



Public Meeting:

Issues Paper on Revisions to Transportation Safety Requirements and Harmonization with IAEA Transportation Requirements

December 6, 2016

Division of Spent Fuel Management
NMSS

Slide #1

12/6/16 Afternoon Agenda



- 12:30 – 1:30pm
 - Transitional arrangements
 - Aging
- 1:30 – 1:45pm – BREAK
- 1:45 – Close
 - U.S. Department of Transportation items
 - Other topics
 - Additional time for clarifying questions
 - Closing

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Issue 10

Transitional Arrangements

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Public Meeting

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Slide #3

Transitional Arrangements

Background



- Also known as: Grandfathering
- In the 2004 NRC rulemaking
 - Phased out packages the NRC approved under the 1967 NRC regulations
 - Put restrictions on use of package designs approved prior to April 1, 1996 (see 10 CFR 71.19)

Transitional Arrangements

Background



- Grandfathering provides for:
 - Continued use of already fabricated package designs
 - Completion of packagings being fabricated or that may be fabricated within a given time period
 - Limited modifications to package designs without demonstrating full compliance with the revised regulations

Transitional Arrangements

Background



- In DS495, the IAEA is proposing to only recognize the grandfathering of package designs certified under the 1985 and 1996 editions of the IAEA's regulations

Transitional Arrangements Issue



Should NRC adopt IAEA grandfathering provisions?

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Slide #7

Transitional Arrangements

Factors for Consideration



- How long should grandfathered packages be allowed to be fabricated and used?
- What type and magnitude of package design changes for grandfathered packages can be made without requiring full re-certification?
- Time period for packages that are phased out?

Transitional Arrangements

Proposed Actions



- Considering whether to include transitional arrangements or “grandfathering” provisions
- If added, terms of the transitional arrangements

Transitional Arrangements

- Packages not requiring competent authority approval of design (excepted packages, Type IP-1, Type IP-2, Type IP-3 and Type A packages)
 - 2012 SSR-6 restricts 1985-based designs
 - Prepared for transport prior to 2004
 - Requires proper QA
 - 20xx SSR-6 draft restricts 1985-2012-based designs
 - Prepared for transport prior to 2026



Transitional Arrangements

- Packages requiring competent authority approval of design (Type B and fissile)
 - Pre-1985 (1973) designs no longer permitted
 - 1985-2012-based designs
 - Subject to multilateral approval after 2025
 - No new manufacture after 2028
- Special form material
 - 1973 approvals no longer permitted
 - No new manufacture of 2012 and older designs





Issue 9

Aging Management

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Slide #12

Aging Management

Background



- In DS495, the IAEA proposes to include aging mechanisms in package design and evaluation
- For shipment after storage, DS495 would require:
 - Including aging mechanisms
 - Gap analysis that includes:
 - Package changes during storage due to aging and
 - Discussion of whether aging affects the package performance during transport

Aging Management Issue



- Part 71 does not explicitly call out aging
- 10 CFR 71.87(b):
“the package is in unimpaired physical condition except for superficial defects such as marks or dents.”
- DOT has similar regulation in 49 CFR 173.475(b)

Aging Management Issue



- NRC expects licensees to diligently inspect packages for wear
- For all shipments, licensees are required to determine that the package to be transported meets the certificate
- Calculations/records may be used to determine whether the package meets the certificate

Aging Management

Factors for Consideration



- Should the NRC add evaluation of aging effects to Part 71?
- Should the NRC require a gap analysis for packages transported after storage?

Aging

Should this apply to other than Type B packages?



U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

To Protect People and the Environment From the Risks of
Hazardous Materials Transportation



BREAK

U.S. Department of Transportation Items

DOT Issues



U.S. Department of Transportation
**Pipeline and Hazardous Materials
Safety Administration**

"To protect people and the environment by advancing the safe transportation of energy and other hazardous materials that are essential to our daily lives."



New Basic Radionuclide Values

Radionuclide	A ₁ (TBq)	A ₂ (TBq)	Activity Concentration Limit for Exempt Material (Bq/g)	Activity Limit for an Exempt Consignment (Bq)
Ba-135m	2×10^1	6×10^{-1}	1×10^2	1×10^6
Ge-69	1×10^0	1×10^0	1×10^1	1×10^6
Ir-193m	4×10^1	4×10^0	1×10^4	1×10^7
Ni-57	6×10^{-1}	6×10^{-1}	1×10^1	1×10^6
Sr-83	1×10^0	1×10^0	1×10^1	1×10^6



Other 20xx Changes

- 536bis. Any marking on the *package* that does not relate to the *shipment* shall be removed or covered.



Other 20xx Changes

- ~~524. The TI for each overpack, freight container or conveyance shall be determined by the consignor as either the sum of the TIs of all the packages contained, or by direct measurement of radiation level dose equivalent, except in the case of non-rigid overpacks, for which the TI shall be determined only as the sum of the TIs of all the packages.~~
- The TI for each rigid overpack, freight container or conveyance shall be determined as the sum of the TIs of all the packages. For a shipment from a single consignor, the consignor may determine the TI by direct measurement of dose equivalent rate.
- 524bis. The TI for a non-rigid overpack shall be determined only as the sum of the TIs of all the packages



Other 20xx Changes

- 546. The *consignor* shall include in the transport documents with each *consignment* the identification of the *consignor* and *consignee*, including their names and addresses, and the following information, as applicable, in the order given:
 - (h) The category of the package, overpack or freight container, as assigned per paragraph 529, i.e. I-WHITE, II-YELLOW, III-YELLOW.
 - (i) The TI of the package, overpack or freight container, as assigned per paragraph 529 (categories II-YELLOW and III-YELLOW only).



Other 20xx Changes

- 624. A *package* to be qualified as *Type IP-2* shall be designed to meet the requirements for *Type IP-1* as specified in para. 623 and, in addition, if it were subjected to the tests specified in paras 722 and 723, it would prevent:
- Loss or dispersal of the *radioactive contents*;
- More than a 20% increase in the maximum ~~*radiation level dose equivalent rate*~~ at any external surface of the *package*, except when the maximum *dose equivalent rate* on the external surface is below 10 $\mu\text{Sv/h}$. In this case, there shall be no increase of more than 2 $\mu\text{Sv/h}$ in the maximum *dose equivalent rate* at any external surface of the *package*.

(Also proposed for IP-3 and Type A packages)



Future Rulemaking

- DOT will monitor NRC progress on rulemaking
- Intend to issue Notice of Proposed Rulemakings at same time
- Objective to finalize and implement regulation updates at same time as NRC



Public Comment Period



- Issues paper (ML16299A298)
- FRN (81 FR 83171): 60 day period
 - November 21, 2016 through January 20, 2017
- Electronically on Federal Rulemaking Website:
<http://www.regulations.gov>, **Docket ID NRC-2016-0179**
- Mail comments to: Cindy Bladey, Chief, Rules, Announcements, and Directives Branch (RADB), Division of Administrative Services, Office of Administration, Mail Stop: OWFN-12-H08, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001



Abbreviations

- CFR – *Code of Federal Regulations*
- CSI – Criticality Safety Index
- DOT – U.S. Department of Transportation
- DSFM – Division of Spent Fuel Management
- HAC – Hypothetical Accident Conditions
- IAEA – International Atomic Energy Agency
- IP – Industrial Package
- LSA – Low Specific Activity
- MOU – Memorandum of Understanding
- NRC – Nuclear Regulatory Commission
- ORNL – Oak Ridge National Lab
- QAP – Quality Assurance Program
- RADB – Rules, Announcements and Directives Branch
- RG – Regulatory Guide
- SCO – Surface Contaminated Object
- SOC – Statement of Consideration
- SRM – Staff Requirements Memorandum
- TI – Transport Index