

**Federal-State Consultation in SNF Transportation System Design:  
The Continuing Challenges – 9567**

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**ABSTRACT**

Federal-state consultation is well established as a core state concern in SNF transportation system design (TSD). This may be attributed, in part, to the limited guidance on transportation systems provided by the NWPA, in part, to the development since 1982 of a greater appreciation of the complexity of SNF transport as a system, and, in part, to recent DOE initiatives to preempt state authority in this critical aspect of SNF and HLW management.<sup>1</sup>

The OCRWM agency for TSD (the Office of Logistics Management: OLM) acknowledges that federal-state consultation is a core state concern, and has provided commendable statements regarding the role of consultation processes in SNF system design. Yet, DOE's commitment to federal-state consultation remains tentative. It's recently released National Transportation Plan (NTP: Rev.0) does not provide a clear description how federal-state consultation will be incorporated in phased review and decision in a complicated systems design process.

No one argues that real federal-state consultation in SNF TSD is simple or easy, for DOE or for their state partners. Yet, success in such consultation is arguably prerequisite to success in any campaign for any large-scale cross-country transport of the nation's growing SNF inventory. This paper considers some of the challenges (institutional, technical, perceptual) to federal-state consultation in SNF TSD. These challenges apply to any re-formulation of the nation's nuclear waste policy that does not involve full and firm national commitment to extended onsite storage.<sup>2</sup>

**NWPA Guidance on SNF Transportation Systems Design**

Other than requiring DOE to contract with private industry (Section 137), use NRC-certified casks (Section 180(a)), notify state and local governments (Section 180(b)), and provide technical assistance and funds to States for emergency response training (Section 180(c)), the NWPA provides little guidance for a 25-30 year campaign for cross-country transport of the nation's entire inventory of spent fuel and high-level defense wastes. It thus leaves to federal agencies (DOE, DOT, and NRC), working with states and carriers, all issues of transport sequence, mode, routing, emergency response planning, and operations.

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<sup>1</sup> Section 7 of the Nuclear Fuel Management and Disposal Act, introduced in 2006 as bill S.2589, would have authorized the Secretary of Transportation to preempt "any requirement of a State...regarding transportation" under the NWPA, and would have authorized the Secretary of Energy to regulate transportation "exclusively under the Atomic Energy Act of 1954." Unsuccessful in 2006, DOE Secretary Bodman sought the assistance of Vice President Cheney to advance the bill in March 2007.

<sup>2</sup> Even under such a policy, federal-state consultation is required in the transport of HLW, and in the eventual pickup and transport of SNF.

For states, the result has been that federal-state consultation (or “constructive engagement”) in all aspects of SNF transport has become the first concern—the basis for an acceptable process of assessment, consideration and decision on all other issues. The Western governors have so stated in resolutions going back to the late 1980s, and other state-regional groups (SRGs) have similar policies. In effect, states have said, “With full consultation, large-scale cross-country transport of SNF is possible; without full consultation (not precisely specified) it will be contentious and may not work.”

### **The OCRWM/OLM Response**

The OCRWM agency for TSD (the Office of Logistics Management: OLM) acknowledges that federal-state consultation is a core state concern, and has provided commendable statements regarding the role of consultation process in SNF system design. Without specifically mentioning “states,” DOE’s Office of Logistics Management asserts that its criteria for a national transportation plan are to: “1. Conduct a thorough, open and collaboration process; 2. Develop a safe/secure transportation system based on that process, and 3. Complete transportation validation prior to starting operations.”<sup>3</sup>

Yet, DOE’s commitment to federal-state consultation remains tentative. It’s recently released National Transportation Plan (NTP: Rev.0) does not provide a clear description how federal-state consultation will be incorporated in phased review and decision in a complicated systems design process. No one argues that federal-state consultation in SNF TSD is simple or easy, for DOE or for their state partners. Yet, success in such consultation is arguably prerequisite to success in any campaign for any large-scale cross-country transport of the nation’s growing SNF inventory. This paper considers some of the challenges—some institutional, some technical, some perceptual--to federal-state consultation in SNF TSD.

### **Framing the “Consultation Gap” in SNF TSD**

This paper asks the question, “Why does the consultation gap—the gap between expressed intent and actual process—persist? Is the gap attributable to simple insincerity on the part of federal agencies or states? Do federal agencies “talk consultation while planning to move 70-200,000 MTHM any way they find convenient? Do states demand consultation merely as a strategy to frustrate cross-country transport through their own jurisdictions?

Or, should the gap be understood as a result of identifiable institutional forces and technical considerations? Even if all agree in principle that consultation in SNF in transportation system design is the best and perhaps only path to transportation program success, might it also be that significant institutional, technical, and/or perceptual-political challenges are unrecognized or unacknowledged? If so, might it be constructive to name these challenges, so that they might then be more effectively discussed and addressed?

### **Challenge #1: Receding Sense of Urgency**

Despite OLM’s commendable statement of principles, there is persistent anxiety among states that OCRWM may not follow through. Late Friday afternoon last October 31 (Halloween), the DOE’s four state-regional groups (SRGs) for federal-state consultation received notice that “RW<sup>4</sup> does not require the intensity of planning, preparation, and stakeholder outreach envisioned under an earlier repository opening date,” suggesting that, burdened by delays and budget cuts, OCRWM might be forgetting a key lesson of history.

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<sup>3</sup> Preliminary Draft National Transportation Plan, July 2007.

<sup>4</sup> “RW” refers to the DOE Office of Civilian Radioactive Waste Management.

The history lesson comes from WIPP (DOE/EM's Waste Isolation Pilot Project, near Carlsbad, NM), which in the 1990s suffered an 8-10 year hiatus while awaiting regulatory approvals and land withdrawal legislation. During this period, DOE authorized several rather remarkable people in its Transportation Management Division<sup>5</sup> to negotiate intensively and continuously with the western states affected by shipments of transuranic wastes from Hanford and Idaho National Laboratory. The result was the creation of an "institutional infrastructure" for such shipments, codified as the "WIPP Transportation Program Implementation Guide" (or, "WIPP-PIG"). It is no exaggeration to say that, since WIPP opened in 1999, this institutional infrastructure has made 7,000 TRU waste shipments possible, despite occasional glitches. The western states' concern, however, is that DOE/EM might under-invest in infrastructure maintenance and renewal, not fully appreciating the extent to which last week's successful shipment from INL or Oak Ridge was made possible by an institutional infrastructure constructed 10-15 years back, or that ongoing neglect carries the risk of degradation or collapse.

### **Challenge #2: Institutional Underestimation of the TSD Task**

Since 1982, it has become increasingly apparent that SNF TSD is a truly complex, phased systems problem. Each phase has implications for subsequent phases, and each has potential effects along thousands of route segments in scores of states, and for hundreds of communities—urban, suburban and rural. The challenge of providing, at each phase, reliable information for productive multi-party review-decision processes is formidable indeed.

Yet, within the DOE team, the Office of Logistics Management is almost required to grievously underestimate the task of "doing SNF transport right." In organizations as in individuals, stress results in a loss of perspective; foreground objects dominate and diminish other system elements thus obscured. Within OCRWM in recent years, the imperative to license Yucca Mountain has dominated all else, and all available resources have been poured into the preparation (and now defense) of its Yucca Mountain license application. One result, however, is that SNF TSD has dropped into the background. To assume that, with a Yucca license finally in hand, transportation system design can then be quickly and easily addressed is an OCRWM institutional imperative.

### **Challenge #3: Institutional Under-Valuation of the TSD Task**

Frustrated by Yucca delays, OCRWM has recently signaled that OLM's consultation principles and/or full commitment to best transportation practice may be nice but not really necessary. The signal is frequent repetition of selected observations from the National Academies' 2006 report, "Going the Distance?": a) Spent fuel shipments are actually less risky than shipments of gasoline, chlorine and other hazmat, and b) SNF accounts for a very small percentage of total hazmat transport. The implication is that no "extra-regulatory" measures (or elaborate consultation on such) should really be necessary.

Can one accept the assertions but reject the implication? The answer is "Yes, indeed"—if one's first focus is *success* in large-scale SNF transport; if one appreciates and does not reject out-of-hand public perceptions of SNF transport risk; if one accepts (at least for this purpose) our federal system of government; and if one is open to the likelihood that, while "demonstrable best practice" would require substantial and sustained OLM effort, it would likely not cost more, and could cost considerably less.

### **Challenge #4: The Institutional Challenges of Best Practice**

In recent years, the National Academies and other outside authorities have examined the SNF transport issue and have made "best practice" recommendations that could make SNF transport safer, more

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<sup>5</sup> The division was moved to DOE Environmental Management in 1990.

efficient, more manageable, and/or fairer.<sup>6</sup> Yet, the means for implementation have not been identified, and/or implementation would require OCRWM and DOE to seek institutional guidance from Congress—guidance which DOE well knows Congress is not currently prepared to provide, particularly to a beleaguered agency such as OCRWM.

The result is that OCRWM and OLM are tentative in setting objectives, limiting themselves to objectives clearly within current authority, and avoiding objectives the implementation of which may require new authority or guidance. In the meantime, unfortunately, DOE cannot demonstrate full commitment to best practice in a national campaign for cross-country transport of the nation's inventory of SNF.

### **Challenge #5: Reliance on Inadequate TSD Consultation Tools**

The recently released National Transportation Plan suggests that consultation in SNF transportation system design will be accomplished through document preparation, distribution and review. "This Plan will be updated as appropriate to reflect progress in the development and implementation of the transportation system, accommodate changes to the waste management system, and incorporate stakeholder and public comments. OCRWM also anticipates that detailed implementation plans (including, but not limited to, a national operations plan, campaign plans, a Section 180(c) implementation plan, fleet maintenance and inventory management plans, security plans, emergency response plans) will be developed in the future in collaboration with the stakeholder community." (pg. 1)

While document distribution and review have important purposes, the process is very unwieldy and not well adapted to consultative SNF transportation system design. Better, perhaps, is a series of webinar discussions in which all participants have real-time access to an updated geospatial database of the SNF transportation system with its many assumptions and options. Using such a resource, discussions could be conducted to both: a) Address issues in a structured, phased TSD process, and b) Provide full assessment of relevant options in any combination (O-D pairs; regional origin combinations; national origin combinations, combinations by phase) at any level (national, regional, state, community, segment).

### **Challenge #6: Cognitive Capacity to Comprehend Complex Systems**

Most participants in DOE's federal-state consultation processes appreciate that a choice of mode at, say, the Oyster Creek nuclear plant in New Jersey has potential effects on route segments in Indiana, Missouri and Wyoming. Most appreciate that dedicated trains can be moved more smoothly through sensitive areas than can mixed freight shipments. Most appreciate that intermodal choices at, say, the St. Lucie plant in Florida affect the origin and route for subsequent cross-country shipment. Most appreciate that shipping older fuel reduces incident-free radiation exposure in transit. Most appreciate that avoidance of rush hour (or special event) congestion in community "A" could entangle shipments in the congestion of downstream community "B." Most appreciate that state-local-tribal management-response capabilities vary widely among thousands of route segments, but that vulnerabilities vary widely as well.

Yet very few are able develop and retain a full systems understanding of SNF transportation system design. Furthermore, the many whose judgments are solicited in a consultative TSD process will not and should not delegate their role to the few who appear to have the fullest system understanding. Full consultation requires that a useful systems understanding be available (probably via a multi-user geospatial database) to the full array of participants, understanding that, for most, judgment will be grounded in responsibilities other than transportation system design.

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<sup>6</sup> Such recommendations include: a) Full implementation of DOE's dedicated train decision; b) Shipment of older fuel; c) Concentrated shipment to maximize coordination and attention at shipment origins; d) Prioritized removal from specified sites; e) Dedicated train speeds consistent with other rail freight traffic.

### **Challenge #7: Developing Support Systems for Consultative SNF TSD**

Over recent decades, DOE has made significant investments in development of routing tools such as TRAGIS, radiological assessment tools such as RADTRAN and RISKIND, and tracking tools such as TRANSCOM. While useful for their intended purposes, these tools were created two decades ago, largely as stand-alone functions.

Since the early 1990s, the geographic information systems revolution has created: a) vast databases of information on schools, hospitals, fire stations, stadiums, land use, route conditions, etc. well beyond the capacity of traditional survey information collection processes, and b) integrative data management tools capable of assembling and interrelating information from many sources, calling and applying multiple assessment tools, and managing the assessment results.

It is apparent that consultative SNF TSD requires integrated information-assessment systems support. Working with Black Mountain Research and GeoDecisions, WIEB has developed a system concept for integrated application of existing tools (e.g. TRAGIS, RADTRAN) with new resources (e.g. geospatial data on schools, hospitals, fire stations, route conditions, stadiums), and new inputs (e.g. AAR route proposals, non-residential land use data) to support a transportation planning process consistent with OLM's principles. We suggest system development as a hiatus activity with long-term dividends for OCRWM/OLM, as well as application in DOE/EM programs such TRU shipment to INL and WIPP, or SNF transfer between INL and SRS.

### **Challenge #8: Designing a Productive, Phased TSD Process**

An adequate geospatial information-assessment resource is necessary for consultative SNF TSD, but obviously not sufficient. Also required is an effective strategy for applying such a tool in phased review and decision. The bases for such a strategy include: a description of the phases in transportation system design, identification of the decision goals at each phase, clarification of DOE's current and potential authority at each phase, a working information-assessment resource for consultative SNF TSD, and a list of the stakeholder participants in phased TSD.

Preliminarily, the phases of SNF TSD may include:

- a) Modal choices (preferred and alternative) from each origin site.
- b) Fuel and sequence choices (preferred and alternative) from each origin site.
- c) Operational practices with systems implications: e.g. relative speed; state reciprocity; stops in urban areas.
- d) Cross-country shipment origins for intermodal shipment.
- e) Routing choices (preferred and alternative) from each origin site.
- f) Readiness review: Detailed route hazards, vulnerabilities, capabilities assessment. State-tribal-local planning for accidents, security incidents or other events that might occur (See NTP:Rev.0, pg. 23, top).
- g) Section 180(c) assessment and planning; training.
- h) Notification, monitoring, tracking protocols.

Note that consultative SNF TSD would not simply proceed from one phase to the next. Provisional decisions in phases a-d are required in order to effectively address phases e and f, but route assessment and preliminary readiness review (phases e and f) are required in order to assess the system effects of options in phases a-d.

Another dimension of consultative transportation system design involves the setting system design objectives. Should these include: Full implementation of DOE's dedicated train decision? Shipment of older fuel? Concentrated shipment to maximize coordination and attention at shipment origins? Prioritized removal from specified sites? Dedicated train speeds consistent with other rail freight traffic? Each of these system design objectives requires assessment in terms of its system implications. If and to the extent adopted, implementation steps (some involving Congressional guidance) must be specified. With broad support developed through consultative TSD, the objectives can be incorporated in final phase a-d decisions.

## **SUMMARY**

The gap between the expressed consultation intent and actual consultation process is probably attributable to a combination of institutional and technical factors. Among the eight challenges discussed above, eight are primarily institutional, one is rooted in human cognition, and two involve technical system design and application. The list of challenges is preliminary and intended to provoke discussion. It is hoped that identification of the several challenges might be a step toward better understanding and resolution of the impediments to full federal-state consultation in SNF transportation systems design.