



WORKING PAPER

**DANGEROUS GOODS PANEL (DGP)
WORKING GROUP MEETING (DGP-WG/20)**

Montréal, 19 to 23 October 2020

- Agenda Item 3: Managing safety risks posed by the carriage of lithium batteries by air**
- 3.5: Consider the need for specific measures to mitigate safety risks posed by lithium batteries packed with or contained in equipment**
 - 3.6: Develop provisions aimed at improving compliance throughout the transport supply chain (Ref: Job Card DGP.003.02)**

**CLARIFICATION OF THE PACKING REQUIREMENTS FOR
PACKING INSTRUCTIONS 966 AND 969**

(Presented by D. Brennan)

SUMMARY

The provisions in Section I of Packing Instructions 966 and 969 regarding the two packing options lack clarity. In addition, there is confusion at acceptance when the shipper elects to place the UN specification packaging containing the lithium cells or batteries into an outer packaging with the equipment. The provisions in Section II appear unnecessarily complicated and can be simplified.

Action by the DGP-WG: The DGP-WG is invited to consider amending Packing Instructions 966 and 969 as shown in the appendix to this working paper. The DGP-WG is also invited to consider the addition of a statement on the package or dangerous goods transport document.

1. INTRODUCTION

1.1 Section I of Packing Instructions 966 and 969 provides for two options for shippers to prepare packages containing lithium batteries packed with equipment:

- a) the package can be prepared with the cells or batteries and the equipment packed into a UN specification outer packaging; or
- b) the cells or batteries can be packed in a UN specification packaging which is then packed with the equipment into a non-UN specification outer packaging.

1.2 However, the existing wording in Section I of Packing Instructions 966 and 969 does not make these two options explicitly clear. It is believed that the wording of the first bullet point in the packing instruction that describes the allowance shown in 1.1 a) does not clearly identify that the UN specification packaging containing the cells or batteries is then packed with the equipment into a non-UN specification outer packaging.

1.3 In reviewing the UN Model Regulations, packing instruction P903, it is believed that the text shown in P903 (3) is much clearer and could be applied to Section I of Packing Instructions 966 and 969. The applicable provision in P903 reads as follows:

- (3) For cells or batteries packed with equipment:
Packagings conforming to the requirements in paragraph (1) of this packing instruction, then placed with the equipment in an outer packaging; or
Packagings that completely enclose the cells or batteries, then placed with equipment in a packaging conforming to the requirements in paragraph (1) of this packing instruction.

1.4 Another issue associated with the two available packing options for Section I is that when the shipper elects to pack the UN specification packaging containing the lithium cells or batteries into an outer packaging with the equipment there is difficulty in performing the acceptance check to verify that the packaging specification mark designating the packing group is appropriate for the dangerous goods, as required in Part 7;1.3.1 d).

1.5 The absence of a visible UN specification packaging mark has and continues to result in rejections of consignments. Some people performing the acceptance check have demanded that the packages must be described and marked as overpacks where the UN specification packagings are not visible, other simply reject the consignment because of the lack of UN specification outer packagings.

1.6 To address this, the DGP-WG is invited to consider if there should be an additional statement on the outside of the package, or on the dangerous goods transport document, such as “Package contains UN specification packagings”, when the shipper packs the batteries in a UN specification packaging which is then inside the outer packaging.

1.7 In Section II of Packing Instructions 966 and 969 the equivalent provisions to those in Section I also offers two options, as follows:

- Lithium ion cells and batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.

1.8 However, this does not align with the provision of special provision 188 in the UN Model Regulations, and logically there is only one option for Section II, which is that the cells or batteries must be placed into inner packagings and then packed with the equipment in a strong, rigid outer packaging.

1.9 Accordingly it is proposed to simplify the provisions in Section II of Packing Instructions 966 and 969 to align to what is shown in special provision 188 in the UN Model Regulations.

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider revisions to Sections I and II of Packing Instructions 966 and 969 as shown in the appendix to this working paper.

2.2 The DGP-WG is invited to consider if an additional statement should be required, or recommended, on the package or dangerous goods transport document where the shipper packs the lithium cells or batteries into UN specification packagings, which are then packed, with the equipment, into an outer packaging.

APPENDIX

PROPOSED AMENDMENT TO PART 8 OF THE TECHNICAL INSTRUCTIONS

Part 4

PACKING INSTRUCTIONS

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

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Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

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I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

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I.2 Additional requirements

- Lithium ion cells and batteries must be protected against short circuits.
- Lithium ion cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery then placed in ~~an outer~~ packaging of a type shown below that meets the Packing Group II performance requirements, then placed with the equipment in an outer packaging. ~~The completed package for the cells or batteries must meet the Packing Group II performance requirements;~~ or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in an outer packaging of a type shown below that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

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Packing Instruction 966

II. SECTION II

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II.2 Additional requirements

- Lithium ion cells and batteries must: be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
 - ~~be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or~~
 - ~~be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.~~
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.

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Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

I. SECTION I

Each cell or battery must meet the provisions of 2;9.3.

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I.2 Additional requirements

- Lithium metal cells and batteries must be protected against short circuits.
- Lithium metal cells or batteries must:
 - be placed in inner packagings that completely enclose the cell or battery, then placed in an ~~outer~~ packaging of a type shown below that meets the Packing Group II performance requirements, then placed with the equipment in an outer packaging. ~~The completed package for the cells or batteries must meet the Packing Group II performance requirements;~~ or
 - be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in an outer packaging of a type shown below that meets the Packing Group II performance requirements.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.
- The number of cells or batteries in each package must not exceed the number required for the equipment's operation, plus two spare sets. A "set" of cells or batteries is the number of individual cells or batteries that are required to power each piece of equipment.
- For lithium metal cells and batteries prepared for transport on passenger aircraft as Class 9:
 - cells and batteries offered for transport on passenger aircraft must be packed in intermediate or outer rigid metal packaging surrounded by cushioning material that is non-combustible and non-conductive and placed inside an outer packaging.

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II. SECTION II

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II.2 Additional requirements

- Lithium metal cells and batteries must: be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.
- ~~be placed in inner packagings that completely enclose the cell or battery, then placed in a strong rigid outer packaging; or~~
- ~~be placed in inner packagings that completely enclose the cell or battery, then placed with the equipment in a strong rigid outer packaging.~~
- Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with electrically conductive material within the same packaging that could lead to a short circuit.

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