



**WORKING PAPER**

**DANGEROUS GOODS PANEL (DGP)  
WORKING GROUP MEETING (DGP-WG/16)**

**Montreal, 17 to 21 October 2016**

**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 2019-2020 Edition**

**2.6: Part 6 — Packaging Nomenclature, Marking, Requirements and Tests**

**PROPOSAL FOR REVIEW OF THE PRESSURE DIFFERENTIAL REQUIREMENTS  
APPLICABLE TO PACKAGINGS CONTAINING RADIOACTIVE MATERIAL**

(Presented by World Nuclear Transport Institute (WNTI))

**SUMMARY**

The requirement in Part 6;7.2.3 of the Technical Instructions regarding the internal pressure all packages containing radioactive material must be capable of withstanding without loss or dispersal of radioactive contents may be difficult to achieve especially in the case of packagings of large dimensions, such as ISO freight containers commonly used as Type IP-1 or Type IP-2 packages for carriage of contaminated tools, machines and components classified as surface contaminated objects (SCO-I or SCO-II), and it may seem excessively severe for low activity materials with little risk even in case of dispersion, such as excepted packages loaded with solid radioactive materials for example.

**Action by the DGP-WG:** The DGP-WG is invited by IAEA TRANSSEC to discuss the setting up of a group of experts in order to solve the issue stated in this working paper and to propose revisions to the regulations accordingly.

## 1. INTRODUCTION

### 1.1 The current regulations

1.1.1 Paragraph 621 of the International Atomic Energy Agency (IAEA) *Regulations for the Safe Transport of Radioactive Material*, (2012 Edition), Safety Standards Series No. SSR-6 requires that all packages of radioactive material (excepted packages, industrial packages IP-1, IP-2 and IP-3, type A, type B(U), type B(M) and type C packages) be designed to meet the following requirement:

“Packages containing radioactive material to be transported by air shall be capable of withstanding, without loss or dispersal of radioactive contents from the containment system, an internal pressure that produces a pressure differential of not less than the maximum normal operating pressure plus 95 kPa.”

The corresponding requirement in the Technical Instructions is in Part 6;7.2.3.

### 1.2 The possible issue

1.2.1 The requirement stated above may be difficult to achieve, especially in the case of packagings of large dimensions, such as ISO freight containers which are commonly used as type IP-2 packages for air carriage of tools and components as surface contaminated objects (SCO-I or SCO-II), and it may seem excessively severe for low activity materials with little risk even in case of dispersion, such as excepted packages loaded with solid radioactive materials.

### 1.3 The proposal made by WNTI to solve the possible issue

1.3.1 A first proposal was submitted by the World Nuclear Transport Institute (WNTI) in the 2013 review cycle and a second proposal during the 2015 review cycle which was discussed at the extraordinary TRANSSC meeting in September 2015 and the TRANSSC 31 in November 2015. As per decision taken during the TRANSSC 31 meeting, it has been requested that at least one further technical meeting between experts should be held prior to its acceptance by TRANSSC.

1.3.2 WNTI has given a presentation to the TRANSSC 32 meeting in Vienna in June 2016 in order to request the setting up of an ad hoc IAEA TRANSSC Working Group of Experts in association with appropriate aviation organizations (ICAO, IATA, etc.) to discuss the WNTI proposal and to propose a solution on the issue stated herein.

1.3.3 The conclusions of the IAEA TRANSSC 32 meeting in June in Vienna were:

- a) IAEA TRANSSC members are not opposed to the creation of a group of experts;
- b) IAEA TRANSSC recommends that WNTI holds a meeting with ICAO in order to define the terms of reference of the group to be presented during the next TRANSSC meeting in November 2016;
- c) IAEA TRANSSC suggests an ICAO or WNTI chair the group;
- d) In the session, France has expressed his interest to participate in this group of experts.

## 2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to discuss the setting-up of a working group which would allow experts:

- a) to share views on the implementation of 6;7.2.3 (para 621 of IAEA SSR-6);
- b) to reach a consensus on the interpretation of 6;7.2.3 (para 621 of IAEA SSR-6);
- c) if no consensus on the interpretation of 6;7.2.3, and/or if the interpretation of 6;7.2.3 appears to be difficult to implement: To reach an agreement on the optimization of the pressure differential safety requirement which is needed;
- d) to review IAEA SSG-26 & SSR-6 to assure that the wording accurately reflects the consensus on the interpretation of para. 6;7.2.3 (including the material you provided, when relevant) and/or the optimization of the pressure differential safety requirement; to propose revision of SSR-6, if needed and revision of SSG-26 and /or additional guidance if needed; and
- e) to draft a working plan for further actions, if needed.

2.2 A two day meeting in 2017 should be enough to provide the adequate recommendations to TRANSSC for the next review and revision cycle of the SSR-6 to be started in 2017 or 2018.

2.3 The terms of reference, as shown in the appendix to this working paper, has been drafted by WNTI in order to be discussed during the DGP WG/16.

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## APPENDIX

### TERMS OF REFERENCE (DRAFT REV 1)

#### Expert Working Group

#### Pressure differential requirement for packages containing radioactive material transported by air.

##### A. Background:

The IAEA Regulations for the Safe Transport of Radioactive Material – SSR-6 2012 Edition, para 621 - and the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air – 2015-2016 Edition, para 7.2.3 of Part 6, require that *“Packages containing radioactive material to be transported by air shall be capable of withstanding, without loss or dispersal of radioactive contents from the containment system, an internal pressure that produces a pressure differential of not less than the maximum normal operating pressure plus 95 kPa.”*

Proposals for amendment of this requirement were submitted by the World Nuclear Transport Institute (WNTI) firstly during the 2013 review cycle and secondly during the 2015 review cycle of the IAEA Regulations for the Safe Transport of Radioactive Material. The first proposal was also submitted for comment to the ICAO Dangerous Goods Panel during its 24th meeting (28 October to 8 November 2013). The decision of the IAEA Transport Safety Standards Committee held in November 2015 (TRANSSC 31) was to defer the decision on the second proposal submitted by WNTI to the IAG (Inter Agency Group) and other appropriate aviation organizations for further discussion and development. The discussion on this issue that took place in the IAG, highlighted, since the issue relates to air transport, that ICAO needs to agree (or disagree) with the proposal. In addition, as no final decision followed the previous discussion between ICAO and WNTI, these discussions are likely to continue until resolution has been reached one way or the other.

At TRANSSC 32, in June 2016, a summary of the issue was presented by WNTI, including some examples illustrating the issue, and suggested the creation of a dedicated WG of experts from aviation organizations, IAEA, interested competent authorities and the industry, to discuss the issue and develop recommendations for TRANSSC and introduction of proposal for change in the next review cycle, if appropriate. From the discussion held during TRANSSC 32, with account of the comments provided by the ICAO before TRANSSC 32, it was agreed that such a WG should be convened for – at least – reach a consensus between experts on how the requirement should be understood and implemented.

It was suggested that this item be discussed at the next ICAO DGP meeting (Working Group 2016 - Montreal, 17 to 21 October 2016) with WNTI in attendance, and that the result of this discussion, as well as the work progress of the WG be presented during the TRANSSC 33 meeting (Vienna, November 2016).

## **B. Expected outputs from the working group**

- 1) Review of the existing requirements for pressure differential (para 621 in SSR-6) and advisory material (paras 621.1 to 621.3 in SSG-26), with account of ICAO Technical Instructions requirements (para 6; 7.2.3), and consensual interpretation of how the current requirement shall be understood and implemented.
- 2) Review of the feasibility of implementation of these requirements for the various kinds of radioactive material in form, size and dangerousness, and identification of the difficulties the existing requirement and advisory material may pose.
- 3) Subject to the conclusions of above items 1 and 2, review of the ambient pressure and temperature conditions that a package could be submitted to during transport by air, in cargo or passenger aircrafts, pressurized, non-pressurized or partially pressurized, summary of those conditions and proposed classification of each of them in routine, normal or accident conditions following the IAEA definition of these terms.
- 4) Identification of the rules applicable to large volume airtight containers for the safeguarding of the safety of the aircraft in flight, as well as that of its passengers and crew in case of rapid depressurization of the aircraft.
- 5) With account of the results of above items 1, 2, 3 and 4, identification of the needs for improvement of the existing requirement and advisory material, and as necessary, proposal for optimization of the existing requirement and/or of advisory material.
- 6) Working plan for further actions, if needed.

## **C. Participation**

Participation in this working group is open to experts nominated by international aviation organizations and their members through the Secretariat of the ICAO DGP, IAEA TRANSSC members through the IAEA Secretariat of the -TRANSSC, and WNTI and its members via its Secretariat.

## **D. Time schedule**

- 1) Term of reference to be submitted and discussed in ICAO DGP Working Group 2016 - Montreal, 17 to 21 October 2016 – Deadline for submission of Working Papers: 2 September, 2016;
- 2) List of participants to the Expert WG: determined during ICAO DGP Working Group 2016;
- 3) Chairperson, secretary: designated during ICAO DGP Working Group 2016;
- 4) First meeting: during ICAO DGP Working Group 2016, or later in beginning 2017;
- 5) Report to IAEA TRANSSC 33 – IAEA, Vienna, November 14 to 18 November 2016.

**E. Working documents**

- IAEA Regulations for the Safe Transport of Radioactive Material – SSR-6 2012 Edition
- *IAEA Regulations for the Safe Transport of Radioactive Material – SSR-6 20XX Draft Edition*
- Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material – SSG-26 (2012 Edition)
- *Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material – SSG-26 (20XX Draft Edition)*
- ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air – 2015-2016 Edition;
- *ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air – 2017-2018 Draft Edition;*
- ICAO DGP-WG/09-WP/46 31/3/09 Transportation of dangerous goods in non-pressurized cargo holds and pressure differentials in flight (Presented by M. Rogers)
- ICAO DGP/24–WP/42 29/8/13 Internal pressure for packages of radioactive material transported by air (presented by WNTI)
- ICAO – Report of the Twenty-Fourth Meeting of the Dangerous Goods Panel (DGP/24) – (Item 2, para 2.6.3)
- IAEA – TRANSSC 31 – INF-05b WNTI201503 Rev.2
- IAEA TRANSSC 32 – INF-19, Agenda item 4-4 ,Pressure differential requirements (WNTI)
- IAEA TRANSSC 32 – INF-19a, Agenda item 4.4, ICAO comments on WNTI paper (ICAO)
- Collection of comments provided by ICAO DGP members concerning WNTI Information paper on pressure differential requirements
- IAEA TRANSSC 32 – INF-019c, Agenda item 4-4 , WNTI Presentation (WNTI)
- *IAEA TRANSSC 32 – Meeting report (item 4.4)*

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