International Civil Aviation Organization

DGP-WG/17-WP/24
20/3/17

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/17)

Montreal, 24 to 28 April 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

2.8: Part 8 — Provisions Concerning Passengers and Crew

CARRIAGE OF ELECTRIC MOBILITY AIDS

(Presented by E. Gillett)

SUMMARY

This working paper describes safety concerns and operational issues associated with the safe carriage of electric mobility aids as baggage and proposes amendments to Table 8-1.

Action by the DGP-WG: The DGP is invited to consider the proposals for amendment of Part 8;1 within Part 2 of this working paper.

1. INTRODUCTION

1.1 There are many different types of electric mobility aid and it can be difficult for ground personnel to determine how to isolate circuits to prevent accidental operation, regardless of the dangerous goods training provided they have received and their experience in the workplace.

1.2 There are existing ISO standards which could aid the preparation of electric mobility aids for their safe carriage by air. For example, ISO 7176 specifies 'The wheelchair shall be equipped with a means of electrically disconnecting the battery set or removing the battery set without the use of a tool. The means shall be clearly marked'. It is suggested that the inclusion of this text within the Technical Instructions as a note to a future requirement, would encourage manufacturers to comply with this requirement for new designs and also provide passengers with a reasonable transitional period covering the likely service life of their existing mobility aids.

1.3 The Technical Instructions specify that mobility aids must be carried in a manner such that they are protected from being damaged by the movement of baggage, mail, stores or other cargo. There is no explicit requirement to secure the mobility aid itself, apart from those with spillable batteries, which must be secured in an upright position or have batteries removed and stowed upright.

1.4 Using other baggage or cargo to brace electric mobility aids is considered almost impossible to plan operationally as too few bags would not adequately secure the mobility aid. Additionally, unsecured baggage used to brace a mobility aid would not be secured in the vertical axis unless independently secured, so may cause damage to the device. Conversely, a large number of bags may result in stowage on top of the mobility aid, again risking damage to the mobility aid. If it is operationally necessary to stow baggage and cargo in the same compartment or ULD as the electric mobility aid, the device can only be effectively protected from damage by independently securing the other baggage and cargo.

1.5 Removing batteries from a mobility aid when a device is specifically designed to allow this does not always enhance safety and introduces additional complexity to ground handling processes. It is suggested that if a collapsible electric mobility aid is of a robust design, such that it resembles for all practical purposes a non-collapsible device, these should be permitted for carriage in the baggage compartment whilst fully assembled, subject to compliance with the requirements for a mobility aid with its batteries connected.

1.6 The Technical Instructions do not currently specify a maximum Watt-hour (Wh) rating for the lithium ion batteries of an electric mobility that is not specifically designed to allow the removal of batteries. A brief review of manufacturers' data consolidated by the British Healthcare Trades Association (BHTA) indicates that the mobility aid with the highest powered batteries has 2 x 383Wh batteries installed. The views of the DGP/WG are sought on whether there should be a maximum Watt-hour limit established per battery, array of batteries or device. If required, there can be further analysis and engagement with the BHTA should this be needed in order to present a further paper at DGP/26.

1.7 Regional consumer protection legislation typically affords persons with reduced mobility the right to travel with mobility equipment subject to compliance with the applicable safety requirements. As an example, European Commission guidance states 'There is no clear definition of "mobility equipment" in Regulation (EC) N° 1107/2006. However, it can be defined as any equipment the purpose of which is to provide mobility to disabled persons and persons with reduced mobility or assist them in their mobility'. Passengers wishing to carry batteries without an electric mobility aid, for example to use with equipment already located at their destination, often seek to do so quoting this guidance. The ICAO Technical Instructions include provisions for the removal of batteries, for example if the device is specifically designed to allow this, e.g. collapsible. The Technical Instructions then specify the safety requirements based on battery type. Providing those safety requirements are met, there would be no difference from a safety perspective to carry the batteries having been removed from the mobility aid, with it or on their own. It is suggested, therefore, that the existing provisions for the carriage of electric mobility aid batteries removed from the mobility aid be amended to explicitly permit the carriage of spare batteries by passengers whose mobility is restricted. The views of the DGP-WG are sought on this and if appropriate further proposals can be presented to DGP/26.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to discuss whether there should be a maximum Watt-hour limit established per lithium ion battery, array of batteries or per mobility aid and also consider the following amendments to Table 8-1 of the ICAO Technical Instructions, as shown in the appendix to this working paper.

— — — — — — — —

APPENDIX

PROPOSED AMENDMENT TO PART 8 OF THE TECHNICAL INSTRUCTIONS

Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

Chapter 1

PROVISIONS FOR DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

Parts of this Chapter are affected by State Variations US 15, VE 9, VE 10; see Table A-1

. . .

1.1 DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

. . .

Table 8-1. Provisions for dangerous goods carried by passengers or crew

Items or articles	*Location*			*Approval of the operator(s) is required*	*The pilot-in-command must be informed*	*Restrictions*
	Checked baggage	*Carry-on baggage*	*On the person*			
. . .						
Medical necessities						
. . .						
5) Mobility aids (e.g. wheelchairs) powered by non-spillable wet batteries or batteries which comply with Special Provision A123 or A199, for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg)	Yes	No	No	Yes	(see 5 d) iv))	a) non-spillable wet batteries must comply with Special Provision A67 or the vibration and pressure differential tests of Packing Instruction 872; b) the operator must verify that: i) the battery is securely attached to the mobility aid; ii) the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container); and iii) electrical circuits have been isolated; c) mobility aids with installed batteries must be ~~carried in a manner such that they are~~ secured to prevent movement and protected from being

Items or articles	*Location*			*Approval of the operator(s) is required*	*The pilot-in-command must be informed*	*Restrictions*
	Checked baggage	*Carry-on baggage*	*On the person*			
						damaged by the movement of baggage, mail~~,~~ ~~stores~~ or ~~other~~ cargo (bracing with other unsecured load is not permitted); d) where the mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible) and the requirements of b) and c) above cannot be achieved: i) the battery(ies) must be removed; the mobility aid may then be carried as checked baggage without restriction; ii) the removed battery(ies) must be carried in strong, rigid packagings which must be stowed in the cargo compartment; iii) the battery(ies) must be protected from short circuit; and iv) the pilot-in-command must be informed of the location of the packed battery; e) it is recommended that passengers make advance arrangements with each operator. *Note.— From 1 January 2025, the mobility aid must be equipped with a means of electrically disconnecting the battery set or removing the battery set without the use of a tool. The means must be clearly marked.*
6) Mobility aids (e.g. wheelchairs) powered by spillable batteries, for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg)	Yes	No	No	Yes	Yes	a) where possible, the mobility aid must be loaded, stowed, secured and unloaded always in an upright position. The operator must verify that: i) the battery is securely attached to the mobility aid; ii) battery terminals are protected from short circuits (e.g. by being enclosed within a battery container); and iii) electrical circuits have been isolated; b) mobility aids with installed batteries must be secured to prevent movement and protected from being damaged by the movement of baggage, mail or cargo (bracing with other unsecured load is not permitted); ~~b~~c) if the mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery(ies) must be removed and carried in strong, rigid packagings, as follows:
						i) packagings must be leak-tight, impervious to battery fluid and be protected against upset by securing them to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage)

Items or articles	*Location*			*Approval of the operator(s) is required*	*The pilot-in-command must be informed*	*Restrictions*
	Checked baggage	*Carry-on baggage*	*On the person*			
						such as by the use of restraining straps, brackets or holders; ii) batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and iii) these packagings must be marked "Battery, wet, with wheelchair" or "Battery, wet, with mobility aid" and be labelled with a "Corrosive" label (Figure 5-24) and with package orientation labels (Figure 5-29) as required by 5;3; The mobility aid may then be carried as checked baggage without restriction; ~~c) mobility aids must be carried in a manner such that they are protected from being damaged by the movement of baggage, mail, stores or other cargo;~~ d) the pilot-in-command must be informed of the location of the mobility aid with an installed battery or the location of a packed battery; e) it is recommended that passengers make advance arrangements with each operator; also, unless batteries are non-spillable they should be fitted, where feasible, with spill-resistant vent caps. *Note.— From 1 January 2025 the mobility aid must be equipped with a means of electrically disconnecting the battery set or removing the battery set without the use of a tool. The means must be clearly marked.*
7) Mobility aids (e.g. wheelchairs) powered by lithium ion batteries, for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg)	Yes	(see 7 d))	No	Yes	Yes	a) the batteries must be of a type which meets the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3; b) the operator must verify that: i) the battery is securely attached to the mobility aid; ii) the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container); and iii) electrical circuits have been isolated; c) mobility aids with installed batteries must be ~~carried in a manner such that they are~~ secured to prevent movement and protected from being damaged by the movement of baggage, mail~~, stores~~ or ~~other~~ cargo (bracing with other unsecured load is not permitted);

Items or articles	*Location*			*Approval of the operator(s) is required*	*The pilot-in-command must be informed*	*Restrictions*
	Checked baggage	*Carry-on baggage*	*On the person*			
						d) where the mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible) and the requirements of b) and c) above cannot be achieved:
						i) the battery(ies) must be removed and carried in the passenger cabin; ii) the battery terminals must be protected from short circuit (by insulating the terminals, e.g. by taping over exposed terminals); iii) the battery must be protected from damage (e.g. by placing each battery in a protective pouch); iv) removal of the battery from the mobility aid must be performed by following the instructions of the manufacturer or device owner; v) the battery must not exceed 300 Wh; and vi) a maximum of one spare battery not exceeding 300 Wh or two spares not exceeding 160 Wh each may be carried; e) the pilot-in-command must be informed of the location of the lithium ion battery(ies); f) it is recommended that passengers make advance arrangements with each operator. *Note.— From 1 January 2025 the mobility aid must be equipped with a means of electrically disconnecting the battery set or removing the battery set without the use of a tool. The means must be clearly marked.*
. . .						

. . .

— END —