapter 4

PROVISION OF INFORMATION

4.8 INFORMATION TO THE PILOT-IN-COMMAND FOR HELICOPTER OPERATIONS

4.8.1 Part 7:4.1.1 of the Technical Instructions provides that with the approval of State of the Operator, where circumstances make it impractical to produce written or printed information or on a dedicated form, the notification to the pilot-in-command may be abbreviated or be by other means (e.g. radio communication, as part of the working flight documentation such as a Journey Log or Operational Flight Plan etc). Examples of such circumstances include:

- a) when the helicopter does not land in order to pick up the dangerous goods, such that it is not possible to provide written information at that location;
- b) where the helicopter is in-flight and the planned load is changed prior to being picked up without the helicopter landing;
- c) when short, repetitive flights, or a series of flights from different locations are undertaken by a helicopter, where it is impractical to provide separate written information for each flight;
- d) where dangerous goods are picked up from an un-manned site.

4.8.2 When granting such an approval, States should consider all of the circumstances under which the approval is being sought, the minimum information that should be provided to the pilot-in-command and the procedures that the operator would implement to ensure that the information is provided and recorded.

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4. **EMERGENCY RESPONSE GUIDANCE FOR AIRCRAFT INCIDENTS INVOLVING DANGEROUS GOODS (DOC 9481)**

- 4.1. No amendments to the Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods are proposed.

— END —