

**State of Nevada
Current Activities
Related to Transportation of Spent Fuel**

**Bob Halstead
Nevada Agency for Nuclear Projects
Presentation to
U.S. Nuclear Waste Technical Review Board
Panel on Waste Management System
Idaho Falls, Idaho
July 10, 2000**

**Nevada Review of Yucca Mountain DEIS
Major Deficiencies: Transportation System Specification**

- Failure to designate preferred mode or modal-mix scenario
- Failure to designate preferred route for construction of new rail spur from existing UPRR to Yucca Mountain
- Failure to designate acceptable highway routes in Nevada (assumed use of I-215, Las Vegas Beltway)
- Unrealistic assumptions regarding national mostly rail scenario (assumed heavy reliance on barge and HHT transport from reactors to mainlines)
- Unrealistic assumptions regarding use of intermodal transfer facilities and HHT transport in Nevada (assumed routes through urban areas, difficult terrain)

**Nevada Review of Yucca Mountain DEIS
Major Deficiencies: Transportation Impacts**

- Underestimated time requirements, impacts, and cost of constructing new rail spur to Yucca Mountain
- Underestimated time requirements, impacts, and cost of upgrading highway infrastructure in Nevada
- Underestimated costs of emergency response and safety measures, such as inspections and escorts
- Underestimated impacts on Indian Tribes and local governments
- Ignored potential adverse socioeconomic impacts resulting from public perception of risk

**Nevada Review of Transportation Issues
Related to DOE's Draft EIS for Yucca Mountain**

- Testimony at DOE Public Hearings, August, 1999 - February, 2000
- Transportation risks and impacts addressed at each DOE hearing, including expected local impacts of shipments to Yucca Mountain
- Written Comments (2 Volumes) submitted to DOE on February 28, 2000
- More than 220 pages of formal comments and attachments related to transportation issues
- Hearing statements and comments available on the web at <http://www.state.nv.us/nucwaste/eis/yucca/index.htm>

**Nevada Review of Yucca Mountain DEIS
Major Deficiencies: Transportation Risks**

- Generally creates false sense of certainty regarding quantification of transportation risks
- Underestimated routine radiological exposure to public (RADTRAN insensitive to unique local conditions)
- Underestimated frequency of accidents and incidents (selection of accident rates)
- Underestimated radiological consequences of severe accidents and terrorism/sabotage incidents (selection of RISKIND/RADTRAN inputs)
- Ignored economic impacts of severe accidents and terrorism/sabotage incidents (did not use RADTRAN)

**Nevada Review of Yucca Mountain DEIS
Major Deficiencies: Timely Public Disclosure**

- Failure to disclose actual routes and shipment numbers used for truck and rail impact analysis in Chapter 6.0 in the DEIS
- Failure to disclose actual routes and shipment numbers used for truck and rail impact analysis in the Federal Register notices for public hearings
- Failure to disclose actual routes and shipment numbers used for truck and rail impact analysis during public hearings
- Compare DOE truck route maps

**Nevada Review of Yucca Mountain DEIS
Additional Nevada Research on Transportation Impacts**

- I-215 Beltway Impacts (City of North Las Vegas)
- Map DOE YM DEIS crosscountry truck and rail routes (UNLV, TRC)
- Update Nevada truck and rail GIS coverages for corridors identified in DOE YM DEIS (UNLV, TRC)
- Shipping cask performance in severe accident fires (UNR, Greiner)
- Shipping cask performance in accidents involving military aircraft and munitions (UNLV, Nambian)
- Radiological sabotage response training for first responders (UNLV, Ballard)

Nevada Petition: NRC Should Amend Regulations to Better Deter, Prevent and Mitigate Consequences of Radiological Sabotage Against Spent Fuel Shipments

- Reexamine Design Basis Threat for Radiological Sabotage - 10 C.F.R. 73.1(a)(1)
- Expand Definition of "Radiological Sabotage" - 10 C.F.R. 73.2
- Strengthen Requirements for Advance Approval of Routes - 10 C.F.R. 73.37(b)(7)
- Adopt New Requirements for Planning and Scheduling - 10 C.F.R. 73.37(b)(8)
- Strengthen Escort Requirements for Shipments by Road - 10 C.F.R. 73.37(c)
- Strengthen Escort Requirements for Shipments by Rail - 10 C.F.R. 73.37(d)
- Adopt New Regulation to Require that All Rail Shipments be made in Dedicated Trains - 10 C.F.R. 73.37(d)

**Nevada Petition to NRC:
State of Nevada Grounds and Interest**

- Nevada is potential host state for national repository and/or interim storage facility (ISF)
- Nevada believes repository/ISF shipments will create greater opportunities for terrorist attacks than past shipments
- Nevada believes repository/ISF shipments will use routes through heavily populated areas and routes which place shipments in significantly disadvantageous tactical positions
- Nevada believes repository/ISF shipments may have greater symbolic value to terrorists than past shipments

**Nevada's Rulemaking Petition to NRC:
Docket PRM-73-10 Chronology**

- 6-22-99 Petition Filed by Nevada
- 6-29-99 Petition Received by NRC
- 7-13-99 Petition Docketed by NRC
- 9-7-99 NRC Response Letter to Nevada
- 9-15-99 Petition Published in Federal Register
- 11-3-99 Public Comment Period Extended
- 1-28-00 Public Comment Period Ends

Documents available on the web at
http://ruleforum.llnl.gov/cgi-bin/rulemake?source=NV_PETITION

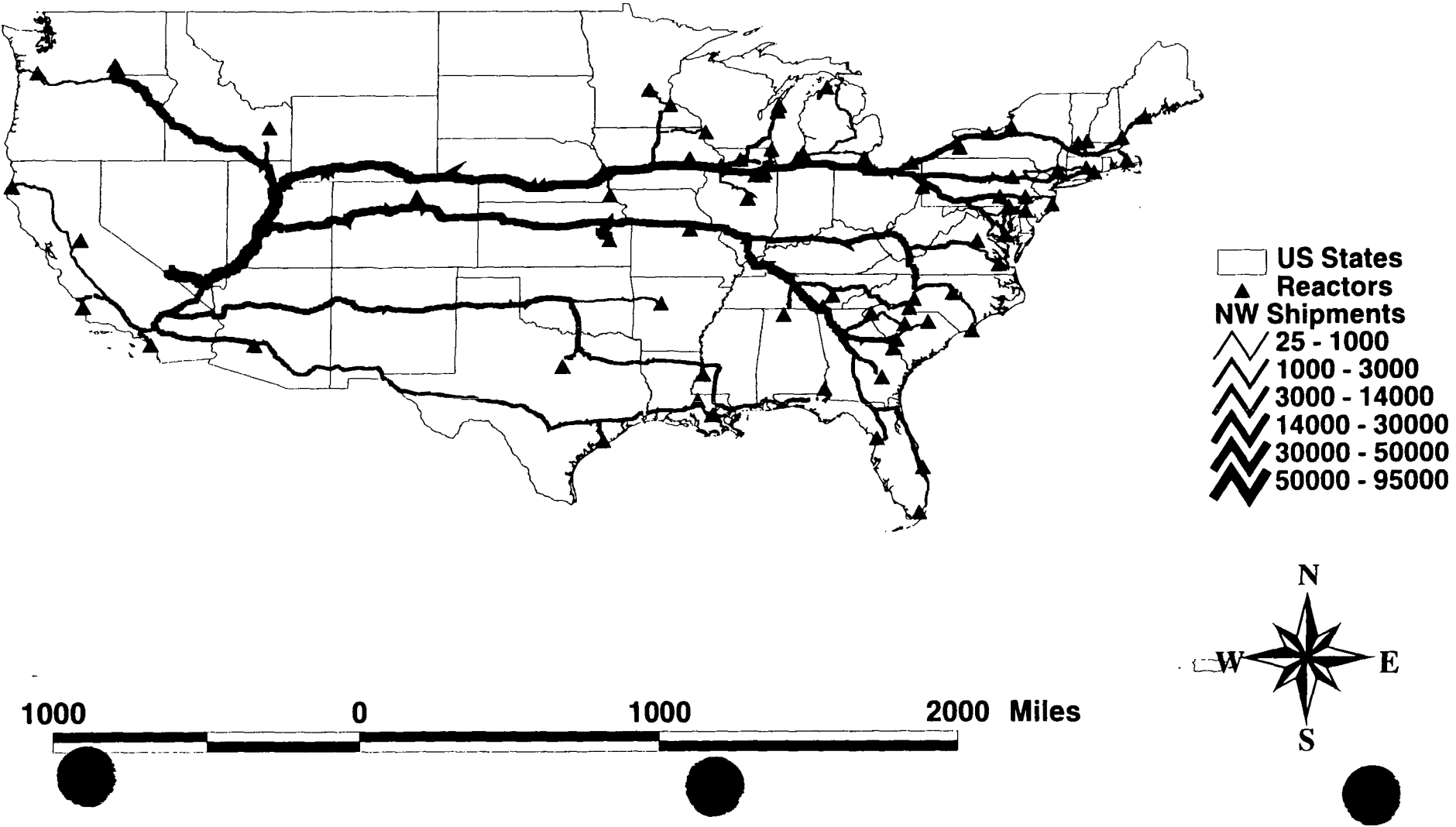
Nevada Petition: NRC Should Conduct Comprehensive Assessment of Consequences of Terrorist Attacks That Have the Capability of Radiological Sabotage

- Assess attacks against transportation infrastructure used during nuclear waste shipments
- Assess attacks involving capture of a nuclear waste shipment and use of high energy explosives against a cask or casks
- Assess direct attacks upon a nuclear waste shipping cask or casks using antitank missiles or other military weapons

Nevada Petition: General Strengthening of NRC Regulations Necessary Because of Changes in the Nature of the Terrorist Threat

- Increasing lethality of terrorist attacks
- Increase in terrorist attacks on and threats against transportation systems
- Renewed concerns about terrorist activities involving potential radioactive contamination
- High-energy explosive devices, especially military antitank weapons and commercial shaped-charges, have increasingly greater capabilities and are more widely available
- New truck and rail shipping cask designs, developed to increase payloads without exceeding specified weight limits, appear to be more vulnerable to attacks using high-energy explosive devices

Figure 13
Truck Routes and Shipments from Nuclear Reactors



Maximum Reasonably Foreseeable Rail Accident in Urban Area (Probability 1.4 in 10 Million)

- DOE Estimated Impacts (Table 6-12)
 - Population Dose (person-rem): 61,000
 - Latent Cancer Fatalities: 31
(RADTRAN4, 26 year-old SNF, mostly stable atmospheric conditions)
- Nevada Estimated Impacts (RWMA, 6/28/00)
 - Population Dose (person-rem): 711,000 – 863,000
 - Latent Cancer Fatalities: 356 – 432
 - Economic Cost (2000\$) \$63 – 108 Billion
(RADTRAN4, 10 and 26 year-old SNF, weighted average atmospheric conditions)

Successful Act of Sabotage Against Truck Cask in Urban Area (High-Energy Explosive Device)

- DOE Estimated Impacts (Page 6-33 to 6-34)
 - Population Dose (person-rem): 31,000
 - Latent Cancer Fatalities: 15
(RISKIND, 26 year-old SNF, minimum release, average atmospheric conditions)
- Nevada Estimated Impacts (RWMA, 6/28/00)
 - Population Dose (person-rem): 12,700 – 329,000
 - Latent Cancer Fatalities: 6 – 165
 - Economic Cost (2000\$) \$13.5 – 20.9 Billion
(RISKIND/RADTRAN5, 26 year-old SNF, minimum and maximum release, weighted average atmospheric conditions)