



WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTIETH MEETING

Montréal, 24 October to 4 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

METHANOL MICRO FUEL CELLS

(Presented by H. Okayama)

1. INTRODUCTION

1.1 At the DGP/05 Working Group Meeting in April 2005, we proposed to give due consideration on the possibility to permit passengers and crew members carry the methanol fuel-powered equipments and its fuel cell cartridges in carry-on baggage on-board aircraft (please refer to DGP-WG/05-WP36). The proposal was discussed in a constructive manner and a number of panel members supported the proposal. Simultaneously, on the other hand, there were some members expressing various comments and suggestions that seemed to us helpful and worthwhile. Consequently it was concluded that this matter has to be returned to the DGP/20 with addressing refinement of several major points identified.

1.2 We are very grateful to have received useful comments and suggestions extended by the Working Group members, regarding the criteria of the tests of the standard under development by the IEC TC 105 (International Electrotechnical Commission, Technical Committee 105) and any appropriate marking to indicate conforming to IEC TC 105 standard. Furthermore, it was confirmed that the spare fuel cartridges would be allowed in checked baggage, while electronic devices with the fuel cell cartridges installed would be restricted to carry-on baggage. Concerning the questions pending of the test items, revisions were made to the safety standard IEC 62282-6-1, especially to the conditions of differential pressure test and drop test, as well as the allowable level of fuel leakage.

1.3 This is to propose not only the direct methanol fuel cells (DMFCs), but also additionally reformed methanol fuel cells (RMFCs). For both of DMFCs and RMFCs, exactly the same type of cartridges containing methanol or methanol solutions (containing water) are to be used as fuel. And it goes without saying that both of these systems and their spare cartridges must be complied with the IEC 62282-6-1 safety standard for micro fuel cells.

1.4 During discussion on standardization at the last DGP-WG/05 meeting, there were many members pointing out that it was premature to make a decision at that time as consultations were ongoing in a number of states. But now, just in time for the DGP/20 meeting as expected by the Working Group, the Committee Draft (CD) for IEC 62282-6-1 standard has been developed, incorporating the revisions based on what were proposed and suggested by the ICAO Working Group members, so that we could introduce this draft in summary by distributing copies of it to all of the members at the DGP 20 meeting. In addition, we would like to report to you that a Committee Draft for Voting (CDV) will be submitted to the IEC in March 2006 and final publication of the standard is expected by the end of the year 2006.

1.5 Accordingly we would like to request the final decision of the DGP/20 in relation to the following proposal to include exceptional provisions in Part 8; 1.1.2 that permits passengers and crew members carrying methanol fuel cell-powered electronic devices with fuel cartridges and spare fuel cartridges on-board aircraft.

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 methanol type;
- 2) fuel cell cartridges must comply with all applicable requirements in the IEC Micro Fuel Cells Safety Standard (IEC 62282-6-1);
- 3) the maximum quantity of flammable liquid including methanol in each fuel cell cartridge must not exceed 200mL;
- 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 the quantity of flammable liquid including methanol in the cartridge (e.g., “200 mL of methanol”);
- 5) the fuel cell system in electronic devices must conform to IEC 62282-6-1 and the device must be marked to indicate conformance with that standard (e.g., “CONFORMS TO IEC 62282-6-1”);
- 6) not more than 3 spare cartridges are carried for each fuel cell-powered electronic device carried by a passenger or crew member; and
- 7) fuel cell-powered electronic devices with fuel cell cartridges installed must be carried in carry-on baggage only.