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**OFFICE OF THE GOVERNOR  
AGENCY FOR NUCLEAR PROJECTS**

1802 North Carson Street, Suite 252  
Carson City, Nevada 89710  
Phone: (775) 687-3744 Fax: (775) 687-5277  
E-mail: [nwpo@govmail.state.nv.us](mailto:nwpo@govmail.state.nv.us)

DOCKET # 73-10  
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January 28, 2000

Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**DOCKET NUMBER**  
**PETITION RULE PRM 73-10**  
**(64FR49410)**

Attn: Rulemakings and Adjudications Staff

RE: Comments on State of Nevada Petition for Rulemaking, Docket PRM 73-10

Dear Commissioners:

Since the State of Nevada petitioned the Commission in June, 1999, the U.S. Department of Energy (DOE) has published new information regarding the consequences of radiological sabotage involving use of high-energy explosive devices against spent nuclear fuel shipping casks. Petitioner Nevada believes that this new information supports our request for amendments to strengthen the current transportation safeguards regulations (10CFR73). However, the new DOE analysis, in our opinion, does not satisfy the documented need for a new and comprehensive assessment of the human health and environmental consequences of sabotage and/or terrorist attacks against spent nuclear fuel shipments.

DOE released its Draft Environmental Impact Statement (DEIS) for a Geologic Repository at Yucca Mountain (DOE/EIS-0250D) in August, 1999. Chapter 6 of the DEIS, Environmental Impacts of Transportation, contains an analysis entitled "Impacts of Acts of Sabotage." DOE's analysis "evaluated the consequences of possible credible sabotage events and found them to be comparable with the impacts of maximum reasonably foreseeable accident events." [DEIS, p. 6-33] DOE commissioned a study by Sandia National Laboratories (Luna, Neuhauser, and Vigil 1999, all) which demonstrated that high-energy explosive devices were "capable of penetrating a cask's shield wall, leading to dispersal of contaminants to the environment." [DEIS, p. 6-33] The DEIS analysis used new release estimates developed by Sandia, including an estimated respirable release six times greater than that found by previous studies and the RISKIND consequence assessment model developed by Argonne National Laboratory. Assuming the attack took place in an urbanized area under average weather conditions, the DEIS estimated that a successful attack on a truck cask would result in a population dose of 31,000 person-rem and 15 latent cancer fatalities, and that a successful attack

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on a rail cask would result in a population dose of 4,900 person-rem and 2.4 latent cancer fatalities. The attack on the smaller truck cask would release greater quantities of radioactive material, "even though the amount of spent nuclear fuel in a rail cask would be as much as six times that in a truck cask." [DEIS, p. 6-34]

Petitioner Nevada believes that DOE's new consequence assessment, in and of itself, strongly supports Nevada's contention that the current safeguards regulations should be strengthened. However, the release and resulting consequences could be ten times greater, according to the new Sandia study, if the weapon fully perforated the cask. [Luna, Neuhauser, and Vigil, 1999, p.20] Based on the Army Ballistics Research Laboratory 1982 peer review of the original Sandia report [Sandoval, 1982], cited in Nevada's petition, full perforation of a truck cask by the reference weapon (the M3A1 military demolition device) should have been assumed in the 1999 analysis. The DEIS should have used a bounding scenario approach, resulting in a range of estimated impacts between 31,000 and 310,000 person-rem population dose and 15 to 150 latent cancer fatalities.

Nevada is presently preparing a detailed critique of the DOE consequence assessment as part of comments on the Yucca Mountain DEIS. Nevada's comments will be submitted to DOE by February 9, 2000. In order to comply with the January 28, 2000 extended deadline for comments in this docket, Nevada is today submitting as attachments to this letter contractor reports prepared as part of the DEIS review. (These contractor reports are available from the State of Nevada web page at <http://www.state.nv.us/nucwaste/eis/yucca/ballard01.htm> and <http://www.state.nv.us/nucwaste/eis/yucca/rwmaymeis.pdf> respectively.) Nevada will provide the Commission with a copy of its final comments on the DEIS impacts of acts of sabotage as soon as possible after February 9, 2000. We conclude this letter with a summary of the major comments Nevada will be submitting to DOE.

1. DOE failed to conduct a systems analysis of the potential impacts of sabotage and terrorism during all phases of transportation, including planning, storage prior to transport, cask loading, transportation, intermodal transfer, lag storage at the receiving facility, and cask unloading. Nevada is particularly concerned that DOE ignored the potential for attacks at intermodal transfer stations and on large rail casks during transport on slow-moving heavy haul trucks.
2. DOE failed to evaluate the full range of potential sabotage and terrorism events, including terrorist attacks on transportation infrastructure used during nuclear waste shipments, attacks involving capture of a shipment and use of high-energy explosive devices against a cask, and direct attacks upon shipping casks using antitank missiles.
3. Sandia used the military definition of man-portability rather than the Commission's definition of the design basis threat in selecting the reference weapons used in the analysis. As a result, Sandia failed to consider weapons such as the TOW and Milan missiles which are capable of completely perforating rail as well as truck casks.
4. Sandia failed to consider credible attack scenarios involving use of more than one penetrating weapon, use of an incendiary device in conjunction with a penetrating weapon, and use of

commercial shaped charges which are more efficient metal penetrators than the M3A1 military demolition device.

5. Sandia's "swept volume" method of estimating the release from the cask is subject to alternative interpretations, especially when coupled with consideration of blast temperature effects.

6. Sandia apparently did not consider the potential contribution of fuel oxidation to generation of respirable fines in any instance where the weapon completely perforated the cask.

7. Sandia relied solely upon computer simulations and the 1980s experimental data to evaluate cask response to the reference weapons. No new tests were performed.

8. Sandia used the SCAP computer code, which is not appropriately benchmarked for modeling multi-layer cask walls composed of different numbers of layers, different thicknesses, and different materials combinations.

Nevada also directs the Commission's attention to the large number of references to sabotage and terrorism during comments presented at DOE's public hearings on the DEIS. Members of the public have frequently commented on issues such as the likelihood of attacks, methods of attack, and unique local conditions along potential shipment routes which would facilitate attacks and exacerbate consequences. Nevada recommends that Commission staff review the transcripts of the DOE public hearings, and treat these public comments as if they had been submitted as part of this docket.

The State of Nevada appreciates the manner in which the Commission has responded to our petition for rulemaking. Thank you for your further consideration of these comments.

Sincerely,

Robert R. Loux  
Executive Director

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Attachments  
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