



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
WORKING GROUP MEETING (DGP-WG/20)**

Virtual, 19 to 23 October 2020

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

**2.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2023-2024 Edition**

**2.3: Develop proposals, if necessary, for amendments to the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) for incorporation in the 2023-2024 Edition**

**APPROPRIATE USE OF “STORAGE” AND “STOWAGE” IN THE TECHNICAL  
INSTRUCTIONS AND ITS SUPPLEMENT**

(Presented by the Secretary)

**SUMMARY**

This working paper invites the working group to review references to “storage” in the Technical Instructions and its Supplement to determine whether the term “stowage” would be more appropriate. Amendments to the documents will be proposed to the 2021 working group meeting if deemed appropriate by DGP-WG/20.

**Action by the DGP-WG:** The DGP is invited to review the list of references to “storage” contained in the Technical Instructions and its Supplement provided in the appendix to this working paper and consider whether referring to “stowage” would be more appropriate..

**1. INTRODUCTION**

1.1 The terms “storage” and “stowage” are used in Annex 18, the Technical Instructions and the Supplement when referring to dangerous goods loaded on aircraft. “Loading and stowage” is referred to in paragraph 8.3 of Annex 18, but the Technical Instructions refer to “Storage and loading” in Part 7;2.1. “Storage” is referred to in relation to dangerous goods loaded on aircraft elsewhere in the Technical Instructions and its Supplement. It was agreed during a DGP virtual meeting that “stowage” was the appropriate term to use in such cases.

1.2 It is obvious in most cases that “storage” should be replaced with “stowage”. Other cases are less obvious, and in some, it is questioned whether the provision should refer to both “stowage” and “storage”. All of these are included in the appendix to this working paper. Most references to “storage” are obviously appropriate and have therefore not been included in the appendix, i.e.:

- a) storage in transit;
- b) temporary storage;
- c) electric storage;
- d) storage systems;
- e) energy storage;
- f) storage devices;
- g) radioactive material packages intended to be used for shipment after storage;
- h) freight containers, packagings, and overpacks used for the transport of radioactive material not being used for storage or transport of other goods; and
- i) storage personnel.

## 2. ACTION BY THE DGP-WG

2.1 The DGP is invited to review the references to “storage” shown in the appendix to this working paper and consider whether they should be revised to refer to “stowage”. Amendments to the Technical Instructions and the Supplement will be proposed at the 2021 DGP working group meeting based on this review.

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APPENDIX

STORAGE VERSUS STOWAGE

TECHNICAL INSTRUCTIONS																													
Text	Location	Replace with "stowage"?																											
<p><b>Table 1-4. Content of training courses for staff of designated postal operators</b></p> <table border="1"> <thead> <tr> <th rowspan="3">Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum</th> <th colspan="3">Designated postal operators</th> </tr> <tr> <th colspan="3">Categories of staff</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>...</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Storage and loading procedures</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>Provisions for passengers and crew</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>Emergency procedures</td> <td>x</td> <td>x</td> <td>x</td> </tr> </tbody> </table> <p><b>CATEGORIES</b></p> <p>A — Staff of designated postal operators involved in accepting mail containing dangerous goods.</p> <p>B — Staff of designated postal operators involved in processing mail (other than dangerous goods).</p> <p>C — Staff of designated postal operators involved in the handling, storage and loading of mail.</p> <p><i>Note.— Guidance on the aspects of training to be covered by staff of designated postal operators can be found in S-1;3.</i></p>	Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum	Designated postal operators			Categories of staff			A	B	C	...				Storage and loading procedures			x	Provisions for passengers and crew	x	x	x	Emergency procedures	x	x	x	Part 1;4	Yes	
Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum		Designated postal operators																											
		Categories of staff																											
	A	B	C																										
...																													
Storage and loading procedures			x																										
Provisions for passengers and crew	x	x	x																										
Emergency procedures	x	x	x																										
<p align="center"><b>Chapter 2</b></p> <p align="center"><b>STORAGE AND LOADING</b></p>	Part 7;2	Yes, or should it be Storage, loading and stowage?																											
<p align="center"><b>2.6 VISIBILITY OF MARKINGS AND LABELS</b></p> <p>During the course of air transport, including storage, markings and labels required by these Instructions must not be covered or obscured by any part of or attachment to the packaging or any other label or marking.</p>	Part 7;2	Should it be replaced with "STOWAGE DURING TRANSPORT AND STORAGE IN TRANSIT"?																											
<p align="center"><b>2.9.1 LIMITATION OF EXPOSURE OF PERSONS TO RADIATION</b></p> <p>2.9.1.1 The radiation exposure of transport and storage personnel must be so controlled that none of them are likely to receive a radiation dose in excess of that permitted for members of the public. In special cases, arrangements may be made with the competent authority for radiological control to have such personnel classified as radiation workers and to comply with the necessary provisions.</p> <p>2.9.1.2 All relevant transport and storage personnel must receive such instructions as are necessary concerning the hazards involved and the precautions to be observed.</p>	7;2.9.1	No																											
<p align="center"><b>2.9.3 Stowage during transport and storage in transit</b></p>	7;2.9.3	No change necessary																											

TECHNICAL INSTRUCTIONS														
Text	Location											Replace with "stowage"?		
<p><b>2.9.4 ADDITIONAL REQUIREMENTS RELATING TO TRANSPORT AND STORAGE DURING TRANSIT OF FISSILE MATERIAL</b></p> <p>2.9.4.1 Any group of packages, overpacks and freight containers containing fissile material <b>stored</b> in transit in any one storage area must be so limited that the total sum of the criticality safety indexes in the group does not exceed 50. Each group must be stored so as to maintain a spacing of at least 6 m from other such groups.</p> <p>2.9.4.2 Where the total sum of the criticality safety indexes on board an aircraft or in a freight container exceeds 50, as permitted in Table 7-7, <b>storage</b> must be such as to maintain a spacing of at least 6 m from other groups of packages, overpacks or freight containers containing fissile material or other conveyances carrying radioactive material.</p>	Part 7;2.9.4											<ul style="list-style-type: none"> <li>Should 2.9.4. heading be amended to read "ADDITIONAL REQUIREMENTS RELATING TO TRANSPORT AND STORAGE DURING TRANSIT AND STOWAGE DURING TRANSPORT OF FISSILE MATERIAL" to align with 2.9.4.1 (stored in transit) and 2.9.4.2 (on aircraft/in freight container)</li> <li>Should 2.9.4.2 refer to "Stowage or storage"?</li> </ul>		
<b>Table 1-4. Content of training courses</b>													Att 4	Yes
<i>Aspects of transport of dangerous goods by air with which they should be familiar, as a minimum</i>	<i>Shippers and packers</i>		<i>Freight forwarders</i>			<i>Operators and ground handling agents</i>					<i>Security staff</i>			
	<i>Categories of staff</i>													
	1	2	3	4	5	6	7	8	9	10	11	12		
<b>Storage</b> and loading procedures					x	x		x		x				
<b>CATEGORIES</b>														
...														
5 — Staff of freight forwarders involved in the handling, <b>storage</b> 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, <b>storage</b> and loading of cargo or mail and baggage														
...														

TECHNICAL INSTRUCTIONS						Location	Replace with "stowage"?	
Text								
<b>Table 1-5. Content of training courses for operators not carrying dangerous goods as cargo or mail</b>						Att 4	Yes  <i>Note.— Was not including "Storage and loading procedures" in Table 1-5 an oversight?</i>	
<i>Contents</i>		<i>Categories of staff</i>						
		13	14	15	16			17
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
CATEGORIES								
13 — Operator's and ground handling agent's staff accepting cargo or mail (other than dangerous goods)								
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								

SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS		
Text	Location	Replace with "stowage"?
<b>Chapter 2 STORAGE AND LOADING</b>	S-7;2	Yes, or should it be Storage, loading and stowage?
<p style="text-align: center;"><b>4.2 Storage of dangerous goods</b></p> <p>Operators should provide specific guidance on the <b>storage</b> of dangerous goods. This guidance should include instructions for Class 8 (corrosive), Class 7 (radioactive), and Class 6, Division 6.1 (toxic) materials as described below:</p> <p>a) The storage of Class 8 (corrosive) materials next to, or in contact with, Class 4, Division 4.2 or 4.3 (flammable) solids or Class 5, Division 5.1 (oxidizing) materials must be prevented. The segregation prescribed in the Technical Instructions must be maintained for all packages containing dangerous goods that might react dangerously when <b>stored</b> in a position that causes or contributes to leakage.</p> <p>b) The <b>storage</b> of Class 7 (radioactive) materials labelled yellow II and/or yellow III will not exceed a transport index (TI) of 50 in a single storage location. These materials are <b>stored</b> in an area that is isolated from people and does not permit pedestrian traffic or loitering. The minimum separation distances prescribed in the Technical Instructions should be maintained between radioactive materials labelled yellow II and yellow III and packages of undeveloped film.</p> <p>c) Packages bearing a Class 6, Division 6.1 toxic label will not be <b>stored</b> in the same location as foodstuffs, feeds, or any edible materials intended for consumption by either humans or animals</p>	Part S-7;4.2	<p>Should heading be Stowage during transport and storage in transit</p> <p>Should "stored" be replaced with "stowed or stored"</p>
<p style="text-align: center;"><b>4.6 Spares and/or company materials (COMAT)</b></p> <p>The State should ensure that operators that use aircraft components or consumable materials (e.g. aircraft spares) classified as dangerous goods include in their manuals and provide responsible personnel training on the following information:</p> <ul style="list-style-type: none"> <li>— procedures and information to assist personnel (particularly maintenance, shipping, and storage personnel) to identify or recognize aircraft components and consumable materials that contain dangerous goods;</li> <li>— procedures and information on how these aircraft components or consumable materials are to be moved, <b>stored</b>, or handled within the facilities of the operator, or other air agency with whom they contract services to or for;</li> <li>— procedures and information for determining the proper packaging, marking, labelling, and materials compatibility, including instructions for the safe movement, storage, and handling of aircraft components and consumable materials classified as dangerous goods while they are within their facilities (including such materials as chemical oxygen generators);</li> <li>— information, guidance, and precautions on the specific hazards associated with aircraft components and consumable materials classified as dangerous goods that are to be moved, <b>stored</b>, or handled within their facilities.</li> </ul>	Part S-7;4.6	No
<p style="text-align: center;"><b>Attachment A Dangerous Goods Manual – Approval Checklist</b></p> <p>...</p> <p>Does the dangerous goods manual contain procedures and information regarding <b>storage</b> prior to transport?</p>	Part S-7;8	No

<b>SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS</b>		
<b>Text</b>	<b>Location</b>	<b>Replace with "stowage"?</b>
<p><b>Attachment A Dangerous Goods Manual – Approval Checklist</b></p> <p>...</p> <p>Does the dangerous goods manual contain procedures for determining if packages containing dangerous goods are properly handled, <b>stored</b>, packaged, loaded and carried on board an aircraft? (Technical Instructions 7;2.)</p>	Part S-7;8	Yes
<p><b>Attachment B Dangerous Goods Training Programme – Approval Checklist</b></p> <p>...</p> <p><b>Storage</b> and loading procedures</p>	Part S-7;8	Yes

— END —