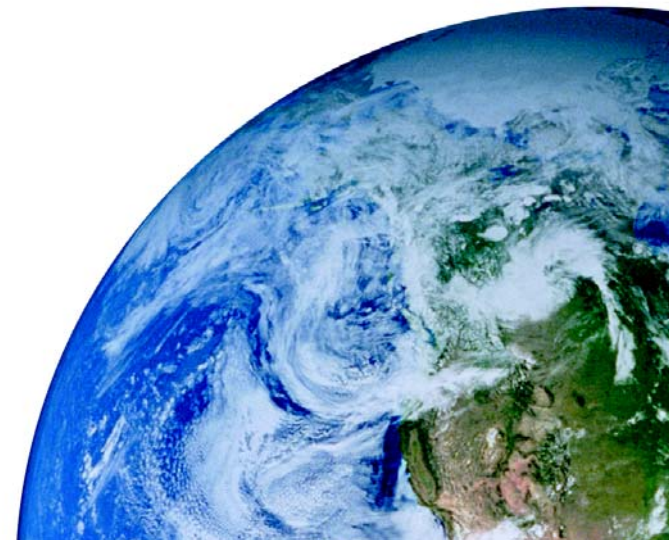


# Package testing to demonstrate safety with added features

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**PATRAM 2010**  
**London**  
**3–8 October 2010**



# Introduction

- Harmonisation is needed:
  - \* regulations
  - \* implementation of the regulations
- Paragraph 611 of the Regulations for the Safe Transport of Radioactive Material

“Any features added to the package at the time of transport which are not part of the package shall not reduce its safety”
- Interpretation of the application of paragraph 611 for transport and/or handling frame



- What is the situation?
- What are the approaches?
- What is WNTI position?
- What happened during the Regulations review process?
- What about the future?
- Conclusion

# What is the situation?

- Paragraph 611: “Any features added to the package at the time of transport which are not part of the package shall not reduce its safety”
  - 611.1 This requirement is intended to prevent such actions as placing handling tools, auxiliary equipment or spare parts on or near the package in any manner such that the intended functions of packaging components could be impaired either during normal transport or in the event of an accident
- Transport and/or handling frames were not “features” to be considered when implementing paragraph 611
- Now, views are different



# What are the approaches?

## Examples in different countries

1. In some instances, a frame used to handle the package within the premises of a nuclear power plant had to be considered: an assessment was needed for the package and its transport and handling frame
2. The behavior of the packages handled with a frame must not be altered during a 9-meter drop when assuming the package is fitted with its handling frame
3. In some instances, the behavior of the package with its direct environment (transport frame, container) must be assessed when the full set is subjected to realistic accident conditions of transport
4. Countries recommend that the equipment always become detached from the package during the accident conditions of transport
5. Some countries take the position that the frame is not a part of the package and require no assessment with frame (it is considered that such assessment is covered by the regulatory tests)



## What is WNTI position? (1/5)

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- The package designer needs to define the packaging design and the package design
  - The package designer has to define which components are part of the package / packaging
  - The package, as defined by these components, has to comply with the Regulations
- Added frames / features which are not necessary to fulfill the requirements of the Regulations do not need to be considered as part of the package

## What is WNTI position? (2/5)



- Are these two situations different?

# What is WNTI position? (3/5)

- Difficulties with the application of paragraph 611 to stowage device
  - how to consider the stowage device for multiple small packages?
  - how to manage changes to the transport frame?
  - how to deal with multiple carriers and / or multiple modes of transport?
  - how can this issue be considered by common carriers such as airlines?
  - what are the reasonable boundaries between the features added to the package and those added to the conveyance?
  - how can the package designer be aware of all of the equipment which might be added at the time of transport?





## What is WNTI position? (4/5)

- The requirement of paragraph 611 would be better placed in Section 5 (Requirements and controls for transport) of TS-R-1 than in Section 6 (Requirements for packagings and packages)
  - This would clarify the intent of this requirement: instead of a requirement applicable to the designer and to the package design, it would be a requirement to apply during the operations and would concern primarily the added features (and not the package)

## What is WNTI position? (5/5)

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- The need to evaluate, in some cases, the influence of the transport frame and more generally all added features in realistic conditions (including different kinds of target, etc.) is recognized. This should be done by the safety authorities independently of the application for a package design approval.
- The appropriate framework for this research is the need to periodically review the regulations versus the real conditions of transport and handling. The participation of the industry on such research could be arranged.

# What happened during the Regulations review process? (1/3)



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## Paragraph 611

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- Majority views during the Technical Meeting in January 2010
  - Para. 611 is general; the intent is “don’t do anything stupid” in preparing a package for shipment
  - Para. 611 was added, originally, to consider items shipped with the package; since then the meaning has grown
  - Original intent of para. 611 seems to be a general precaution to the shipment of all types of package
  - Interpretation and demonstration of compliance with para. 611 differs around the world; this is a challenge for multilateral approval.

# What happened during the Regulations review process? (2/3)



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## Definition of packaging and package

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- Regulations
  - A package is the **complete product of the packaging operation**, consisting of the packaging and its contents **prepared** for transport
- Proposal for the Advisory Material
  - For design and compliance assurance purposes, this includes any or all structural equipment required for handling or securing the package which is **either permanently attached or assembled integral** with the package.
  - In order to determine which structural components should be considered part of the package, it is necessary to examine the use and purpose of such equipment with respect to transport **safety**. If for **safety purposes** a package can only be transported with certain structures, then it is normal to consider those structures to be part of the packaging.
  - A **conveyance should not be** considered part of the package, even in the case of dedicated transport.

# What happened during the Regulations review process? (3/3)



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## Definition of added features

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- Proposal for the Advisory Material
  - This requirement is intended to prevent such actions as placing handling tools, auxiliary equipment, **transport frames** or spare parts on or near the package in any manner such that the intended functions of packaging components could be impaired either during normal transport or in the event of an accident.
- With this wording linked to the definitions of packaging, package and added features, **a transport or handling frame is not part of the packaging** otherwise specified by the designer or sharing safety functions of the package

# What about the future ?

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- Review / revision process
  - Original intent of para. 611 has been clarified
  - Chances of different interpretations are reduced, but not eliminated
    - Clearly, a handling frame or a transport frame is not part of the packaging
    - The implementation of para. 611 can still lead to different views
  - WNTI (and all other parties) should propose fine adjustments to the “Advisory Material”, to eliminate cause of misinterpretation as much as possible
- WNTI will continue efforts to achieve harmonised implementation and interpretation of the Regulations
  - List of recognised interpretation of the Regulations?
  - List of differing interpretations?

## Conclusion (1/3)

- The World Nuclear Transport Institute (WNTI) stands ready to liaise with competent authorities worldwide, in the interest of fostering an approach which:
  - provides an appropriate level of safety
  - is applicable efficiently by the industry
  - is harmonised and common to all the competent authorities



## Conclusion (2/3)

- The difficulty with para. 611 lays in its general nature
  - what are the limits of the features added to the package?
  - what is the meaning of the requirement about the absence of reduction of safety?
  - is safety equivalent to the Regulations?
- Clarification about para. 611
  - “don’t do anything stupid” in preparing a package for shipment
  - a transport frame or a handling frame is not part of the packaging





## Conclusion (3/3)

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- To avoid general requirements in the Regulations must be a continuous goal
  - the field of application of each paragraph must be clearly defined
  - the criteria must be unambiguous
- **Clarification should be an important goal for the Regulations review and revision cycle**
  - **currently ending**
  - **next**