



International Civil Aviation Organization

WORKING PAPER

DGP-WG/08-WP/3

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Revised

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DANGEROUS GOODS PANEL (DGP) MEETING OF THE WORKING GROUP OF THE WHOLE

The Hague, 3 to 7 November 2008

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 2011/2012 Edition

DEFINITION OF A FUEL CELL AND DEFINITION OF A FUEL CELL CARTRIDGE

(Presented by USFCC)

REVISED

SUMMARY

DGP-WG/08 is invited to add a definition for fuel cell and fuel cell cartridge in Attachment 2, Glossary of terms and Part 3, Chapter 3, Special Provisions.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 The USFCC has been advised that a definition of “fuel cell”, along with a definition of “fuel cell cartridge” could alleviate possible confusion with pneumatic tools and compressed gas cartridges under the “fuel cell” description. See the following website: <http://www.paslode.com/maintenance/maintain.html>.

1.2 As the term “fuel cell” is not defined in the Technical Instructions, its exact meaning is open to various interpretations.

2. ACTION BY THE DGP-WG

2.1 To avoid confusion in what exactly the “fuel cell” term refers to, DGP-WG/08 is invited to add a definition for fuel cell in Attachment 2 (Glossary of terms).

a) The following definition, extracted from IEC 62282-1, is proposed:

FUEL CELL. A fuel cell is an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products.

- b) DGP-WG 08 might also find useful the addition of a definition for fuel cell cartridges, in “Attachment 2, Glossary of terms”, as follows:

FUEL CELL CARTRIDGE. An article that stores fuel for discharge into the fuel cell through a valve(s) that control the discharge of fuel into the fuel cell.

The above definition is extracted from Special Provision A146 (as amended to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods at its third session in Geneva, 15 December 2006).

2.2 The DGP-WG is invited to also add the same definition to Special Provision A146:

- a) It is proposed to add to Special Provision A146, which applies to the various entries for “fuel cell cartridges”, a definition of “fuel cell” as indicated with underlining below:

A146 (328) This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. A fuel cell is an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products. Fuel cell cartridges, including when contained in equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transport.

Fuel cell cartridge design types using liquids as fuels must pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage.

Except for fuel cell cartridges containing hydrogen in metal hydride which must be in compliance with A162, each fuel cell cartridge design type, including fuel cell cartridges installed in or integral to a fuel cell system, must be shown to pass a 1.2 metre drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents.

2.3 To maintain the alignment between the ICAO and UN provisions the DGP-WG is invited to offer the definition of “Fuel cell” proposed in 2.1 a) to the UN Sub-Committee of Experts on the Transport of Dangerous goods for inclusion in the UN Recommendations on the Transport of Dangerous Goods, Model Regulations.

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