International Civil Aviation Organization

DGP-WG/21-WP/24
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WORKING PAPER

DANGEROUS GOODS PANEL (DGP) WORKING GROUP MEETING (DGP-WG/21)

Virtual Meeting, 24 to 28 May 2021

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

ADEQUATE PROTECTION TO THE BATTERY OF MOBILITY AIDS

(Presented by D. Brennan)

SUMMARY

This working paper proposes revision to allow batteries that power mobility aids to be removed according to the level of protection provided to the battery by the device instead of whether or not the battery is removable by design.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 The Twenty-Sixth Meeting of the Dangerous Goods Panel (DGP/26, 16 to 27 October 2017) revised the passenger provisions for battery-powered mobility aids contained in the 2017-2018 Edition of the Technical Instructions and incorporated all the operator responsibilities related to battery-powered mobility aids into the storage and loading chapter of Part 7 (see paragraph 2.8.3 of the DGP/26 Report). The revisions included changes to the criteria of when the battery(ies) needed to be removed from the mobility aid. The revised provisions were incorporated in the 2019-2020 Edition of the Technical Instructions.

1.2 The provisions contained in the 2017-2018 Edition required that "where the mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible)", the battery(ies) must be removed, irrespective if they were non-spillable batteries, dry batteries, nickel-metal hydride batteries or lithium ion batteries. The original proposal presented to DGP/26 allowed the battery(ies) to either be securely attached to the mobility aid or removed from the mobility aid "when the mobility aid does not adequately protect the battery." DGP/26 did not agree to this text and concluded that the criteria in the 2017-2018 Edition of "where the mobility aid is specifically designed to allow its battery(ies) to be removed by the user" should be retained as concern was expressed surrounding the description of "adequate protection" being too prescriptive. However, even though the aforementioned

condition was reinstated in Part 7;2.13, "adequate protection" was adopted in Table 8-1 of the 2019-2020 Edition of the Technical Instructions as shown below:

4) Battery-powered mobility aids (e.g. wheelchairs)	Yes	(see d))	Yes	a) 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); b) the passenger should make advance arrangements with each operator and provide information on the type of battery installed and on the handling of the mobility aid (including instructions on how to isolate the battery); c) in the case of a non-spillable wet battery: i) each battery must comply with Special Provision A67; and ii) a maximum of one spare battery may be carried per passenger; d) in the case of a lithium ion battery: i) each battery 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; ii) when the mobility aid does not provide adequate protection to the battery: — the battery must be removed in accordance with the manufacturer's instructions; — the battery must not exceed 300 Wh; — the battery terminals must be protected from short circuit (by insulating the terminals, e.g. by taping over exposed terminals); — the battery must be protected from damage (e.g. by placing each battery in a protective pouch); and — the battery must be carried in the cabin; iii) a maximum of one spare battery not exceeding 300 Wh or two spare batteries not exceeding 160 Wh each may be carried. Spare batteries must be carried in the cabin.

1.3 The two options of a battery being allowed to remain installed in the mobility aid when it can be securely attached to the device and a battery being required to be removed if the mobility aid is specifically designed to allow it to be appears to be contradictory or confusing. On the one hand, the provisions are suggesting that the battery can remain if it can be securely attached to the device, but on the other hand, the user needs to remove the battery if the device is designed to allow the battery to be removed.

1.4 Nowadays, many battery powered mobility aids are designed to allow the battery(ies) to be removed, so that users can either replace the battery(ies) or carry spare battery(ies) with them. One example of these mobility aids is:

1.5 The manufacturer of the mobility aid shown above highlighted that the two 192 Watt-hour batteries can be unclipped from the device in a few seconds. In other words, the mobility aid is specifically designed to allow the batteries to be removed by the users, following the manufacturer's instructions. At the same time, as shown in the photographs above, the lithium batteries are securely enclosed inside the tubes of the frame of the device with adequate protection though not exactly "attached". There was then a dilemma of whether the batteries should remain or be removed and if they are to be removed, the passenger would end up with two 192 Watt-hour lithium batteries.

1.6 As the intent of the provisions is to ensure safety when transporting these devices, the level of protection to the device must also be taken into account, which is demonstrated by the requirements of spillable battery powered mobility aids, where their battery only needs to be removed if the device cannot be loaded, stowed, secured and unloaded in an upright position without considering whether the device is designed to allow the battery to be removed or not.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider the revisions to Part 7;2.13.1 and Part 7;2.13.3 as shown in the appendix to this working paper.

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APPENDIX
AMENDMENT TO PART 7 OF THE TECHNICAL INSTRUCTIONS

Part 7

OPERATOR'S RESPONSIBILITIES

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2.13 LOADING OF BATTERY-POWERED MOBILITY AIDS CARRIED UNDER THE PROVISIONS OF PART 8

2.13.1 Loading of mobility aids powered by non-spillable wet batteries or batteries which comply with Special Provision A123 or A199

2.13.1.1 An operator must secure, by use of straps, tie-downs or other restraint devices, a battery-powered mobility aid with installed batteries. The mobility aid, the batteries, electrical cabling and controls must be protected from damage including by the movement of baggage, mail or cargo.

2.13.1.2 An operator must verify that:

a) the passenger has confirmed that the battery is:

1) a non-spillable wet battery that complies with Special Provision A67;

2) a dry battery that complies with Special Provision A123; or

3) a nickel-metal hydride battery that complies with Special Provision A199.

b) the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container);

c) the battery is either:

1) securely attached to the mobility aid and the electrical circuits are isolated following the manufacturer's instructions; or

2) removed by the user, if the mobility aid ~~is specifically designed to allow it to be~~ does not provide adequate protection to the battery, following the manufacturer's instructions.

d) a maximum of one non-spillable wet spare battery is carried per passenger.

2.13.1.3 An operator must ensure that any battery(ies) removed from the mobility aid and any spare battery are carried in strong, rigid packagings, protected from short circuit and stowed in the cargo compartment.

2.13.1.4 The operator must inform the pilot-in-command of the location of any mobility aids with installed batteries, removed batteries and spare batteries.

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2.13.3 Loading of mobility aids powered by lithium ion batteries

2.13.3.1 An operator must secure, by use of straps, tie-downs or other restraint devices, a battery-powered mobility aid with installed batteries. The mobility aid, the batteries, electrical cabling and controls must be protected from damage including by the movement of baggage, mail or cargo.

2.13.3.2 An operator must verify that:

a) the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container);

b) the battery is either:

1) securely attached to the mobility aid and the electrical circuits are isolated following the manufacturer's instructions; or

2) removed by the user, if the mobility aid ~~is specifically designed to allow it to be~~ does not provide adequate protection to the battery, following the manufacturer's instructions; and

c) the removed battery does not exceed 300 Wh and that its spare battery does not exceed 300 Wh or its two spare batteries do not exceed 160 Wh each.

2.13.3.3 An operator must ensure that any battery removed from the mobility aid and any spare batteries are carried in the cabin and protected from damage (e.g., by placing each battery in a protective pouch) and the battery terminals protected from short circuit (by insulating the terminals, e.g. by taping over exposed terminals).

2.13.3.4 The operator must inform the pilot-in-command of the location of any mobility aids with installed lithium ion batteries, removed batteries and spare batteries.

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