Rail Transportation of Spent Nuclear Fuel

Office of Safety
Hazardous Materials Division
Rail Transportation of Spent Nuclear Fuel

Traditionally the transportation of SNF (Spent Nuclear Fuel) by rail was to be under the authority of the DOE (Department of Energy).

Under this authority the DOE would take ownership of the shipment at the Commercial Reactor’s gate.

This in turn means that the DOE would become the shipper of this material.

Due to congressional politics and lack of funding to Yucca Mountain (the designated national repository for SNF) a shipping campaign has been on hold.
Rail Transportation of Spent Nuclear Fuel

Due to lack of funding for the completion of Yucca Mountain the Commercial Nuclear Power Plants had to develop ISFSI’s (Independent Spent Fuel Storage Installation’s) to store used fuel because of lack of space in their Spent Fuel Pool’s
Rail Transportation of Spent Nuclear Fuel

Current as of February 23, 2017

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As an alternative solution to the lack of either a permanent repository or interim storage facility for SNF by the Federal Government private entities have applied for Consolidated Interim Storage Facility (CISF) for storage of SNF until the government has completed a permanent repository for SNF.

Two companies have filed applications with the NRC (Nuclear Regulatory Commission) for CISF

Holtec International
Interim Storage Partners (ISP) (formerly Waste Control Specialists -WCS)
The Proposed Holtec Lea County Interim Storage Facility would be located approximately 20 miles east of Carlsbad New Mexico.
Holtec has and is in the process of purchasing additional Shut Down Reactor Sites for decommissioning and maintaining the ISFSI’s for eventual “Private Shipment” of SNF to their CISF site in eastern New Mexico pending of course if they receive an ISFSI License from the NRC.

“Private Shipments” would not reflect DOE’s SNF shipping program.
FEDERAL RAILROAD ADMINISTRATION

Rail Transportation of Spent Nuclear Fuel

Interim Storage Partners (ISP) (formerly Waste Control Specialists - WCS) is an active waste repository for Low-Level Nuclear Waste. The facility is located in Andrews County, TX, on the eastern New Mexico border.
Rail Transportation of Spent Nuclear Fuel

ISP is an active repository for Low-Level Radioactive Waste. They have also built a pad to AFA (Agreement between DOE and ISP) for storage (Not disposal) of GTCC (Greater Than Class C) material on site.

**GTCC**

Most radioactive of the low-level classes. (average concentration: 300 to 2,500 curies/cubic foot) (The 300 figure is based on the 1985 inventory. The higher figure represents anticipated inventory in 2020, including some decommissioning wastes.)
Recent Rail Transportation of Cask by Rail

Currently, ISP has outfitted rail car KRL 50002 (MP-197 type cask) with a cradle and cask for training purposes. When training is complete, the Cask will be used to transport Radioactive Material (Irritated Hardware) from Vermont Yankee back to their site in Texas.

This heavy weight 8 axle flat car is not built to the AAR S-2043 Standard.

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ISP is serviced by the TNMR (Texas and New Mexico Railroad)

- The TNMR is a WATCO owned railroad.
- ISP is serviced by TNMR at Eunice, NM, at Mile Post 66.4.
- The TNMR interchanges with the UP at Monahans, TX.
- The rail line running south to north is approximately 100 miles long.
- The line is maintained to FRA Class 2 Safety Standards but operated at FRA Class 1 Safety Standards.
Rail Transportation of Spent Nuclear Fuel

ISP specific rail concerns;
Several points of Rail end miss-match,

Majority of the main line is 85 lb. rail (manufactured in the 1920’s, 1930’s & 1940’s),

Terrain areas include sandy areas at MP 86.6 MP (5 mph speed restrictions)

The ballast foundation is soft throughout the line

<table>
<thead>
<tr>
<th>Rail Size</th>
<th>Mile Posts (MP)</th>
<th>Rail Type - CWR/Jointed</th>
</tr>
</thead>
<tbody>
<tr>
<td>136 lb.</td>
<td>0.0 to 7.75</td>
<td>CWR</td>
</tr>
<tr>
<td>136 lb.</td>
<td>7.75 to 11.3</td>
<td>Jointed</td>
</tr>
<tr>
<td>85 lb.</td>
<td>11.3 to 100.5</td>
<td>Jointed</td>
</tr>
<tr>
<td>115 lb.</td>
<td>Located in 5 total curves</td>
<td>Jointed</td>
</tr>
</tbody>
</table>
Switching Gears

Playing out the possibilities of a private SNF Shipment.
Midwestern Radioactive Materials Transportation Committee (MRMTC)

• After a table top exercise involving a hypothetical Private Shipment of SNF by rail at the Nuclear Energy Institute (NEI), the MRMTC used a few lessons learned and set up a similar table top exercise scenario with their members.
The MRMTC scenario involved many aspects of transportation included a heavy haul highway move to a rail location.
During the scenario, the highway movement was pretty clear jurisdictionally, but many questions seemed to arise from the states about their inspection jurisdiction on a rail move as the train would pass across state lines.
MRMTC-Takeaway Topic from the Tabletop Exercise - Inspections during Transportation

With the NRC, FRA and a rail carrier representative, Pat Brady- BNSF Hazardous Materials Manager attending, many questions were asked about the following topics:

– Stopping trains for inspections at State lines;
– Coming on to Railroad Property to do inspections;
– Pass/Fail Criteria for an inspection of a package on rail.
MRMTC-Takeaway Topic from the Tabletop Exercise - Inspections during Transportation (Contd..)

– Emergency Response, "Section 180(c) of the Nuclear Waste Policy Act of 1982, as amended"

– Rail equipment, Holtec insists that they do not need to use AAR’s S-2043 Standard.

– Security, private security brings up many questions.
Any Questions?

Jeffrey “Jeff” S. Moore
Hazardous Materials Specialist
1200 New Jersey Avenue, SE
Washington, DC 20590
Office: 202-493-0635
Mobile: 215-327-6851  And/or

Lawrence “Mel” Massaro
Railroad Safety Specialist
Radioactive Materials/Hazardous Materials
526 Mountain Avenue
Altoona, PA 16602
Office: (814) 942-2777
Cell: (814) 279-1771
E-mail: Lawrence.Massaro@dot.gov