



WORKING PAPER

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

Montreal, 17 to 21 October 2016

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

2.7: Part 7 — Operator's Responsibilities

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)

MITIGATION MEASURES FOR LITHIUM BATTERIES ON ALL-CARGO AIRCRAFT

(Presented by S. Schwartz)

SUMMARY

This working paper presents mitigation strategies for the carriage of **Lithium ion batteries** (UN 3480) and **Lithium metal batteries** (UN 3090) on all-cargo aircraft.

Action by the DGP-WG: The DGP-WG is invited to consider adopting revisions to the Technical Instructions as presented in the appendix to this working paper.

1. INTRODUCTION

1.1 **Lithium metal batteries** (UN 3090) and **Lithium ion batteries** (UN 3480) are prohibited as freight on passenger aircraft in part because of the inability of on-board fire suppression systems to adequately suppress a fire and address other hazards involving lithium batteries. Beyond the package level, there are no safety requirements at the unit load device (ULD), compartment, or aircraft level for their transport on all-cargo aircraft.

1.2 Testing of lithium batteries by the U.S. Federal Aviation Administration (FAA) at the William J. Hughes Technical Center demonstrated that lithium ion batteries present fire, heat, and explosion hazards on aircraft.

1.3 All-cargo aircraft transport significant numbers of lithium battery shipments. One likely result of the prohibitions of lithium battery transport on passenger aircraft has been an increase in the number carried on cargo aircraft since many batteries that were previously transported on passenger aircraft have been redirected to all-cargo aircraft. Additionally, all-cargo aircraft may not have fire suppression systems as capable of those present on the majority of passenger aircraft. The net effect is that more batteries are carried on aircraft with less capable fire suppression systems, resulting in significantly greater risk to all-cargo operations.

1.4 Recognizing the increasing danger to all-cargo operations, and that there has been little support to suspend lithium battery transport on all-cargo aircraft until safe methods of transport are developed and implemented, it is believed that additional mitigation strategies should be employed for all-cargo aircraft carrying lithium batteries as freight. It is recognized that these are only incremental measures proposed to increase the safety of lithium battery transport, and they do not, in themselves, ensure the safe transport of lithium batteries. They are proposed as temporary measures pending comprehensive solutions that mitigate the hazards posed by lithium battery shipments.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to adopt revisions to the Technical Instructions to improve the safety of lithium battery shipments on all-cargo aircraft as shown in the appendix to this working paper.

APPENDIX

PROPOSED AMENDMENT TO PART 7 OF THE TECHNICAL INSTRUCTIONS

Part 7

OPERATOR'S RESPONSIBILITIES

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Chapter 2

STORAGE AND LOADING

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2.14 HANDLING AND LOADING OF INTERMEDIATE BULK CONTAINERS (IBCs)

During handling and loading of intermediate bulk containers (IBCs), account must be taken of the IBC markings specified in 6;2.4.3, if present.

**2.15 LOADING OF UN 3090, LITHIUM METAL BATTERIES
AND UN 3480, LITHIUM ION BATTERIES ON CARGO AIRCRAFT**

Packages and overpacks of UN 3090 — Lithium metal batteries and UN 3480 — Lithium ion batteries must be loaded for carriage on cargo aircraft according to the following provisions:

- a) in a fire resistant unit load device or under a fire resistant cover;
- b) in a Class C aircraft cargo compartment, or in the cargo compartment with the most capable fire suppression system;
- c) segregated from other labeled flammable dangerous goods; and
- d) lithium battery shipments should be separated from other lithium battery shipments to reduce the density of batteries in any single location.

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