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Bringing Hiroshima Home Concerns for the Transport of Nuclear Waste

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FACT SHEET

Why is Nuclear Transport an Issue?

The process of approving a high-level nuclear waste repository at Yucca Mountain faces many serious setbacks. Included in the debate is the fact that tens of thousands of tons of highly hazardous nuclear waste is going to have to cross through 45 states, the District of Columbia, and through or near virtually every major American city, putting tens of millions of Americans at risk of exposure to nuclear radiation. (1)

U.S. nuclear power plants have already produced more than 40,000 tons of high-level waste, adding 2,000 tons annually. Presently most of the radioactive waste is stored on site at the power plant where it was generated. But storage capacity is disappearing quickly and industry pressure is mounting to get the waste moved to the proposed federal repository at Yucca Mountain. The nuclear industry and utility companies are pressuring for the issue to be resolved quickly, supporting among other ideas interim storage sites for the spent nuclear fuel. However, there are significant risks to consider. (2)

How Will Transport Work?

If the Yucca Mountain repository becomes operational, DOE and the state of Nevada analysis project approximately 108,500 truck shipments or more than 36,000 combined rail and truck shipments will be required to move the approved 77,000 tons of high-level radioactive waste expected to be buried at the

Yucca Mountain nuclear waste dump. (1) To put this in perspective, if DOE selects a truck shipment model, a truck shipment of high-level radioactive waste would be required every 4 hours, around-the-clock, 365 days a year, for 38 years.

DOE has stated that it prefers using rail shipments but rail lines connecting all of the nuclear reactor sites do not yet exist and most nuclear spent-waste casks are too heavy for road transport. Consequently, there are proposals for significant barge-shipment down the nation's coastlines and waterways. DOE's estimates from 2002 show a total of roughly 3,000 barge shipments on proposed routes past New York City and Staten Island, along the coast of Southern California, to the ports of Boston, New Haven and Baltimore, around Cape Cod, on Lake Michigan, down the Missouri, Mississippi and Tennessee rivers, and around the coasts of Florida. (1)

Problems with Transport

Accidents

Even DOE, which assumes human error will not affect the probability or severity of accidents, predicts 66 truck or 10 rail accidents. Based on the actual record of past spent fuel shipments, other experts estimate there will be 130 truck accidents or 440 rail accidents over 40 years. (1)

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Picture of various TOW missiles, provided by NAMSA

(<http://www.namsa.nato.int/gallery/systems/tow-22.jpg>)

According to the U.S. Department of Transportation, an accident could result in cask failure and the release of radioactivity, producing high human and financial costs. (3) For example, a train accident such as the summer 2001 Baltimore tunnel fire would have resulted in cask failure and the release of radioactive materials, causing thousands of deaths and \$10-\$14 billion in cleanup costs. (1, 3) The Baltimore train tunnel remains a DOE-approved eligible transportation route for nuclear waste.

Furthermore, any accidents on barges run the risk of initiating an actual nuclear reaction between spent waste fuel from light water reactors and the water it is being carried down, putting millions of people at risk from both contamination of water sources and possible nuclear reactions dangers. (4)

Radiation in Transit

Even without an accident, the NRC approved casks continuously emit low levels of radiation, posing a direct risk to transportation workers and members of the public living or traveling in the vicinity of the transportation routes. The National Academy of Sciences (NAS) has recently produced a report declaring that no dose of ionizing radiation, no matter how small, is safe. (5)

Attack

On June 25, 1998 the U.S. Army conducted a weapons test depicting the vulnerability of nuclear waste storage casks. The tested model, a GNB dual-purpose CASTOR, one used in both dry storage and transport, was successfully pierced during the tests by a TOW armor piercing anti-tank missile warhead. Had there been spent fuel inside, a serious release of radioactivity would have occurred. (6)

The TOW is the most widely distributed anti-tank guided missile in service around the world and weighs less than fifty pounds, certainly a size small enough for a mobile attack effort from terrorists. The CASTOR is among the most robust models of nuclear waste storage in use; it is 15

inches thick while many other models in use in the U.S. are only a few to several inches thick. The CASTOR can also hold over 200 times the long-lasting radioactivity released by the Hiroshima bomb. (6) Moving enough waste for 200 Hiroshimas per cask through most major U.S. cities poses terrifying possibilities for a terrorist attack. (7)

Cost

The NWSA established that the majority of the costs for a repository construction would come from funds set aside in the Nuclear Waste Trust Fund that currently holds about \$18 billion. DOE has already spent \$8 billion of this money dealing with the weaknesses and dilemmas of the Yucca Mountain site. The last DOE estimate from 2001 projected a cost of \$60 billion for the repository construction and operation based on the optimistic opening date of 2010 which is inconceivable today. (8) The Caliente Rail construction in Nevada alone will cost over \$2 billion. (9) Costs will most likely balloon as the delays continue.

DOE has also not yet secured funding for state and local governments to create, equip, train and maintain adequate emergency response teams. (10) Before any waste is transported, DOE must make sure that every community along the transportation routes, both land and water, is ready to respond to any sort of radiological accident that might occur.

February 2006 NAS Transport Report

The NAS produced a report on the transport of spent nuclear fuel and high-level radioactive waste in the U.S. that concluded that while transport is technically possible, a safe transportation program is extremely difficult to create. Beyond the technology, it must also be well planned and managed, with stringent regulations carefully enforced, over the entire period of the transportation program.

Main Points of Report:

- The need for full scale crash testing of transport packages under severe accident conditions;
- Study of security issues from an independent examiner;
- Study of very long duration fires because extreme accident scenarios involving such fires could compromise the waste containers, and to implement operational controls and restrictions to reduce the likelihood of such conditions, including carefully discerning transportation routes;
- The committee expressed concerns about DOE’s ability to plan and manage a safe program and details them through a series of points about rail construction, routes, emergency responder preparedness responsibilities, and timely access to information that does not require protection;

Other government bodies must be involved including: the Nuclear Regulatory Commission, the Department of Transportation, the Department of Homeland Security, and state, local and tribal governments. All must play a central role in any waste transportation program’s planning and implementation.

The committee also states that opposition to a transportation program and questions about its safety and competence are completely rational and cannot be dismissed as an unreasonable fear of radiation. (11)

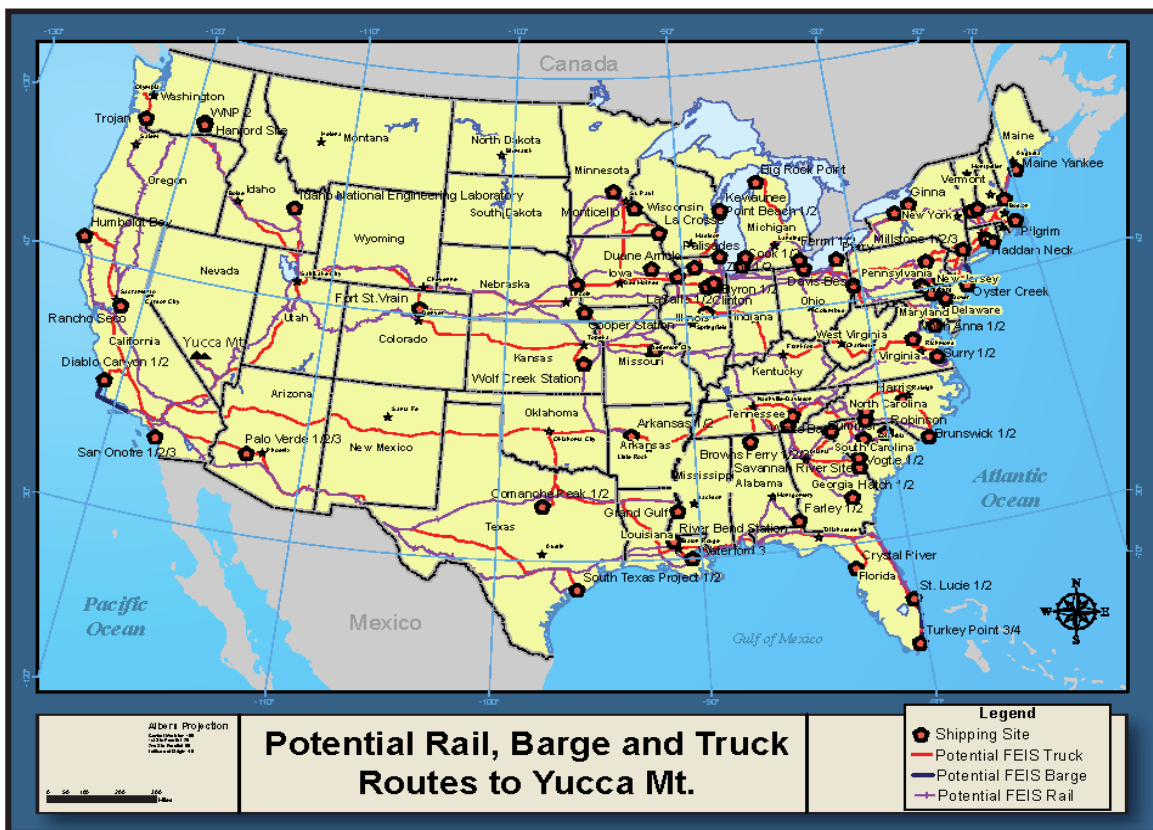


Diagram provided by NIRS (<http://www.state.nv.us/nucwaste/maps2002/roadrail/index.htm>)

Conclusion

No pending crisis requires either the immediate transportation of or the opening of a faulty repository at Yucca for the nuclear waste at its present locations. Current hardened dry cask storage technology, considered safe and economical by NRC, can be used to store spent nuclear fuel in its current locations until an appropriate long-term storage solution can be identified and agreed to. This is a solution that is also proposed in a bipartisan bill currently being promoted by Senators Harry Reid and John Ensign on Nevada. When it does come time for the transport of high-level nuclear waste, the NAS Transport Report of February 2006 follows guidelines that thus far best protect the public’s health and safety.

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In response to the September 11 terrorist attacks on the United States, PSR has initiated the PSR Center for Global Security and Health. Drawing on the interdisciplinary experience and expertise of the PSR professional staff and Board of Directors in medicine, public health, and public policy issues including national and global security, international institutions, treaties and law, nuclear weapons doctrine, environmental health and security, violence prevention and civil conflict, the Center will provide timely information, analysis, and policy proposals to the public, policy makers, the media, and the medical community.

Through its educational efforts and policy proposals, the Center seeks to develop long-range policies for the United States that reduce the threat of terrorism and war, increase international cooperation and respect for international law, and build a healthy, just, secure and sustainable future for our citizens and others around the world. The PSR Center for Global Security and Health has published a report *New Nuclear Weapons and the War on Terrorism: Counterproliferation, Nuclear Doctrine and the Chemical and Biological Weapons Threat*, that examines these issues in greater depth.

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Resources

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