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**Cc:** [White, Bernard](#); [Wong, Emma](#); [Young, Thomas](#)  
**Subject:** [External\_Sender] Docket ID NRC-2016-0179; Revisions to TSR and Compatibility With IAEA Transportation Standards  
**Date:** Friday, January 20, 2017 11:56:47 AM  
**Attachments:** [17-0120 WNTI Response NRC-2016-0179-0004.pdf](#)

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The World Nuclear Transport Institute, as attached to this email, herein provides a responses to issues discussed in NRC-2016-0179-0004, *Issues Paper on Potential Revisions to Transportation Safety Requirements and Harmonization with International Atomic Energy Agency Transportation Requirements*.

Should NRC staff have any questions, please contact me.

Sincerely,

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Eileen M. Supko  
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World Nuclear Transport Institute

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WORLD NUCLEAR TRANSPORT INSTITUTE

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**WNTI REF:** ES/17/NRS/L/01

U.S. Nuclear Regulatory Commission,  
Ms. Annette Vietti-Cook, Secretary  
ATTN: Rulemakings and Adjudications Staff  
Washington DC 20555-0001

Washington, 17<sup>th</sup> January 2017

**Subject: Comments of the World Nuclear Transport Institute regarding Request for Comment on U.S. Nuclear Regulatory Commission's *Revisions to Transportation Safety Requirements and Compatibility with International Atomic Energy Agency Transportation Standards*, Docket ID NRC-2016-0179, Federal Register Vol. 81, No. 224, dated November 21, 2016**

Dear Ms. Vietti-Cook,

On behalf of the nuclear transport industry, the World Nuclear Transport Institute (WNTI) appreciates the opportunity to provide comments to the U.S. Nuclear Regulatory Commission (NRC) regarding NRC's proposed *Revisions to Transportation Safety Requirements and Compatibility with International Atomic Energy Agency Transportation Standards* as summarized in an NRC Issues Paper.

WNTI understands that the NRC and the U.S. Department of Transportation (DOT) are considering a rulemaking to maintain harmonization based on the latest revision of the International Atomic Energy Agency's (IAEA) "Specific Safety Requirements No. SSR-6: Regulations for the Safe Transport of Radioactive Material 2012 Edition," (SSR-6), along with an additional proposed revision to SSR-6 estimated to be published by 2018.



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The World Nuclear Transport Institute (WNTI) is a non-governmental organization headquartered in London, United Kingdom, with offices in Japan and the U.S., and representatives in Australia, China and South Africa. WNTI was established in 1998 by the then British Nuclear Fuel Limited (BNFL), COGEMA of France and the Federal Electric Power Companies (FEPC) of Japan.

The WNTI has consultative status with the International Maritime Organization (IMO), an observer status with the International Atomic Energy Agency (IAEA) and its Transport Safety Standards Committee (TRANSSC) where the transport safety regulations are reviewed and revised. The WNTI is also observer to the International Civil Aviation Organization (ICAO) at its Dangerous Goods Panel. WNTI has consultative status with the United Nations Committee of Experts on the Transport of Dangerous Goods, is a Category B Liaison Member to the International Organization for Standardization (ISO), and information status with the American National Standards Institute (ANSI) N14 Committee. WNTI represents the collective interests of its member companies worldwide in the safe, efficient and reliable packaging and transport of radioactive materials. The Institute is recognized internationally as the single authoritative voice dedicated to the radioactive packaging and transport industry, and for those companies that rely on such transport. Today, WNTI member companies represent a wide range of industry sectors, including major utilities, fuel producers and fabricators, transport companies, package producers, and the producers and suppliers of large radiation sources.

WNTI and its member companies generally support and encourage the harmonization of the NRC and DOT regulations governing the transport of radioactive material with the IAEA Transport Safety Standards as embodied in SSR-6, indeed WNTI is involved in the IAEA SSR-6 revision cycle started in 2015 and proposed revisions to be published in 2018.

WNTI member companies look forward to continued dialogue on these issues. For that purpose, in Attachment 1, WNTI is pleased to provide the NRC with comments on the issues identified in the NRC's Issue Paper.

If you have any questions, please feel free to contact me on (202) 785-8833.

Sincerely,

Eileen M. Supko  
Principal Representative  
North American Office  
World Nuclear Transport Institute

Enclosed: Attachment 1: WNTI response to NRC -2016-0179-0004

**Comments by the World Nuclear Transport Institute regarding  
The U.S. Nuclear Regulatory Commission's Issues Paper on  
Potential Revisions to Transportation Safety Requirements and Harmonization  
With International Atomic Energy Agency Transportation Requirements**

**Issue No. 1: Fissile Materials**

***Issue No. 1a: New Fissile Exceptions in IAEA SSR-6, Paragraph 417***

WNTI supports the NRC's proposed actions identified in Issue No. 1a. Paragraph 417(c) is intended to allow shipment of UF<sub>6</sub> samples based on historic practice. Although consignment limits do not fully control the accumulation, accumulations exceeding a critical mass on a conveyance are a very low risk during the conduct of an International shipment from the U.S. to other countries. Any fissile exception mass limits should be the same as those limits specified in para. 417 to avoid confusion for international shipments to other countries from the U.S. Not adopting the fissile exception limit in 417(c) may increase the costs of shipping small quantities of uranium enriched in U-235 to a maximum of 5% by mass.

***Issue No. 1b: Competent Authority-Approved Fissile Exception, SSR-6 Paragraph 417(f)***

WNTI does not support NRC's proposed actions identified in Issue No. 1b. SSR-6 Paragraph 417(f) is a useful provision because of the variety of very low risk fissile materials that are produced when processing wastes. Experience has demonstrated that it is not possible to develop general specifications or requirements that can bound the diversity of low risk fissile materials.

The concentration limits in § 71.15 (b),(c) are examples of specific exceptions allowed by the NRC as intended by 417(f) , but these concentration limits alone may not be general enough to provide for the diversity of materials generated from processing wastes. The increase in decommissioning activities and disposition of legacy materials will continue to produce a variety of very low risk fissile material. Instead of relying on a rulemaking process to authorize additional fissile-exceptions, the concept of a process that allow approval of fissile exceptions using a review process similar to that used for approval of packages and special form radioactive materials would be useful for licensees. The U.S. DOT currently issues Certificate of Competent Authority for special form radioactive materials in accordance with paragraph 804 of the IAEA Regulations and Section 173.476 of Title 49 of the Code of Federal Regulations. A similar provision for approving approval of exemptions for fissile material beyond what is in § 71.15 for domestic shipment would be of value to licensees.

***Issue No. 1c: CSI-Controlled Fissile Material Packages, SSR-6 Paragraph 674***

WNTI does not support NRC's proposed actions identified in Issue No. 1c. The limits in §§ 71.22 and 71.23 are appropriate as supported by assessments provided in NUREG/CR-5342. Likewise, the provision in SSR-6 para. 674 are supported by technical reasons to ensure safety

equivalent to that required for fissile material packages approved by competent authorities. The impact on international shipping of small quantities of fissile material using packaging that is not approved by a competent authority as allowed in para. 674 depends on the interpretation of the U.S. DOT, under which international shipments, both into and from the U.S., are authorized under the international standards or regulations.

In rulemaking HM-215M, (published January 8, 2015 ) PHMSA incorporated by reference the 2012 IAEA SSR-6 regulations to replace the TS-R-1 (ST-1, Revised) 1996 Edition to allow shipments to be offered for transportation or transported under the most recent IAEA regulations. PHMSA added additional requirements to §171.23 to ensure domestic concerns were addressed. Paragraph (b)(11) of §171.23 prescribes these additional requirements for shipments of radioactive materials made under authorized international standards or regulations. PHMSA amended §171.23 to require that shipments of excepted fissile materials offered in accordance with the IAEA SSR-6 regulations also conform to the requirements of §173.453. However, the additional requirements added to §171.23 do not explicitly address packages containing fissile material that are authorized by the 2012 IAEA SSR-6 regulations in para. 674.

The existing mass limits for the fissile material general licenses in §§ 71.22 and 71.23 are greater than the mass limits in para. 674, however, the differences in allowed packaging types imposes requirements on consignors that may increase the cost for shipments of small quantities of fissile material into the U.S. from other countries. Furthermore, consignors must also be a U.S. NRC licensee in order to use the general licenses for transport into or within the U.S. Foreign consignors are not usually U.S. NRC licensees and they are not granted a general license.

It is not clear whether shipment of packages containing fissile material offered for shipment into or from the U.S. with contents as authorized by 2012 IAEA SSR-6 para. 674 is allowed by §171.23 (b)(11). The NRC should either endorse the DOT an incorporation by reference of para. 674 in §171.23, or incorporate the provision of para. 674 and 570 in 10 CFR Part 71. This will benefit international shipments by allowing import and export of small quantities of fissile material in packaging not approved for fissile material and using CSI to control accumulation.

### **Additional Comments on Fissile Material Exemptions**

§ 71.15 (b) is a fissile exemption based on concentration of fissile material. The basis for this limit is supported by assessments provided in NUREG/CR-5342. The technical basis for the 15 g fissile exemption limit assumes that the 1 g of fissile is mixed within at least 200 grams non-fissile material. The presentation during the NRC Public Meeting on December 5, 2016, stated on that the non-fissile material does not include the packaging. Language should be added in §71.15 (b) to clarify whether the packaging material may be included in the non-fissile material.

## **Issue No. 2: Consideration for Adopting a Change to the Reduced External Pressure Design Requirement for Transportation Packages**

WNTI supports the proposed NRC actions identified in Issue No. 2. The proposed change to §71.71(c)(3) to reduce the external pressure from “25 kPa (3.5 lbf/in<sup>2</sup>) absolute” to 60 kPa (8.7 psia) has no adverse impact on existing Safety Analysis Reports. This change provides increased design margins for packagings compared to using 3.5 psia value for external pressure.

## **Issue No. 4: Solar Insolation**

Packages used for commercial fuel cycle transportation activities are typically involved in international shipments requiring multilateral approvals. Solar insolation is included in the thermal evaluations for existing package designs to meet the requirements for use in other countries. The NRC should add solar insolation as an initial condition to the fire test in §71.73(c)(4).

Changing the units in §71.71(c)(1) without due consideration to maintaining the same equivalent values could be burdensome to the Certificate of Compliance holder. Keeping the values, thus increasing the solar heat load by approximately 3 percent, may seem insignificant. However, the increase could result in decreasing margins or exceeding thermal limits.

Additionally, NUREG 1536, Standard review Plan for Spent Fuel Dry Storage Systems at a General License Facility, Revision 1, Section 4.5.3 refers to the use of the insolation values presented in 10 CFR Part 71 as acceptable for determining thermal loads and environmental conditions for 10 CFR Part 72 applications. Although the keeping of the same values increases the solar heat load by approximately 3 percent may not seem insignificant, this increase could have an impacts to the thermal evaluations for Part 72 storage systems.

## **Issue No. 5: Replace Radiation Level with Dose Equivalent Rate.**

WNTI supports the proposed NRC actions identified in Issue No. 5 with clarifications. Adding a definition of the term “*radiation level*” to §71.4 as defined in 49 CFR 173.403 would have less impact on existing licensee and regulatory documents. The term “*radiation level*” in 49 CFR 173.403 includes “dose-equivalent rate” in the definition. A definition for the term “dose-equivalent rate” could also be added to both §71.4 and 49 CFR 173.403 without having to change the term “radiation level” throughout 10 CFR 71 and 49 CFR 173 to “dose-equivalent rate”.

## **Issue No. 6: Deletion of the Low Specific Activity-III Leaching Test**

WNTI supports the proposed NRC actions identified in Issue No. 6. 10 CFR Part 71 should be changed to remove the leaching test for LSA-III material as supported by the technical expert working group. The increase in decommissioning activities will generated increased volumes of consolidated wastes and activated metals that will be shipped to disposal sites as LSA-III.

Elimination of any unnecessary tests to qualify waste materials will benefit the large volume of transport activities associated with planned nuclear power plant decommissioning activities.

#### **Issue No. 7: Introduction of the Provisions for *Large Solid Contaminated Objects (Surface Contaminated Object (SCO-III))***

WNTI supports the proposed NRC actions identified in Issue No. 7. 10 CFR Part 71 should be changed to add provisions for SCO-III. The increase in decommissioning activities will generate increased numbers of large radioactive objects. Provisions for SCO-III will benefit the large number of transport activities for large objects from planned nuclear power plant decommissioning activities.

#### **Issue No. 8: UF<sub>6</sub> Packages**

WNTI does not support the proposed NRC actions identified in Issue No. 8. Existing packages for fissile material UF<sub>6</sub> may not have been tested or analyzed for drop tests in orientations that could potentially affect the plug. The plug component is not as susceptible to damage as the valve which extends from the surface of the 30B cylinder. Testing the package to demonstrate there is no contact with the valve could be extended to conclude the same result could apply for the plug. In some cases for multilateral approval, the regulators in other countries have required demonstrating that the plug would not contact any other component of the packaging.

Introducing this requirement would require demonstrating the same performance criteria in order to maintain approval under the current regulations for packages approved under the 1996 edition of IAEA Regulations (-96). A change to 71.55(g)(1) to add the plug is not considered appropriate, but if made should include a provision to allow continued use of packages approved prior publishing a revision to include the plug.

#### **Issue No. 9: Aging**

WNTI does not support adding aging management consideration in 10CFR Part 71. This IAEA proposed requirement to consider aging effects is appropriate for spent fuel storage casks and dry storage containers where the cask or container may remain in storage under 10 CFR 72 for decades with limited inspection during the storage period prior to transport under 10 CFR 71.

Other packages used for commercial fuel cycle transport activities and used fuel transportation packages for dry storage canisters are not generally kept in long term storage prior to transport. The current NRC and DOT inspection requirements in § 71.87(b) and 49 CFR 173.475(b), licensees provide assurance that “the package is in unimpaired physical condition except for superficial defects such as marks or dents.” This determination should identify any degradation or aging effects on the packaging that would impair the intended function. Requirements included in Chapter 8, Acceptance Test and Maintenance Program, of 10 CFR part 71 safety analysis reports specify tests and inspections for the continued use of the package and specify a maintenance program that assures packaging performance during its service life. This is in following NUREG 1907, Standard Review Plan for Transportation Packages for Radioactive

Material, and NUREG 1617, Standard Review Plan for Transportation Packages for Spent Nuclear Fuel.

The NRC proposal is appropriate to require aging management for packages that are to be used for transport after long term storage. Imposing an aging management requirement on all transportation packages is not considered necessary since there are already measures implemented through periodic maintenance and testing during the service life of the transportation package.

**Issue No. 13: Clarification of Type A Package Requirements in § 71.22 – General License: Fissile Material, and § 71.23 – General License: Plutonium-Beryllium Special Form Material**

WNTI supports the proposed NRC actions identified in Issue No. 13 with clarifications. The concept of a general license for small quantities of fissile material in §§ 71.22 and 71.23 is similar to the new concept for fissile material packages introduced SSR6-6 2012 edition in para. 674. SSG-26 para. 674.1 notes the actual packaging (e.g. Type IP, Type A, Type B(U), Type B(M)) to be used is not specified and these requirements need to be confirmed prior to shipment. The NRC should consider not specifying the actual packaging in the §§ 71.22 and 71.23 and remove the requirement that the package contain no more than a Type A quantity of radioactive material [§§ 71.22 and 71.23 (c)(1)]. The package requirement in §§ 71.22 and 71.23 (a) should be removed or replaced to require use of packaging appropriate for the quantity and form of the radioactive material.