



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)**

**TWENTIETH MEETING**

**Montréal, 24 October to 04 November 2005**

**Agenda Item 2: Development of recommendations for amendments to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284) for incorporation in the 2007-2008 Edition**

**EXCEPTIONS FOR FUEL CELL SYSTEMS AND CARTRIDGES  
CARRIED BY PASSENGERS AND CREW**

(Presented by DGAC)

**SUMMARY**

Further to the discussions that took place at the meeting of the Working Group of the Whole DGP in April 2005, this document proposes the incorporation into Part 8;1.1.2 of a provision allowing passengers and crew to carry small fuel cell systems powering consumer electronic devices, and spare fuel cartridges for such systems, when conforming to the IEC 62282-6-1 standard. As proposed, the provision relates only to direct methanol systems, but other types of systems covered by the referenced IEC standard could be added if the DGP deems appropriate.

**1. INTRODUCTION**

1.1 At the Working Group of the Whole DGP held in April 2005, the Working Group discussed various fuel cell system technologies under development for purposes of powering consumer electronic devices, as well as the ongoing development of an IEC standard governing the safety of such systems and the cartridges used to supply fuel to the systems. In addition, in light of the adoption by the UN Committee of a new entry for “**Fuel cell cartridges** containing flammable liquids” (UN 3473), the Working Group agreed to include this entry into the Technical Instructions along with an appropriate packing instruction.

1.2 The Working Group also considered the proposed incorporation into Part 8;1.1.2 of a provision allowing passengers and crew to carry small fuel cell systems fueled by flammable liquids (in

particular methanol), and spare fuel cartridges for such systems. While a number of members supported this proposal, others suggested that it would be premature to adopt such a provision at that time (see 5.1.5 in DGP-WG/05-WP/55) and no final decision was taken. However, a number of useful comments and suggestions were offered by the working group in relation to the passenger exception under consideration, as well as the IEC standard that was proposed for incorporation into that exception, and it was agreed to return to this matter at DGP/20.

1.3 In light of those discussions, and taking account of the comments made by Working Group members, this document again proposes the incorporation into Part 8;1.1.2 of a provision allowing passengers and crew to carry small fuel cell systems powering consumer electronic devices, and spare fuel cartridges for such systems, when conforming to the IEC 62282-6-1 standard. The provision proposed in this document is limited only to direct methanol systems, but the text is constructed in such a manner that other types of systems covered by the referenced IEC standard could be added (along with the relevant cartridge quantity limits) if the DGP deems appropriate.

1.4 Work has continued on the refinement of IEC 62282-6-1, including changes to address comments made by ICAO Working Group members (e.g., with regard to pressure differential and drop capabilities, allowable leakage rates under the prescribed performance tests, etc.). It is anticipated that a copy of the standard will be provided to DGP members for their review as early as possible prior to the beginning of DGP/20.

## 2. PROPOSAL

2.1 Add a new paragraph r) in Part 8; 1.1.2 to read:

r) consumer electronic devices (for example, cameras, cellular phones, laptop computers, camcorders) powered by fuel cell systems, and spare fuel cell cartridges, under the following conditions:

1) fuel cell systems must be of the direct methanol type;

2) fuel cell cartridges must comply with all applicable requirements in the IEC Micro Portable Fuel Cell Safety Standard (IEC 62282-6-1 (date));

3) the maximum quantity of dangerous goods in any fuel cell cartridge must not exceed 200 mL in the case of flammable liquids;

4) each fuel cell cartridge must be marked with an indication that it conforms to IEC 62282-6-1 (e.g., "CONFORMS TO IEC 62282-6-1"), and with either the maximum quantity of dangerous goods in the cartridge or an indication that the maximum quantity of dangerous goods in the cartridge does not exceed the quantity limit prescribed in 3), above ("e.g., "CONTAINS NOT MORE THAN 200 mL OF FLAMMABLE LIQUID");

5) the fuel cell system in electronic devices must conform to IEC 62282-6-1 (date) and the device must be marked to indicate conformance with that standard (e.g., "CONFORMS TO IEC 62282-6-1"); and

6) not more than 3 spare cartridges are carried for each fuel cell powered electronic device carried by a passenger or crew member. Electronic devices with fuel cell cartridges installed must be carried in carry on baggage only.

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