Reconnecting to the Caliente Rail Route – Implications for the Las Vegas Valley

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Potential Repository Shipments Over 24 Years

Mostly Rail: 10,725 Cask-Shipments (about 8 rail casks, in 2 or 3 trains, per week, and 1 truck cask per week; additionally there would be 2,000 + barge and/or heavy haul truck shipments from 24 reactors to rail connections)

Mostly Truck: 53,086 Cask-Shipments (about 6 trucks per day, plus 300 rail casks of naval SNF shipped from Idaho in 100-300 trains)

Source: DOE-EIS-0250, Appendix J
Yucca Mountain Shipments Compared to Past Shipments

- 43 Times More SNF Shipped Per Year
- 8 to 38 Times More Casks Shipped Per Year
- 5 to 40 Times More Shipments Per Year
- 443% Increase In Average Rail Shipment Distance
- 280% Increase In Average Truck Shipment Distance
- Western Route Characteristics and Operating Conditions
- Potential Unprecedented Reliance on Heavy Haul Truck and Barge Shipments

Spent Nuclear Fuel Transportation
Safety & Security Issues

- Direct SNF exposure deadly for 50+ years
- Each cask contains enormous amount of dangerous fission products (especially Cesium-137, half-life 30 years, 136,00 to 810,000 curies per cask)
- Shipping casks not tested full-scale
- Cask breach in worst-case accident: 5-4,000+ latent cancer fatalities (LCFs) and $300,000-$10 billion+ cleanup costs
- Cask breach in successful terrorist attack: 4-1,800+ LCFs and $10 billion+ cleanup costs
- Routine gamma radiation from casks hazardous to workers and to some members of public
- Lesson from Exxon Valdez accident – Disaster can occur after 8,000 safe shipments
State of Nevada Transport Safety & Security Recommendations to DOE

- Oldest Fuel First
- Mostly Rail (65-75%)
- Dual-Purpose Casks
- Dedicated Trains
- Full-scale Cask Testing (Regulatory & Extra-regulatory)
- NEPA Process for Selection of Rail Spur

- WIEB “Straw Man” Routing Process
- Sec 180(c) Program Rulemaking
- State Regulatory Enhancements (Safety & Perception)
- Terrorism and Sabotage Concerns

*Human Factors Management*
Legal Weight Truck (LWT) Routes Most Likely to be Used for FEIS Mostly Rail Scenario

Legend
- Yucca Mt.
- Shipping Sites
- Truck Routes used under Mostly Rail Scenario
Legal-Weight Truck (LWT) Shipments under DOE FEIS Mostly Rail Scenario

- DOE FEIS assumes LWT shipments use I-15 to I-215 to US95 through Las Vegas metropolitan area
- Six sites ship by LWT: Crystal River, St Lucie, Pilgrim, Monticello, Ginna, Indian Pt
- During Years 1-24, six sites make 1,079 LWT shipments (an average of 45 shipments were year)
- LWT shipments increase each year over first 5 years under standard contracts with utilities
  - Year 1 – 25 truck shipments
  - Year 2 – 58 truck shipments
  - Year 3 – 88 truck shipments
  - Year 4 – 118 truck shipments
  - Year 5 – 175 truck shipments
NANP Comments to DOE, 1995

Criteria for Comparative Evaluation of Rail Spur Route Options

- Impacts on the human environment, with particular attention to public health and safety and impacts on highly populated areas
- Engineering feasibility, with particular attention to mountain crossings, seismic hazards, and surface flood hazards
- Impacts on critical environmental resources
- Cost of construction, predictability of costs
- Right-of-way acquisition, avoidance of private lands
- Impacts on Native American lands and cultural resources
- Potential conflicts with U.S. Air Force
- Economic development costs and opportunities, addressing both standard and special (risk-induced) socioeconomic impacts
- Specifically address the potential impacts and risks of rail shipments through Las Vegas on UP mainline
Caliente Corridor Fails NANP Criteria

- White River, Timber Mountain Pass: Feasibility, Safety, Cost, Environmental Resources
- Garden Valley, Golden Gate: Feasibility, Safety, Cost, “City”
- Cow Canyon, Reveille Valley: Feasibility, Safety, Cost, Cultural Resources
- City of Caliente, Lincoln County: Community Impacts, Limited Economic Benefits
Rail Shipments Through Las Vegas to Proposed Caliente Rail Line

- **Minimum:** 5% of Total Rail Casks, About 20 Casks, in 5-7 Trains per Year, for 24 Years (DOE FEIS for Yucca Mountain, 2002)

- **Maximum:** 87% of Total Rail Casks, About 350 Casks, in 110-120 Trains per Year, for 24 Years (PIC Report for NANP, 1996)

- **Current Estimate:** 50% of Total Rail Casks, About 200 Casks, in 60-70 Trains per Year, for 24 Years (NANP Suite of Routes Analysis, 2007)
Potential Rail Routes to Yucca Mt. via Proposed Caliente Spur (Suite of Routes from Kansas City and Memphis Gateways)

Legend
- Yellow Triangle: Yucca Mt.
- Blue Squares: Shipping Sites
- Pink Lines: Rail routes to Yucca Mt.
- Blue Lines: FEIS barge routes
- Orange Lines: Truck Routes used under Mostly Rail Scenario

This map depicts routes for the Mostly Rail Scenario from nuclear waste shipping sites to the proposed Yucca Mt. repository via the proposed Caliente spur. It shows routes on Class I Track from the shipping sites to the gateways of Kansas City and Memphis. The map also depicts likely highway routes from six reactor sites that ship by legal weight truck under the Mostly Rail Scenario.

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Proximity of Rail Shipment Route to “The Strip”
Safety & Security Concerns in Las Vegas
Proximity of “The Strip” to UP RR to Caliente
Proximity of Rail Shipment Route to Location of Today’s Meeting

Radiation Exposure Zone
Proximity of Rail Shipment Route to Location of Today’s Meeting