



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

POWER PACKS & SPARE BATTERIES

(Presented by B. Firkins)

SUMMARY

Portable power packs have been identified by the Australian Civil Aviation Safety Authority (CASA) as an emerging threat to the safety of passengers on aircraft.

This paper sets out a proposal to prevent the recharging of power banks and power packs of less than 100 Wh, whilst on board the aircraft. It also proposes to require that power banks not be connected to another device whilst on board the aircraft.

Action by the DGP-WG: The DGP is invited to consider and comment upon the proposed text as shown in the appendix to this working paper.

1. INTRODUCTION

1.1 Portable power packs are a rapidly growing area; and are presenting as an emerging threat to aviation safety. Recent reports included a flight from Harbin, China to Nagoya, Japan, which was forced to divert following the cabin crew managing an incident in the cabin.

1.2 It was widely reported that “During the diversion, the cabin crew discharged fire extinguishers into the locker before placing **the burning power pack and the connected smartphone** into a water container, extinguishing the fire nine minutes after it started.”

1.3 In an analysis of reported dangerous goods occurrences by the Australian Civil Aviation Safety Authority, power banks were identified and named in 2015 as being in the “Top ten least wanted

dangerous goods” and were named in conjunction with spare batteries. Power banks moved to the Number 2 ranking in 2016.

1.4 Power packs, or power banks, are frequently sold or given away as corporate hospitality merchandise; or sold through television advertising. Often these power packs are marketed as having functional extra components in order to have them classified as UN 3481 **Lithium batteries contained in equipment**.

1.5 The provisions for passengers and crew have tried to capture these types of devices with a sub-entry of “articles containing lithium metal or lithium ion cells or batteries the primary purpose of which is to provide power to another device, must be carried as spare batteries in accordance with the item below”. The “item below” relates to “spare batteries for portable electronic devices....”

1.6 The difficulty for operators and passengers is the ability to establish whether these power banks have cell or batteries that meet UN 38.3.

1.7 Whilst the power banks may be intended as being the equivalent of “spare batteries”; the reality is that traditional spare batteries were either produced by the original equipment manufacturer (OEM), or a reputable after-market battery manufacturer for the device (examples are laptops and cameras where the battery was designed for a particular device or a small range of devices) or alternatively, the spare batteries tended to be single cell 18650 or CR123 style batteries.

1.8 Furthermore, spare batteries were either installed in the relevant piece of equipment; or they were not. Traditional spare batteries were not held outside the device and tethered to provide electrical power as currently happens with power packs and power banks.

1.9 These power packs are often charged, recharged and discharged by powering other devices through a USB type port; which significantly reduces manufacturing set up costs and increases the usability of the power pack to power other devices.

1.10 The mass production of these devices, and the limited government oversight and setting and enforcing of product safety standards, is producing a situation similar to that experienced by the aviation industry with e-cigarettes and hoverboards.

1.11 Given the difficulty in establishing compliance with UN 38.3, and the increased risks presented by power packs and lithium batteries when they are being charged, discharged, experience over-heating or during use; coupled with the increasing availability of aircraft with power being supplied direct to the passenger’s seat; there is an accelerating and increasing to passenger safety on aircraft.

1.12 This paper proposes to restrict the use, operation and recharging of power packs, which are less than 100 Wh, on aircraft.

1.13 This paper does not propose to extend the same restrictions to the other spare battery entry for power packs with a Wh rating of 100 or more, but less than 160 Wh. Carriage of these power banks (spare batteries) are already subject to requiring the approval of the operator. This puts the operator in a position of being able to establish compliance with UN 38.3, and/or institute their own instructions in respect of accessing any on-board power supply.

1.14 This paper does not propose to extend the same restrictions to the spare battery entries for portable medical electronic device. Medical purpose equipment tends to be subjected to more rigorous

construction and maintenance standards, greater government and consumer safety oversight and with greater diligence by the OEM.

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

2.1 The DGP-WG is invited to consider and comment upon the proposed amended text 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

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

<i>Items or articles</i>	<i>Location</i>			Approval of the operator(s) is required	The pilot-in-command must be informed	<i>Restrictions</i>
	Checked baggage	Carry-on baggage	On the person			
...						
Consumer articles						
...						
20) Portable electronic devices (such as watches, calculating machines, cameras, cellular phones, laptop computers, camcorders)						
Portable electronic devices containing lithium metal or lithium ion cells or batteries (articles containing lithium metal or lithium ion cells or batteries the primary purpose of which is to provide power to another device must be carried as spare batteries in accordance with the	Yes	Yes	Yes	No	No	a) carried by passengers or crew for personal use; b) should be carried as carry-on baggage; c) each battery must not exceed the following: — for lithium metal batteries, a lithium content of 2 grams; or

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			
item below)						<ul style="list-style-type: none"> — for lithium ion batteries, a Watt-hour rating of 100 Wh;
						d) if devices are carried in checked baggage, measures must be taken to prevent unintentional activation; and
						e) batteries and cells must be of a type which meets the requirements of each test in the <i>UN Manual of Tests and Criteria</i> , Part III, subsection 38.3.
Spare batteries (including power packs and power banks) for portable electronic devices containing lithium metal or lithium ion cells or batteries	No	Yes	Yes	No	No	<ul style="list-style-type: none"> a) carried by passengers or crew for personal use; b) must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); c) each battery must not exceed the following: <ul style="list-style-type: none"> — for lithium metal batteries, a lithium content of 2 grams; or — for lithium ion batteries, a Watt-hour rating of 100 Wh; and d) batteries and cells must be of a type which meets the requirements of each test in the <i>UN Manual of Tests and Criteria</i>, Part III, subsection 38.3-; e) <u>spare batteries and power banks must not be recharged while on board the aircraft; and</u> f) <u>power banks must not be electrically connected, or providing power, to an external device.</u>
Portable electronic devices containing lithium ion batteries exceeding a Watt-hour rating of 100 Wh but not exceeding 160 Wh	Yes	Yes	Yes	Yes	No	<ul style="list-style-type: none"> a) carried by passengers or crew for personal use; b) should be carried as carry-on baggage; and c) batteries and cells must be of a type which meets the requirements of each test in the <i>UN Manual of Tests and Criteria</i>, Part III, subsection 38.3.
...						
...						