Spent Nuclear Fuel Transportation Workshop

Midwestern Radioactive Materials Transportation Committee

November 13, 2019
Purpose of a Tabletop Exercise

According to NUREG – 1514:
A tabletop exercise is a structured discussion, which is based on a scenario or set of conditions for potential situations, among stakeholders in a low-stress environment. **Tabletops are not intended to solve all problems or make policy; they may simply identify areas which need resolution.** They are a teaching/training aid as well as an opportunity to talk through plans and procedures or discuss new systems. Their objective is both educational and developmental in that disconnects, perceptions, and procedures can be identified easily and then corrected.
Purpose of Today’s Exercise

• Structured discussion will help us all to identify issues that need resolution.

• Talking through plans and procedures can be a powerful teaching/training aid. Disconnects, perceptions, and procedures can be identified and adjusted, if needed.

• Sharing institutional knowledge can help everyone understand the history and evolution of transportation planning.

• MRMTC’s mission is to identify, prioritize, and work with DOE to resolve regional issues related to transport of spent nuclear fuel.
Important Disclaimer

• Today's discussion is for learning purposes only.
• Although the discussion draws from real, live documents, we are not talking about a real, live shipment or even a future shipment that may be real and/or live.
• Nothing in today's discussion is intended to influence DOE policies or procedures, nor is anything intended to imply that DOE had, has, or will have any policies or procedures that bear any resemblance to the ones we're using for the purposes of this learning experience for the Midwestern states and other participants.
Important Disclaimer

- This material is based upon work supported by the Department of Energy under Award Numbers DE-NE0008604, DE-EM0004869, and DE-EM0005168.

- This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.
Ground Rules

• Be respectful
  • Turn off or silence cell phones and laptops.
  • When you’re in the room, be in the room.

• Be engaged
  • Participants may ask a question or make a comment by turning their name tent onto the short side and waiting to be called on.
  • Participants and observers may pose questions at any time through Sli.do.

• Be brief
  • With only 4 hours to complete the exercise, we all need to get to the point and stay on point.
Using Slido

• Navigate to slido.com
• Enter event code TTX2019
• Type your response to this question:
  *Who will win the Super Bowl this year?*
• Answer this test question:
  *Where do you fall among the generations?*
• Type your questions as we go along
Important Background Information

• Midwestern Radioactive Materials Transportation Committee
The Unpronounceable MRMTC

• Organized in 1989
• 12 states, 12 gubernatorial appointees, up to 12 state legislators
• Mission: to identify, prioritize, and work with the U.S. Department of Energy to resolve regional issues related to the department's transport of radioactive waste and materials, including spent nuclear fuel
• One of the State Regional Groups (SRGs)
Important Background Information

• Midwestern Radioactive Materials Transportation Committee
• 10 Things to Know about Nuclear Waste
10 Things to Know

1. Nuclear Waste Policy Act (NWPA) made the federal government responsible
2. Yucca Mountain in Nevada was chosen from among 3 sites
3. 1998 was the original date (more than 21 years ago!)
4. Ratepayers, taxpayers – we all pay!
5. Project was terminated in 2010 – no repository was built
6. The State of Nevada was, is, and will be opposed
7. Midwestern states have 21,200 MTUs of spent fuel and have paid over $5.3 billion
Figure 1-1. Sites Currently Storing Spent Nuclear Fuel and High-Level Radioactive Waste
39 States

Approximate amounts shown in Metric Tons (MT)

Estimated total inventory: --80,000 MT Commercial

- Research reactors only: 4 States (RI, IN, NM, UT)
- No waste: 11 States (DE, WV, KY, OK, SD, ND, WY, MT, NV, as well as Hawaii and Alaska which are not depicted)

*= Defense/DOE waste NOT included in totals: 4 States (SC, CO, ID, WA)
Y= Only SNF stored at NRC regulated facilities is shown. Additional SNF is stored at INL under DOE authority.

As of 6/30/2017
State total rounded to nearest ten
Total inventory rounded to nearest thousand

CSG MIDWEST
10 Things to Know

8. Storage is temporary…but it doesn’t seem that way to communities hosting shutdown sites

9. Heavy weight of spent fuel storage casks → transport by train or barge

10. Federal standstill → industry DIY
U.S. Independent Spent Fuel Storage Installations (ISFSI)

Current as of October 6, 2016

- Reactor sites operating a general licensed ISFSI
- Reactor sites pursuing a general licensed ISFSI
- Specific licensed ISFSI (at or away from reactor site)
- Sites are pursuing a future specific licensed ISFSI
- Reactor sites have not announced intentions regarding ISFSI
- States have at least one ISFSI

CSG MIDWEST
Objectives

• States
  • Identify ability to integrate into a DOE SNF shipment
  • Identify strengths and areas for improvement in transportation programs
  • Demonstrate ability to perform state-specific activities

• Transportation Planning
  • Identify strengths and weaknesses of a collaborative SNF shipment planning process
  • Compare and contrast requirements and practices for a DOE shipments versus a licensee shipment
Objectives

• Other
  • Grow stakeholder relationships
    • Work with Tribes to start envisioning their own role with regard to DOE versus licensee shipments
    • Identify possible future opportunities for collaboration among states and Tribes
    • Continue the dialogue begun by the industry at the May TTX in Minnesota
    • Work with other federal partners to better understand our respective roles
  • Pass along institutional knowledge
Exercise Overview & Assumptions

• Big Rock Point (BRP) will be the point of origin for a bi-modal shipment by heavy haul truck to rail
• The S-2043 Atlas Railcar will be used for rail portion
• Starting in Michigan, the shipment will pass through Indiana, Illinois, Missouri, and Kansas before leaving the Midwest
• Midwestern states not impacted by shipment will be involved as observers and will have opportunities to ask questions and make comments
• The shipment will travel to an unspecified location outside the Midwest
Exercise Overview & Assumptions

• DOE will be the shipper and will take title to SNF at the gate
• Because of the potential for licensee shipments, at each step we’ll pause to identify how things might change if a licensee instead of DOE were making the shipment
Exercise Overview & Assumptions

• Primary reference materials will include:
  • NRC’s “Physical Protection of Shipments of Irradiated Reactor Fuel” (NUREG – 0561)
  • CSG Midwest’s “Planning Guide for Shipments of Radioactive Material through the Midwestern States”
  • DOE’s “Radioactive Materials Transportation Practices Manual” (460.2-1A)
Exercise Overview & Assumptions

• Other reference materials will include:
  • Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (10 CFR 961)
  • FRA’s Safety Compliance Oversight Plan (1998 version)
  • DOE’s 2005 Dedicated Train Decision and 2004 “mostly rail” Record of Decision
  • Orano’s De-Inventory Report for BRP
  • Principles of Agreement 2015
  • Shutdown Sites Report
  • CSG Midwest’s “NEI TTX Reference Guide for Midwestern States”
Big Rock Point
This just in......
Phase 1 (READY!): 3-5 years out
Coordinate with Stakeholders
Preferred Suite of Routes
Option 1: Proposed Barge Route
Agreed Upon and Approved Route
Route Assessment for Planning

• Training along routes
• Public outreach
NWPA 180(c)
States’ Recommendations

• Pass-through of funds: do not require
• Matching funds: do not require
• State fees: do not deduct unless separately negotiated
• Definitions:
  • Public safety official
  • Safe, routine transportation
  • Technical assistance
• Contingency planning
• Funding operational activities
States’ Recommendations

- Timing and eligibility
  - Five, four, three
  - Eligible unless lapse of 4 years or more
- Rulemaking
- Funding distribution mechanism: grant
- Allowable activities
- Unresolved issues
  - Funding allocation approach
  - Grant guidance
Time to Build a Transportation Plan

Planning Guide for Shipments of Radioactive Material through the Midwestern States

Physical Protection of Shipments of Irradiated Reactor Fuel

Final Report
Phase 2 (SET!): 6 to 12 Months Out
The Pieces Are Coming Together
### Advanced Notification

#### Table 1. Notification Requirements for Non-Classified Spent Nuclear Fuel and High-Level Waste.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Type of Shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non-Classified DOE SNF and HLW not subject to NRC regulation</td>
</tr>
<tr>
<td>Sources</td>
<td>DOE O 460.2</td>
</tr>
<tr>
<td>Who is notified</td>
<td>Governors or designees and designated tribal points of contact</td>
</tr>
<tr>
<td>Time of notification</td>
<td>Postmarked at least 7 days before shipment if mailed, 4 days by messenger</td>
</tr>
<tr>
<td>Notification of schedule change</td>
<td>By telephone if greater than 6 hours</td>
</tr>
<tr>
<td>Information to be included in notification</td>
<td>1. name, address, and telephone number of shipper, carrier, and receiver; 2. description of shipment; 3. a list of routes to be used within the state or through tribal jurisdictions; 4. estimated date and time of departure from point of origin; 5. estimated date and time of entry into the Governor’s state or into tribal lands; 6. estimated date and time of departure from Governor’s state or tribal jurisdiction (when the destination is not within the state)</td>
</tr>
<tr>
<td>Safeguard requirements</td>
<td>None</td>
</tr>
</tbody>
</table>

¹ Governors or designees are notified only if they are located within the state.
Phase 3 (GO!): Shipment Time

**Step 1:** Transfer the W74 from the W150 to the TS125 and perform tests. (2 days per TS125)

**Step 2:** Load TS125 and cradle on HHT, secure and prepare TS125 for shipment, and attached truck to HHT (1-2 days per TS125)

**Step 3:** Transport ~13 miles to Transload Facility located on Clarion Avenue in Petoskey, MI (1 day per TS125)

**Step 4:** HHT to Rail Flow of Operations (1-2 days per TS125)

HHT to Rail Flow of Operations: 5-7 days per TS125
Point of Origin Level VI Inspection
Heavy Haul Truck to Petoskey
HHT to Rail Transfer

2 Locomotives

Security Escort Car

Buffer Car

Buffer Car
It’ll be comin’ ‘round the corner when It comes…

[Toot! Toot!]
Indiana
Missouri
Kansas
Arrivederci
Contingency and Emergency Measures

• Weather
• Mechanical
• Traffic accident
• Demonstration, protests, and/or media
• Transloading incident
• Public information
Lessons Learned

- Standard Contract doesn’t necessarily apply to licensee shipments.
- Licensees are aiming for 2023 shipments pending CISF approval, in real life.
- Industry’s stakeholder engagement has already begun, they are in Phase 1.
- Industry envisions using same experienced workforce to prepare several shutdown sites for shipments.
- Utility must supply a fully compliant product to the gate, beyond that, it’s a DOE’s shipment.
- Utility be fully responsible throughout if it’s a licensee shipment.
- Each rail carrier must do its own rail route risk analysis.
- Will DOE actually do a rail route risk analysis? Will they leave it to the rail companies?
- Would defer to rail companies, but will get state and Tribe feedback.
- Route approval lasts 5 years for highway, 7 years for rail.
- If you do public outreach, do it together.
- Secured escorts do not cross state lines, different requirements in different states.
- Safeguards information; need to know basis, don’t advertise, criminally liable if abuse information.
- Railroads may require state inspectors to have specific access or training. Can deny access.
- S-2043 is the only railcar the industry will accept for SNF shipments.
Action Items

• Get more people on the START system.
• Awareness training for emergency responders: avoid overreactions.
• Distribute Homeland Security Funding White Paper to committee.
• States need to determine how they will protect safeguard information.
• Be sure to understand county and local regulations/governments; ex of Illinois permitting process.
• Must determine if state will be allowed to do a rad inspection at transload site or en route.
• Share the Capstick paper.
• Tribes must declare/opt in if they want to receive advanced notification.
Announcements

• Group Dinner at Yard House at 6:30 pm
  • Meet in the lobby at 6:15 pm to walk over.

• MRMTC Meeting on Thursday
  • Join your colleagues for a networking breakfast beginning at 7:30 am in this same room.
  • The meeting will begin promptly at 8:30 am.
  • Plan to adjourn at 5 pm.
Thank you for participating!

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