



DANGEROUS GOODS PANEL (DGP)

TWENTY-FOURTH MEETING

Montréal, 28 October to 8 November 2013

Agenda Item 4: Development of recommendations for amendments to the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481) for incorporation in the 2015-2016 Edition

REVISION TO THE DRILL CODE FOR LITHIUM ION BATTERIES

(Presented by M. Rogers)

SUMMARY

This paper proposes a revision to the Drill Code for entries containing lithium ion batteries.

Action by the DGP: The DGP is invited to revise the Drill Code Letter for UN 3480 (**Lithium ion batteries**) and UN 3481 (**Lithium ion batteries contained in equipment; Lithium ion batteries packed with equipment**) to “F”.

1. INTRODUCTION

1.1 In the 2013-2014 Edition of the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* (Doc 9481), a new additional risk drill letter “Z” was introduced. The corresponding text indicates that the “Aircraft cargo fire suppression system may not extinguish or contain the fire; consider landing immediately”. This drill code letter was applied against all entries for lithium ion and lithium metal batteries (UN 3480, UN 3481, UN 3090, UN 3091).

1.2 While lithium metal battery fires have been shown to not respond to Halon, the fire suppressant normally found on commercial aircraft, the same has not been true for lithium ion batteries. In testing by the FAA Technical Center in Atlantic City, published in September 2006, it was found that “Halon 1301, the fire suppression agent installed in transport category aircraft, is effective in suppressing the electrolyte fire and easily extinguishes any fire at both the 5% knockdown concentration as well as the 3% suppression concentration.” In subsequent testing published in 2010, the FAA again found that “Halon 1301 in a Class C cargo compartment and hand-held fire extinguishers containing Halon 1211

will extinguish the open flames from a lithium-ion or lithium-ion polymer cell fire and prevent the spread of fire to other ordinary combustibles.”

1.3 The FAA Technical Center conducted yet more testing in 2013, this time using a shipment of 5,000 lithium ion batteries in a Class C compartment in a donated 727. The findings were again consistent with previous research; Halon was effective in suppressing the fire, preventing the spread of fire to adjacent combustible material.

1.4 The testing conducted thus far indicates that a fire involving lithium ion batteries primarily involves the burning of the electrolyte, a flammable liquid. As such, the fire characteristics of lithium ion batteries are significantly different than those for lithium metal batteries. There has been no testing that would indicate that Halon would not be effective at suppressing a burning electrolyte fire, nor any indication that the aircraft cargo fire suppression system may not contain the fire.

1.5 Prior to the introduction of the Drill Code Letter “Z”, lithium ion batteries were assigned the letter “F” (Flammable). It is suggested this is still the most appropriate entry for lithium ion batteries.

APPENDIX

PROPOSED AMENDMENT TO EMERGENCY RESPONSE GUIDANCE

Section 4

CHART OF DRILLS AND
LIST OF DANGEROUS GOODS WITH
DRILL REFERENCE NUMBERS

<i>UN No.</i>	<i>Drill Code</i>	<i>Proper shipping name</i>
...		
3480	9FZ	Lithium ion batteries
3481	9FZ	Lithium ion batteries contained in equipment
3481	9FZ	Lithium ion batteries packed with equipment
...		

— END —