Toil and Trouble: Preparation of the DOE National Transportation Plan for Pilot Interim Storage

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Overview

• Following the BRC recommendation, DOE has proposed a pilot interim storage facility to be open by 2021

• Meeting the 2021 target date requires near-term development of an NTP (National Transportation Plan)
  • A previous effort to develop an NTP for the Yucca Mountain Project (YMP) was begun in 2006
  • Pre-decisional draft for review was published in July 2007
  • DOE published a second NTP for review and comment in January 2009.
  • Both plans were widely criticized by stakeholders, especially the state regional groups (SRGs)
Aspects of The SNF/HLRW Policy

Problem

Hazard
Unlike TRU waste
Accidents and Incidents
Routine radiation

Legal/Regulatory
Not defense waste
Public awareness
Stakeholder attention
Uncertain regulation

Systems Design
WIPP
Canisters
Handling
Stakeholder interaction

Environment
Mode
Numbers and duration
Security
Rail access/Intermodal
Declining public trust
The Likely Future Environment

‘Whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called “civic virtue.” The difference is that “social capital” calls attention to the fact that civic virtue is most powerful when embedded in a sense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital’ (Putnam 2000: 19).
Suggested Design

- Systems Integration
- Timelines
- Organization
- Operations/Feedback

- Waste Acceptance
- Oldest Fuel First
- Damaged fuel
- Packaging
- Full-scale testing
- Routes
- Regulations
- Security
- Liability
- 180c assistance
SYSTEMS INTEGRATION

• The NTP should describe how the DOE plans to incorporate improving technology on an ongoing basis. This is an important consideration for a program that is due to last more than a half century.

• A statement of the systems architecture for the program. A robust statement of the program components and their interrelationships.

• The NAS and BRC both recommended a systems approach to transportation planning.
Systems

- Stakeholder
- Staff
- Transportation Operational System
- Disposal/storage facilities
- Procurement
- Packaging and Handling Equipment
- Regulatory
ROUTE SELECTION

• National route and mode selection for YMP was a problem DOE never solved

• The DOE NTP for pilot interim storage should describe how it will work with State, localities and tribes to identify primary, and alternate, routes from shipping sites to an interim storage facility

• One of the most overlooked aspects of route and mode selection is the need to improve near-site transportation infrastructure and pay for improvements
WIEB straw man process

DOE, with input from states and federal groups develops route selection methodology

DOE makes final action on methodology

National route identified by DOE

Each state along national route decides if alternative route is desirable

Each state designates intrastate alternative

Groups of states choose multi-state alternatives

Individual state choose alternatives

Groups of states work out discontinuities

Improvements to infrastructure and Emergency Mngmt

NO

YES

SHIPMENTS COMMENCE
Near Site Infrastructure: Time and Money
PUBLIC COMMUNICATION AND INTERACTION PLANNING

• Acknowledge risks and stress risk management
• Select audiences to create support
• Enable the program to proceed more rapidly with widest possible support from the stakeholders and public
• Resolution of risk concerns is necessary for public support
• It will also help avoid lengthy legal disputes.
• An effective public interaction program will make the program more resilient and enhance confidence in the management of the program.
Future Legislation must include NAS recommendations

• Enable more public scrutiny
• Offer redress to affected parties

“Transportation implementers should take early and proactive steps to establish formal mechanisms for gathering high-quality and diverse advice about social risks and their management on an on-going basis” (2006, p. 11).

“The DOE should continue to ensure the systematic, effective involvement of state, local, and tribal governments in its decisions involving routing and scheduling of foreign and DOE research reactor spent fuel shipments” (2006, p. 15).
Plan should provide a comprehensive overview of transportation packaging issues

• Constraints on selection of shipping containers from available designs
• Development and certification of new designs
• Cask interface requirements (storage, transport, disposal)
• Implications of higher-burn-up fuels, special handling for failed fuel assemblies
• Modal and intermodal transfer considerations
• Large campaign logistics, turn-around times, and cask utilization factors
• Private sector roles: Procurement and costs
• Full-scale cask testing
• The NTP must make it clear that the shipments will be governed by NRC rules the same as utility shipments
• Under NWPA as amended DOE shipments are only partially regulated by NRC (cask certification, state notification)

The BRC Final Report made the following recommendation in this regard: “...the BRC’s Transportation and Storage Subcommittee heard testimony that DOE’s plans to use its own self-regulating authorities under the Atomic Energy Act sharply undercut credibility in the proposed transportation program. The existing regulatory framework for commercial transportation – which features extensive oversight and involvement by the NRC, mode-specific administrations of the DOT, and state and tribal officials – is proven. Consistent with the recommendations articulated in Chapter 7 of this report, the Commission believes that a new waste management organization should be subject to independent regulation of its transport operations in the same way that any private enterprise performing similar functions would be – in other words, the new organization should not receive any special regulatory treatment. This would help assure regulatory clarity and transparency.” [p.83]
LIABILITY

• The potential for confusion and delay is substantial in the inevitably complex response to a major accident involving spent nuclear fuel
• The difficult and protracted recovery from recent natural disasters does not inspire confidence (e.g. Katrina, Sandy, and Fukushima)
• The NTP must address the liability rules affecting these shipments:
  • it must be clear when liability begins
  • who has the liability
  • what the coverage limits are
  • predefine the process for redress of wrongs
  • mere reference to Price-Anderson is insufficient
Standard Contracts

• Shipping older fuel first is the most cost-effective way to enhance safety, security, and public acceptance
• The NAS and BRC have both indicated that the Standard Contracts are impediments to the efficient functioning of the waste program
• Standard Contracts do not resolve who ships what and when
• The BRC established shut reactor sites as priority shippers
• The NTP should indicate whether or not the DOE’s pilot program will also incorporate shipments of DOE spent fuel
CONCLUSION

• Preparation of the pilot interim storage NTP offers DOE an opportunity to demonstrate that it understands transportation challenges

• Unfortunately, the challenges are increasing in size and urgency.

• Stakeholders must be fully involved in the preparation of the NTP

• There are two reasons to do the NTP right:
  • To make transportation work safely and efficiently
  • To demonstrate DOE’s ability to make progress on interim storage