



## فريق خبراء البضائع الخطرة

### الاجتماع الثامن والعشرون

اجتماع افتراضي، من ١٥ إلى ١٩/١١/٢٠٢١

البند رقم ٤ من جدول الأعمال: معالجة مخاطر السلامة الناجمة عن نقل بطاريات الليثيوم بطريق الجو  
(Ref: Job Card DGP.003.03)

خفض مستويات شحن بطاريات الليثيوم (UN 3481) بما لا

يتجاوز ٣٠ في المئة وفقاً لتعليمات التعبئة ٩٦٦ و ٩٦٧

(ورقة مقدّمة من س. شوارتز)

#### الموجز

تقترح ورقة العمل هذه تعديل تعليمات التعبئة رقم ٩٦٦ ورقم ٩٦٧ الواردتين في التعليمات الفنية، بحيث تشترط أن تكون بطاريات أيونات الليثيوم الموضوعة مع المعدات (بحسب لائحة الأمم المتحدة UN 3481) وبطاريات أيونات الليثيوم الموجودة في المعدات (بحسب لائحة الأمم المتحدة UN 3481) والمطلوب نقلها مشحونةً بالطاقة عند أدنى مستوى ممكن من الناحية العملية، على ألا يتجاوز ذلك ٣٠ في المائة. الإجراء المطلوب من فريق الخبراء: تُدعى مجموعة العمل التابعة لفريق خبراء البضائع الخطرة إلى النظر في التعديلات حسبما ترد مفصلةً في المرفق بورقة العمل هذه.

## 1. INTRODUCTION

1.1 When the 30 per cent state of charge (SOC) requirement for UN 3480 — **Lithium ion batteries** was implemented in Packing Instruction 965 of the Technical Instructions, it was seen as a way to quickly and easily reduce the general risk they pose in air transport. The 30 per cent level was based on tests demonstrating significantly reduced risk from many cells and batteries offered for transport.

1.2 It has been assumed that the equipment in UN 3481 **Lithium ion batteries packed with equipment** and UN 3481 — **Lithium ion batteries contained in equipment** provides adequate protection from both thermal runaway propagation and explosive gas generation, but little data has been presented to demonstrate this. Additionally, battery energy density has been increasing and electronic component size has been decreasing, resulting in reduced protection afforded by the equipment in the case of a battery failure.

1.3 Limiting the SOC for UN 3480 has been accepted as an important safety enhancement, and extending the same requirements to UN 3481 would further reduce the risk lithium batteries pose in air transport by reducing the likelihood of thermal runaway propagation, the energy available to initiate a fire in the event of an internal short circuit, and the amount of explosive gas generated during a thermal runaway.

1.4 The DGP is invited to consider whether Packing Instructions 966 and 967 of the Technical Instructions should be amended to require UN 3481 to be offered for transport at the lowest practical SOC, but no higher than 30 per cent.

## 2. ACTION BY THE DGP

1.5 The DGP-WG is invited to consider amendments as detailed in the appendix to this working paper.

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APPENDIX

a) PROPOSED AMENDMENT TO PART 4 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.2 Additional requirements**

- Lithium ion cells and batteries must be offered for transport at the lowest practical state of charge but not exceeding 30 per cent of their rated capacity unless a higher state of charge is specifically approved by the State of Origin and the State of the Operator.
- Lithium ion cells and batteries must be protected against short circuits.

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**II.2 Additional requirements**

- Lithium ion cells and batteries must be offered for transport at the lowest practical state of charge but not exceeding 30 per cent of their rated capacity unless a higher state of charge is specifically approved by the State of Origin and the State of the Operator.
- 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.

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### Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

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#### I.2 Additional requirements

- Lithium ion cells and batteries must be offered for transport at the lowest practical state of charge but not exceeding 30 per cent of their rated capacity unless a higher state of charge is specifically approved by the State of Origin and the State of the Operator.
- The equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental operation during air transport.

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#### II. SECTION II

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#### II.2 Additional requirements

- Lithium ion cells and batteries must be offered for transport at the lowest practical state of charge but not exceeding 30 per cent of their rated capacity unless a higher state of charge is specifically approved by the State of Origin and the State of the Operator.
- The equipment must be secured against movement within the outer packaging and must be equipped with an effective means of preventing accidental activation.

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