



DANGEROUS GOODS PANEL (DGP) WORKING GROUP ON LITHIUM BATTERIES

SECOND MEETING

Montréal, 7 to 11 April 2014

Agenda Item 1: Mitigating risks associated with the carriage of lithium metal batteries

EXTENDED DIVERSION TIME OPERATIONS (EDTO) AND FIRE SUPPRESSION CAPABILITIES

(Presented by the Secretary)

SUMMARY

This information paper provides background information on the potential impact the transport of lithium metal batteries may have on certification conditions related to extended diversion time operations (EDTO) and cargo compartment fire suppression capabilities.

1. INTRODUCTION

1.1 The Twenty-Fourth Meeting of the Dangerous Goods Panel (DGP/24) was asked to consider the Secretariat's growing concern with cargo safety and the increasing need for coordination between dangerous goods and other aviation areas, including operations and airworthiness. The inability of current cargo fire suppression systems to extinguish a lithium metal fire was of particular concern. It was suggested that this could have an impact on certification requirements related to extended diversion time operations (EDTO) in Annex 6 — *Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes* and fire suppression capabilities in Annex 8 — *Airworthiness of Aircraft*. This information paper provides background information on these requirements.

2. EXTENDED DIVERSION TIME OPERATIONS (EDTO)

2.1 The planning of new air traffic services (ATS) routes across the Polar Regions and developments in Contracting States prompted ICAO to review Standards and Recommended Practices (SARPs) and guidance material related to the conduct of extended range operations. This review began in

2000 and resulted in the development of new EDTO SARPs adopted by the ICAO Council in 2012 for incorporation in Annex 6, Part I (Amendment 36 to Annex 6, Part I applicable 15 November 2012).

2.2 Maximum diversion time as defined in Annex 6, Part I is the maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome. For EDTO, time limited systems are to be considered when establishing a maximum diversion time as described in Standard 4.7.2.3:

4.7.2.3 When approving the appropriate maximum diversion time for an operator of a particular aeroplane type engaged in extended diversion time operations, the State of the Operator shall ensure that:

- a) *for all aeroplanes*: the most limiting EDTO significant system time limitation, if any, indicated in the aeroplane flight manual (directly or by reference) and relevant to that particular operation is not exceeded; and

...

The cargo fire suppression time limitation of an aeroplane is considered to be an EDTO significant system time limitation.

2.3 The intent of EDTO provisions is to ensure that should a failure to a system occur, there would be a reasonable expectation that an aeroplane would be able to land safely. This means that in the case of a cargo fire suppression system, it would need to be capable of suppressing a fire for the amount of time it would take to proceed to an aerodrome and land the aeroplane safely.

3. **CARGO COMPARTMENT FIRE SUPPRESSION CAPABILITIES**

3.1 Annex 8 provides the international Standards for States to develop their own codes of airworthiness for the certification of aeroplanes, which includes their cargo compartments. The Standards in Annex 8 stipulate that cargo compartment fire suppression systems, including their extinguishing agents, shall be designed so as to take into account a sudden and extensive fire such as could be caused by an explosive or incendiary device or dangerous goods.

4. **CONCLUSION**

4.1 An assessment of the capability of a cargo compartment fire suppression system to suppress a lithium battery fire is required when considering whether the batteries can be transported safely.
