RAIL ACCESS TO YUCCA MOUNTATION: CRITICAL ISSUES

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ABSTRACT

The proposed Yucca Mountain repository site currently lacks rail access. The nearest mainline railroad is almost 100 miles away. Absence of rail access could result in many thousands of truck shipments of spent nuclear fuel and high-level radioactive waste. Direct rail access to the repository could significantly reduce the number of truck shipments and total shipments. The U.S. Department of Energy (DOE) identified five potential rail access corridors, ranging in length from 98 miles to 323 miles, in the Final Environmental Impact Statement (FEIS) for Yucca Mountain. The FEIS also considers an alternative to rail spur construction, heavy-haul truck (HHT) delivery of rail casks from one of three potential intermodal transfer stations. The authors examine the feasibility and cost of the five rail corridors, and DOE's alternative proposal for HHT transport. The authors also address the potential for rail shipments through the Las Vegas metropolitan area.

INTRODUCTION

Previous studies have demonstrated that direct rail access to the national rail network is highly desirable in siting a geologic repository or centralized storage facility. (1) Without direct rail access, delivery of spent fuel and high-level radioactive waste to a national facility would require either tens of thousands of cross-country legal-weight truck (LWT) shipments or many thousands of heavy-haul truck (HHT) shipments from an intermodal transfer facility. In the Final Environmental Impact Statement (FEIS) for Yucca Mountain, the U.S. Department of Energy (DOE) tentatively identifies rail as the preferred mode of transportation, nationally and in Nevada. (2) DOE deferred formal selection of rail as the preferred mode until "some future date." DOE's identification of rail as the preferred mode is based upon the "smaller number of shipments" and "the correspondingly reduced environmental impacts." [p.S-9]

According to the FEIS, absence of rail access would require about 53,000 truck shipments of spent nuclear fuel and high-level radioactive waste over the first 24 years of repository operations, and almost 109,000 truck shipments over 38 years. Absence of direct rail access would require almost 10,000 heavy-haul truck shipments in Nevada over 24 years, or about 19,000 heavy-haul truck shipments over 38 years. Table I shows DOE's shipment projections.

Table I. Projected Shipments to Yucca Mountain for DOE Scenario Combinations

Inventory Scenario	(Mostly Truck) Truck Shipments	(Mostly Truck) Rail Shipments	(Mostly Rail) Truck Shipments	(Mostly Rail) Rail Shipments
Proposed Action (2010-2034)	52,786	300	1,079	9,646
Module 1 (2010-2048)	105,685	300	3,122	18,243
Module 2 (2010-2048)	108,544	355	3,122	18,935

Ref. 2

Prior to the selection of Yucca Mountain for site characterization in 1987,all DOE repository transportation studies acknowledged the desirability of direct rail access. The 1980 Generic Environment Impact Statement, upon which the current geologic disposal program is based, assumed direct rail access to repository sites. Proximity to mainline railroads and ease of rail access construction are identified as favorable conditions in the DOE siting guidelines promulgated in 1984. The 1986 Environmental Assessments (EAs) for repository candidate sites evaluated rail and highway access conditions. (1) Table II shows that Yucca Mountain had the least favorable transportation access conditions of the five candidate sites evaluated in 1986.

Table II. Rail and Highway Access Conditions at Potential Repository Sites

Condition	Davis Canyon, Utah	Deaf Smith, Texas	Hanford, Washington	Richton, Mississippi	Yucca Mountain, Nevada
Nearest Mainline Railroad (miles)	74	25	51	17	100
Nearest Alternative Railroad (miles)	Not Identified	40	101	26	265
Rail Access New Construction (miles)	39	26	3	26	100
Rail Access Cost (Million 1985 Dollars)	142	21	6	16	151
Nearest Interstate Highway (miles)	89	14	28	26	100
Nearest Alternative Interstate (miles)	198	200	72	84	208

Ref. 3

The transportation discussion in the 1986 EA demonstrates that DOE was aware of the difficulty of constructing rail access to Yucca Mountain. Yucca Mountain did not exhibit the favorable conditions for rail access spelled out in the 1984 guidelines: short distances; low construction costs; absence of need for Federal condemnation to acquire rights-of-way; absence of need for cuts, fills, tunnels, and bridges; absence of steep grades or sharp curves; and bypass of local cities and towns. Further, Yucca Mountain did exhibit three potentially adverse conditions set forth in the guidelines: relatively high construction costs; relatively difficult terrain; and local conditions "that could cause the transportation-related costs, environmental impacts, or risk to public health and safety from waste transportation operations to be significantly greater than those projected for other comparable siting options." (4,5)

RAIL ACCESS OPTIONS

The FEIS evaluates three Nevada transportation scenarios: mostly rail with direct access to Yucca Mountain by way of a new branch rail line, mostly rail with heavy-haul truck deliveries to Yucca Mountain from an associated intermodal transfer station, and mostly legal-weight truck. Despite indications of preference for rail, the FEIS, released in February 2002, did not formally select rail as the preferred mode of transportation nationally or in Nevada. Nor did DOE formally select construction of a rail spur as the preferred implementation method, although the FEIS states: "DOE would prefer to use a branch rail line to ship spent nuclear fuel and high-level radioactive waste to Yucca Mountain." [p.3-122] The FEIS declares that DOE will address these issues "at some future date" in a Record of Decision. [p.1-3] As of December 2002, DOE has not announced any formal decisions regarding selection of a preferred mode of transportation.

The FEIS identifies five potential rail corridors for construction of a new branch rail line to Yucca Mountain. Table III summarizes key aspects of the five rail corridors, according to the FEIS. Independent reviews by the Nevada Agency for Nuclear Projects (NANP) conclude that the data reported in the FEIS seriously underestimated rail spur construction costs, construction times, and travel times. (6,7) Figure 1 shows the location of the five rail corridors.

Table III: Potential Rail Corridor Summary Data

	Caliente	Carlin	Caliente-Chalk Mountain	Jean	Valley
Cost (millions of 2001 dollars)	$880	$821	$622	$462	$283
Length (miles)	319	323	214	114	98
One-way Travel Time (hours)	10	9	8	4	3
Disturbed Land Area (square miles)	18.3	19.3	12.6	9.2	5
Construction Time (months)	46	46	43	43	40
1990 Population living near the rail route	350	3200	589	492	219
Presence of tribal lands	None	None	None	None	None

Ref. 2

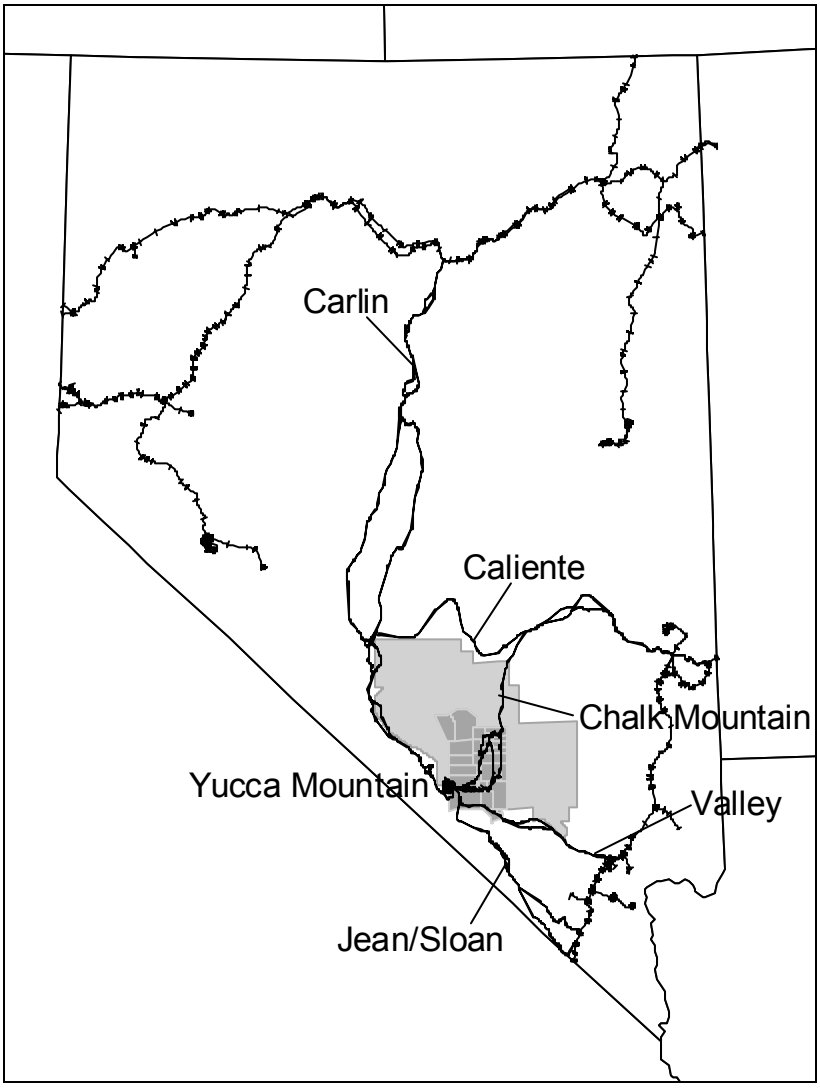

Fig. 1. Potential Rail Corridors Identified in DOE FEIS

The FEIS clearly states that DOE "has not identified a preference among the five potential rail corridors." [p.1-3] Selection of a rail corridor is explicitly deferred: "If, for example, mostly rail was selected (both nationally and in Nevada), DOE would then identify a preference for one of the rail *corridors* in consultation with affected *stakeholders*, particularly the State of Nevada. In the example, DOE would announce a preferred corridor in the *Federal Register* and other media. No sooner than 30 days after the announcement of a preference, DOE would publish its selection of a rail corridor in a *Record of Decision*.

A similar process would occur in the event that DOE selected heavy-haul truck as its mode of transportation in the State of Nevada." [p. 3, italics in original]

The FEIS further distinguishes between future selection of a rail corridor (defined as a strip of land approximately 400 meters or 0.25 miles wide) [p.3-123] and future selection of a specific alignment (location of a rail line) within a corridor. "Other transportation decisions, such as selection of a rail *alignment* within a corridor, would require additional field surveys, State and local government and Native American tribal consultations, environmental and engineering analyses, and *National Environmental Policy Act* reviews." [Pp. 1-3 to 1-4, italics in original]

While no formal transportation decisions were announced in the FEIS, the document states: "DOE believes the EIS provides the environmental information necessary to make certain broad transportation-related decisions, namely the choice of a national mode of transportation outside Nevada (mostly rail or mostly legal-weight truck), the choice among alternative transportation modes in Nevada (mostly rail, mostly legal-weight truck, or heavy-haul truck with use of an associated intermodal transfer station), and the choice among alternative rail corridors or heavy-haul truck routes with use of an associated intermodal transfer station in Nevada." [p. 1-3]

In a lawsuit filed in December 2002, the State of Nevada, Clark County, and the City of Las Vegas, challenged DOE's failure to formally select preferred modes and routes in the FEIS. DOE prepared the FEIS under the requirements and principles of the National Environmental Policy Act (NEPA). The petitioners' opening brief contends that DOE's approach constitutes illegal NEPA segmentation of the proposed repository and its transportation components. (8)

POTENTIAL RAIL CORRIDORS

At the time of this writing, DOE has not announced the record of decision for its rail corridor preference. Each of the five potential corridors would involve known land use conflicts. None of the potential rail corridors identified in the FEIS have been shown to be feasible.

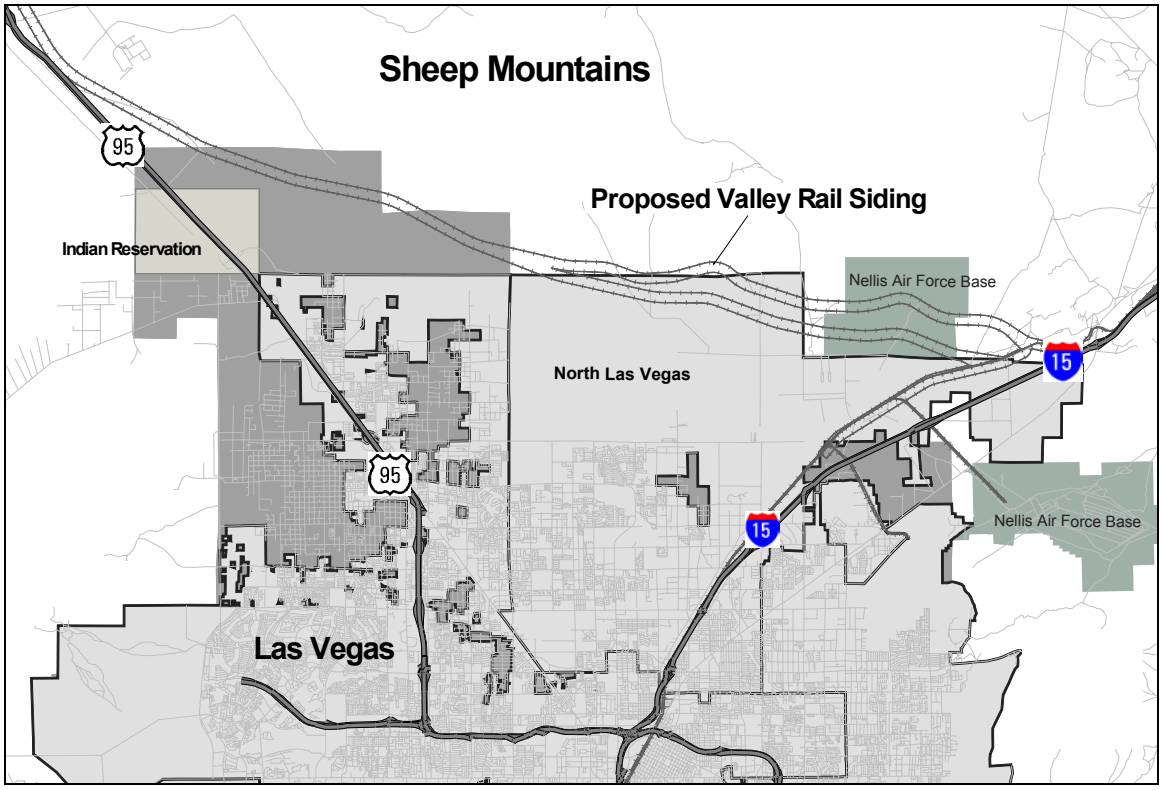

Fig. 2. Valley Corridor Land Use Conflicts

The Valley corridor would originate from the Union Pacific mainline in northeastern, urban Clark County. It traverses the rapidly developing northern portion of Clark County. In many ways, Valley is the most attractive of the rail alternatives evaluated in the FEIS. The specific corridor identified by DOE would be shorter than other routes, would be less expensive to build and operate, would disturb less land, and would appear to impact relatively small resident and non-resident populations. However, recent land use changes in urban Clark County have made this route impossible to construct.

In 1998, the U.S. Congress passed the Southern Nevada Public Lands Management Act of 1998 (P.L. 106-263. H.R.449). The new law directed the BLM to offer public lands in the area for sale. This affected lands contained approximately 25 percent of the Valley rail siding. This land was annexed by North Las Vegas and is currently under development. Among the projects being constructed is a multi-million-dollar, state-of-the-art, civilian shooting-range. Extensive residential development is also taking place around the area. There are no trackage rights left for the abandoned rail line in the area.

On November 6th 2002, President Bush signed the Clark County Conservation of Public Land and Natural Resources Act of 2002 (Public Law 107-282, H.R. 5200). This act turned over 232,033 acres in Nevada to the BLM for disposal. The land is duly being auctioned off by the BLM, and is being incorporated into local land use plans. This recent release of land means that development will occur right up to the base of the mountains in the northern part of the valley. The development process has or will remove significant additional segments of the corridor identified in the FEIS. Continuing development will effectively rule out a rail connection between the UP mainline and Yucca Mountain through the northern part of the Las Vegas Valley.

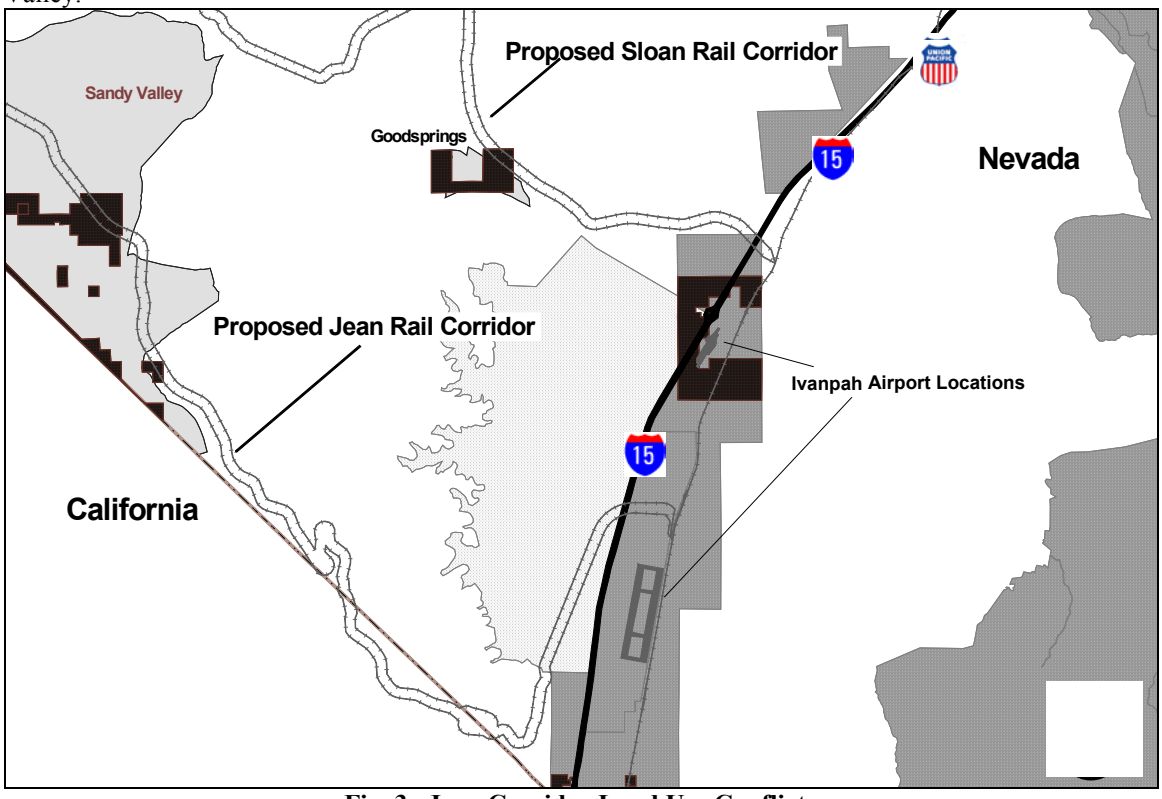

Fig. 3. Jean Corridor Land Use Conflicts

The Jean corridor and Sloan variation would originate from the Union Pacific mainline in the southern portion of Clark County, and travel north. The Jean and Sloan corridor variations are already subject to the same land use conflicts as the Valley corridor. The Ivanpah Valley Airport Public Lands Transfer Act of 2000 devoted significant land area for a new, multi-runway regional airport. Local land use plans for both Clark County and Henderson (Nevada's second largest city) have marked the area surrounding the airport

for future growth. The development plans for this area are nearly complete. Federal legislation to turn over significant portions of this land will likely be enacted this year.

The FEIS characterizes the Caliente-Chalk Mountain rail corridor as "Nonpreferred alternative: Strongly opposed by the U.S. Air Force because of the adverse effect on security and operations at Nellis Air Force Range." [p.S-72] Because of unrelenting US Air Force opposition based on national security concerns, the State of Nevada has recommended that DOE eliminate the Caliente-Chalk Mountain corridor from further consideration.

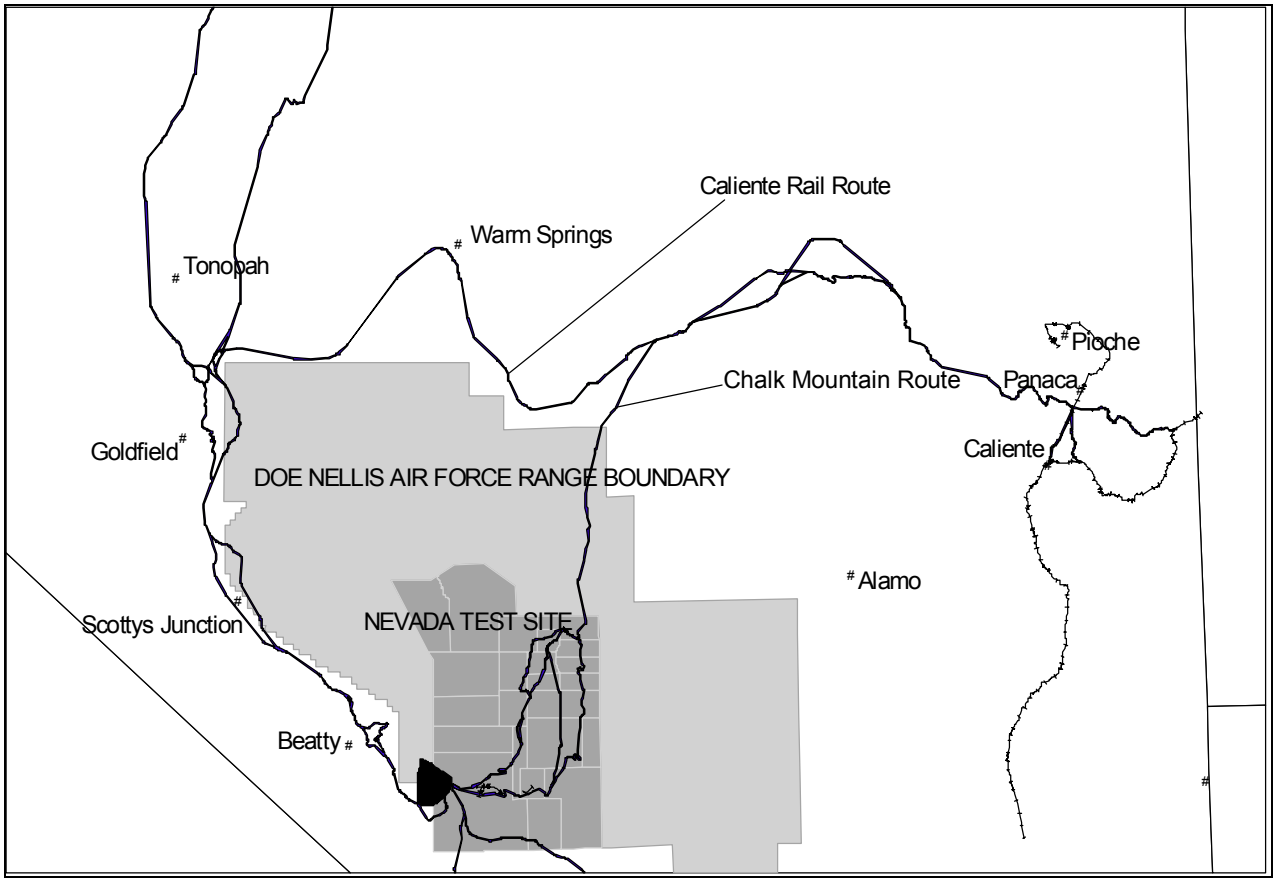

Fig. 4. Caliente-Chalk Mountain Corridor Land Use Conflicts

Two other corridors - Caliente and Carlin – would also involve known land use conflicts. Caliente and Carlin are the longest and most expensive rail access options identified in the FEIS. Either of these routes would be considerably longer than the 113-mile Orin Line constructed by the Burlington Northern to access the Wyoming Powder River Basin coal fields in the 1970s. The Orin Line was the longest new track construction effort in the United States since the 1930s. (1)

The Caliente corridor exemplifies the difficulty of constructing an East-West railroad across North-South mountain ranges through sensitive environments. (7,9) DOE originally considered constructing a railroad to Yucca Mountain that would have followed existing highways (US 93 and SR 375) from Caliente to the Nye County line. One major obstacle was the necessity of tunneling and/or massive cuts and fills to cross the Pahranagat Range at Hancock Summit. Figure 5 shows the highway pass through Hancock Summit on SR 375. Another major obstacle was the environmental sensitivity of the area between Ash Springs and Hiko. Both the oasis at Crystal Springs and the Key Pittman Wildlife Management Area include critical habitat

for several threatened and endangered species, as well as recreation resources and historic sites. Figure 6 shows the oasis at Crystal Springs.

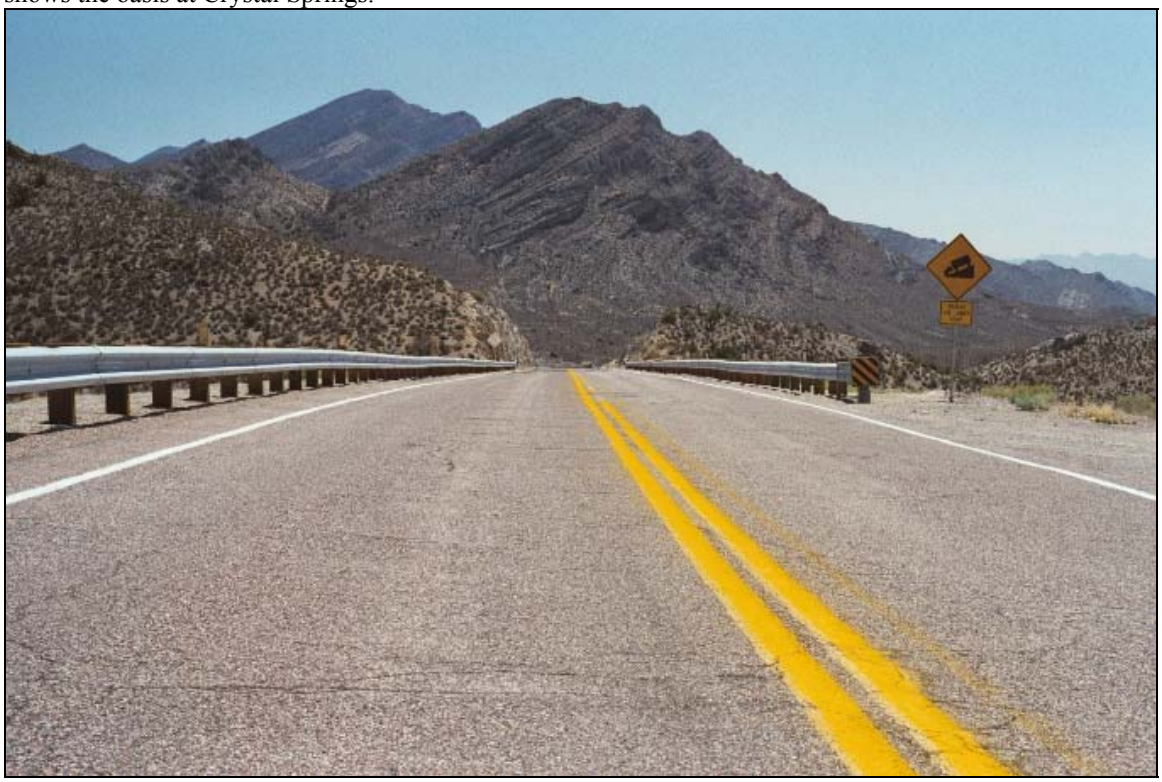

Fig. 5. Hancock Summit

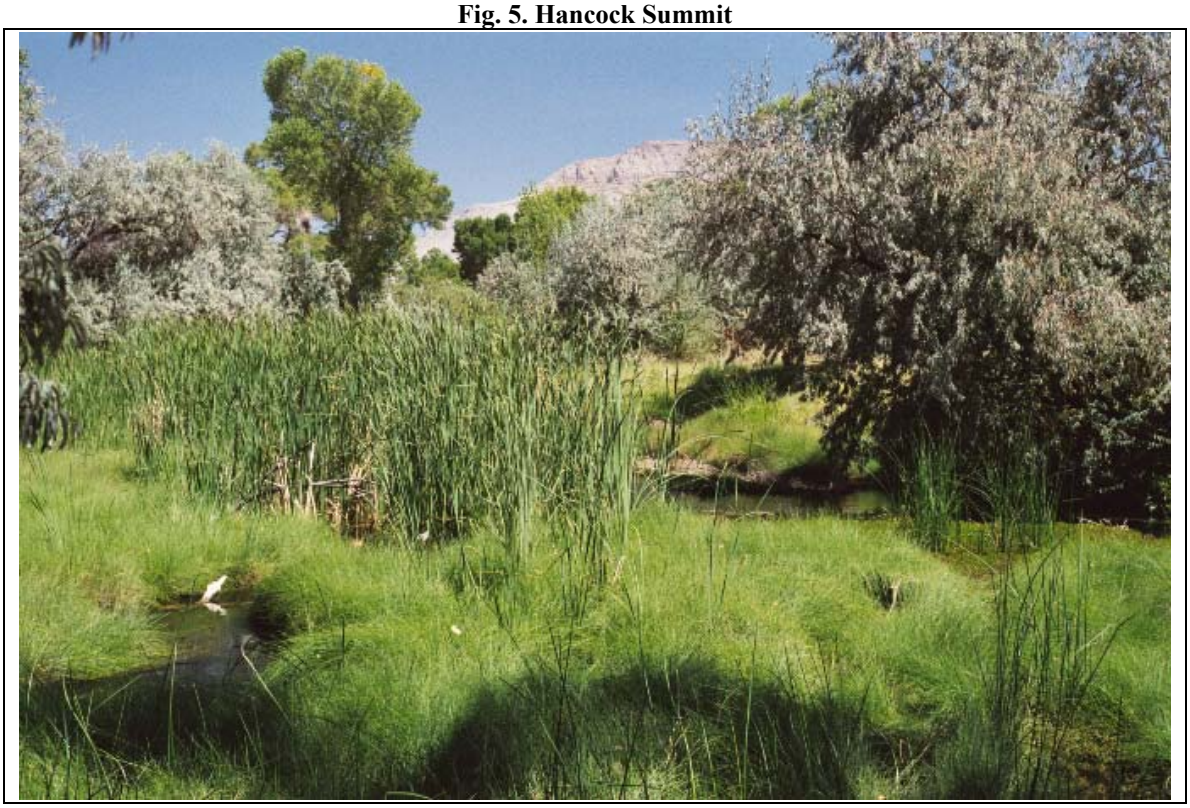

Fig. 6. Crystal Springs

After detailed studies, DOE selected a corridor 30 to 50 miles north of the original Caliente route. The new corridor avoided Hancock Summit and Crystal Springs, but required additional mountain crossings through less-well-studied areas. The new corridor may very well contain significant environmental and cultural resources that have not yet been documented. Figure 7 shows the corridor through Bennett Pass across the junction of the Chief and Highland Ranges. Figure 8 shows the corridor through Timber Mountain Pass across the Seaman Range. The new corridor eliminates the need for tunneling and reduces cut and fill requirements. However, the estimated construction cost of the new route still exceeded $1 billion, compared to an estimated construction cost of $1.3 billion for the original route. (9)

Fig. 7. Bennett Pass

Fig. 8. Timber Mountain Pass

The current Caliente rail corridor's most significant terrain and environmental challenges occur along the segment that is common to the Caliente-Chalk Mountain corridor. The most difficult terrain conditions along the original Caliente corridor are the steep grades and sharp curves along SR 375 through Hancock Summit. These conditions would severely limit or prohibit DOE's proposed use of the existing highway for heavy-haul truck shipments along the Caliente and Caliente-Chalk Mountain routes. The environmentally sensitive areas around Crystal Springs would also present a major obstacle to the highway upgrading necessary for heavy-haul shipments. (7)

The Carlin rail corridor described in the FEIS has not been studied as extensively as the Caliente corridor. The original Carlin corridor was located about 20 miles to the East. After preliminary studies, DOE moved the corridor origination from Palisade to Beowawe. This change addressed environmental protection concerns in Pine and Monitor Valleys. It also addressed engineering feasibility and cost concerns about the cut and fill requirements needed to bring the spur out of the Humboldt River Valley. The move, however, created an entirely new set of concerns about social and environmental impacts in Crescent and Big Smokey Valleys. The new Carlin corridor traverses areas with a growing resident population, and could significantly impact ranching, mining, tourism, and recreation. (7)

POTENTIAL HEAVY-HAUL TRUCK OPTIONS

As an alternative to construction of a new rail spur, DOE has proposed delivering large rail casks to Yucca Mountain by heavy-haul truck (HHT) on existing highways. Nuclear waste casks would be delivered by rail to an intermodal transfer station, unloaded from the rail cars, and either transferred directly to HHT trailers or placed in storage pending HHT transport.

The FEIS identified three possible locations for the intermodal transfer station. These are Caliente, located in Lincoln County; Apex/Dry Lake located north of Las Vegas; and Sloan/Jean, located south of Las

Vegas. Five possible routes along existing highways are being considered from these intermodal transfer station sites to Yucca Mountain, as shown in Figure 9 and described below:

Caliente: From the intermodal transfer station at Caliente, shipments would follow U.S. 93 to State Route (SR) 375, SR 375 to Warm Springs, U.S. 6 to Tonopah, U.S. 95 to the Lathrop Wells road to Yucca Mountain. The total length of this route is 331 miles. Travel time, according to DOE, would be 2 days. DOE estimates a life-cycle cost of $669 million (2001 dollars).

Caliente/Chalk Mountain: From the intermodal transfer station at Caliente, the shipments would follow U.S. 93 to SR 375. Near Rachel the shipments would travel on a newly constructed road through Nellis Air Force Base to the Nevada Test Site (NTS). The total length of this route is 175 miles. Travel time would be 2 days. DOE estimates a life-cycle cost of $548 million (2001 dollars).

Caliente/Las Vegas: From the intermodal transfer station at Caliente, the shipments would follow U.S. 93 to I-15, I-15 to the proposed North Las Vegas Beltway, the proposed Beltway to U.S. 95, and U.S. 95 to NTS. The total length of this route is 234 miles. Travel time would be 2 days. DOE estimates a life-cycle cost of $607 million (2001 dollars).

Apex/Dry Lake: From the intermodal transfer station at Apex/Dry Lake, the shipments would follow I-15 to the proposed North Las Vegas Beltway, the proposed Beltway to U.S. 95, and U.S. 95 to NTS. The total length of this route is 114 miles. Travel time would be one-half day. DOE estimates a life-cycle cost of $387 million (2001 dollars).

Sloan/Jean: From the intermodal transfer station at Sloan/Jean, the shipments would follow I-15 to the proposed Southern Las Vegas Beltway, the proposed Beltway to U.S. 95, and U.S. 95 to NTS. The total length of this route is 118 miles. Travel time would be one-half day. DOE estimates a life-cycle cost of $444 million (2001 dollars).

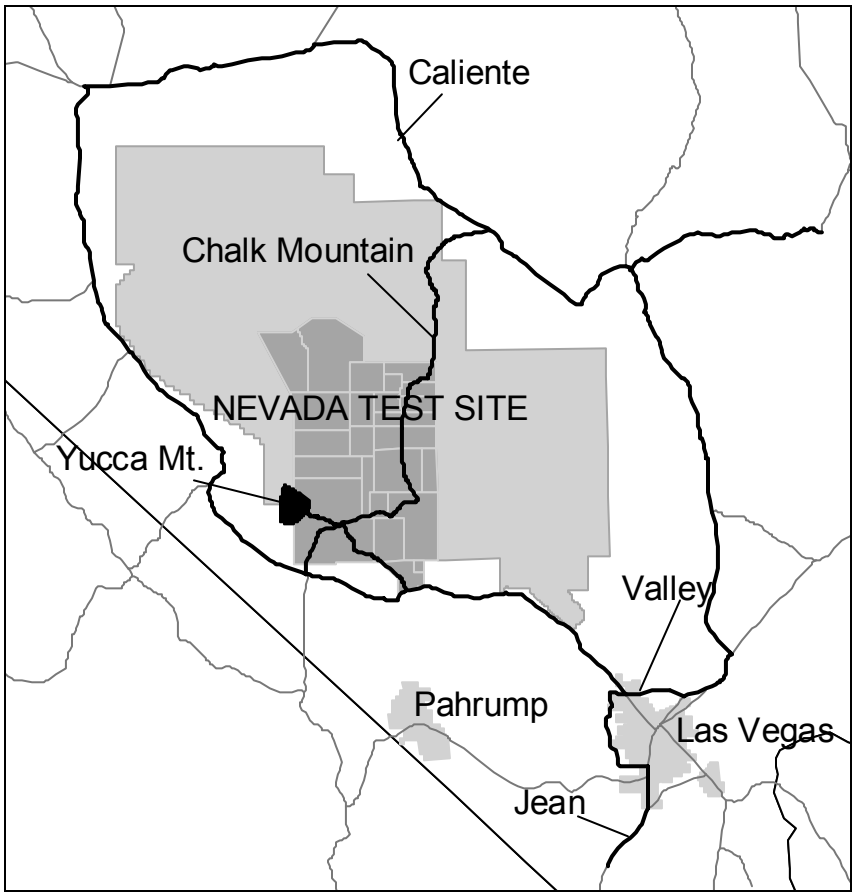

Fig. 9. HHT Routes Identified in DOE FEIS

The tractor-trailer rig used for these shipments would be a custom rig built specifically for this project. The custom built trailer is required because the proposed spent fuel casks create a more concentrated load than used on existing heavy haul trailers. The tractor-trailer would be designed for maximum axle loads of 20,000 pounds for single axles and 34,000 pounds for tandem axles. For the proposed 125-ton spent fuel casks, the trailer would be about 148 feet long. With tractors, the vehicle would be 220 feet long, with an unloaded weight of the vehicle would be 200,000 pounds. According to DOE, the unit would operate at open-road speeds of 20 to 50 mph, with an average speed of 20 to 30 mph. (2,7)

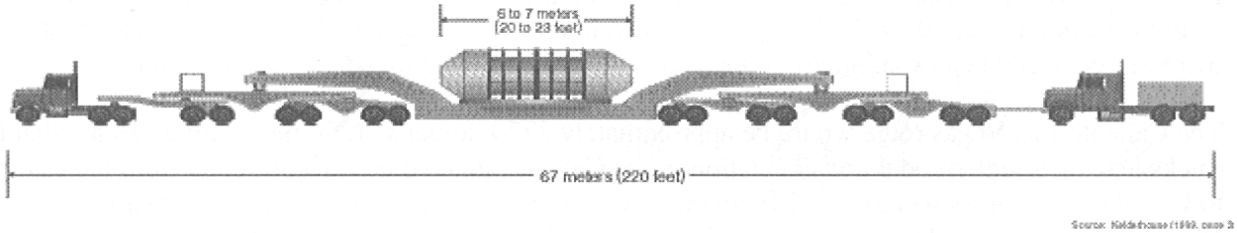

Fig. 10. Heavy Haul Rig for Use With Yucca Mountain Shipments

There would be more than 18,900 shipments over 38 years, with an average of almost 500 shipments per year. Shipments would be allowed only during daylight hours Monday through Friday. DOE would have to construct an overnight parking area.

The feasibility of DOE's proposal to ship spent nuclear fuel and high-level radioactive waste by HHT is uncertain at best. The use of heavy haul truck on Nevada highways requires that DOE obtain overweight truck permits from the Nevada Department of Transportation (NDOT). The issuance of an overweight permit is dependant on the determination that the load is a non-divisible load. A regulatory analysis

prepared for NANP concluded that DOE would have great difficulty meeting the Federal Highway Administration (FHWA) definition (23 CFR 658) of non-divisible load. Because the transport vehicle would be 220 feet in length, an oversize vehicle permit would also be required. (7)

Since the use of rail casks is clearly optional, and the material could be shipped in legal weight casks, DOE's proposed use of rail casks transported on overweight and oversize vehicles clearly does not meet the definition of non-divisible load, and does not qualify for an overweight and oversize permit based upon non-divisibility of the load. The State of Nevada would therefore not be required to issue the permits needed to make HHT a feasible option in Nevada. (7)

Heavy haul of the magnitude and duration on State highways proposed by DOE has little precedent anywhere, raising questions concerning the technical feasibility of the operation. There is little, if any information regarding the performance over time of bridges, structures, culverts, and pavement subjected to heavy loads of this magnitude and frequency. Specific obstacles to DOE's proposed HHT plan of operations include day-of-week and time-of-day travel restrictions, frost restrictions, bridge weight restrictions, route closure during resurfacing operations, limited safe parking areas, and limited turning areas large enough for HHTs to turn around.

Southern Nevada experiences extreme heat during summer months. The heavy-haul trucks could cause severe rutting of asphalt surfaces during times of excessive heat. In areas that experience winter snowfall, snowmelt could create saturated roadbed conditions, resulting in pavement damage from heavy-haul trucks. The feasibility of some heavy-haul route options depends on upgrades required to remove frost restrictions on some road segments. There is also inadequate information to demonstrate that the heavy-haul trucks would not significantly reduce the expected life of pavement surfaces.

All of the proposed HHT routes through Clark County involve severe traffic and safety impacts. The extreme length of the heavy-haul vehicle and its slow speed would result in a significant impact to traffic flow on all the highways considered.

DOE believes that this problem could be reduced once the planned Las Vegas Beltway is completed. This very well might not be the case. Studies have demonstrated that in growing urban areas, growth takes place along transportation corridors, negating any improvement in traffic flow from route improvements. This was recently demonstrated for the Denver urban area where studies of an extensive improvement planned for the highways in that area predict insignificant change in traffic flow. (7)

DOE's plan to construct climbing lanes only where grades exceed four percent and turnout lanes every 5 to 20 miles, depending on traffic volumes, is inadequate. The average speed of the transport vehicle is traveling 30 mph. At a length of 220 feet, with two escort vehicles and two Highway Patrol escorts, the "convoy" would be over 400 feet in length. If another vehicle attempts to pass the convoy at an average speed of 45 mph, it would take over a quarter of a mile to pass the convoy. Safe passing by triple trailers (115 feet in length) would require a one-mile passing lane every five miles. (7)

An additional concern with HHT transport is the potential for relatively large routine radiation exposures along certain segments of the public highway routes identified in the FEIS. NANP has identified locations along US 95 in Tonopah, Goldfield, and Beatty where exposures would be maximized by proximity to casks during required transport vehicle stops and/or travel at slow speeds. (7)

POTENTIAL RAIL SHIPMENTS THROUGH LAS VEGAS

Shipments to Yucca Mountain would have direct and dramatic impacts on downtown Las Vegas under seven of the eight rail access scenarios that DOE is considering. The Union Pacific Railroad mainline through Las Vegas would be used for some portion of shipments to four of the five rail spur originations proposed in the FEIS. The same mainline through Las Vegas would be used for some portion of shipments to all three of the intermodal transfer stations proposed in the FEIS.

Downtown Las Vegas would be most heavily affected, according to the FEIS, by development of the Jean rail spur or the Sloan/Jean intermodal transfer station. Under either of those options, 85 percent of all rail

shipments to Yucca Mountain would enter Nevada from Utah and travel the Union Pacific mainline through Las Vegas. Development of the Valley Modified rail spur or the Apex/Dry Lake intermodal option would route 8 to 9 percent of the rail shipments through downtown Las Vegas, with the remainder entering the northern Las Vegas metropolitan area from Utah. (2)

Development of the Caliente or Caliente/Chalk Mountain rail spurs or intermodal options would also impact downtown Las Vegas. Under DOE's analysis, about 6 percent of the rail shipments to Yucca Mountain would enter Nevada from California, and travel to Caliente through Las Vegas. DOE's analysis assumed that the vast majority of rail shipments from the East would use the Union Pacific from Chicago or Kansas City, via Gibbon, Nebraska, and Cheyenne, Wyoming, entering Nevada from Utah. (2) Alternative cross-country rail routes are available, however, and a number of factors could result in the vast majority of shipments from the East traveling to Nevada on the Burlington Northern-Santa Fe or Union Pacific routes across Texas, New Mexico, Arizona, and California. All rail shipments to Yucca Mountain, except those from the Pacific Northwest and Idaho, could therefore travel to Caliente through downtown Las Vegas under credible alternative routing scenarios. (10)

Many thousands of Las Vegas residents live and work near this potential rail route to Yucca Mountain. The Union Pacific mainline between Apex Siding on the North and Arden Siding on the South is about 36 miles long. According to the 2000 Census, more than 39,000 people reside within one-half mile of the rail line. A number of large hotel-casinos are located within one-half mile also. When the resident population is combined with the school population, estimated average daily workers, and estimated hotel/casino guests, the average daily exposed population within one-half mile of the routes is currently about 86,000.

Table IV. Las Vegas Population Within 1/2-Mile of Union Pacific Railroad

Route Segment Data	Union Pacific Mainline through Las Vegas
Corridor Length (miles)	35.74
2000 Resident Population	39,291
Total Employment	83,976
Est. Avg. Daily Hotel/Casino Guests	18,032
Est. Avg. Daily Hotel/Casino Guests	18,032
School Population	597
Est. Avg. Daily Exposed Population	85,912

Ref. 7.

Tens of thousands of Clark County residents could be exposed to the risks associated with rail shipments to Yucca Mountain. Moreover, these shipments could continue for a period of four decades or more. The potential for large-scale rail shipments through Las Vegas is a major concern for the State of Nevada, Clark County, and the Cities of Las Vegas and North Las Vegas. In addition to the potential impacts on residents, the proximity of the Union Pacific mainline to the world-famous Las Vegas Strip and to other major commercial properties create truly unique local impact conditions. NANP has assessed the potentially disastrous consequences of a severe rail accident or successful terrorist attack in the Las Vegas metropolitan area. NANP has also assessed the potential radiation exposures from routine rail shipments through Las Vegas. (7) The impacts of Yucca Mountain rail shipments on Las Vegas will be a major issue in any future DOE transportation planning activities.

CONCLUSIONS

Direct rail access to the national rail network is highly desirable in siting a geologic repository. Without direct rail access, delivery of spent fuel and high-level radioactive waste to Yucca Mountain could require 53,00 to 109,000 cross-country legal-weight truck shipments, or 10,000 to 19,000 heavy-haul truck (HHT) shipments from an intermodal transfer facility.

The proposed Yucca Mountain repository site currently lacks rail access. The nearest mainline railroad is almost 100 miles away. DOE identified five potential rail access corridors, ranging in length from 98 miles to 323 miles, in the FEIS. Based on land use conflicts, none of the potential rail corridors identified in FEIS have been shown to be feasible. Two of the corridors - Caliente (319 miles long) and Carlin (323 miles long) - would be the largest new rail construction projects in the United States since the 1930s. The construction cost alone, for either route, would likely exceed $1 billion dollars.

The FEIS also considered an alternative to rail spur construction, HHT delivery of rail casks from one of three potential intermodal transfer stations. DOE's HHT alternative is probably not feasible.

Shipments to Yucca Mountain would impact Las Vegas in seven of the eight rail shipping scenarios that DOE is considering. Up to 85 percent of total rail shipments could travel through downtown Las Vegas. The impacts of Yucca Mountain rail shipments on Las Vegas will be a major issue in any future DOE transportation planning activities.

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