



**WORKING PAPER**

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

**Abu Dhabi, United Arab Emirates, 7 to 11 November 2010**

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

**5.3: 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-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 This working paper is intended as a discussion document for those attending the helicopter working group meeting in Abu Dhabi prior to DGP-WG/10.

1.2 When carried by helicopters, dangerous goods can be either inside or outside the aircraft, either as under-slung loads or in external carrying devices attached to the helicopter. Regardless of the location of the dangerous goods, they can still pose a hazard to either the helicopter, its occupants, handlers or people on the ground. The Technical Instructions however are mainly written with fixed wing aircraft in mind and there are no provisions that specifically mention carriage external to the aircraft.

1.3 In many States, helicopters are used for specialized purposes such as avalanche control, construction or remote operations. Again, there are no specific references to these types of operations within the Technical Instructions, nor guidance to States when granting exemptions or approvals.

1.4 The appendix to this working paper contains suggested amendments or additions to the Technical Instructions and the Supplement together with proposed text to include reference to helicopter operations where applicable. The appendix also contains some specific discussion points that need to be resolved before further amendments can be drafted.

**2. ACTION BY THE DGP-WG**

2.1 The helicopter working group is invited to consider the justifications and proposed text within the appendix to this working paper. As a result of discussions by the helicopter working group, it is proposed to produce a consolidated working paper to present to the DGP-WG.

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## 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* have been proposed at this stage.

#### 2. TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (DOC 9284)

##### 2.1 Part 1; Chapter 1

2.1.1 It is suggested that information be provided within the general applicability paragraphs of Part 1, Chapter 1 to make it clear that the Technical Instructions apply to both fixed wing and helicopter aircraft. Additionally reference should be made to clarify that the Technical Instructions apply to carriage by helicopters whether the dangerous goods are carried inside or outside of the helicopter:

##### 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 both fixed wing aircraft and helicopters (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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2.1.2 It is suggested that a new Note 2 be added beneath Part 1;1.1.3 to refer to Part 7;X (see paragraph 2.8 below) as follows:

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 sometimes 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;X].*

...

2.1.3 In some areas within the Technical Instructions the term “on an aircraft” can be incorrectly interpreted as meaning items that are within the aircraft itself and not those that are carried outside of the aircraft. It is suggested that where applicable, this should be changed to say “by an aircraft” so that it is irrelevant whether the goods are inside, outside or beneath the aircraft.

2.1.4 In some States, avalanches are controlled by means of explosives being released from helicopters. This is a well-controlled operation in accordance with procedures prescribed by the appropriate national authority and it is suggested that these operations should be excepted from the general requirements of the Technical Instructions as happens for agricultural, horticultural, forestry and pollution control activities. Therefore, it is suggested to amend Part 1;1.1.4 as follows:

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:

...

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

...

***Discussion point***

2.1.4.1 Should other scenarios also be included as general exceptions, such as “building construction”?

**2.2 Part 1; Chapter 2**

2.2.1 It is suggested that it is not necessary to add specific information about helicopters in this chapter.

**2.3 Part 1; Chapter 3.1.1**

2.3.1 It is proposed that in Part 1; Chapter 3 a definition is included for the term “external carriage”:

**External carriage.** Loads under-slung beneath an aircraft or in equipment attached to an aircraft.

The Secretary is requested to advise whether an ICAO definition for external carriage (or similar) already exists. If so, any definition added to the Technical Instructions would need to align.

**2.4 Part 4; Introductory notes**

2.4.1 The introductory notes to Part 4 contain information concerning the need for consignors of dangerous goods to take into account temperature variations, pressure variations, vibrations etc. It is suggested that for helicopter operations, it is important that consideration should also be given to protecting packages of dangerous goods from the elements when they are being carried externally to a helicopter.

Note 11.— Carriage external to helicopters

When dangerous goods are prepared for external carriage by a helicopter (i.e. under-slung or in open external carrying devices), consideration should be given to the protection of packaging where necessary from the effects of weather (e.g. by damage from rain or snow).

**2.5 Part 7**

2.5.1 It was considered whether it would be more appropriate to provide information about helicopter operations within each chapter of Part 7, or to create a new chapter specifically for helicopter operations. On balance it is suggested that it is more appropriate to create a new chapter to contain those aspects of an operator's responsibilities that are specific to helicopter operations. Ideally, the new chapter would become Chapter 5 and the existing Chapters 5 and 6 be renumbered accordingly. Alternatively, a new Chapter 7 could be produced.

**2.6 Part 7; Chapter 2**

2.6.1 It is suggested that reference to the new chapter within Part 7 should be included within Part 7; Chapter 2:

**Chapter 2****STORAGE AND LOADING**

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2.1.2 Under the conditions specified in S-7;2.2 of the Supplement, the State of Origin and the State of the Operator may approve the transport of dangerous goods in main deck cargo compartments of passenger aircraft that do not meet the requirements in 2.1.1.

2.1.3 For additional requirements concerning the loading of dangerous goods for carriage by helicopters, see [Part 7;7 or 7;5].

***Discussion Point***

2.6.1.1 Are the holds on many helicopters considered to be 'main deck cargo compartments' referred to in 7;2.1.1? If they are, then it is likely that none of them meet the certification requirements for a Class B or Class C aircraft cargo compartment and therefore cannot carry dangerous goods when passengers are being carried, with the exception of some specific dangerous goods with the approval described in S-7;2.2 of the Supplement to the Technical Instructions. Given the differences between helicopter and aeroplane operations, this seems overly restrictive. Therefore, the following options are proposed:

- a) if the helicopter compartments are not considered to be what is referred to in Part 7;2.1.1 as a 'main deck cargo compartment', amend Part 7;2.1.1 to clarify that it relates only to fixed wing aircraft; otherwise
- b) either amend 7;2.1.1 to allow dangerous goods to be loaded in a helicopter hold which:
  - 1) has a separate approved smoke or fire detection system to give warning at the pilot station;

- 2) there are means of shutting off the ventilation air flow to or within the compartment;
  - there are means of excluding hazardous quantities of smoke, flames or noxious gases from the passenger and flight crew compartment; and
  - the required emergency exits are accessible under any cargo loading conditions

*Note.— This is equivalent to a Class E cargo compartment; or*

- c) amend S-7;2.2 of the Supplement to enable States to approve the carriage of a wider range of dangerous goods in helicopters.

2.6.2 “Cargo aircraft only” dangerous goods are routinely carried by helicopters and are often carried as under-slung loads. Currently Part 7;2.4.1.1 of the Technical Instructions does not provide for this, but it is suggested that carriage as under-slung loads is as appropriate as carriage inside a helicopter. Additionally, some helicopters have the ability to carry external carrying devices, such as pods or racks. Unlike under-slung loads, these cannot be jettisoned, but consideration should be given to permitting them to be loaded with ‘cargo aircraft only’ dangerous goods.

#### 2.4.1 Loading on cargo aircraft

2.4.1.1 Packages or overpacks of dangerous goods bearing the “Cargo aircraft only” label must be loaded 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) under-slung beneath a helicopter [or in external carrying devices].

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

#### **Discussion Point**

2.6.2.1 Consideration needs to be given to 7;2.4.1.1 c) when single crew operations are being conducted. Clearly, in single crew operations, the crew member does not have the opportunity to access nor handle the packages. It is suggested that this is an issue that does not just concern helicopter operations, so perhaps should be subject to separate discussion.

#### 2.7 Part 7; Chapter 4

2.7.1 There are a number of circumstances when it is not practical, or even possible, for a *written* notification to be provided to the pilot-in-command. Examples of such operations are un-manned sites, remote locations (e.g. mountainous areas) and construction sites etc. At un-manned sites, the pilot may be the one who actually loads the helicopter, so will know what has been loaded, and where. Therefore, for such operations, it may be more appropriate and acceptable for this information to be

provided in a different manner, such as by radio to the pilot-in-command, or as part of the day's work plan giving general information about what is to be picked up at each location. In these circumstances, it may also not be possible or necessary to provide all of the normally required information. Therefore, the following options are proposed to amend Part 7;4.1:

- a) to allow for States to approve the use of other means to transmit information to the pilot-in-command of a helicopter (e.g. by radio or as part of 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; and
- b) to allow for States to approve the information to the pilot-in-command to contain abbreviated information.

### *Discussion point*

2.7.1.1 Part 7;4.8 requires the operator to ensure that certain information is available to the pilot-in-command in the event of an emergency, such as the Emergency Response Guidance document or equivalent information. For helicopter operations it is questioned whether this requirement is appropriate in all situations since in most instances, with the possible exception of offshore operations, the response will be to land a helicopter as soon as possible. In some circumstances there is only one crew member, so there is very little other action that could be taken. Therefore, the following options are suggested to amend 7;4.8:

- a) to exclude [onshore] helicopter operations from the requirement for emergency response information; or
- b) to allow for abbreviated information to be provided for [onshore] helicopter operations; or
- c) to allow for basic information to be included in the Operations Manual to advise the pilot-in-command to land as soon as possible.

2.8 New chapter for Part 7 (Chapter 5 or Chapter 7, see paragraph 2.5.1 above)

## Chapter **[5 or 7]**

### HELICOPTERS

1.1 Due to the differences in the type of operations carried out by helicopters compared with fixed wing aircraft, there may be circumstances when the full provisions of the Technical Instructions are not appropriate or necessary, such as some operations [to un-manned sites, remote locations (e.g. mountainous areas) or construction sites]. In such circumstances, States may grant an [exemption/approval] in order to permit such operations without all of the normal requirements of the Technical Instructions being fulfilled. [Further information about the granting of such [exemptions/approvals] are contained in the Supplement.]

1.2 When loading dangerous goods for carriage externally to a helicopter (i.e. under-slung or in open external carrying devices), consideration must be given to protect the packaging where necessary from the effects of weather (e.g. by damage from rain or snow) in addition to the general loading provisions of 7;2

1.3 When dangerous goods are being carried externally to a helicopter, the operator must ensure that consideration is given to the dangers of static discharge upon landing or release of external loads.

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

3.1 Depending upon discussions on the above subjects, additional text will be required for the following areas.

3.2 **Part S-7;2.2**

3.2.1 If 2.6.1.1 c) above is agreed, amend to give guidance on approving the carriage of a wider range of dangerous goods.

3.3 **Part S-7;X**

3.3.1 If 2.7.1 a) above is agreed, create a new chapter in S-7 giving guidance to States on occasions when it may be appropriate to grant approval for information to be provided to the pilot-in-command by some other means.

3.4 **Part S-7;X**

3.4.1 If 2.7.1 b) above is agreed, create a new chapter in S-7 giving guidance to States on occasions when it may be appropriate to grant approval for abbreviated information to be provided to the pilot-in-command.

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

4.1 Depending upon discussions concerning Part 7;4.8 (paragraph 2.7.1.1 above), further text specific to helicopter operations may be required in Doc 9481.

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