Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods **21 June 2012**

Forty-first session
Geneva, 25 June – 4 July 2012
Item 4 (e) of the provisional agenda
Electric storage systems - Miscellaneous

Summary of decisions taken by the ICAO Dangerous Goods Panel at a special meeting of the DGP Working Group of the Whole on Lithium Batteries

Transmitted by the International Civil Aviation Organization (ICAO)

Introduction

1. The Twenty-Third Meeting of the Dangerous Goods Panel (DGP/23, 11 to 21 October 2011) concluded that provisions related to lithium batteries needed a detailed review, with an emphasis on addressing concerns related to bulk shipments of excepted batteries (comparable to Special Provision 188 of the UN Recommendations). The decision was prompted by a proposal to remove the exceptions for lithium batteries which currently exist for the air mode. Test results in one State and a number of lithium battery-related incidents led some members to believe that the risks associated with transporting lithium batteries by air were too great to justify any exceptions from the regulations. These risks were compounded by the substantial increase of batteries being transported, the increase in energy density of modern lithium batteries, and the expected future upward trend for both. Most panel members did not support the proposal as they believed that all of the incidents reported were related to non-compliant shipments and that further regulation would not result in increased compliance. Members did recognize that when the exceptions for lithium batteries were introduced, the level of growth in the numbers shipped and the increase in energy density was never anticipated, nor was the possibility that shippers would take advantage of the provisions to facilitate the shipment of such items in bulk. Consequently, large consignments of lithium batteries were currently being shipped by air without the pilot-in-command being notified of their presence on board an aircraft. The panel agreed that such large shipments should be reported not only for the benefit of the captain but also for the benefit of emergency responders on the ground.

2. A separate working group of the whole on lithium batteries meeting was therefore held in February to address this issue (DGP WG/LB/1, 6 to 10 February 2012).

3. At the request of the Universal Postal Union (UPU), the panel also agreed to devote time during the lithium battery working group to discuss a proposal by the UPU to amend the Technical Instructions to permit equipment containing lithium batteries in airmail. The amendment would align the Technical Instructions with the UPU Convention which had already been amended.

Lithium battery exceptions

4. Fully regulating the transport of lithium batteries by air was considered, as this would require training for the shippers, impose acceptance checks for compliance prior to loading aboard the aircraft, and would automatically result in a notification to captain. However, some panel members felt that full regulation would also result in an unnecessary burden to shippers who were already complying with the current regulations and that alternate means for providing information to the pilot-in-command should be considered. Airline operators were, however, strongly opposed to any other means of providing information to the captain, as the sheer volume of excepted lithium battery shipments would make this extremely difficult to do outside of the regulatory framework.

5. After a long discussion, it was finally decided that no changes were required to the requirements for the transport of lithium batteries contained in equipment or packed with equipment. The conditions for the transport of UN 3480, Lithium ion batteries (Packing Instruction 965) and UN 3090, Lithium metal batteries (Packing Instruction 968) were revised. The applicable packing instructions will now be categorized in three sections:

> **Section IA** will apply to lithium ion cells or batteries exceeding 20 Watt-hours or 100 Watt-hours respectively (PI 965) or lithium metal cells and metal batteries exceeding 1 g or 2 g respectively (PI 968). These will be subject to the full requirements of the Technical Instructions.
>
> **Section IB** will apply to lithium cells and batteries which exceed the number of cells and batteries transported per package permitted in Section II but not the Watt-hour rating (maximum 20 Wh/cell and maximum 100 Wh/battery) or lithium content (maximum 1 g/cell and maximum 2 g/battery) permitted in Section II. These will be subject to most requirements of the Technical Instructions except that non-UN specification packages and alternative documentation instead of the dangerous goods declaration may be used. The lithium battery handling label will be required in addition to the Class 9 hazard label.
>
> **Section II** (comparable to UN Special Provision 188) will apply to significantly lower numbers of cells and batteries per package currently permitted under Section II. These would remain excepted from most of the requirements of the Technical Instructions.

6. The tables in the attachment outline the three categories of lithium batteries provisions which will be included in Packing Instructions 965 and 968 of the 2013-2014 Edition of the Technical Instructions.

Lithium batteries contained in equipment in airmail

7. After much discussion, the meeting agreed to the addition of provisions in the Technical Instructions which would permit equipment containing no more than four lithium cells or two lithium batteries in the international post. Recognizing that dangerous goods were in fact discovered in airmail daily, the DGP members felt that establishing a framework which would permit dangerous goods in the mail safely and legally would benefit safety. On that basis, it was agreed that national postal authorities could accept lithium batteries in equipment in airmail, provided their procedures and training programmes were approved by the civil aviation authority of the State of the national postal authority.

Conclusion

8. The DGP acknowledged that there were other risks in shipping lithium batteries which could not be mitigated through the regulatory framework. Non-compliance, whether intentional or accidental, was a reality. The meeting recommended that regulatory authorities increase their outreach, oversight and appropriate enforcement activities in order to address these threats. The benefits of sharing knowledge and information were also recognized, not just for oversight but also for outreach activities. The ICAO Council supported these endeavours.

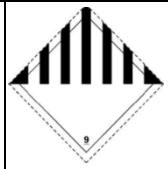
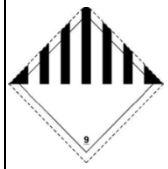
9. The reports of DGP/23 and DGP-WG.LB/1 can be found on the ICAO dangerous goods website at:

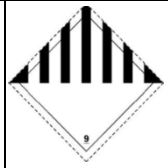
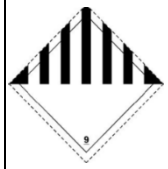
DGP/23 http://www.icao.int/safety/DangerousGoods/Pages/DGP23.aspx

DGP-WG/LB/1: http://www.icao.int/safety/DangerousGoods/Pages/Working-Group-of-the-Whole-on-Lithium-Batteries.aspx

ATTACHMENT

LITHIUM ION CELLS AND BATTERIES
Packing Instruction 965 of the ICAO Technical Instructions (2013-2014 Edition)

<table>
<tr><th></th><th>Section IA</th><th>Section IB</th><th>Section II</th></tr>
<tr><td>Criteria</td><td>
<table>
<tr><th></th><th>Watt hour rating</th></tr>
<tr><td>Cells</td><td>> 20 Wh/cell</td></tr>
<tr><td>Batteries</td><td>> 100 Wh/battery</td></tr>
</table>
</td><td>
<table>
<tr><th></th><th>Watt hour rating</th><th>Number per package</th></tr>
<tr><td>Cells</td><td>≤ 20 Wh/cell</td><td>> 8</td></tr>
<tr><td>Batteries</td><td>≤ 100 Wh/battery</td><td>> 2</td></tr>
</table>
</td><td>
<table>
<tr><th></th><th>Watt hour rating</th><th>Number per package</th></tr>
<tr><td>Cells or batteries</td><td>≤ 2.7 Wh</td><td>No limit</td></tr>
<tr><td>Cells</td><td>≤ 20 Wh/cell</td><td>≤ 8</td></tr>
<tr><td>Batteries</td><td>≤ 100 Wh/battery</td><td>≤ 2</td></tr>
</table>
</td></tr>
<tr><td>Package content limits</td><td>
<table>
<tr><th colspan="2">Quantity/package</th></tr>
<tr><th>Passenger</th><th>Cargo</th></tr>
<tr><td>5 kg</td><td>35 kg</td></tr>
</table>
</td><td>
<table>
<tr><th colspan="2">Quantity/package</th></tr>
<tr><th>Passenger</th><th>Cargo</th></tr>
<tr><td>10 kg G</td><td>10 g G</td></tr>
</table>
</td><td>
<table>
<tr><th colspan="2">Quantity/package</th></tr>
<tr><th>≤ 2.7 Wh</th><th>> 2.7 Wh, ≤ 20 Wh</th></tr>
<tr><td>2.5 g</td><td>n/a</td></tr>
</table>
</td></tr>
<tr><td>Packaging</td><td>UN performance packaging</td><td>Strong outer packaging
1.2 m drop test</td><td>Strong outer packaging
1.2 m drop test</td></tr>
<tr><td>Documents</td><td>Dangerous goods transport document</td><td>Alternative documentation, including additional SP188 information</td><td>Document containing information required by SP 188</td></tr>
<tr><td>Labels</td><td>  </td><td>   </td><td>  </td></tr>
<tr><td>Other Requirements</td><td>DG check
NOTOC
DG training</td><td>DG check
NOTOC
DG training</td><td>No DG check
No NOTOC
Adequate instructions</td></tr>
</table>

<table>
<tr><td colspan="4">LITHIUM METAL CELLS AND BATTERIES
Packing Instruction 968 of the ICAO Technical Instructions (2013-2014 Edition)</td></tr>
<tr><td></td><td>Section IA</td><td>Section IB</td><td>Section II</td></tr>
<tr><td>Criteria</td><td>
<table>
<tr><td></td><td>Lithium content</td></tr>
<tr><td>Cells</td><td>> 1 g/cell</td></tr>
<tr><td>Batteries</td><td>> 2 g/ battery</td></tr>
</table>
</td><td>
<table>
<tr><td></td><td>Lithium content</td><td>Number per package</td></tr>
<tr><td>Cells</td><td>≤ 1 g/cell</td><td>> 8</td></tr>
<tr><td>Batteries</td><td>≤ 2 g/ battery</td><td>> 2</td></tr>
</table>
</td><td>
<table>
<tr><td></td><td>Lithium content</td><td>Number per package</td></tr>
<tr><td>Cell or batteries</td><td>≤ 0.3 g</td><td>No limit</td></tr>
<tr><td>Cells</td><td>≤ 1 g/cell</td><td>≤ 8</td></tr>
<tr><td>Batteries</td><td>≤ 2 g/ battery</td><td>≤ 2</td></tr>
</table>
</td></tr>
<tr><td>Package content limits</td><td>
<table>
<tr><td colspan="2">Quantity/package</td></tr>
<tr><td>Passenger</td><td>Cargo</td></tr>
<tr><td>2.5 kg</td><td>35 kg</td></tr>
</table>
</td><td>
<table>
<tr><td colspan="2">Quantity/package</td></tr>
<tr><td>Passenger</td><td>Cargo</td></tr>
<tr><td>2.5 kg G</td><td>.5 kg G</td></tr>
</table>
</td><td>
<table>
<tr><td colspan="2">Quantity/package</td></tr>
<tr><td>≤ 0.3 g</td><td>> 0.3 g, ≤1 g</td></tr>
<tr><td>2.5 kg</td><td>n/a</td></tr>
</table>
</td></tr>
<tr><td>Packaging</td><td>UN performance packaging</td><td>Strong outer packaging
1.2 m drop test</td><td>Strong outer packaging
1.2 m drop test</td></tr>
<tr><td>Documents</td><td>Dangerous goods transport document</td><td>Alternative documentation, including additional SP188 information</td><td>Document containing information required by SP 188</td></tr>
<tr><td>Labels</td><td>  </td><td>   </td><td>  </td></tr>
<tr><td>Other Requirements</td><td>DG check
NOTOC
DG training</td><td>DG check
NOTOC
DG training</td><td>No DG check
No NOTOC
Adequate instructions</td></tr>
</table>