



**WORKING PAPER**

**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**

**2.4: Part 4 — Packing Instructions**

**PACKING INSTRUCTION 900**

(Presented by M. Matsui)

**SUMMARY**

This working paper proposes an amendment to the minimum quantity of fuel remaining in a fuel tank.

Action by the DGP-WG is in paragraph 2.

**1. INTRODUCTION**

1.1 During transport of UN 3166, equipment incorporating internal combustion engine on board a Boeing 747 freighter from Tokyo to Chicago via Anchorage, leakage of about 15 litres of fuel gasoline occurred. It was necessary to completely drain the remaining fuel, which was approximately 185 litres of gasoline based on the shipper draining the tank to one quarter of its 757 litre capacity as required by Packing Instruction 900. Meanwhile, the cause of this incident turned out to be a defect in the parts used as fuel filters.

1.2 Packing Instruction 900 stipulates as follows.

Vehicles, machines or equipment containing internal combustion engines or batteries must meet the following requirements:

- a) except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, must be drained of fuel as far as practicable, and if any fuel remains, it must not exceed one-quarter of the tank capacity. ...

1.3 This incident suggests that there is a safety problem as long as it is simply limited to one-quarter of the tank capacity unless the fuel can be drained out as much as possible. In this case 185 litres is one-quarter of a 757 litre tank capacity. Depending on the size of engines, the fuel tank capacity of typical vehicles varies from 40 litres to 70 or 80 litres, etc., of which one quarter becomes 10 to 17.5 or 20 litres. This amount of fuel is not necessarily needed for vehicles to be moved or transferred to and out of trailers or trucks before and after the flight. On the other hand, in the cases of transporting gasoline itself, there is a 5 litre gasoline limit per package for passenger aircraft and 60 litre per package limit for cargo aircraft when using complete UN Certification packagings. We consider it necessary to place at least a minimizing limit of enough fuel covering the distance necessary for self-movement before and after transport by air.

## 2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to consider the following proposed amendment to Packing Instruction 900:

900	PACKING INSTRUCTION 900	900
Vehicles, machines or equipment containing internal combustion engines or batteries must meet the following requirements:		
<p>a) except as otherwise provided for in this packing instruction, fuel tanks must be drained of fuel and tank caps fitted securely. Special precautions are necessary to ensure complete drainage of the fuel system of vehicles, machines or equipment incorporating internal combustion engines, such as lawn mowers and outboard motors, where such machines or equipment could possibly be handled in other than an upright position. When it is not possible to handle in other than an upright position, vehicles, except those with diesel engines, <u>machines or equipment incorporating internal combustion engines</u> must be drained of fuel as <u>far much</u> as <u>practicable possible</u>, and if any fuel remains, it must not exceed <u>one-quarter of the tank capacity 4 litres (1 gallon) that is supposed to be enough to cover the distance of self-movement before and after transport by air</u>. Vehicles equipped with diesel engines are excepted from the requirement to drain the fuel tanks, provided that a sufficient ullage space has been left inside the tank to allow fuel expansion without leakage, and the tank caps are tightly closed. A careful check must be made to ensure there are no fuel leakages;</p>		

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