

FACT SHEET: Rail Transport of High-Level Nuclear Waste to Yucca Mountain

The proposed Yucca Mountain Repository for High-Level Nuclear Waste in southern Nevada is the only site being considered by the federal government for the storage of irradiated fuel rods from the nation's 112 commercial nuclear reactors, Navy ship reactors and private research reactors. Transportation of irradiated rods to this site would involve truck or rail shipments through 43 states, within one half mile of the homes of 50 million people, and through hundreds of major towns. Rail service or a rail right-of-way currently does not exist for Yucca Mountain, but research has continued for a decade to explore that method of travel. Larger casks, and therefore fewer shipments, could be moved by rail rather than by truck.

Background:

In 1990, the Dept. of Energy (DOE) was authorized to conduct a Preliminary Rail Access Study for Yucca Mountain. Several existing and abandoned rail routes were included as route corridor options, although the existing rail beds are often not appropriate for modern trains. The study identified and evaluated ten potential rail route options. The Caliente Route was studied further in 1991, but funding for additional detailed studies has not occurred.

The Yucca Mt. Draft Environmental Impact Statement includes five proposed rail routes (and alternatives), approaching Yucca Mt. from the north, east and west. If final selection was made, additional Environmental Impact Study is required.

Construction of rail lines would not begin until the Repository was licensed by the Nuclear Regulatory Commission, but would then be one of the first priorities. The DOE wants rail lines completed within two years of licensing to haul construction materials for the Repository itself.

Criteria for Considering Routes:

- **Topography:** 2-2.5% maximum uphill or downhill grade; 8 degree horizontal curve;
- **Access for connecting to existing national rail routes** and carrier depots;
- **Land-use incompatibility such as:**
 - 1) Native Reservations or private development of land, such as ranches, farms or communities;
 - 2) Environmentally protected areas such as wetlands and flood plains, and endangered species habitat;
 - 3) Military restricted use such as the Nellis Bombing and Gunnery Range or the Nevada Nuclear Test Site.

Cost & Environmental Considerations of New Rail Construction:

- **The shortest flattest route** is usually the cheapest, in terms of construction, equipment, operation and maintenance.
- **More rugged routes** might avoid private lands, but require moving more earth, building more bridges and tunnels, and have greater

Proposed Volume (DOE): Minimum of 70,000 metric tons of high-level nuclear waste to be shipped to Yucca Mountain over 24 years. DOE could ship up to 120,000 tons over 39 years.

Exposure: A person standing next to one unshielded assembly would receive a lethal dose in a few minutes. Each rail cask will contain 2 to 5 million curies of radioactive materials.

DOE shipment estimates:

Mostly truck scenario: 49,500-96,500 trucks & 300 rail casks

Mostly rail scenario: 10,800-19,800 rail casks & 2,600-3,700 trucks

Estimated accidents (NWPO):

If 2/3 by rail: 175-355

If 9/10 by rail: 185-250

By truck only (Clark County):

15-20 in Las Vegas alone.

Current rail accidents (RailWatch):

Every 90 minutes, and rising

Toxic spill every 2 weeks

State of Nevada (NWPO) estimates that **a successful terrorist attack could release up to 40,000 curies from a rail cask.**

environmental impacts and conflicts with hunting and restricted-use areas.

- **Valleys would offer the easiest construction** but are often already developed. Rail routes would affect communities and private land owners, rivers and flood plains and precious water sources for wildlife and irrigation for food crops and ranches.
- **“Shared-use” versus “restricted use”:** Shared use would allow public carrier use of the rail lines, and share of costs. However, only use restricted for nuclear waste shipments on proposed new rail routes has been studied to date.
- **The National Environmental Policy Act (NEPA)** mandates an Environmental Impact Study which considers air quality, areas of critical environmental concern, cultural resources, prime/unique farmlands, floodplains, Native American religious concerns, threatened or endangered species habitat, drinking and groundwater quality, wetlands and riparian zones, wild and scenic rivers, and wilderness areas.

Primary Impacts of Nuclear-Waste Transportation for Nevada Residents

- **Proposed rail routes and the 230 square miles proposed for withdrawal for the Yucca Mountain Repository lie within Western Shoshone Treaty lands.** The ratification of the 1863 Treaty of Ruby Valley acknowledges Western Shoshone sovereignty over this land. The Western Shoshone Nation continues to contest and litigate federal appropriation of treaty lands.
- **Long Term Economy:** A highly visible and secured rail line carrying extremely deadly material will affect all aspects of Nevada economy: tourism and recreation, agriculture, mining, and future development and land values. Rail routes under consideration could separate crop fields from farm buildings and divide grazing allotments into unusable segments. Mining transportation routes and existing patent claims could be in direct conflict with rail routes.
- **Short Term Economy:** Construction jobs and use of local services in each community will be seasonal and short-lived, and therefore disruptive to local economies.
- **Water** is scarce in the desert. Streams are small and intermittent, and depend on run-off from

- higher elevations, carrying potential contaminants from rail construction and cumulative effects of nuclear waste transportation. Groundwater is increasingly used for crop irrigation, residential or other development.
- **Wildlife** is plentiful, but dependent on specific and limited habitat. Endangered species such as the bald eagle and protected species such as the cutthroat trout, as well as many species that are hunted for food must be protected from disruption and contamination.
- **Emergency Preparedness:** The main effect on county, town and school district officials would be responsibility to prepare for radiological emergencies: equipment, training, facilities and personnel. Health care facilities are far apart. The financial burden on rural counties would be enormous. Long distances and access to remote areas increase response time, and therefore, contamination impacts and clean-up costs. The potential for sabotage must also be considered.
- **Over 20 billion curies of radioactivity** would pass through our communities to be stored in the mountain. Each curie is a large unit: 2,224,000,000,000 (2 ¼ trillion) radioactive emissions, or ‘counts’ per minute.
- **Cumulative Radioactive Impacts:** Nuclear Waste Casks emit radiation in low doses all the time. Casks that stopped all emissions would be too heavy to move. Cumulative emissions will result from thousands of shipments over the same routes even if no accidents occur.
- **Each rail cask of irradiated reactor fuel will contain 2 to 5 million curies** of radioactive materials. Over half the curies are deadly fission products Cesium-137 and Strontium-90. Most of the remaining curies are Cobalt-60, Americum-241, and long-lived isotopes of Plutonium.
- **Consequences of Rail Accidents (DEIS):** 31 latent cancer fatalities resulting from release of radioactive materials and a population dose of 61,000 person-rem. An earlier DOE report (Sandquist, 1985) estimated that a severe rail accident could contaminate an area of 42 square miles with 1380 curies of Cobalt-60, Cesium-134, and Cesium-137. Cleanup would require 460 days and cost \$620 million.

For more information or to find out how to make your opinion heard: call HOME at (760) 852-4151