



Department of Energy
Washington, DC 20585

NR:RR:DTKawakami G#09-02803
June 11, 2009

E William Brach
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards
Nuclear Regulatory Commission
Washington, DC 20555

**235R001 SHIPPING CONTAINER [USA/6386/B(U)F] - ADDITIONAL
INFORMATION TO SUPPORT NRC REVIEW OF THE SAFETY ANALYSIS REPORT
FOR PACKAGING FOR SHIPMENT OF S9G NEW FUEL MODULES; FORWARDING
OF**

Background: The 235R001 shipping containers [USA/6386/B(U)F] ship new fuel assemblies to servicing facilities. Naval Reactors letter G#07-02462 dated December 18, 2007, submitted the Safety Analysis Report for Packaging (SARP) for shipment of S9G new fuel modules in the 235R001 container.

Discussion: In a phone conversation with Naval Reactors (Miles) in April 2009, the NRC (Staab) requested that Naval Reactors address the 19 regulatory issues concerning compatibility with IAEA TS-R-1 required for a "-96" certification. Enclosure (1) provides a review of the issues as they apply to the S9G SARP and notes that no further action is necessary to show compliance with the 19 issues. If you or your staff have any questions, please call me at (202)781-6166.

BK Miles

B. K. Miles
Naval Reactors

Enclosure: (1) Review of IAEA TS-R-1 Compatibility Issues for
Effects on the S9G/NGR New Fuel in Model 235R001
Container SARP

NHSS01

Copy to:

C. M. Staab, Spent Fuel Licensing, SFPO, NMSS, NRC
Manager, M290/Dry Storage Program, KAPL
Manager, Container Equipment Design, M290/DSP, KAPL
Manager, Shipping Containers/S9G Servicing, RSO, KAPL
Manager, Reactor Engineering and Operations, Bettis
Manager, Shipping Container Analysis, REO, Bettis

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP

TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
2	Radionuclide Exemption Values	71.14; 71.88; Appendix A	The final rule adopts radionuclide activity concentration values for exemption from regulatory requirements on shipping certain radioactive low-level materials. The final rule also provides an exemption from regulatory requirements for natural materials and cores containing naturally occurring radionuclides that are not intended to be processed for use, provided the activity concentration of the material does not exceed 10 times the applicable values.	The requirement is not applicable since the SARP does not request an exemption for low-level materials. No action is necessary for compliance with 10 CFR 71.
3	Revision of A ₁ and A ₂	Appendix A	The final rule adopts the new A ₁ and A ₂ values from TS-R-1, except for molybdenum-99 and californium-252. The final rule does not include A ₁ and A ₂ values for the 16 radionuclides that were previously listed in part 71 but which do not appear in TS-R-1.	The revised A ₁ and A ₂ values have no impact for the nuclides listed in the S9G 235R001 SARP. The SARP analyses show that there is no release of nuclides under normal conditions of transport. For hypothetical accident conditions, the potential nuclide release is well within the 10 CFR 71 requirement limit. No action is necessary for compliance with 10 CFR 71.

Enclosure (1) to
Ser 08G#09-02803

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP				
TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
4	Uranium Hexafluoride (UF ₆) Package Requirements	71.55	The final rule provides a specific exception for certain uranium hexafluoride (UF ₆) packages from the requirements of 71.55(b).	This requirement is not applicable to the S9G 235R001 SARP since the package does not contain uranium hexafluoride. No action is necessary for compliance with 10 CFR 71.
5	Introduction of the Criticality Safety Index Requirements	71.4; 71.18; 71.20; 71.59	The final rule adopts the TS-R-1 paragraphs 218 and 530. Paragraph 218 results in the NRC incorporating a Criticality Safety Index (CSI) that is determined in the same manner as the previous part 71 "Transport Index for criticality control purposes," but now it must be displayed on shipments of fissile material using a new "fissile material" label.	The CSI is incorporated in the S9G 235R001 SARP consistent with 10 CFR 71, Sections 71.4 and 71.59. No action is necessary for compliance with 10 CFR 71.
7	Deep Immersion Test	71.41; 71.51; 71.61	The final rule adopts the requirement for an enhanced water immersion test, which is applicable to any Type B or C packages containing activity greater than 10 ⁵ A ₂ .	The S9G 235R001 SARP analyses demonstrate that the total activity in the package is much less than the 10 ⁵ A ₂ limit. Therefore, the revised immersion test requirement is not applicable to the S9G 235R001 SARP.

Enclosure (1)

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP				
TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
8	Grandfathering Previously Approved Packages	71.13	The final rule adopts the following grandfathering provision: Package designs approved under any pre-1996 IAEA standards may be resubmitted to the NRC for review against the current standards. If the package design meets the current standards, the NRC may issue a new CoC for that package design with a -96 designation.	The Model 235R001 Container CoC is currently designated as "B(U)F". The S9G 235R001 container packaging meets the 10 CFR 71 requirements for assignment of a "B(U)F-96" CoC type designation.
9	Changes to Various Definitions	71.4	The final rule adopts the TS-R-1 definition of Criticality Safety Index (CSI). Additionally, the following definitions have been revised to improve their clarity and maintain consistency with the DOT: A ₁ , A ₂ , consignment, LSA-I, LSA-II, LSA-III, and unirradiated uranium.	Adopting the definition of CSI has been addressed in issue #5 above. Revisions of the other definitions have no effect on the S9G 235R001 SARP analyses. No action is necessary for compliance with 10 CFR 71.
10	Crush Test for Fissile Material Package Design	71.73	The final rule adopts the TS-R-1 requirement for crush testing fissile material package designs.	This requirement is not applicable to the S9G 235R001 SARP since the packaging has a mass greater than 1100 lb. No action is necessary for compliance with 10 CFR 71.

Enclosure (1)

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP				
TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
11	Fissile Material Package Design for Transport by Aircraft	71.55	The final rule adopts the criticality evaluation in paragraph 680 of TS-R-1, which only applies to fissile material package designs that are intended to be transported aboard aircraft.	This requirement is not applicable to the S9G 235R001 SARP. The S9G 235R001 package is not designed to be transported by air. No action is necessary for compliance with 10 CFR 71.
12	Special Package Authorizations	71.41	The final rule adopts special package authorizations that will apply only in limited circumstances and only to one-time shipments of large components.	The revised section is not applicable to the S9G 235R001 SARP since the S9G 235R001 package is not considered a nonstandard package. No action is necessary for compliance with 10 CFR 71.
13	Expansion of Part 71 Quality Assurance (QA) Requirements to Certificate of Compliance (CoC) Holders	71.0; 71.1; 71.6; 71.7; 71.8; 71.9; 71.91; 71.93; 71.100; 71.101 through 71.137	The final rule adds the terms "certificate holder" and "applicant for a CoC" to subpart H of part 71 and adds a new section 71.9 on employee protection. Adopting these requirements will ensure that the regulatory scheme of part 71 will remain more consistent with other NRC regulations in that certificate holders and applicants for a CoC will be responsible for the behavior of their contractors and subcontractors.	The added terms have no effect on the S9G 235R001 SARP quality assurance sections, which currently identify DOE-NR as the packaging owner. DOE-NR is the "certificate holder" and "applicant for a CoC." NR program quality assurance requirements are applied to contractors and subcontractors. The controls exercised in the NR QA program satisfy the requirements of 10 CFR 71, subpart H. The addition of the section on employee protection has no effect on the S9G 235R001 SARP because NR policies already prohibit any form

Enclosure (1)

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP				
TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
				of discrimination against employees for reporting violations of any federal laws or regulations. No action is necessary for compliance with 10 CFR 71.
16	Fissile Material Exemptions and General License Provisions	71.4; 71.10; 71.11; 71.18; 71.20; 71.22; 71.24; 71.53; 71.59; 71.100	The final rule adopts various revisions to the fissile material exemptions and the general license provisions to facilitate effective and efficient regulation of the transport of small quantities of fissile material.	Changes made to Sections 71.4, 71.10, 71.11, 71.18, 71.20, 71.22, 71.24, and 71.53 do not affect the S9G 235R001 SARP analyses. Changes to Section 71.59 (Standards for arrays of fissile material packages) have been incorporated in the applicable SARP analyses (see Issue # 5). Changes to Section 71.100 (Criminal Penalties) do not affect the S9G 235R001 SARP because the quality assurance program implemented by the NNPP prime contractors applies to the design, purchase, handling, shipping, storing, cleaning, assembly, inspection, testing, operation, maintenance, repair, and modification of components of packaging which are important to safety. The controls exercised in the NNPP QA program satisfy the requirements of 10 CFR 71, Subpart H, "Quality Assurance". The revision to Section 71.15 does not affect

Enclosure (1)

Table I: Review of IAEA TS-R-1 Compatibility Issues for Effects on the S9G/NGR New Fuel in Model 235R001 Container SARP				
TS-R-1 Issue # (Note 1)	Description of Issue	Affected 10 CFR 71 Sections (1-1-03 Edition)	NRC Final Ruling	Effect of Final Rule on S9G 235R001 SARP and Required Action (if Necessary)
				the S9G 235R001 SARP since an exemption from classification as fissile material is not requested in the SARP. No action is necessary for S9G 235R001 SARP compliance with 10 CFR 71.
17	Decision on Petition for Rulemaking on Double Containment of Plutonium (PRM-71-12)	71.63	The NRC has decided to remove the double containment requirement. The Type B packaging standards provide reasonable assurance that public health and safety and the environment are protected during the transportation of radioactive material.	This requirement is not applicable to the S9G 235R001 SARP since the package does not contain plutonium. No action is necessary for compliance with 10 CFR 71.
19	Modifications of Event Reporting Requirements	71.95	The final rule revises the event reporting submission period from 30 to 60 days to provide a written report.	The controls exercised in the NR program satisfy the revised event reporting requirements in 10 CFR 71. No action is necessary for compliance with 10 CFR 71 requirements.

Note: 1. Compatibility Issue Nos. 1, 6, 14, 15, and 18 are not applicable since they were not adopted by the NRC.

Enclosure (1)