

## **POLICY ISSUE INFORMATION**

July 11, 2008

SECY-08-0101

FOR: The Commissioners

FROM: R. W. Borchardt  
Executive Director for Operations

SUBJECT: HOW THE NRC COULD BETTER INFORM THE PUBLIC ABOUT  
THE RISKS ASSOCIATED WITH THE TRANSPORTATION OF  
RADIOACTIVE MATERIALS IN THE UNITED STATES

### PURPOSE:

To report to the Commission how the NRC could better inform the public about the risks associated with transportation of radioactive material compared to other hazardous material transported across the U.S. and the requirements the NRC has put in place to reduce these risks. Staff has chosen to focus on spent fuel because it is shipped in rail and truck casks that are comparable in both size and weight to the tank cars used to ship hazardous materials that exhibit the greatest transportation risk, and because spent fuel shipments have been a major focus of the public and the Advisory Committee on Nuclear Waste and Materials (ACNW&M).

### BACKGROUND:

For the past several years, NRC's outreach effort in the area of transportation safety has mostly focused on the potential shipment of spent nuclear fuel and high-level radioactive waste to a potential geological repository or interim storage site, and has been addressed primarily to State and local government organizations. State and local government organizations have been specifically chosen because of: (1) their prospective regulatory roles in such shipments (e.g., inspections, routing, fees, etc.); (2) the need to provide States and local governments with information useful for their own outreach efforts; and (3) and the long lead times needed by State and local governments for planning (e.g., emergency response training, assessment of transportation infrastructure, etc.). Staff is prepared to expand its outreach efforts to include a wider public audience, as potential spent fuel shipping campaigns become more imminent, and to support NRC's licensing efforts for new power reactors, potential interim storage sites, and the proposed geological repository.

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Staff has used the communication guidelines set forth in “Effective Risk Communication” (NUREG/BR-0308) in developing its safety messages on the transportation of spent fuel based on risk comparisons. Staff has also been guided by the stated objectives of openness and effectiveness in the NRC’s Strategic Plan for Fiscal Years 2008-2013 (NUREG1614, Vol. 4) in external communication with stakeholders. As part of this outreach effort, NRC staff has often used risk comparisons between the transportation of spent fuel and other hazardous materials, such as chlorine, ammonia, gasoline, and propane. The primary purposes of making these comparisons have been to illustrate that the risk of shipping spent fuel is very low and is much lower than that involved in the shipment of other commonly shipped hazardous materials. These comparisons also highlight that the lowered risk results from the way in which risk is managed for spent fuel transportation – primarily through the use of “accident-resistant” transportation casks.

#### DISCUSSION:

Consistent with the Commission's guidance in Staff Requirement Memorandum (SRM) M071114, NRC staff met with representatives from the ACNW&M in March 2008. PowerPoint slides used by the staff in the March 2008 briefing can be found at ML081440732. Most of the slides contained in the presentation have been used in previous presentations to stakeholders to illustrate how the risk of shipping spent fuel compares to that of other commonly shipped hazardous materials.

In using risk comparisons between the transportation of spent fuel and other hazardous materials, staff has found that the context and manner in which the message is delivered is often as important as the message itself. For some audience members, such comparisons have been seen and characterized as an attempt to trivialize the risks of spent fuel shipments. This point of view was recently expressed in a paper presented at the 2008 Waste Management Symposia; entitled *Why DOE's Messages on Transportation Don't Resonate with the Public (and What DOE Can Do to Fix the Problem)* (ML081440733.) For other audience members, it has seemingly provided a needed perspective for making an informed judgment.

The challenge associated with informing the public about the risks of shipping radioactive material is not communicating the risks, but it is gaining the public's acceptance of the message. As illustrated in the recent Mega Disaster show entitled “Glow Train Catastrophe,” which aired on the History Channel on June 24, 2008, the public views expert assessments of risk skeptically and with the expectation that “anything can happen.”

One way that staff has found risk comparison to be useful for general audiences is to use it as a tool to explain how risk is managed for spent fuel transportation. The use of risk comparisons can then be seen as a measure of the effectiveness of NRC and Department of Transportation (DOT) transportation safety regulations, rather than an attempt to have audiences accept the risk based on the fact that other accepted (i.e., necessary) activities are more risky. One of the ways this can be done is effectively by framing the risk comparison in the following manner:

1. Recognize/understand/validate stakeholders' concerns.

Avoid risk comparisons implying that spent fuel is not a hazardous or dangerous material. Don't trivialize the hazard. Remember a primary reason that stakeholders are

present is precisely because they believe that spent fuel is, or can be, an extremely hazardous commodity to transport.

2. Explain what the Commission has done to address those concerns.

Explain what the Commission is doing to manage or reduce the risk (i.e., address stakeholder concerns). The risk is reduced because the casks used to transport spent nuclear fuel are designed to prevent radioactive material releases or increased radiation exposures in a severe transportation accident. The risk is lowered even further because of the lower number of spent fuel shipments, and the fact that spent fuel is shipped in a solid non-dispersible form. The risks and the way that risk is managed for spent fuel shipments (e.g., “accident-resistant” packaging and increased operating controls) are different from the way risk is managed for other hazardous material shipments. (Comparison of how risk is managed).

3. Give measures of how NRC efforts have been effective in addressing stakeholder concerns.

The way that risks are managed for spent fuel shipments has resulted in lower risk estimates for spent fuel shipments than for shipment of almost any other hazardous material. This is borne out by DOT accident statistics, studies by independent agencies and expert panels such as the National Academy of Sciences, and NRC’s own risk studies (e.g., NUREG-0170 and NUREG/CR-6672) (comparison of risks as a result of risk management).

4. Reinforce/emphasize the NRC commitment to protect public health and safety and common defense and security.

Even though the risk of shipping spent fuel is significantly lower than the risks of other hazardous material shipments, NRC is continually reviewing severe accidents and sabotage scenarios to ensure that current regulations still protect public health and safety.

### Future Focus

In accordance with the Commission’s guidance in SRM M071114, the NRC staff has adopted a three-pronged approach that includes both short-term and long-term actions to appropriately communicate the risks involved with transportation of radioactive materials, and NRC’s actions to mitigate those risks. First, in the short term, NRC’s outreach effort in the area of transportation safety will remain focused on State and local government organizations. One of the goals is to provide States and local governments with information that could be useful for their own outreach efforts, including comparisons of the overall risks of shipping spent fuel and other hazardous materials. The NRC’s short-term outreach efforts should remain focused on the potential shipment of spent nuclear fuel and high-level radioactive waste to a potential geological repository or interim storage site.

Second, the staff is prepared to expand its outreach efforts to include a wider public audience, as potential spent fuel shipping campaigns become more imminent, and to support NRC’s

licensing efforts for new power reactors, potential interim storage sites, and a geological repository. To address a wider public audience, the staff is making greater use of web-based materials and is considering whether to develop appropriate factsheets. Staff is currently developing a web-based interactive brochure on the risks associated with the transportation of radioactive materials, including spent nuclear fuel, and how the requirements NRC has put into place for transportation of radioactive materials have reduced those risks.

Finally, the staff is also participating in the U.S. Department of Energy's Transportation External Coordination (TEC) Working Group's effort to develop more effective ways to communicate transportation safety messages with stakeholders. The TEC working group, which is chartered to coordinate transportation safety activities between the Federal Government and the States, has recently created a topic group dedicated to transportation safety and risk communication. One of the topics to be explored is how risk comparisons should be used to communicate the safety of spent fuel shipments.

Staff will continue to monitor the effectiveness of its use of risk comparisons by monitoring public media coverage and through soliciting feedback from its external stakeholders.

RESOURCES:

No additional resources are required to maintain staff's current level of outreach activities for transportation safety. Staff also believes that current FY 2009 resources of 0.5 FTE (fee based) and 1 FTE (Nuclear Waste Fund) and FY 2010 resources of 0.5 FTE (fee based) and 0.5 FTE (Nuclear Waste Fund) are adequate to support additional limited outreach activities related to NRC licensing actions for new reactors, potential interim storage sites, and a potential geologic repository. Outreach efforts will be curtailed if the amount of resources available from the Nuclear Waste Fund is reduced in FY 2010.

COORDINATION:

The Office of the General Counsel has reviewed this paper, and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

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