

SFTRA will further risk-inform the Commission's technical basis for conclusions regarding spent fuel shipment safety, increase public understanding of spent fuel shipment risks, and may, through public participation in the comment process, help to alleviate public concerns in this area. These periodic reviews of transportation risk estimates will continue to support Commission direction that "[...] regulatory policy concerning transportation of radioactive material be subject to close and continuing review" (46 FR 21620). Potentially, the Commission could use the outcome of this assessment, including the public comments, to review its conclusion, with respect to spent fuel transport, that "[...]present regulations (i.e., 10 CFR Part 71, "Packaging and Transportation of Radioactive Material") are adequate to protect the public against unreasonable risk from the transport of radioactive materials" (46 FR 21620, published April 13, 1981).

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Transportation Safety Visualizations

The Division of Spent Fuel Storage and Transportation (SFST) in the Office of Nuclear Material Safety and Safeguards (NMSS) frequently engages in outreach activities in meetings with state, local and Tribal officials in order to explain NRC's safety role in the transport of radioactive material, especially with regard to spent fuel transport. Often, these meetings include presentations by individuals that focus on highlighting transport routine and accident consequences, without providing the balancing perspective of the probabilities of those consequences. It then falls to NRC representatives to reassure the public regarding the adequacy of NRC's transportation safety regulations to provide protection of public health and safety. NRC has produced many technical studies that establish the adequacy of its regulations. However, these studies are based on engineering and probabilistic risk evaluations that can be difficult to convey to the public. The visualizations are intended to facilitate safety communication without overly complicated discussions.

2.0 Objectives

The objectives of this agreement are delineated below.

- A. Perform an updated spent fuel transportation risk assessment including modeling of spent fuel canisters and package impact limiters, prepare a draft final NUREG, and support the related public comment, peer review, and publication processes.
- B. Provide technical support in the preparation of materials, including animations and graphics, to better inform the public on the level of safety provided by NRC's transportation safety regulations.
- C. Enhance public acceptance of spent fuel transportation risk estimates. Enhance staff understanding of code parameters. Perform analysis in fuel and material behavior and properties. Provide other technical support as assigned.

3.0 Purpose

The purpose of this agreement is to obtain an updated spent fuel shipment risk assessment and explanatory materials that will enhance NRC's outreach efforts (see background).

4.0 Expertise and Disciplines Required

SNL will ensure that the principal investigator is a nationally and internationally recognized

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radioactive material packaging expert. The principal investigator must be a scientist or engineer with in-depth experience in package design and testing, who has recently assessed package performance under impact and/or thermal accident conditions. In particular, the principal investigator will have experience in conducting physical package testing, in the pre- and post-test evaluation of containment systems, and in the application of package structural integrity evaluations to spent fuel shipment risk estimates.

The principal investigator will either perform or provide technical oversight and continuity during all work performed on this project. Therefore the principal investigator must possess outstanding oral and written communication skills.

200 only requesting approval for Task 1 changes.
5.0 Work to be Performed

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Work requirements are delineated under the tasks below. Since specific needs in terms of these subject areas cannot be completely forecast in advance, this agreement will be modified to include additional tasks and to revise work requirements whenever other work is required under the tasks identified below. A proposal will be requested for any revisions to the updated work.

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Task 1. Spent Fuel Transport Risk Assessment

SNL will conduct a spent fuel transport risk assessment that updates the spent fuel transportation risk estimates in NUREG/CR-6672. This will be a generic risk assessment, not a facility-specific assessment, although specific package designs and routes may be employed in the analysis. To the maximum extent practicable, SNL will use cask design models already developed by the NRC for structural and thermal analyses. These models will be specified by the TPM, and include, for example, the truck and rail cask models developed for the NRC by the Pacific Northwest National Laboratory. The assessment will be informed by results of relevant security assessments, but will not evaluate security-related scenarios or impacts. This assessment will be performed primarily by using computer analysis (although small-scale or bench testing might be included at the direction of the SFST TPM). This will be a useful tool in outreach efforts on communicating transport risks, and will complement the work done on the Baltimore and Caldecott tunnel fires.

The spent fuel transport risk assessment task will include the following subtasks:

Subtask 1a. SNL will provide support, as needed, for publication of the revised transportation risk assessment as a NUREG document. SNL will prepare and provide to the NRC, the revised spent fuel transportation risk assessment, as a draft NUREG in the appropriate format for (sequential) public comment and peer review.

Considering the end use of the document by the public, the clarity of explanation of the method used and results obtained, accessibility to the underlying assumptions and data, and overall readability of the NUREG are paramount objectives of this effort. SNL will carefully plan and structure the document to meet the challenge of achieving these objectives. The NUREG report will be the primary focus of the entire task, and SNL management and staff will focus its efforts from the outset on the utility and quality aspects of the NUREG report.

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SNL will prepare responses to comments and reviews, and revise the draft NUREG in consultation with the SFST TPM. With respect to explaining the relationships between