Lithium Battery Guidance Document

Transport of lithium Metal and Lithium Ion batteries

运输锂金属和锂离子电池

Revised for the 2013 Regulations 根据2013年规则更新

Introduction 引言

This document is based on the provisions set out in the 2013-2014 Edition of the ICAO Technical Instruction for the Safe Transport of Dangerous Goods by Air and the 54th Edition of the IATA Dangerous Goods Regulations (DGR).

本文件基于2013—2014版 ICAO《技术细则》以及第54版 IATA DGR 编写。

The purpose of this document is to provide guidance for complying with provisions applicable to the transport by air of lithium batteries as set out in the DGR.

本文件编写的目的是为了能安照 DGR 运输锂电池提供一个指南。

Specifically the document provides information on:

本文件包含以下内容：

- Definitions;
  定义
- Classification (including classification flowcharts);
  分类（含分类流程图）
- Transport Conditions
  运输条件
- Exceptions;
  例外条款
- Special Provisions;
  特殊规定
- Packaging provisions for lithium batteries;
  包装要求
- Prohibitions;
  禁运情况
- Passenger Provisions; and
  对旅客的要求
- Frequently Asked Questions
  常见问题

Definitions

定义

Lithium Battery – The term “lithium battery” refers to a family of batteries with different chemistries, comprising many types of cathodes and electrolytes. For the purposes of the DGR they are separated into:

锂电池—“锂电池”是指各种不同的化学成分包含许多类型的阴极和电解质的组合。在 DGR 中，锂电池分成以下几类：

Lithium metal batteries**.** Are generally primary (non-rechargeable) batteries that have lithium metal or lithium compounds as an anode. Lithium metal batteries are generally used to power devices such as watches, calculators, cameras, temperature data loggers;

锂金属电池－一般由锂金属或锂混合物充当阳极的一次性电池（不可充电的）。锂金属电池一般用作手表，计算器，相机，温度数据记录仪的能源。

Figure 1 - Example of Lithium Metal Batteries

图 1－锂金属电池

Lithium-ion **batteries** (sometimes abbreviated Li-ion batteries) are a type of secondary (rechargeable) battery commonly used in consumer electronics. Also included within lithium-ion batteries are lithium polymer batteries. Lithium-ion batteries are generally found in mobile telephones, laptop computers, etc.

锂离子电池（有时缩写成 Li-ion batteries）是一种可二次使用的电池（可充电的），一般用于消费者电子行业。包含在锂离子电池里的还有锂聚合物电池。锂离子电池通常用于移动电话，手提电脑等。

Figure 2 - Example of a Lithium Ion Battery

图 2－锂离子电池

The technical definition of a battery and cell, as indicated in the UN Manual of Tests and Criteria, is as follows:

在联合国检测和标准的手册里提到的电池和电池芯的技术定义如下：

“**Battery**” means two or more cells which are electrically connected together and fitted with devices

necessary for use, for example, case, terminals, marking and protective devices. A single cell lithium battery is considered a "cell" and must be tested according to the testing requirements for "cells" for the purposes of these Regulations and the provisions of subsection 38.3 of the UN Manual of Tests and Criteria (see also the definition for "cell").

“电池”用电路连接在一起的两个或多个电池芯，并安装有使用所必需的装置，如：外壳、电极端子、标记和保护装置等。单芯电池被认为是“电池芯”，在进行 UN38.3 测试时按电池芯处理。（又见“电池芯”的定义）。

Note:

Units that *are commonly referred to as “battery packs”, “modules” or “battery assemblies”* having *the primary function of providing a source of power to another piece of* equipment *are for the purposes of these Regulations and the provisions of Subsection 38.3 of the UN Manual of Tests and Criteria treated as batteries.* “**Cell”** means a single encased electrochemical unit (one positive and one negative electrode) which exhibits a voltage differential across its two terminals. Under these Regulations and the *UN Manual of Tests and Criteria*, to the extent the encased electrochemical unit meets the definition of “cell” herein, it is a “cell”, not a “battery”, regardless of whether the unit is termed a “battery” or a “single cell battery” outside of these Regulations and the *UN Manual of Tests and Criteria*

注：

像“电池包”，“模块”或“电池组件”这一类的单元，具有的主要功能是为另一设备提供能量，并且符合这些规则和联合国检测标准小册子里的 38.3 条款的，可以被称为电池。“电池芯”由一个正极和一个负极组成且两个电极之间有电位差的单一的、封闭的电化学装置。无论在这些规则和联合国测试标准和手册之外，这种电化单元被称作“电池”还是“单芯电池”，在我们的规则和联合国测试标准和手册中，它们被称为“电池芯”而不是电池。

Button cell or battery means a round small cell or battery when the overall height is

less than the diameter.

钮扣电池：整体高度小于直径的圆形小电池芯或电池。

Classification (DGR 3.9.2.6)

分类(DGR 3.9.2.6)

Lithium batteries are classified in Class 9 – Miscellaneous dangerous goods as:

锂电池作为以下 UN 编号，被分在第 9 类—杂项类危险品里：

UN3090，锂金属电池（lithium metal batteries）

UN3480，锂离子电池（lithium ion batteries）

or, if inside a piece of equipment or packed separately with a piece of equipment as:

或，将其安装在设备内或与设备分开包装在一个包装件内，见：

UN3091，锂金属电池安装在设备中（lithium metal batteries contained in equipment）

UN3091，锂金属电池与设备包装在一起（lithium metal batteries packed with equipment）

UN3481，锂离子电池安装在设备中（lithium ion batteries contained in equipment）

UN3481，锂离子电池与设备包装在一起（lithium ion batteries packed with equipment）

In the absence of exceptions, these batteries must be shipped in quantities that comply with the limitations contained in the DGR (see DGR Table 4.2 and the applicable packing instruction). They must be contained in a UN specification packaging as prescribed by the applicable packing

instruction in the DGR.

在不考虑例外的情况下，这些电池的限量必须遵守规则（见 DGR 表格 4.2 和适用的包装说明）里的限制进行运输。并且，它们必须依据适用的包装说明指导装在 DGR 危险品规则所规定的 UN 规格包装里。

A completed package must display a Class 9 hazard label in addition to markings that identify the applicable proper shipping name and UN number. A shipper must document the shipment using a Shipper's Declaration for Dangerous Goods.

一个完整的包装件除了标有适用的正确运输专用名称和 UN 编号的标记外，还必须贴 9 类危险性标签。托运人必须填写危险品申报单。

As of 1 January 2013, the classification criteria for lithium batteries stipulate that cells and batteries must be manufactured under a quality management program. DGR 3.9.2.6 includes the elements that must be included in such a program.

自 2013 年 1 月 1 号起，锂电池的分类标准规定，必须在下生产电池芯和电池。DGR3.9.2.6 包含了质量管理的程序必须含有的一些要素。

Transport Conditions

运输条件

The following information is a summary of the conditions that apply to various sizes of batteries for air transport. More details on the exceptions are found in the next section of this document.

以下信息是一个对各种尺寸电池空运条件的简介。更多例外细节可在本文件的下节内容里找到。

1. Section I / IA Packing Instructions 965 – 970

1、Section I/IA 包装说明 965-970

Lithium ion and lithium metal cells and batteries (PI 965 & PI 968, Section IA and PI 966, PI 967, PI 969 & PI 970, Section I) are subject to all of the applicable requirements in the DGR. These requirements are as follows:

锂离子和锂金属电池芯和电池（PI 965 & PI 968, Section IA and PI 966, PI 967, PI 969 & PI 970, Section I）需符合 DGR 里适用的所有要求。这些要求如下：

(a) dangerous goods training (DGR 1.5);

危险品培训(DGR 1.5)

(b) classification (DGR 3.9.2.6);

分类(DGR 3.9.2.6)；

(c) limits on the net quantity of lithium batteries per package (DGR 4.2 and applicable packing instruction);

锂电池包装件的限量（DGR4.2 和适用的包装说明）

(d) UN specification packaging (applicable packing instruction, see also DGR Section 6);

联合国规格包装（适用的包装说明，同时参见 DGR 第 6 章）

Note: *UN specification packaging does not apply to PI 967 and PI 970.*

注： 联合国规格包装不适用于 PI967 和 970

(e) marking and labelling of packages (DGR Section 7)

包装件的标记和标签（DGR 第 7 章）

Note: *packages must not bear the lithium battery handling label, only the Class 9 hazard label*

and Cargo *Aircraft Only label, when applicable, must be applied. If packages are assembled into an overpack the requirements for overpacks in DGR 7.1.4 and 7.2.7 apply*;

*注：*包装件不贴锂电池操作标签，只贴第 9 类危险性标签，适用时还有仅限货机标签。如果包装件装在合成包装件内，还需要同时满足 DGR7.1.4 和 7.2.7 合成包装件的要求。

(f) Shipper's Declaration for Dangerous Goods (DGR Section 8);

托运人危险品申报单（DGR 第 8 章）

2. Section IB - Packing Instructions 965 & 968

Section IB-包装说明 965 和 968

Lithium ion and lithium metal cells and batteries that meet the Watt-hour or lithium content limits set out in Section II of PI 965 and PI 968 respectively, but that exceed the weight or quantity limits set out in Table 956-II or Table 968-II are subject to all of the applicable requirements in the DGR except for the requirements for UN specification packagings and for a full Shipper's Declaration.

锂离子或锂金属电池的瓦时数或锂含量符合 PI965 和 PI968 第二节的限制，但是重量或数量超出了表 965-II 或表 968-II 的限制时，需满足 DGR 规定的所有条款，除了联合国规格包装要求和完整的托运人申报要求。

The requirements applicable are as follows:

适用要求如下：

(a) dangerous goods training (DGR 1.5);

危险品培训(DGR 1.5)

(b) classification (DGR 3.9.2.6);

分类(DGR 3.9.2.6)；

(c) limits on the total weight per package (applicable packing instruction);

每个包装件的总量限制（适用的包装说明）

(d) strong outer packagings (see Section IB of applicable packing instruction);

坚固的外包装（见适用包装说明的 Section IB）

(e) marking and labelling of packages (DGR Section 7)

包装件的标记标签（DGR 第 7 章）

Note: *packages must bear both the lithium battery handling label and the Class 9 hazard label. If packages are assembled into an overpack the* requirements for overpacks in DGR 7.1.4 and 7.2.7 apply;

*注：*包装件必须贴锂电池操作标签和第 9 类危险性标签。如果包装件装在合成包装件内，还需要同时满足 DGR7.1.4 和 7.2.7 合成包装件的要求。

(f) documentation must describe the details of the consignment (Section IB of PI 965 or PI 968);

文件必须描述所托运货物的详细信息。(Section IB of PI 965 or PI 968);

Note: *if packages of Section IB are consolidated with other cargo, the provisions of DGR 1.3.3.3 and 1.3.3.6 apply. If packages are assembled into an overpack the requirements for overpacks in DGR 8.1.6.9.3, Step 7 apply to the document used to describe the batteries.*

*注：*如果满足 IB 要求的包装件和其它货物混装在一起，DGR 的 1.3.3.3 和 1.3.3.6 也必须满足。如果包装件装在合成包装件内，该票货物还需要同时满足 DGR8.1.6.9.3 适用的文件描述要

求。

3. Section II - Packing Instructions 965 – 970

Section II-包装说明 965-970

“Small” Lithium ion and lithium metal cells and batteries that meet the Watt-hour or lithium content limits set out in Section II of PI 965 to PI 970 are only subject to certain parts of the DGR when shipped as cargo. The bulk of the requirements for these small lithium batteries are contained within the General Requirements at the start of each packing instruction which apply to all lithium batteries and then the specific requirements set out in Section II of each packing instruction. are as follows:

锂离子或锂金属电池的瓦时数或锂含量符合 PI965 和 PI968 第二节限制的小电池只受 DGR 指定部分的限制。限制内容在每个包装说明开始处的“基本要求”和后面的“Section II”给出的特殊规定。如下所列：

(a) classification (DGR 3.9.2.6);

分类（DGR3.9.2.6）

(b) limits on the quantity of lithium cells or batteries per package (Table II of the applicable packing instruction);

每个包装件里的锂电池芯或电池的数量限制(适用包装说明图 II)；

(c) strong outer packagings (see Section II of applicable packing instruction);

坚固的外包装（见适用包装说明第二部分）；

(d) marking and labelling of packages (Additional Requirements of Section II of the applicable packing instruction);

包装件的标记和标签（适用的包装说明第二部分的附加要求）；

(d) the details of the consignment must be described (Additional Requirements of Section II of the applicable packing instruction).

货物的详细说明描述（适用包装说明第二部分的附加要求）。

Exceptions

例外

Small lithium metal and lithium ion batteries are not subject to all of the provisions of the DGR provided that they comply with all of the requirements set out in Section II of Packing Instructions 965, 966 and 967 for lithium ion batteries and Section II of Packing Instructions 968, 969 and 970 for lithium metal batteries in the 54th Edition of the IATA DGR.

小型锂金属和锂离子电池不要求它们遵从所有的 DGR 条款，即在 IATA DGR 第 54 版本里对锂离子电池而言，满足包装说明 965，966 和 967 第二部分提出的要求；对锂金属电池而言，满足包装说明 968，969 和 970 第二部分提出的要求。

Packages containing lithium batteries, or lithium batteries contained in, or packed with, equipment that meet the provisions of Section II of these packing instructions are not required to have a Class 9 hazard label and there is no requirement for a Shipper’s Declaration for Dangerous Goods for consignments of these batteries. However, in the event of an incident involving these batteries, the incident reporting requirements apply.

含锂电池的包装件，或锂电池和设备仪器包装或装在设备内的包装件满足适用的包装说明第二部分的要求时，不要求贴第 9 类危险性标签。不要求填托运人危险品申报单。但一旦发生事故征候，需要启动汇报程序。

Note:

Only batteries that have successfully passed the test procedures of Part III, Sub- Section 38.3 of the UN Manual of Tests and Criteria qualify under this exception. This is also true for so-called "OEM" or "aftermarket" batteries. Any battery manufacturer or distributor should be able to provide documentation confirming that the batteries have been so tested.

*注：*电池必须通过联合国测试和标准手册 38.3 节第 III 部分的测试要求才可例外。本要求同样适用于"OEM"和"aftermarket"电池。任何电池厂家或分销商应可以提供电池已通过测试的证明文件。

Quantities of Lithium metal and lithium ion cells and batteries that exceed the "per package" limits described in Section II of the packing instruction 965 (Table 965-II) and 968 (Table 968-II) must be assigned to class 9 and shipped as "Section IB". All applicable requirements contained in the IATA Dangerous Goods Regulations relating to these commodities must be complied with, including the training requirements, with the exception of:

每个包装件内锂金属或锂离子电池或电池芯的数量超出 PI965（表 965-II）和 PI988(表 968-II)的限制必须归为第 9 类危险品，按照"Section IB"运输。IATA DGR 内所有有关这些商品的要求必须满足，包括培训要求，除了：

- UN Specification packaging is not required.

  不要求使用联合国规格包装

- A "Shipper's Declaration for Dangerous Goods" is not required provided that the air waybill or alternative transport document contains the required information

  不要求托运人危险品申报单，但运单上或替代文件需含要求的信息。

Packages must bear the Class 9 hazard label in addition to the lithium battery handling label.

包装上必须同时贴第 9 类危险性标签和锂电池操作标签。

Lithium metal and lithium ion batteries larger than those permitted by Section II of the applicable packing instruction must be assigned to Class 9 and consigned as UN 3090 (Lithium metal batteries), UN 3480 (Lithium ion batteries), UN 3091 (Lithium metal batteries contained in equipment or Lithium metal batteries packed with equipment) or UN 3481 (Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment). All applicable requirements contained in the IATA Dangerous Goods Regulations relating to these commodities must be complied with, including the training requirements; a "Shipper's Declaration for Dangerous Goods" must be issued, and packages must bear the Class 9 hazard label.

大于适用包装说明第二部分描述的限量要求的锂金属和锂离子电池，必须归为第 9 类危险品，并被分为 UN3090(锂金属电池)，UN3480（锂离子电池），UN3091（锂金属电池含在仪器里或是锂金属电池跟仪器一起包装）或 UN3481（锂离子电池含在仪器里或是锂离子电池跟仪器一起包装）。IATA 危险品规则里有关这些商品的所有适用的要求都必须满足，包括培训要求；必须填托运人危险品申报单，包装件必须贴第 9 类危险性标签。

Special Provisions

特殊规定

There are a number of special provisions which may allow for the transport of lithium batteries other than in accordance with the defined conditions or limits, or which require the shipper to take additional precautions when preparing batteries for transport. The special provisions applicable to lithium batteries are set out following. Notwithstanding the general requirement that prior to being transported each type of lithium battery must have successfully passed the UN test requirements, there is provision for prototype lithium batteries that have not yet passed the UN test requirements to be shipped for testing purposes, this testing includes pre-production or product compatibility

testing, in accordance with Special Provision A88, as follows:

有一些关于锂电池运输的特殊规定，允许在指定的情况或限制外运输锂电池，或是要求托运人在准备托运锂电池时要注意附加的事先警告。

A88 Prototype or low production, (i.e. annual production runs consisting of no more than 100 lithium cells or batteries) lithium cells or batteries that have not been tested to the requirements in subsection 38.3 of the *UN Manual of Tests and Criteria* may be transported aboard cargo aircraft, if approved by the appropriate authority of the State of origin and the following requirements are met:

a) except as provided in paragraph (c), the cells or batteries must be transported in an outer packaging that is a metal, plastic or plywood drum or a metal, plastic or wooden box and that meets the criteria for Packing Group I packagings;

b) except as provided in paragraph (c), each cell or battery must be individually packed in an inner packaging inside an outer packaging and surrounded by cushioning material that is non-combustible, and non- conductive. Cells or batteries must be protected against short-circuiting;

c) lithium batteries with a mass of 12 kg or greater and having a strong, impact resistant outer casing, or assemblies of such batteries, may be packed in strong outer packagings or protective enclosures not subject to the requirements of Section 6 of these Regulations. The batteries or battery assemblies must be protected against short circuiting; and

d) a copy of the document of approval showing the quantity limitations must accompany the consignment.

Irrespective of the limit specified in Column L of Table 4.2, the battery or battery assembly as prepared for transport may have a mass exceeding 35 kg.

A88 原型或低产量（即年度生产量不超过 100 个锂电池或电池芯）的锂电池或电池芯，没有按《联合国试验和标准手册》的 38.3 节的要求进行过测试的，如果经始发国有关当局的批准并且满足如下条件，可以在货机上运输：

a) 除了 c) 款规定者外，电池芯或电池必须装入符合 I 级包装标准的外包装中运输，该外包装应是金属桶、塑料桶、胶合板桶或金属箱、塑料箱、木箱；

b) 除了 c) 款规定者外，每个电池芯或电池在装入外包装之前必须单独装入内包装中，周围用不燃性的绝缘材料衬垫。必须对电池芯或电池做好防短路保护；

c) 质量为 12 千克或以上、具有坚实抗冲击外壳的锂电池或此类电池组件，可以装入不受本细则第 6 部分要求所限的坚固的外包装或保护罩内。必须对电池或电池组件做好防短路保护；和

d) 托运货物必须随附一份列有数量限制的批准文件。

无论表 4.2 第 L 栏规定的限制为何，准备交运的电池或电池组件的毛重可以超过 35 千克。

For air transport, specific quantity limits apply to the net weight of lithium batteries in a package. The maximum net weight of lithium batteries per package for Cargo Aircraft Only is 35 kg. However, there is provision for large lithium batteries that have a net weight exceeding 35 kg to be consigned on a cargo aircraft in accordance with Special Provision A99 as follows:

空运时，包装件内的锂电池净重有特殊数量限制。仅限货机的每个包装件内锂电池的最大净重是 35 公斤。但是，有条款规定，净重超过 35 公斤的大的电池须在符合 A99 的特殊规定时可以在货机上运输，如下：

A99 Irrespective of the per package quantity limit for cargo aircraft specified in Column L of the List of Dangerous Goods (Subsection 4.2), and in Section I of Packing Instructions 965, 966, 967, 968, 969 or 970, a lithium battery or battery assembly (UN 3090 or UN 3480), including when packed

with, or contained in equipment (UN 3091 or UN 3481) that meets the other requirements of Section I of the applicable packing instruction may have a mass exceeding 35 kg, if approved by the appropriate authority of the State of origin. A copy of the document of approval must accompany the consignment.

A99 无论 DGR 表 4.2 ，L 栏和包装说明 965、966、967、968、969 和 970 第 I 节规定的货机数量限制为何，锂电池或电池组件（即 UN 3090 或 UN 3480），包括与设备装在一起或装在设备中的锂电池或电池组件（即 UN 3091 或 UN 3481），符合有关包装说明第 I 节的其他要求的，如果经始发国有关当局批准，质量可以超过 35 kg。该批准文件副本必须随附货物。

There will be occasion where a manufacturer may wish to have a defective battery returned for analysis. However, where such batteries may pose a safety risk they are prohibited from transport by air as set in Special Provision A154, as follows:

有时，制造厂商希望将一些有缺陷的电池召回做分析。但是，这样的电池可能会引起安全风险而禁止空运，如特殊规定 A154 所提出的，具体如下：

A154 Lithium batteries identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

A154 禁止运输由制造商查明为具有安全方面缺陷、或已经受损、可能会产生导致危险的热量、造成火情或短路的锂电池（例如那些出于安全原因退还给制造商的锂电池）。

One of the major risks associated with the transport of batteries and battery-poweredequipment is short-circuit of the battery as a result of the battery terminals cominginto contact with other batteries or metal objects. Special Provision A164 requiresthat all batteries and battery-powered equipment must be packed to prevent short circuit an inadvertent operation as follows:

有关电池和以电池为动力的仪器运输的其中一个主要的风险是由于电池的两极跟其他的电池或是金属物体接触而引起的短路。A164 要求所有的电池和以电池为动力的仪器必须防止因疏忽大意造成的短路，具体如下：

A164 Any electrical battery or battery-powered device, equipment of vehiclehaving the potential of a dangerous evolution of heat must be prepared fortransport so as to prevent:

(a) a short circuit (e.g. in the case of batteries by the effective insulation ofexposed terminals; or in the case of equipment, by disconnection of thebattery and protection of exposed terminals); and

(b) unintentional activation.

A164 具有潜在放热危险性的任何带电电池或以电池为动力的装置、设备或车辆都必须做好运输准备，以防止下列情形：

a) 短路现象（例如：对于电池，对裸露的电极做有效的绝缘处理；对于设备，断开电池的连接，对裸露的电极做绝缘保护）；和

b) 意外启动。

When a shipment of a combination of lithium batteries contained in equipment and lithium batteries packed with equipment is presented for transport, the classification is to be lithium batteries packed with equipment as indicated by special provision A181.

如果包装件既含有装在设备中的锂电池，也含有与设备包装在一起的锂电池，可按特殊规定 A181 的要求分类.

A181 When a package contains a combination of lithium batteries contained in equipment and lithium batteries packed with equipment, the package mustbe marked UN 3091 Lithium metal batteries packed with equipment, or UN3481 Lithium ion batteries packed with equipment as

appropriate. If a package contains both lithium ion batteries and lithium metal batteries, the package must be marked as required for both battery types. However, button cell batteries installed in equipment (including circuit boards) need not be considered.

如果包装件既含有装在设备中的锂电池，也含有与设备包装在一起的锂电池，则包装件必须根据情况，标明 UN 3091 Lithium metal batteries packed with equipment（与设备包装在一起的锂金属电池）或 UN 3481 Lithium ion batteries packed with equipment（与设备包装在一起的锂离子电池）。如果包装件既含有锂金属电池，也含有锂离子电池，则包装件必须根据要求标明这两种电池类型。但是不需考虑装在设备中（包括线路板在内）的钮扣式电池。

Questions have been asked regarding whether to classify equipment with lithium batteries as battery-powered equipment, or only lithium batteries contained in equipment. Special Provision A182 makes it clear that the requirement is to use the lithium battery specific entries when only those batteries are present.

我们又面临有关区分以锂电池作为电池动力仪器还是仅仅是将锂电池包含在仪器内的问题。特殊规定 A182 在此澄清。当那些电池存在的时候，就适用锂电池特殊规定的要求，

A182 Equipment containing only lithium batteries must be classified as either UN 3091 or UN 3481.

A182 仅含有锂电池的设备必须划为 UN 3091 或 UN 3481。

It has been clarified that waste batteries are not permitted in air transport with the addition of Special Provision A183.

特殊规定 A183 澄清了废电池禁止空运

A183 Waste batteries and batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator.

A183 除非经过始发国和运营人所属国的国家有关当局批准，否则禁止航空运输废电池和为回收或处理目的运输的电池

Questions have been asked regarding whether to classify vehicles powered only by lithium batteries as vehicles, or using a lithium battery entry. Special Provision A185 makes it clear that the requirement is to use the battery-powered vehicle entry.

关于如何区分仅以锂电池为动力的交通工具问题。特殊规定 A185 在此澄清，要求用电池驱动交通工具。

A185 Vehicles only powered by lithium metal batteries or lithium ion batteries must be consigned under the entry UN 3171, **Battery-powered vehicle**

A185 仅以锂金属或锂离子电池为动力的车辆归为 UN3171 ，电池驱动的车辆。

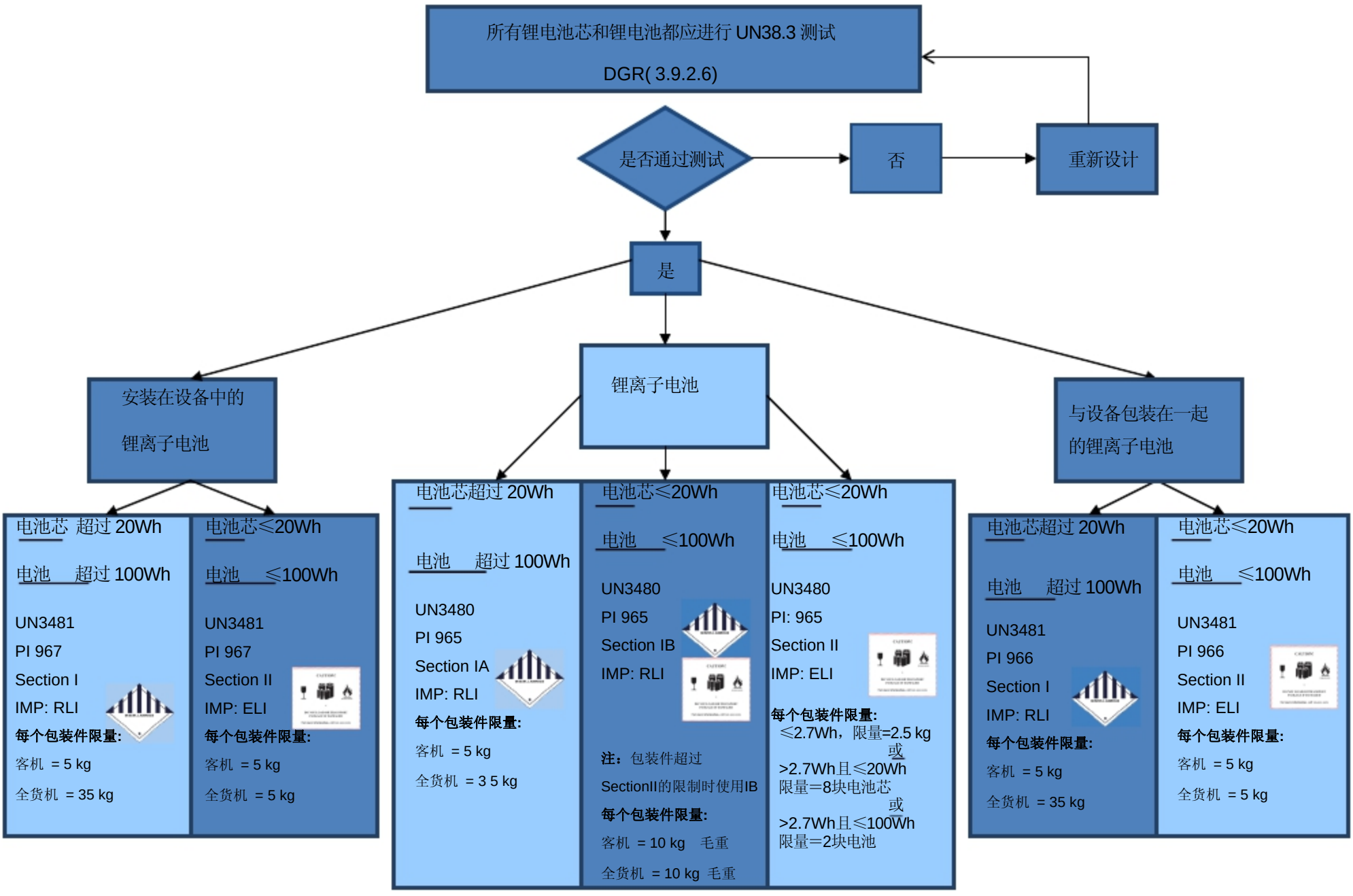
Classification Flowcharts

分类流程图

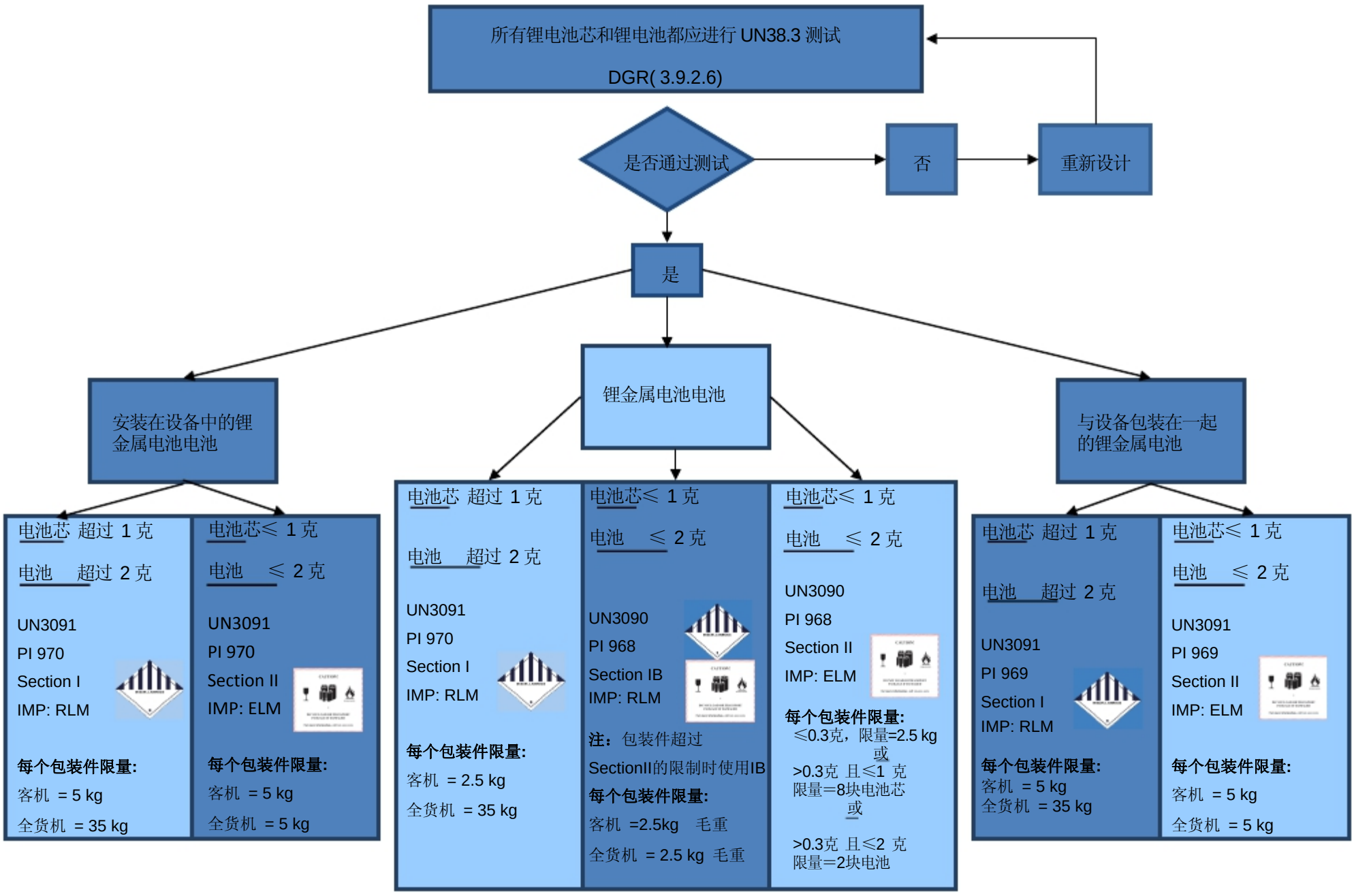
The following (2) classification flowcharts are intended to provide guidance on the classification for lithium metal and lithium ion batteries.

下面两个流程图将为锂金属和锂离子电池的分类提供一个指南

分类流程图 – 锂离子电池


所有锂电池芯和锂电池都应进行 UN38.3 测试
DGR(3.9.2.6)
是否通过测试
否
重新设计
是
安装在设备中的
锂离子电池
锂离子电池
与设备包装在一起
的锂离子电池
电池芯 超过 20Wh
电池 超过 100Wh
UN3481
PI 967
Section I
IMP: RLI
每个包装件限量:
客机 = 5 kg
全货机 = 35 kg
电池芯≤20Wh
电池 ≤100Wh
UN3481
PI 967
Section II
IMP: ELI
每个包装件限量:
客机 = 5 kg
全货机 = 5 kg
电池芯超过 20Wh
电池 超过 100Wh
UN3480
PI 965
Section IA
IMP: RLI
每个包装件限量:
客机 = 5 kg
全货机 = 3 5 kg
电池芯≤20Wh
电池 ≤100Wh
UN3480
PI 965
Section IB
IMP: RLI
注：包装件超过SectionII的限制时使用IB
每个包装件限量:
客机 = 10 kg 毛重
全货机 = 10 kg 毛重
电池芯≤20Wh
电池 ≤100Wh
UN3480
PI: 965
Section II
IMP: ELI
每个包装件限量:
≤2.7Wh，限量=2.5 kg
或
>2.7Wh且≤20Wh
限量=8块电池芯
或
>2.7Wh且≤100Wh
限量=2块电池
电池芯超过 20Wh
电池 超过 100Wh
UN3481
PI 966
Section I
IMP: RLI
每个包装件限量:
客机 = 5 kg
全货机 = 35 kg
电池芯≤20Wh
电池 ≤100Wh
UN3481
PI 966
Section II
IMP: ELI
每个包装件限量:
客机 = 5 kg
全货机 = 5 kg

分类流程图 – 锂离子电池


所有锂电池芯和锂电池都应进行 UN38.3 测试
DGR(3.9.2.6)
是否通过测试
否
重新设计
是
安装在设备中的锂金属电池电池
锂金属电池电池
与设备包装在一起的锂金属电池
电池芯 超过 1 克
电池 超过 2 克
UN3091
PI 970
Section I
IMP: RLM
每个包装件限量:
客机 = 5 kg
全货机 = 35 kg
电池芯≤ 1 克
电池 ≤ 2 克
UN3091
PI 970
Section II
IMP: ELM
每个包装件限量:
客机 = 5 kg
全货机 = 5 kg
电池芯 超过 1 克
电池 超过 2 克
UN3091
PI 970
Section I
IMP: RLM
每个包装件限量:
客机 = 2.5 kg
全货机 = 35 kg
电池芯≤ 1 克
电池 ≤ 2 克
UN3090
PI 968
Section IB
IMP: RLM
注：包装件超过SectionII的限制时使用IB
每个包装件限量:
客机 =2.5kg 毛重
全货机 = 2.5 kg 毛重
电池芯≤ 1 克
电池 ≤ 2 克
UN3090
PI 968
Section II
IMP: ELM
每个包装件限量:
≤0.3克，限量=2.5 kg
或
>0.3克 且≤1 克
限量=8块电池芯
或
>0.3克 且≤2 克
限量=2块电池
电池芯 超过 1 克
电池 超过 2 克
UN3091
PI 969
Section I
IMP: RLM
每个包装件限量:
客机 = 5 kg
全货机 = 35 kg
电池芯≤ 1 克
电池 ≤ 2 克
UN3091
PI 969
Section II
IMP: ELM
每个包装件限量:
客机 = 5 kg
全货机 = 5 kg

Prohibitions

禁止

Transport to, from or through the United States

始发、到达或穿越美国时

Lithium metal batteries shipped to, from or through the United States are subject to additional limitations specified in the US national dangerous goods regulations contained in Code of Federal Regulations Title 49 (49 CFR). The basis of these limitations is reflected in State Variation USG-02, which states that:

在运输锂金属电池始发、到达或穿越美国时，在美国的联邦法典 49CFR 里给出了更多的限制。DGR 在美国国家差异-02 条款里有列明：

Primary (non-rechargeable) lithium metal batteries and cells, (UN 3090), are forbidden for transportation aboard passenger-carrying aircraft. Such batteries transported in accordance with Section I of Packing Instruction 968 must be labelled with the CARGO AIRCRAFT ONLY label. Such batteries transported in accordance with Section II of Packing Instruction 968 must be marked “PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”.

禁止用客机运输（不可再充电的）原锂金属电池和电池芯（UN 3090）。凡是按照包装说明 968 第 I 节的规定运输的电池，都必须贴有“CARGO AIRCRAFT ONLY（仅限货机）”标签。凡是按照包装说明 968 第 II 节的规定运输的电池，都必须标明“PRIMARY LITHIUM BATTERIES– FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（原锂电池—禁止用客机运输）”或“LITHIUM METAL BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（锂金属电池—禁止用客机运输）”。

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) are forbidden for transportation aboard passenger- carrying aircraft unless:

1. the equipment and the batteries and cells are transported in accordance with Packing Instruction 969 or 970, as appropriate;

2. the package contains no more than the number of lithium metal batteries or cells necessary to power the intended piece of equipment;

3. the lithium content of each cell, when fully charged, is not more than 5 grams;

4. the aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams; and

5. the net weight of lithium batteries does not exceed 5 kg (11 lb).

禁止用客机运输装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯（UN 3091），除非它们满足下列条件：

1) 设备和电池与电池芯是酌情按照包装说明 969 或 970 运输的；

2) 包装件所含的锂金属电池或电池芯数目不超过为拟供电设备供电所需的数目；

3) 每个电池芯在完全充电时，其锂含量不超过 5 克；

4) 每个电池在完全充电时，电池阳极的合计锂含量不超过 25 克；和

5) 锂电池的净重不超过 5 千克（11 磅）

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) and transported in accordance with Section I of Packing Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger-carrying aircraft and must be labelled with the CARGO AIRCRAFT ONLY label.

按照包装说明 969 或 970 第 I 节运输的装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯（UN 3091），如不符合上述规定，则禁止用客机运输，且必须贴有“CARGO AIRCRAFT ONLY（仅限货机）”标

签。

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN 3091) and transported in accordance with Section II of Packing Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger-carrying aircraft and must be marked “PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”.

按照包装说明 969 或 970 第 II 节运输的装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯（UN 3091），如不符合上述规定，则禁止用客机运输，且必须标明“ PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（原锂电池—禁止用客机运输）”或“LITHIUM METAL BATTERIES – FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（锂金属电池—禁止用客机运输）”。

Passenger Provisions

旅客规定

Transport within Passenger Baggage

在旅客行李中运输时

Certain restrictions apply to the carriage of lithium metal and lithium ion batteries even when carried by passengers as baggage. Once again, only batteries that have successfully passed the Tests outlined in Part III, Sub-Section 38.3 of the UN Manual of tests and criteria may be carried.

甚至当乘客把锂金属或锂离子电池作为行李携带时，也有某些限制。再次声明，只有已经成功通过了，UN 测试和标准手册第 38.3 小节 PartIII 测试程序的电池，才可能被携带。

As said before batteries manufactured, distributed or sold by major companies do meet this requirement, however, certain replacement batteries which are not OEM or aftermarket batteries but simply low-cost copies of those – also called “fakes” – may not have undergone the required tests. Untested batteries are consequently excluded from air transport.

如前所述，电池制造，分销的主要公司一定要符合这个要求，然而，某些电池替代品，不是所谓的 OEM 或 aftermarket 电池，而仅仅是它们的低成本复制品--也被叫做“赝品”—可能没有通过要求的测试。未测试的电池不得空运。

Users of equipment powered by lithium metal and lithium ion batteries should therefore be vigilant when buying replacement batteries from unknown sources, such as on markets or Internet auction platforms. The differences between genuine andcopied battery types may not be visible but could be very dangerous; such untested batteries may have a risk of overheating or causing fires.

当从未知来源购买由锂金属或锂离子电池驱动的仪器设备，比如在市场上或是网上竞拍平台上购买时，用户应该警惕。真品和复制品电池的区别可能不可见，但是可能很危险。这样的未经检测的电池可能会有过热或引起火灾的风险。

Because of the risks associated with the carriage of spare batteries these may not be transported within passenger checked baggage. Spare batteries must be in carry-on baggage.

由于备用电池运输导致的风险，备用电池不可以放在乘客的托运行李中被运输，必须放在自理行李里。

These requirements are stipulated by subparagraph 2.3.5.9 of the IATA Dangerous Goods Regulations:

这些要求见 DGR 2.3.5.9

2.3.5.9 Portable Electronic Devices containing Batteries

2.3.5.9 含有电池的便携式电子设备

2.3.5.9.1Portable electronic devices (such as watches, calculating machines, cameras, cellular phones, lap-top computers, camcorders, etc.) containing batteries when carried by passengers or crew for personal use, which should be carried in carry-on baggage. Spare batteries must be individually protected to prevent

short circuits by placement in the original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch, and carried in carry-on baggage only. In addition, lithium batteries are subject to the following conditions:

(a) . each installed or spare battery must not exceed:

1. for lithium metal or lithium alloy batteries, a lithium content of not more than 2 g; or
2. for lithium ion batteries, a watt-hour rating of not more than 100 Wh.

(b) batteries and cells must be of a type that meets the requirements of the UNManual of Tests and Criteria, Part III, subsection 38.3;

(c) if devices are carried in checked baggage the passenger/crew member must take measures to prevent unintentional activation.

旅客或机组成员为个人自用并应作为自理行李携带的、内含锂或锂离子电池芯或电池的便携式电子装置（手表、计算器、照相机、手机、手提电脑、便携式摄像机等）。备用电池必须单个做好保护以防短路（放入原零售包装或以其他方式将电极绝缘，如在暴露的电极上贴胶带，或将每个电池放入单独的塑料袋或保护盒当中），并且仅能在自理行李中携带。此外，每一已安装电池或备用电池不得超过以下限制：

（a）每一个安装好的或是备用电池不得超过：

1. 对于锂金属电池或是锂合金电池，锂含量不能超过 2 克
2. 对于锂离子电池，瓦时额定值不能超过 100 瓦时

（b）电池和电池芯必须通过联合国检测和标准手册第 III 部分第 38.3 小节要求的测试；

（c）如果设备在乘客或机组人员的托运行李内，则必须采取措施防止意外启动。

There is also provision, with the approval of the airline, for larger lithium ion batteries with a watt-hour rating in excess of 100 Wh, but not more than 160 Wh in equipment and no more than two spare lithium ion batteries as set out in subparagraph 2.3.3.2 as follows:

对于大的锂离子电池额定，瓦时超过 100 瓦时但不超过 160 瓦时，在仪器设备内或作为备用电池不超过两个时另有规定。需要经航空公司批准才可以运输，见 2.3.3.2：

2.3.3.2 Lithium ion batteries exceeding a watt-hour rating of 100 Wh but not exceeding 160 Wh may be carried as spare batteries in carry-on baggage, or in equipment in either checked or carry-on baggage. Batteries must be of a type that meets the requirements of the UN Manual of Tests and Criteria, Part III, subsection 38.3. No more than two individually protected spare batteries per person may be carried.

经运营人批准，瓦时额定值超过 100 Wh 但不超过 160 Wh 的锂离子电池，可以作为备用电池在自理行李中携带，或装在交运行李或自理行李中的设备上。每人不得携带超过两个单独得到保护的备用电池。电池和电池芯必须通过联合国检测和标准手册第 III 部分第 38.3 小节要求的测试。

Although the text provided above does not impose a limit on the number of lithium metal and lithium ion batteries that fall under the 2 g or 100 Wh limitation (See 2.3.5.9) being carried as spares within a passenger’s carry-on baggage it must be emphasized that the number of spares must be “reasonable” in the context of the equipment used by the passenger and his or her itinerary. Furthermore, these must be intended to power portable electronic devices (including, but not limited to, cameras and professional film equipment, laptop computers, MP3 players, cell phones, Personal Digital Assistants (PDA’s), pocket calculators etc).

尽管作为备用电池在乘客自理行李里携带时，以上提供的文本没有对低于 2 克或是 100 瓦小时（见 2.3.5.9）的锂金属或锂离子电池的数目上施加限制。但必须强调，在他/她的旅程中使用的设备，备用电池的数目必须合理化。此外，这些必须可以驱动便携式电子设备（包括，但是不仅仅是，相机和专业电影设备，手提电脑，MP3 播放器，移动电话，私人数码助手（PDA’s）便携式计算器，等等）。

Batteries which are carried for the purpose of resale or beyond personal needs are clearly not covered.

很显然，不包括以转售为目的或是超过个人用途的电池。

The regulations imposed on these commodities by the United States competent authorities (Department

of Transportation and FAA) match the ICAO / IATA regulations addressed in this document.

美国主管权威机构（运输和 FAA 部门）对这些商品的规则要求与本文件中阐述的 ICAO/IATA 规则相同。

Lithium-ion battery powered wheelchairs or other similar mobility aids for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), are permitted in air transport but subject to the following conditions:

(a) the batteries must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3;

(b) the operator must verify that:

(1) battery terminals are protected from short circuits, e.g. by beingenclosed within a battery container,

(2) the battery must be securely attached to the wheelchair or mobility aid; and

(3) electrical circuits have been inhibited.

(c) the mobility aids must be carried in a manner such that they are protected from being damaged by the movement of baggage, mail, or other cargo;

(d) where a battery powered or other similar mobility aid is specifically designed to allow its battery(ies) to be removed by the user (e.g. collapsible)

(1) the battery(ies) must be removed. The wheelchair / mobility aid may then be carried as checked baggage without restriction;

(2) the battery(ies) must be protected from short circuit by insulating the terminals (e.g. by taping over exposed terminals);

(3) the removed battery(ies) must be protected from damage (e.g.) by placing each battery in a protective pouch. The battery(ies) must be carried in the passenger cabin;

(4) removal of the battery from the device must be performed by following the instructions of the manufacturer or device owner;

(5) the battery must not exceed 300 Wh;;

(6) a maximum of one spare battery not exceeding 300 Wh or two spares each not exceeding 160 Wh may be carried; and

(e) the pilot-in-command must be informed of the location of the mobility aid with an installed battery or the location of the lithium battery when removed and carried in the cabin.

(f) It is recommended that passengers make advance arrangements with each operator.

作为托运行李并经运营人批准，由锂离子电池驱动的代步工具（例如轮椅），供由于残障、健康或年龄原因而行动受限或暂时行动不便（例如腿断了）的旅客使用，但须受以下条件限制：

a) 电池所属类型必须符合联合国《试验和标准手册》第 III 部分 38.3 小节规定的每项试验的要求；

b) 运营人必须核实：

1) 电池牢固安装在代步工具上；；

2) 电池两级能防止短路（例如将电池封装在电池盒内）；和

3) 电路已经绝缘；

c) 代步工具在运载时必须采取保护措施，防止其由于行李、邮件、备用品或其他货物的移动而受到损坏；

d) 如果代步工具经过专门设计，允许由用户拆下电池（例如可分拆）：

1) 必须卸下电池并在客舱中携带；

2) 电池两级必须能防止短路（例如在暴露的电极上贴胶带，使电极绝缘）；

3) 必须保护电池免受损害（例如将每个电池放入单独的保护盒当中）；

4) 必须遵循制造商或装置所有人的指示，将电池从代步工具上卸下；

5) 电池不得超过 300 Wh；和

6) 最多可携带一个不超过 300 Wh 的备用电池，或两个各不超过 160 Wh 的备用电池；

e) 必须将锂离子电池的位置通知机长；

f) 建议旅客事先同每一运营人做好安排；

Note: most scooters have a key which can be switched to the off position, removed and given to the passenger for safe keeping. However, most power chairs are switched on and off with a push-button which could be reactivated in flight by the inadvertent movement of baggage or cargo. Accordingly, further steps are required to inhibit the circuits of such devices, for example separating the power supply betweenthe batteries and the control mechanism by disconnecting cable plugs or connectors, or inserting an inhibiting plug. Any exposed electrical terminals must be insulated to prevent short circuit. Batteries should not be routinely disconnected or removed, since this is often very difficult to do, and if not done properly can increase the risk of a fire.

备注：大多数轮椅有钥匙，可以转到停止位置了，拔下并交给乘客保管。但是，大多数驱动椅子可以通过一个按钮来启动和停止，这样就有可能在飞行过程中由于行李或货物的移动被误启动。据此，要求进一步的程序来防止电路接通。例如，通过断开电线插头或连接器，或插入禁止插头来分离电池和轮椅之间的电源。任何暴露的电极必须绝缘以防短路。电池不宜经常被断开或卸下，因为这往往是非常困难的事，如果操作不当可能会增加火灾危险。

To check that electrical circuits have been inhibited, prior to loading place the device into drive mode (i.e. not freewheel mode), try to power up the device be pressing the on/off switch and see if use of the joystick results in the mobility aid moving. A check should also be made that batteries are securely attached to the mobility aid and battery terminals are protected from short circuit. If it is evident that an electric mobility aid has not been made safe, it must not be loaded.

检查电路是否已被禁用，把设备调到动力模式（如：非自由轮模式），试着按下 on/off 键启动设备，看使用操纵杆是否导致轮椅移动。还必须检查：电池是否安全地紧附在助行器材上，电池末端已被保护以防短路。如果助行器材明显不安全，则不得装载。

Once loaded onboard the aircraft or into a ULD, the electric mobility aid should be returned to drive mode as this will help prevent it moving with the potential for damage. Devices must be secured to prevent movement and may require load- spreading (consult the airline ground handling manual for details).

一旦被装载在飞机上或是装入 ULD 内，电子助行器材应该被返回到驱动模式因为这会有助于防止移动而导致潜在的损坏。设备必须牢固安全以防移动，可能有更多装载要求（详细内容参考航空公司地面操作手册）。

Frequently Asked Questions 常见问题

Part 1 – Questions Related to Definitions

第 1 部分 — 与定义有关问题

A. What are the various types of lithium batteries?

A--锂电池有哪些类型？

Lithium batteries fall into two broad classifications; lithium metal batteries and lithium ion batteries. Lithium metal batteries are generally non-rechargeable and contain metallic lithium. Lithium ion batteries do not contain metallic lithium and are rechargeable.

锂电池大致可分为两类：锂金属电池和锂离子电池。锂金属电池通常是不可充电的，且内含金属态的锂。锂离子电池不含有金属态的锂，并且是可以充电的。

B. What are lithium polymer batteries?

B--什么是锂聚合物电池？

A lithium polymer battery is a type of lithium ion battery. Generally, the main difference is lithium ion polymer batteries contain a polymer electrolyte.

锂聚合物电池是锂离子电池的一种。一般来说，主要的区别是锂离子聚合物电池含有某种聚合物电解质。

C. What is the difference between a lithium cell and a lithium battery?

C--锂电池芯和锂电池的区别是什么？

A lithium cell is a single encased electrochemical unit consisting of one positive and one negative electrode that exhibits a voltage differential across the two terminals. A lithium battery is two or more cells electrically connected. A single cell battery is considered a cell and not a battery for the purposes of the limitations set out in the DGR.

锂电池芯是一个单一的电化学封闭单元，由一个正极和一个负极组成，两极之间有电位差。锂电池是由一个或多个锂电池芯通过电路进行连接组成的。在 DGR 中单芯电池应视为电池芯而不是电池来做限制。

Note: Units that are commonly referred to as "battery packs" having the primary function of providing a source of power to another piece of equipment are for the purposes of these Regulations treated as batteries. Refer to the section on Definitions for complete details.

注：一些通常都被称为“电池组”的单位，其主要功能是供给设备电源，那在规则中就要被看作是电池，详见 DGR 相关定义。

D. How are component cells connected to form a battery?

D--电池芯是如何进行连接以组成电池的？

Cells in batteries may be connected in parallel, in series, or in a combination of the two. When cells are connected in series the voltage of the battery increases but the capacity in ampere-hours (Ah) does not change. By contrast, when cells are connected in parallel the capacity in ampere-hours of the battery (Ah) increases but the voltage stays the same.

电池中的电池芯可以通过并联、串联或者两种方式组合的方式进行连接。当电池芯串联时电池的电压升高但容量（以安培小时 Ah 为单位）不变。相反，电池芯并联时容量增加而电压不变。

E. How do I determine the watt-hour rating for a particular lithium ion battery?

E--如何确定锂离子电池的额定瓦特小时？

The watt-hour (Wh) rating is a measure by which lithium ion batteries are regulated.Section II Lithium ion batteries manufactured after 1 January 2009 are required to be marked with the watt-hour rating. Section I Lithium ion batteries manufactured after 31 December 2011 are required to be marked with the watt-hour rating.

额定瓦特小时(Wh)是一种规范锂离子电池的计量标准。Section II 中要求 2009 年 1 月 1 日以后生产的锂离子

电池都要求用额定瓦特小时进行标记。sectionI 中要求 2011 年 12 月 31 日后生产的锂离子电池都需要标注瓦时。

You can also arrive at the number of watt-hours your battery provides if you know the battery's nominal voltage (V) and capacity in ampere-hours (Ah):

如果已知电池的标称电压(V)和标称容量(Ah)，可以通过计算得到额定瓦特小时的数值：Wh= V x Ah

安培乘以标称电压等于瓦时

This information is often marked on the battery.

标称电压和标称容量通常标记在电池上。

Note that if only the milli-ampere-hours (mAh) are marked on the battery then divide that number by 1000 to get ampere-hours (Ah) (i.e. 4400 mAh / 1000 = 4.4. Ah).

请注意：如果电池上只标记有毫安时(mAh)，可将该数值除以 1000 得到安培小时(Ah)

(例, 4400 mAh / 1000 = 4.4. Ah)。

Most lithium ion batteries marketed to consumers are below 100 watt-hours. If you are unsure of the watt-hour rating of your lithium ion battery, contact the manufacturer.

消费者使用的大多数锂离子电池其额定瓦特小时都低于 100 瓦特小时。如果无法确定锂离子电池的额定瓦特小时，应联络生产商。

F. What is a button cell battery?

F--什么是钮扣电池？

A button cell battery is a round small cell or battery where the overall height is less than the diameter.

一个纽扣电池是小型的圆形的电池，总高度小于其直径。

Part 2 – Questions related to Packaging and Transport Provisions

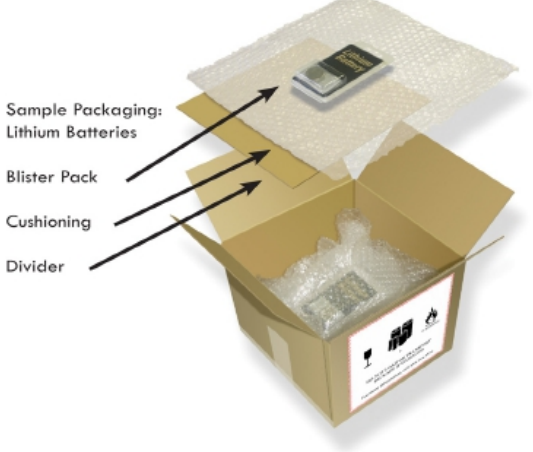
第 2 部分 关于包装和运输条款的问题

A. How do I safely package lithium batteries for transport?

A--如何安全的包装锂电池进行运输？

One of the major risks associated with the transport of batteries and battery-powered equipment is short-circuit of the battery as a result of the battery terminals coming into contact with other batteries, metal objects, or conductive surfaces. Packaged batteries or cells must be separated in a way to prevent short circuits and damage to terminals. They must be packed in a strong outer packaging or be contained in equipment. Sample packaging meeting these requirements is shown below:

电池和电池动力设备运输时，最主要的风险之一就是电池两极接触其他电池、金属物体或其他导电体而引起的电池短路。因此，必须将包装好的电池芯和电池使用适当的方式隔开，以防止发生短路和电极破损。此外，电池和电池芯还必须包装在坚固的外包装内，或者安装在设备中。符合规定的包装样例如下：



B. How can batteries be effectively protected against short circuit?

B—如何对电池进行有效的防短路保护？

Methods to protect against short circuit include, but are not limited to, the following methods:

防止电池短路包括但不限于以下方法：

a. Packing each battery or each battery-powered device when practicable, in fully enclosed inner packagings made of non-conductive material (such as a plastic bag);

在可行的情况下，用非导电材料（如塑料袋）制成的完全封闭的内包装来装每个电池或每个电池动力设备；

b. Separating or packing batteries in a manner to prevent contact with other batteries, devices or conductive materials (e.g., metal) in the packagings; and

使用适当的方式对电池进行隔离或包装，使其无法与包装件内的其他电池、设备或导电材料（如金属）相互接触，并且；

c. Ensuring exposed terminals or connectors are protected with non-conductive caps, non-conductive tape, or by other appropriate means.

对裸露的电极或插头使用不导电的保护帽、绝缘带或其他适当的方式进行保护。

If not impact resistant, the outer packaging should not be used as the sole means ofprotecting the battery terminals from damage or short-circuiting. Batteries should besecurely cushioned and packed to prevent shifting which could loosen terminal capsor reorient the terminals to produce short circuits.

如果外包装不能抵挡碰撞，那么就不能仅使用外包装作为防止电池电极破损或短路的唯一措施。电池还应使用衬垫防止移动，否则由于移动导致的电极帽松动，或者电极改变方向易引起短路。

Terminal protection methods include but are not limited to the following:

电极保护方法包括但不限于以下措施：

a. Securely attaching covers of sufficient strength to protect the terminals;

将电极牢固地附上有足够强度的盖；

b. Packaging the battery in a rigid plastic packaging; and

将电池包装在刚性塑料包装内；并且

c. Constructing the battery with terminals that are recessed or otherwise protected so that the terminals will not be subjected to damage if the package is dropped.

电池电极使用凹陷设计或有其他保护方式，这样即使包装件跌落电极也不会破损。

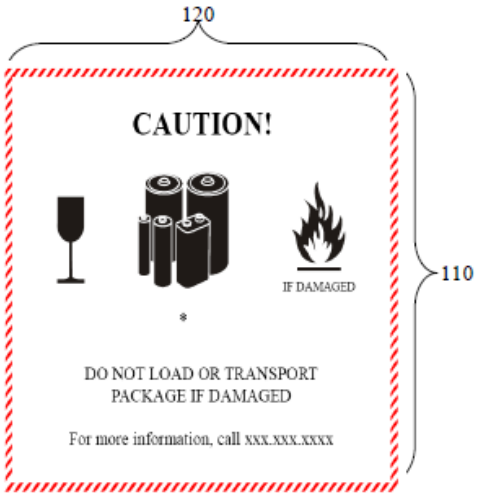
C. What does the new lithium battery handling label look like and when is it required?

C--新的锂电池操作标签是什么样的？什么情况下需要使用？

The new lithium battery handling label is required as specified in the additional requirements of Section II of packing instructions 965, 966, 967, 968, 969 and 970. It is also required as specified in the additional requirements of Section IB of packing instruction 965 and 968 in addition to the Class 9 label. The new label is as shown in Figure 7.4.H of the IATA Dangerous Goods Regulations. The border of the label must have red diagonal hatchings with text and symbols in black on a contrasting background. The lithium battery handling label may be printed directly on the outer packaging provided that there is sufficient contrast between the elements of the lithium battery label and the colour of the packaging material. The minimum dimensions are 120 mm x 110 mm

包装说明 965、966、967、968、969 和 970 第 II 节的附加规定中明确了需要粘贴新的锂电池操作标签的情况。该标签同时还和第九类杂项标签一起用于 PI965 和 PI968 的第 I 节的 IB 小节。新标签见 DGR 图 7.4H。标签的边必须有红色斜阴影线，符号和文字使用与背景形成鲜明对比的黑色。如果标签和包装材料的颜色对比足够

明显，锂电池操作标签也可以直接印刷在外包装上。



D. If I have smaller packages, can I use a smaller lithium battery handling label?

D—如果用的是小包装，能使用更小的锂电池操作标签吗？

Where the packages are of dimensions such that they can only bear smaller labels the label dimensions may be 74 mm × 105 mm. The design specifications remain otherwise the same.

因包装件的尺寸原因只能用小标签的话，可以使用 7 4 mm X 1 0 5 mm 尺寸的标签。设计规格样式方面不变。

E. When is a lithium battery handling label not required?

E—何时不需要锂电池操作标签？

A lithium battery handling label is not required for packages prepared in accordance with Section I of Packing Instructions 965-970 (i.e. bearing a Class 9 label) or when a package contains not more than 4 cells or 2 batteries installed in equipment prepared in accordance with Section II of Packing Instructions 967 and 970. This applies to UN 3481 Lithium ion batteries contained in equipment (See Section II of Packing Instruction 967) and UN3091 Lithium metal batteries contained in equipment (see Section II of Packing Instruction 970), except that button cells installed in equipment (including circuit boards) need not be considered. As these packages do not require a lithium battery handling label, the accompanying document mentioned in the "Additional Requirements" of Section II of Packing Instructions 967 and 970 is not required.

符合包装说明 966、967、969、970 第 I 节规定（即贴有第 9 类危险性标签）的包装件不需要粘贴锂电池操作标签。符合包装说明 965、968 第 I 节，IA 小节规定的包装件不需要粘贴锂电池操作标签(译注：此处英文原文有误)。

对于安装在设备中的锂离子电池 UN3481 和安装在设备中的锂金属电池 UN3091，若其包装件符合包装说明 967 和 970 第 II 节的规定，且其安装在设备中的电池芯不超过 4 个或电池不超过 2 个。这些包装件也不需要粘

贴锂电池操作标签。此时安装在设备中的钮扣电池芯可不考虑。由于这些包装件不需要粘贴锂电池操作标签，对于包装说明 967 和 970 第 II 节其他包装要求规定的附加随机文件也无需提供。

Note: The Air Waybill is only required to contain the statements "Lithium [ion or metal] batteries in compliance with Section II of PI9XX" when the lithium battery label needs to be affixed.

注：只有在需要锂电池操作标签时，运单才需要显示"Lithium [ion or metal] batteries in compliance with Section II of PI9XX"的声明字样。

F. Is there a requirement for the Lithium Battery Handing Label to be available in languages other than English?

F--锂电池操作标签是否可以使用除英文之外的语言文字？

English is generally the standard language accepted in international aviation.However, the State of origin where the package is being offered for shipment mayrequire their official language. Subsection 7.1.3.3 of the IATA DGR specifies that in addition to the languages which may be required by the State of origin, English must be used.

一般来说，英文是国际航空所使用的标准语言。但是，包装件交运的始发国可以规定使用其官方语言。IATA DGR7.1.3.3 详细阐明了除始发国规定的语言外，还应使用英文。

G. Section II in Packing Instructions 967 and 970 states that "Each package containing more than four cells or more than two batteries installed in equipment must be labelled with a lithium battery handling label." What is the intent of this provision?

G--包装说明 967 和 970 第 II 节规定"每个包装件内如安装在设备的电池芯超过 4 个或电池超过 2 个，则该包装件必须粘贴操作标签"。如何理解？

This provision authorizes packages with equipment containing no more than 2 batteries or 4 cells to be offered for transport without the lithium battery handling label. For example, a package containing a notebook computer may have 1 lithium ion battery and 2 small lithium metal coin cells installed in the product. This single package does not require the lithium battery handling label. The number of cells contained inside the lithium ion battery are NOT counted towards the 4 cell limitation because it is the battery installed in the equipment being presented for transport. In addition, multiple packages each containing no more than 2 batteries or 4 cells may be overpacked and neither the individual packages nor the overpack would require the label.

本条规定适用于电池或电池芯安装在设备中进行运输的情况。当包装件中的设备内含的电池不超过 2 个或电池芯不超过 4 个时，本规定允许该包装件交运时不粘贴操作标签。例如，包装件内装有一个笔记本电脑，1 个锂离子电池和 2 个锂金属纽扣电池芯被安装在电脑中。在这种情况下这个包装件是不需要粘贴锂电池操作标签的。此时，锂离子电池中的电池芯数量不计算在 4 个电池芯的限制中，因为交运的是安装在设备中的电池。此外，内装不超过 2 个电池或 4 个电池芯的包装件，可以多个组合制成合成包装件，无论是单个包装件还是合成包装件都不要贴标签。

H. I have an MP3 player that contains one single-cell lithium ion battery pack. Do I have to label the shipping box that contains each MP3 player? What if I place five MP3 players in a shipping box? Does this require a label?

H--若一个 MP3 播放器内有一个单电池芯锂离子电池，那么装有 1 个 MP3 的盒子是否要贴标签？如果装有装 5 个 MP3 呢？

For packages of single MP3 players, no lithium battery label would be required since you can place up to 4 of these single-cell batteries in a box without labelling the outer box. In the case where 5 MP3 players are in a shipping package, a lithium battery label on the outer shipping package would be required.

装有一个 MP3 播放器的包装件不需要贴锂电池操作标签，因为一个盒子内最多可以放 4 个这样的单电池芯电池而在其外部无需贴锂电池操作标签。如果一个交运的包装件里放 5 个这样的 MP3，包装件外部就必须粘贴锂电池操作标签。

I. Can a single label be used to identify that both lithium metal and lithium ion batteries are contained inside the package?

I--当包装件内同时装有锂金属和锂离子电池时，是否可以用一个标签来标明？

Yes. A single label identifying both lithium ion and lithium metal batteries may be used.

可以。可以用一个标签来同时标明包装件内即含锂离子电池，又含锂金属电池。

J. What are the requirements for the telephone number on the lithium battery handling label?

J--锂电池操作标签上的电话号码有什么要求？

The telephone number should be of a person knowledgeable about the shipment but is not intended to be for the purposes of obtaining immediate emergency response guidance, and is therefore not required to be monitored at all times that the package is in transit. It is acceptable for the number to be monitored during the company's normal business hours in order to provide product-specific information relative to the shipment. However, it also is acceptable to use an emergency response, 24-hour phone number on the label.

在锂电池操作标签上填写电话号码的目的是为了解到货物的信息，而不是为了获取应急指导，因此这个电话号码并不要求在货物运输的全过程中随时保持有人接听，只要在公司正常上班时间可以打通即可，电话的主要目的是要获取与货物有关的产品详细信息。当然，在锂电池操作标签上填写 24 小时应急电话也是可以接受的。

K. For the purposes of the lithium battery packing instructions, what is considered the "package"?

K--包装说明中的“包装件 package”如何理解？

The package is the complete product of the packing operation that satisfies the requirements of the packing instruction and in a manner ready to be presented for transport (shipper/consignee information, hazard communication, etc). The package may contain multiple batteries or pieces of equipment provided the limitations set out in the applicable packing instruction are not exceeded. The package must be marked and labelled as required by the packing instruction. A single package may be offered for transport, or one or more packages may then be placed into an overpack for ease of handling or transport purposes. When an overpack is used, the package markings and labels must be duplicated on the overpack unless the markings and labels required on individual packages are visible, or are not required by the packing instruction (i.e. not more than 4 cells or 2 batteries when contained in equipment).

包装说明中包装件是指经包装作业后的完整产品，它满足包装说明的所有要求。在不超过包装说明中规定限值的前提下，包装件内可以装有多个电池或设备。包装件必须依据包装说明的规定进行标记和标签。单个包装件可以直接交运，出于方便操作或运输目的，一个或多个包装件可以放在合成包装件内。使用合成包装件时，包装件的标记和标签应复制在合成包装件外部，除非单个包装件的标记和标签从合成包装件外清晰可见，或者包装说明没有要求（如安装在设备中的少于 4 个电池芯或 2 个电池）。

L. Please explain the documentation requirements for consignments of lithium batteries that are required to have the lithium battery label?

L--请描述当需要张贴锂电池标签的锂电池托运时的文件相关要求

Each consignment of packages with lithium batteries that is required to have the lithium battery handling label must be accompanied by a document such as an airway bill or other document that indicates:

要求需粘贴锂电池操作标签的货物必须随附文件（如货运单或其他文件），以说明

- The package contains lithium ion cells or batteries;

  包装件内有锂电池芯或锂电池；

- The package must be handled with care and that a flammability hazard exists if the package is damaged;

  包装件必须小心操作，如包装件破损有易燃危险性；

- Special procedures should be followed in the event the package is damaged,to include inspection

and repacking if necessary; and

包装件破损时应执行的特殊程序，包括检查和必要的重新包装；

- A telephone number for additional information.

可获取其他信息的电话号码。

This document may be in any form provided it contains all the appropriate information and accompanies the consignment.

文件可以是任何形式的，只要其包含所有信息且随附货物即可。

An example of the document has been provided at the end of this guidance document in Appendix A.

文件的样本可以在附录 A 中找到

This document is required for any shipment where the lithium battery handling label is required (i.e. Section IB and Section II).

本文件适用于所有需要粘贴锂电池操作标签的情况（如：Section IB 和 Section II）

M. Does IATA require an MSDS containing the UN test data?

M--IATA 需要提供有 UN 测试数据的 MSDS 吗？

No. IATA does not require the use of MSDS and test data is not part of the required documentation requirements when offering lithium batteries for transport.

不需要，IATA 不要求使用 MSDS，交运锂电池时，测试数据也不是文件要求的一部分。

N. Under Packing Instructions 966 and 969, it states that "The maximum number of batteries in each package must be the minimum number required to power the equipment, plus two spares". If a package contains 4 power tools (each tool contains a lithium ion battery), can 2 extra lithium ion batteries be placed in the package for each piece of equipment for a total of 8 batteries?

N--根据包装说明 966 和 969 中的说明"每个包装件内的电池最大数量应是设备动力所需的最少电池数量，再加 2 个备用电池"。如果一个包装件有 4 个电动工具（每个工具有 1 个锂离子电池），是否可以为每个工具配备 2 个备用锂离子电池一共 8 个备用电池放在包装件内？

Yes. The 8 batteries reflect two spares for each of the 4 power tools in the outer package.

可以。整个包装内 4 个电动工具每一个都可以有 2 个备用电池。

O. May lithium battery packages be placed in an overpack in accordance with the new IATA Dangerous Goods Regulations?

O--根据最新的 IATA 危险品规则，锂电池包装件是否可以放在一个合成包装件内？

Yes. The overpack may also contain packages of dangerous goods or goods not subject to the Regulations provided there are no packages enclosing different substances which might react dangerously with each other. An overpack must be marked with the word "overpack" and must be labelled with the lithium battery handling label (Figure 7.4.H), unless the label(s) on the package(s) inside the overpack are visible or not required by the Packing Instruction.

可以。合成包装件可以由危险品包装件和不受限制的货物包装件组成，只要内装物相互之间不发生危险反应即可。当包装件上要求粘贴锂电池操作标签（图 7.4H）时，合成包装件外也必须贴锂电池操作标签，并在其旁边标识"合成包装件（OVERPACK）"字样，除非包装件上的标签清晰可见。

In addition, the word "overpack" must be marked on overpacks containing packages transported in accordance with Section I of the applicable Packing Instructions (i.e. bearing Class 9 labels).

此外，根据适用包装说明第一部分的合成包装件外必须注明"overpack"字样

P. Do the quantity limits shown in the IATA packing instructions apply to overpacks containing lithium batteries?

P--包装说明中规定的数量限制是否也适用于合成包装件？

The quantity limits shown in the packing instructions refer to the package. Provided each package remains under the limit specified in the packing instruction, the overpack may exceed the specified limits.

包装说明中的数量限制是针对包装件的限制。只要每个包装件在包装说明所限制的范围内，合成包装件可以超出限制。

Q. Packing Instructions 966 and 969 Section II include a requirement for a 1.2 metre drop test. What portion or portions of the package are subject to this test?

Q--包装说明 966 和 969 第 II 节规定了 1.2 米跌落测试。哪些包装件要做这项测试？

The completed package containing batteries as prepared for transport in accordance with the relevant packing instruction must be capable of withstanding the 1.2 m drop test. This could apply to a package solely containing batteries that is packaged in full compliance with the provisions of the packing instruction (to include the 1.2 m drop test capability requirement) and is then overpacked with equipment and offered for transport (see item 2O for additional information related to overpacks). Or, it could apply to a package that includes batteries properly packed in inner packaging and equipment or other non-dangerous goods that are placed in a single outer packaging. The package that includes both the inner packaging containing batteries and the equipment must comply with the packing instruction to include meeting the capability to pass the 1.2 m drop test.

根据相应的包装说明已经包装完成准备交运的内含锂电池的包装件必须能够承受 1.2 米跌落测试。如果装有电池的包装件与设备等包装在一起组成合成包装（OVERPACK）时，装有电池包装件的包装必须符合相应包装说明的所有要求，这其中就包括 1.2 米跌落测试。

如果装有电池的内包装与其他设备或非危物质装在同一个外包装中构成一个组合包装件时，包括锂电池内包装和设备在内的整个包装件必须符合相应包装说明的所有规定，这其中也包括 1.2 米跌落测试。

R. How do I transport prototype lithium cells and batteries that have not been UN Tested?

R--如何运输没有做过 UN 测试的原型样品锂电池？

Prototype or low-production lithium batteries may be transported by cargo aircraft if you do the following (See Special Provision A88):

原型样品锂电池可以用货机运输，但需要满足以下条件（见特殊规定 A88）：

1. Obtain approval from the competent authority of the origin country prior to transport;

   运输前从政府主管部门获得批准；

2. Protect the cells and batteries from short circuiting;

   对电池和电池芯进行防短路保护；

3. Individually pack each of the cells or batteries in an inner packaging inside an outer packaging that completely surrounds the cells and batteries. All packaging and cushioning material must be non-conductive and non- combustible

   每个电池芯或电池放在一个完全封闭的内包装中，再放入外包装。所有包装和衬垫材料都必须是不导电和不易燃的。

4. Place the cells and batteries in an outer drum or box made of metal, plastic or plywood that meets Packing Group I performance requirements.

   电池和电池芯应包装在以金属、塑料或胶合板为原料的桶型外包装或箱型外包装中，这些桶或箱必须满足包装等级 I 级的性能要求。

   a. Lithium batteries with a mass of 12 kg or greater and having a strong, impact resistant outer

casing, or assemblies of such batteries, may be packed in outer packagings or protective enclosures not subject to the requirements of Section 6 of the IATA DGR.

质量为 12 千克或以上、具有坚实抗冲击外壳的锂电池或此类电池组件，可以装入不受 DGR 第 6 章要求所限制的坚固的外包装或保护罩内。必须对电池或电池组件做好防短路保护。

S. Can I ship recalled, damaged or non-conforming cells or batteries?

S--是否可以运输召回的，损坏的或者不合格的电池芯或电池？

Lithium batteries, identified by the manufacturer as being defective for safety reasons, or that have been damaged, that have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons). The U.S. DOT has developed guidance for consumers and manufacturers for shipping recalled batteries:

http://safetravel.dot.gov/Battery_Recall_Guidance.pdf

Batteries which have some other defective feature (e.g., LEDs not showing charge, incorrect model number on label, or batteries not holding enough charge) could still be shipped by air. Also, laptops being returned may not have a defective battery, it may not meet the needs of the customer, may be defective itself (but not the battery), etc. In these situations air transport would be permitted. The battery or equipment manufacturer should be contacted to determine the appropriate shipping method.

因为安全原因被制造商确认为有缺陷或已被损坏的锂电池，有可能会演变发生发热、燃烧和短路的潜在危险，禁止运输。美国运输部对消费者和厂家运输召回的锂电池编写了指导文件，参见：

http://safetravel.dot.gov/Battery_Recall_Guidance.pdf

有其他问题（如：LED 不显示电量、标签上型号错误、电池电量不足）的电池可以进行航空运输。另外，有些被召回的笔记本电脑并非是由于其安装了有缺陷的电池，而可能是电脑自身设计有缺陷。在这种情况下可以使用航空进行运输。应联络电池或设备厂商确定其正确的运输方法。

T. How do I protect against “inadvertent activation”?

T--怎么防止“意外启动”？

When batteries are contained in equipment, the equipment should be packaged in a manner that prevents unintentional activation or should have an independent means of preventing unintentional activation (e.g., packaging restricts access to activation switch, switch caps or locks, recessed switches, trigger locks, temperature sensitive circuit breakers, etc.). This requirement does not apply to devices which are intentionally active in transport (RFID transmitters, watches, sensors etc.) and which are not capable of generating a quantity of heat sufficient to be dangerous to packaging or personal safety.

电池安装在设备中时，设备的包装方式应该能够防止意外启动，或者有防止意外启动的单独措施（如：包装能防止接触开关、有开关保护帽或锁、开关使用凹陷设计、触动锁、温度感应断流器等）。此要求不适用于运输中启动的设备（如 RFID 转换器、手表、感应器等），也不适用于不能产生足以危害包装或人身安全的热量的设备。

U. What is the maximum weight of batteries per package for fully regulated batteries contained in equipment (Section I)?

U--对于安装在设备中的电池，每个包装件中电池的最大重量是多少？

As of 1 Jan 2013, the maximum weight is 5 kg per package for passenger and cargo aircraft and 35 kg per package for cargo aircraft only

自 2013 年 1 月 1 日起，客货机最大净重是每个包装件最大重量是 5 kg，仅限货机的是 3 5 kg

	Net Quantity per Package Passenger & Cargo Aircraft	Net Quantity per Package Cargo Aircraft Only
Lithium Ion & Lithium Metal cells and batteries contained in equipment	5 kg	35 kg

V. Do I need to declare a gross weight or a net weight for lithium batteries (Section I)?

V--是否需要申报锂电池的毛重或者净重(Section I)？

All lithium battery shipments, including when packed with or contained in equipment, will need to be declared by the net weight as per the new definition of net weight (IATA DGR Appendix A).

依照新的净重定义(IATA DGR 附录 A)，所有锂电池运输时，包括安装在设备中的或者和设备一起包装的电池，都需要申报净重

Note: *Section IB shipments (PI965 and 968) are limited by a gross weight and will need to have the gross weight indicated on the transport document and package as indicated in the packing instruction.*

注：包装说明 965 和 968 中 IB 的货物是按毛重限制的，并需要在运输文件和包装件显示其毛重信息

X. I have 2kg of 2.7Wh cells and 2 batteries that meet the Section II limitations; can I place them in one package?

X--我有 2kg 重的 2.7Wh 的电池芯是和 2 节电池，都符合第二部分限制要求，我可以将它们装在一起吗？

No. The limits found in Table 965-II and Table 968-II cannot be combined. The packages can be split, for example with 1 package of2 kg of 2.7Wh cells and another of 2 batteries or the Section IB provisions used.

在 SectionII 时不可以。表 965II 和表 968II 中都有限制。包装需要分开，2kg,2.7Wh 的电池芯装一个包装中，另外的 2 节电池装一个包装。或者按 Section I 中 IB 条款运输。

Y. I am shipping Section IB lithium [ion or metal] batteries; do I need dangerous goods training?

Y--运输 IB 部分的锂电池时，我需要接受危险品培训吗？

Yes. All the provisions of the Dangerous Goods Regulations apply to shipments of Section IB batteries except the references listed in Section IB. Therefore, dangerous goods training as indicated in Subsection 1.5 of the Dangerous Goods Regulations is required.

当然需要，除非 IB 部分另有说明，危险品规则中的条款都适用于 IB 部分的电池。因此，根据危险品规则第 1.5 章节要求，必须接受危险品培训。

Z. What are the additional marking requirements for a Section IB of Packing Instruction 965 and 968 package?

Z--包装说明 965 968 中 IB 部分的包装件需要哪些额外的标记要求？

Because all of the requirements of the dangerous goods regulations apply other than the exceptions listed in Section IB each package must be marked with:

除了在 IB 部分有例外的一些条目以外，其它所有危险品规则中的标记要求都需要符合：

- the UN Number preceded by “UN” and the Proper Shipping Name (DGR7.1.5.1 (a));

  UN 编号和运输专用名称
- the shipper and consignee address (DGR 7.1.5.1 (b)); and

  收发货人的地址
- in addition the gross weight as required by (DGR 7.1.5.1(c)) must be marked on the package.

  另外，毛重必须在外包装上标注

Note: When using an overpack, each package must be marked in accordance with the Regulations and then, when placed in an overpack, marked as required by DGR 7.1.4.

注：当使用合成包装件时，每个包装件必须符合危险品规则做标记，如果包装件装在合成包装件内，需要按照 DGR7.14 的要求进行标记。

AA. I am shipping perishable cargo with lithium battery powered temperature or data loggers; do I need to follow the Dangerous Goods Regulations?

AA--当易腐货物和锂电池供电的温度计或者数据计数器一起运输时，还需要按照危险品规则运输吗？

Yes. All the applicable provisions for lithium batteries will need to be followed by the shipper of such devices, including the limitations for devices that are “active” (on) during transport.

需要，当托运的设备含有锂电池，所有锂电池适用的条款都需要满足，包括对于运输中“运行状态”的设备的一些限制。

Note: The perishable cargo regulations (PCR) also apply to such shipments.

注：这些货物同时需满足易腐烂货物的规则要求。

Part 3 – Questions Related to Design Type Testing Provisions

第 3 部分 与设计型号测试有关的一些问题

A. Where can I find requirements related to testing of battery design types?

A— 哪里可以找到与电池设计型号测试有关的规定？

The UN Manual of Tests and Criteria sets out specific tests that must be conducted on each lithium cell or battery design type. Each test is intended to either simulate a common transportation occurrence such as vibration or changes in altitude or to test the integrity of a cell or battery. You may obtain a copy of these testing requirements via the following website:

http://www.unece.org/trans/danger/publi/manual/manual_e.html.

联合国《试验和标准手册》给出了每个锂电池芯和电池设计型号需进行的测试。每项测试旨在模拟常规运输环境，如振动或高度的变化，或者是为了测试电池芯和电池的完好性。下面的网址可以下载这些测试规定的详细内容：http://www.unece.org/trans/danger/publi/manual/manual_e.html.

B. What constitutes a design change requiring renewed design type testing?

B--什么样的设计变化需要进行重新型号测试？

The following provisions are taken from the 5th revised edition of the UN Manual of Tests and Criteria.

以下条款由第 5 次更新的联合国测试手册中提出

A cell or battery that differs from a tested design by:

电池芯或者电池与测试设计时的不同的判断基于：

(a) For primary cells and batteries, a change of more than 0.1 g or 20% by mass,whichever is greater, to the cathode, to the anode, or to the electrolyte;

电池阳极、阴极或电解液的质量有大于 20%或大于 0.1g 的改变

(b) For rechargeable cells and batteries, a change in Watt-hours of more than 20% or an increase in voltage of more than 20%; or

对于可以重复充电的电池芯和电池，额定能量变化大于 20%或者电压升高超过 20%的；

(c) A change that would materially affect the test results

产品的变动将显著的改变试验结果的

Shall be considered a new type and shall be subjected to the required tests.

这几点都应被看作是新的型号，需要接受新的测试

In the event that a cell or battery type does not meet one or more of the test requirements, steps shall be taken to correct the deficiency or deficiencies that caused the failure before such a cell or battery type is retested.

若电池和电池芯不满足测试要求的，在重新测试之前，需要修正其导致失败的缺陷再进行测试。

Part 4 – Questions Related to State and Operator Variations

第 4 部分 关于国家差异条款的问题

A. What additional requirements are imposed by US Variation USG-02?

A--美国国家差异条款 USG02 中哪些额外的要求？

The United States restricts the transport of certain primary (non-rechargeable) lithium metal batteries, both packaged batteries and those packed with our contained in equipment, from transport on passenger carrying aircraft. In accordance with USG- 02, primary (non-rechargeable) lithium metal batteries and cells (UN3090) are forbidden for transportation aboard passenger-carrying aircraft. Such batteries transported in accordance with Section I of Packing Instruction 968 must be labelled with the cargo aircraft only label. Such batteries transported in accordance with Section II of Packing Instruction 968 must be marked “PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”.

禁止用客机运输（不可再充电的）原锂金属电池和电池芯（UN 3090）。凡是按照包装说明 968 第 I 节的规定运输的电池，都必须贴有“CARGO AIRCRAFT ONLY（仅限货机）”标签。凡是按照包装说明 968 第 II 节的规定运输的电池，都必须标明“PRIMARY LITHIUM BATTERIES– FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（原锂电池—禁止用客机运输）”或“LITHIUM METAL BATTERIES – FORBIDDEN FOR TRANSPORT ABOARDPASSENGER AIRCRAFT（锂金属电池—禁止用客机运输）”。

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN3091) are forbidden for transportation aboard passenger-carrying aircraft unless:

禁止用客机运输装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯

（UN 3091），除非它们满足下列条件：

1) The equipment and the batteries and cells are transported in accordance with Packing Instruction 969 or 970, as appropriate;

   设备和电池与电池芯是酌情按照包装说明 969 或 970 运输的；

2) The package contains no more than the number of lithium metal batteries or cells necessary to power the intended piece of equipment;

   包装件所含的锂金属电池或电池芯数目不超过为拟供电设备供电所需的数目；

3) The lithium content of each cell, when fully charged, is not more than 5 grams;

   每个电池芯在完全充电时，其锂含量不超过 5 克；

4) The aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams; and

   每个电池在完全充电时，电池阳极的合计锂含量不超过 25 克；和

5) The net weight of lithium batteries does not exceed 5 kg (11 pounds).

   锂电池的净重不超过 5 千克（11 磅）

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN3091) and transported in accordance with Section I of Packaging Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger carrying aircraft and must be labelled with the cargo aircraft only label.

按照包装说明 969 或 970 第 I 节运输的装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯（UN 3091），如不符合上述规定，则禁止用客机运输，且必须贴有“CARGOAIRCRAFT ONLY（仅限

货机）”标签。

Primary (non-rechargeable) lithium metal batteries and cells contained in or packed with equipment (UN3091) and transported in accordance with Section II of Packaging Instruction 969 or 970 that do not conform to the above provisions are forbidden for transportation aboard passenger carrying aircraft and must be marked “PRIMARY LITHIUM BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT” or “LITHIUM METAL BATTERIES — FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”.

按照包装说明 969 或 970 第 II 节运输的装在设备中或与设备包装在一起的（不可再充电的）原锂金属电池和电池芯（UN 3091），如不符合上述规定，则禁止用客机运输，且必须标明“ PRIMARY LITHIUM BATTERIES – FORBIDDEN FOR TRANSPORT ABOARDPASSENGER AIRCRAFT（原锂电池—禁止用客机运输）”或“LITHIUM METAL BATTERIES– FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT（锂金属电池—禁止用客机运输）”。

Additional Information Further information can be found here:

更多信息请浏览以下网址：

http://www.iata.org/whatwedo/cargo/dangerous_goods/index.htm

http://safetravel.dot.gov

You may also contact the airline of your choice or your national civil aviation authority if you have any further concerns about travelling with lithium metal or lithium ion batteries.

如果有任何关于锂电池运输的疑问可以直接联系航空公司或者民航局

You can also contact the IATA Dangerous Goods Support team if you have questions or concerns which may not have been addressed in this document: dangood@iata.org

如果你有疑问在这份文件中未找到答案的，也可以联系 IATA 危险品支持团队：dangood@iata.org

Appendix A - Template for Accompanying Lithium Battery Document

Document Template

Reference Number (optional): _____

WARNING: LITHIUM BATTERIES THAT HAVE BEEN RECALLED BY THE MANUFACTURER FOR SAFETYREASONS **MUST NOT** BE SHIPPED BY AIR.

Terminology:

- Cell – *electrochemical unit, consisting of an anode and a cathode, capable of generating electrical current*
- Battery – *assembly of cells*
- Lithium ion cells/batteries – *rechargeable – includes lithium polymer cells/batteries*
- Lithium metal cells/batteries – *generally non-rechargeable*

This package contains lithium cells or batteries in the following configuration (check applicable):

Lithium Ion - *Maximum of* • ***20 Watt-hours per cell; and*** • ***100 Watt-hours per battery***	**Lithium Metal – *Maximum of*** • ***1 gram of lithium metal per cell; and*** • ***2 grams of lithium per battery***
☐ **Cells or batteries only (ICAO/IATA Packing Instruction 965, Section II)** – *Cells or batteries in a package, without electronic equipment* **Package Limit:** ⩽2.7 Wh = 2.5 kg; or >2.7 Wh but ⩽ 20 Wh = 8 cells; or >2.7 Wh but ⩽ 100 Wh = 2 batteries	☐ **Cells or batteries only (ICAO/IATA Packing Instruction 968, Section II)** – *Cells or batteries in a package, without electronic equipment* **Package Limit:** ⩽0.3 g = 2.5 kg; or >0.3 g but ⩽1 g = 8 cells; or >0.3 g but ⩽2 g = 2 batteries
☐ **Cells or batteries only (ICAO/IATA Packing Instruction 965, Section IB)** – *Cells or batteries in a package, without electronic equipment*	☐ **Cells or batteries only (ICAO/IATA Packing Instruction 968, Section IB)** – *Cells or batteries in a package, without electronic equipment*
☐ **Packed with equipment (ICAO/IATA Packing Instruction 966, Section II)** – *Cells or batteries contained in a package with associated electronic equipment*	☐ **Packed with equipment (ICAO/IATA Packing Instruction 969, Section II)** – *Cells or batteries contained in a package with associated battery-powered equipment – with the batteries not installed in the equipment*
☐ **Contained in equipment (ICAO/IATA Packing Instruction 967, Section II)** – *Cells or batteries installed in equipment*	☐ **Contained in equipment (ICAO/IATA Packing Instruction 970, Section II)** – *Cells or batteries installed in equipment*

- This package must be handled with care. A flammability hazard exists if the package is damaged.
- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified. The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits
- For more information about the batteries contained in this package, call the following telephone number:

List telephone number here, including area code and any applicable country code

Name/Address of shipper:

_____

_____

Signed: _____ Date: _____

附录 A　锂电池随附文件模版

序列号（可选）: _____

警告:　因为安全隐患原因而被厂家召回的锂电池禁止空运

术语:

- *电池芯－由一个正极和一个负极组成且两个电极之间有电位差的单一的、封闭的电化学装置。*
- *电池－－由若干个电池芯组成*
- *锂离子电池芯/电池－可充电－含锂聚合电池芯/电池*
- *锂金属电池－通常不可充电*

本包装件内含有如下所列的锂电池或电池芯(检查是否适用)

锂离子电池 - • ***每个电池芯额定能量不超过20 瓦时; 且*** • ***每个电池额定能量不超过100 瓦时***	**锂金属电池 -** • ***每个电池芯锂含量不超过1 克; 且*** • ***每个电池锂含量不超过2 克***
☐ **纯运输电池或电池芯(ICAO/IATA** 包装说明 **965, Section II)** – *包装件内只有电池或电池芯，没有设备。* **包装件 限量:** ≤2.7 Wh = 2.5 kg; or >2.7 Wh but ≤20 Wh = 8 电池芯; or >2.7 Wh but ≤100 Wh = 2 电池	☐ **纯运输电池或电池芯(ICAO/IATA** 包装说明 **968, Section II)** – *包装件内只有电池或电池芯，没有设备。* **包装件 限量:** ≤0.3 g = 2.5 kg; or >0.3 g but ≤ 1 g = 8 电池芯; 或 >0.3 g but ≤ 2 g = 2 电池
☐ **纯运输电池或电池芯(ICAO/IATA** 包装说明 **965, Section IB)** –*包装件内只有电池或电池芯，没有设备。*	☐ **纯运输电池或电池芯(ICAO/IATA** 包装说明 **968, Section IB)** –*包装件内只有电池或电池芯，没有设备。*
☐ **和设备包装在一起(ICAO/IATA** 包装说明 **966, Section II) –***电池或电池芯作为附件和电子设备包装在一个包装件内*	☐ **和设备包装在一起(ICAO/IATA** 包装说明 **969, Section II) –***电池或电池芯作为附件和电子设备包装在一个包装件内，该设备由电池驱动，且电池没有安装在设备内。*
☐ **安装在设备中(ICAO/IATA** 包装说明 **967, Section II) – 电池或电池芯安装在设备中**	☐ **安装在设备中(ICAO/IATA** 包装说明 **970, Section II) –电池或电池芯安装在设备中**

- 应小心操作，如包装件破损，有易燃危险性;
- 如该包装件在运输中损坏，在未确定内部物品状态前不能装载。该包装件中的电池必须检查是否有损坏，只有确认电池完好无损且做好短路防护时才能再次包装它。
- 如果需要更多该包装中电池的信息，请联系以下电话_____（电话号码需含国家区号）

托运人 名称/地址:

_____

_____

签名: _____　　日期: _____