



**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/16)**

Montreal, 17 to 21 October 2016

Agenda Item 5: Specific work items identified by the Air Navigation Commission:

**5.3: Mitigating risks posed by the carriage of lithium batteries by air (ANC job card
DGP.003.01)**

BATTERY-POWERED ACTIVE DEVICES IN BAGGAGE, MAIL AND CARGO

(Presented by the Secretary)

SUMMARY

A working paper submitted to the fourth meeting of the Airworthiness Panel Meeting (AIRP/4, Montréal, 7 to 11 November 2016) on the subject of battery-powered active devices in baggage, mail and cargo is provided for information. It is related to the amendment proposed to DGP-WG/16 on the same subject (DGP-WG/16-WP/1).



WORKING PAPER

AIRWORTHINESS PANEL (AIRP)

FOURTH MEETING

Montréal, 7 to 11 November 2016

Agenda Item 5: Any other business

5.1: Future work

BATTERY-POWERED ACTIVE DEVICES IN BAGGAGE, MAIL AND CARGO

(Presented by D. Brennan — DGP Member)

SUMMARY

This working paper proposes that the Airworthiness Panel (AIRP) consider development of SARPs for inclusion into Annex 6, 8 and/or guidance material to address the effect on aircraft operations of carriage in baggage, cargo or mail of battery-powered devices that are active when inside the aircraft cargo compartment.

Action by the AIRP is in paragraph 4.

1. INTRODUCTION

1.1 Battery-powered active devices are increasingly being used by consignors of air cargo for incorporation in items such as tracking devices and temperature data loggers. These devices are placed in the aircraft cargo and remain active throughout the entire transport journey, including while inside the aircraft during flight. The use of some of these items, such as temperature data loggers, is a requirement for certain commodities, such as pharmaceuticals. Therefore the consignor is obligated to have these items, and implicitly the battery-powered active devices they incorporate, in the air cargo to comply with regulations set forth by agencies such as the United States Federal Drug Administration (FDA).

1.2 The air operators and/or equipment manufacturers are also using battery-powered active devices that are attached to aircraft unit load devices (ULDs), or use ULDs that are fitted with battery-powered active devices such as refrigeration/heating units. There is also a move to the use of so called permanent baggage tags or other devices in passenger baggage fitted with batteries and which remain active when inside the aircraft.

1.3 The use of lithium batteries as a power source for these battery-powered devices has been addressed by the Dangerous Goods Panel (DGP). The DGP has developed provisions for the carriage of lithium batteries in cargo and passenger and crew baggage that are set out in the Technical Instructions. In doing so the DGP has also recognized the use of active devices where the Technical Instructions includes the following text: “Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.”

2. DISCUSSION

2.1 The purpose of this working paper is to progress the development of Standards that can be used by device manufacturers and operators to determine that the electromagnetic radiation emitted by these active battery-powered devices when carried in aircraft cargo compartments does not pose a risk to the safe operation of the aircraft.

2.2 In developing any Standard, Recommended Practice or guidance material, the AIRP needs to recognize that, unlike aircraft equipment which is controlled under the operator’s maintenance program, these devices are in items of cargo that are offered for transport by the shipper (consignor) of the cargo.

2.3 When the shippers prepare their shipments for air cargo in which they want to place a data logger, or other active battery-powered device, the shipper may not know by which operator the cargo will be carried. There are also many instances where cargo is carried on more than one operator between the airport of origin and the airport of destination.

2.4 For the reason mentioned in 2.3 above, it is believed that there needs to be a system that places the responsibility on the manufacturer of the device to test against a standard such as RTCA DO-160 to validate that any electromagnetic radiation is within specified limits and will not interfere with aircraft systems. The device manufacturer should then provide a certificate of compliance for these devices, or devices could be marked to identify that they comply. Shippers would then be required to only use devices that have been certified as compliant by the device manufacturer.

2.5 It is also believed that it is unreasonable to expect every operator to have to conduct testing of every possible device for each aircraft type that they operate. Here it is believed that there should be coordination between the aircraft manufacturers and the device manufacturers so that appropriate information can be made available to the operators on approved/certified devices together with any limits that may apply on cumulative numbers of active devices that can be carried in cargo by aircraft type and compartment, if applicable.

2.6 Development of Standards, Recommended Practices or guidance material that would provide clear information for shippers and for operators could then be used by the operators to just advise shippers on which devices and in what quantity are permitted on a given flight.

3. CONCLUSION

3.1 That manufacturers of devices intended to be carried in cargo and/or passenger baggage must design and test the devices to a specified Standard that identifies that the device will not affect

aircraft systems. Devices that have been designed and tested to the applicable Standards should be identified as being compliant.

3.2 Airframe manufacturers must provide aircraft operators with data on the capability of the aircraft, including any applicable limits that must be applied to the carriage of active devices inside the aircraft cargo compartment. This should include reference to the applicable Standards.

3.3 Aircraft operators should develop, as part of their operating manuals, information for cargo consignors on the requirements that must be applied to active battery-powered devices.

4. **ACTION BY THE AIRP**

4.1 The AIRP is invited to:

- a) consider the conclusions 3.1 to 3.3 presented above;
- b) review the job card proposal as shown in the appendix to this working paper; and
- c) agree that the proposed job card, as modified by action b) above, be submitted to the Air Navigation Commission (ANC) for approval.

**APPENDIX
PROPOSED JOB CARD**

Title		Control of risks posed by the carriage of battery-powered devices in baggage, cargo and mail that are active when inside the aircraft cargo compartment	Reference:			
Source		Secretariat				
Problem Statement		Many items carried in aircraft cargo compartments, including unit load devices, cargo, mail and passenger baggage now contain, or are fitted with battery-powered devices that are operational (active) throughout the transport chain, including when inside the aircraft during flight. These devices, when active, emit electromagnetic radiation that could have the potential to affect the aircraft systems thereby compromising flight safety.				
Specific Details (including impact statements)		<p>Battery-powered devices are increasingly being used by consignors of air cargo for use in items such as tracking devices and temperature data loggers which are placed in the aircraft cargo and which remain active throughout the entire transport journey, including when inside the aircraft during flight. The use of some of these devices, such as temperature data loggers is a regulatory requirement for some commodities, such as pharmaceuticals, and therefore the shipper is obligated to have these devices in their air cargo to comply with applicable regulations.</p> <p>The air operators and/or equipment manufacturers are also using battery-powered devices that are attached to aircraft unit load devices (ULDs), or use ULDs that are fitted with battery-powered devices such as refrigeration / heating units. There is also a move to the use of so called permanent baggage tags or other devices in passenger baggage fitted with batteries, which remain active when inside the aircraft.</p> <p>The concern with the specific devices and the accumulation of these devices in the cargo compartment is the electromagnetic radiation that may be emitted by the devices when active and the potential effect on aircraft systems.</p> <p>To address this potential risk it is believed that the AIRP should develop specific SARPs and/or guidance material.</p>				
Expected Benefit		Safe transport aboard aircraft of cargo, mail and passenger baggage that contains active battery-powered devices.				
Reference Documents		ICAO Circ 340 AN/198, Guidelines for the Expanded Use of Portable Electronic Devices FAA Advisory Circular AC 91.21-1C, Use of Portable Electronic Devices Aboard Aircraft EASA AMC and GM to CAT.GEN.MPA.140, Portable Electronic Devices			Attachments	
Primary Expert Group:		AIRP				
WPE No.	Document affected	Description of Amendment proposal or Action	Supporting Expert Group	Expected dates:		
				Expert Group	Effective	Applicability
	Annex 6 and/or 8		DGP	Q42017	2019	2020
	Manual/Doc		DGP	Q42017	2019	2020
Initial Issue Date: xx Nov 2016		Date approved by ANC:		Session/Meeting:		