

INTERMODAL TRANSPORTATION OF LOW-LEVEL WASTE TO THE NEVADA TEST SITE

E. Frank DiSanza

Waste Management Division Director, Department of Energy, Nevada Operations Office

Michael O. Giblin

Transportation Advisor, Department of Energy, Nevada Operations Office

Joseph P. Johnston

Environmental Engineer, Bechtel Nevada Corporation

ABSTRACT

Presently, all low-level radioactive waste shipments arriving at the Nevada Test Site are transported on established roadways by legal-weight trucks. Over 80 percent of these shipments enter Nevada on U.S. Highway 93 at Hoover Dam. These shipments continue on U.S. Highway 93 through Boulder City, Henderson, Las Vegas, and the Snow Mountain Reservation. Stakeholders perceive that crossing Hoover Dam and the use of U.S. Highway 93 through the Las Vegas Valley poses a health risk to Valley residents and may impact the Valley's gaming and tourist industry. In an effort to address both real and perceived risks, the Department of Energy was led to consider the use of intermodal (rail/truck) transportation and all-truck routes that avoid the Valley. While acknowledging the importance for the Department of Energy to address the real risks of shipping radioactive waste, this paper will focus on the perceived risks of shipping low-level radioactive waste through populated areas in the metropolitan Las Vegas area, and attempt to identify the institutional, legal, and policy ramifications associated with changing to intermodal transportation or truck routes that avoid the Valley. If the change to either intermodal transportation or truck routes that avoid the Valley is accepted by the Department of Energy and tolerated by the stakeholders, the benefits would be elimination of this perceived risk and potential opportunities for economic development. In summary, intermodal transportation of low-level radioactive waste to the Nevada Test Site or the use of the new truck routes could be a win/win solution for the Department of Energy and stakeholders.

BACKGROUND

Driven by the desire to be a good neighbor, management at the U.S. Department of Energy/Nevada Operations Office (DOE/NV) instructed staff to initiate an effort with the Nevada stakeholders to first understand why transportation of low-level radioactive waste (LLW) to the Nevada Test Site (NTS) is an issue and second to explore physical and institutional means that would eliminate or reduce these concerns. This effort was initiated in 1994. What staff found out was that due to the Department of Energy's past practice of secrecy, and given the congressional mandate to study the disposal of high-level waste at Yucca Mountain, located on the NTS, the Nevada stakeholders did not trust the Department. Furthermore, they support the Nevada national, state, and local politicians that oppose radioactive waste transportation. This position is based on the potential impacts that may occur in Southern Nevada in the event of a transportation accident or incident. The perceived impacts would be health injuries or deaths to

the residents of Southern Nevada and reduced revenues from the Southern Nevada gaming and tourist industry.

To address the trust issue, the Nevada Operations Office established several stakeholder groups. One such group is the Nevada Transportation Protocol Working Group. By working with this group the Nevada Operations Office has been able to develop a cooperative relationship with a key group of state and local stakeholders. It has also allowed the Nevada Operations Office to receive stakeholder input on transportation matters, such as the posting of supplemental radioactive waste shipping data on the Internet and the review of transportation documents before these documents are released to the general public. In general, building a working relationship with the members of the Nevada Transportation Protocol Working Group and demonstrating a willingness to listen, has led to an open exchange of ideas and suggestions.

To address the health risks and potential impacts on the gaming and tourist industry, the Nevada Operations Office prepared a transportation risk assessment. The results of this assessment are documented in the *Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (DOE 1996). The conclusions reached were: all transportation related health risks are extremely low and within acceptable limits; the transportation carriers would minimize radiological risk by using any of the transportation routes studied; and the most significant risk associated with transportation of low-level radioactive waste is the programmatic risk that would occur if the perceived risk were ignored by the DOE. We soon learned that providing statistical data did not address the perceived risk.

CURRENT ACTIVITIES

Presently, all low-level waste shipments arriving at the NTS are transported on established roadways by legal-weight trucks. Over 80 percent of these shipments enter Nevada on U. S. Highway 93 at Hoover Dam. These shipments continue on U. S. Highway 93 through Boulder City, Henderson, Las Vegas, and the Snow Mountain Reservation. Stakeholders perceive the crossing of Hoover Dam and the use of U. S. Highway 93 through the Las Vegas Valley poses a health risk to Valley residents and may impact the Valley's gaming and tourist industry. Seeking a solution to this perceived risk led the Department of Energy to consider the use of intermodal (rail/truck) transportation of low-level radioactive waste to the NTS and all-truck routes that avoid the Las Vegas Valley.

In 1997, the Nevada Operations Office proposed to conduct an intermodal demonstration by shipping several rail cars loaded with LLW to the Union Pacific's intermodal facility at the Valley Siding, located in the city of North Las Vegas. Because this particular intermodal facility is near populated areas and requires use of the interstate highway network that passes through the heart of the Las Vegas urban center, there was opposition to this plan from elected officials and stakeholders. The demonstration was dropped. In its place, the Nevada Transportation Protocol Working Group was interested in assisting the Nevada Operations Office to perform an intermodal study. This group helped formulate the study and several members provided services to ensure the study was objective and met their needs. Published in January 1998, the *Nevada Test Site Intermodal Transportation Facility Site and Routing Evaluation Study* (DOE January 1998), contained information that the stakeholders found convincing enough to recommend that the Department of Energy prepare an Intermodal Environmental Assessment (EA). However,

stakeholders established several parameters around which the scope of the EA would be prepared: ensure wide-spread public involvement; examine rail transportation as an alternative to trucking, but limit the examination of intermodal facilities to those outside the Las Vegas metropolitan area; include an "all truck" alternative utilizing highways that avoid the Las Vegas metropolitan area and Hoover Dam; compare the two alternatives with the current routing in terms of safety and radiological risk.

The Nevada Operations Office has completed the draft of this assessment, *Intermodal Transportation of Low-Level Radioactive Waste to the Nevada Test Site – Preapproval Draft – Environmental Assessment (DOE September 1998)*. The stakeholders have reviewed this report and the Department of Energy is currently evaluating comments that were received.

There are a number of localized benefits that would be realized from the development of an intermodal facility. Direct employment at such a facility depends on the amount of material processed. The larger the volume, the greater the number of people required to operate the facility. Facility operations would employ individuals with a variety of skills such as forklift, crane, and switching operators and mechanics, as well as administrative and management personnel. Annual salaries of personnel at the facility would vary depending on skill level and position. An intermodal facility would also result in the development of spin-off or secondary jobs. Some secondary jobs, such as truck drivers, would be directly related to the facility operations and others would be the result of increased local employment, and new housing construction starts. Increased revenues would be expected in a town or area close to the location of the facility due to an increase in direct and secondary employment, as well as increases in taxes and user fees for the facility. Firm estimates of these and other impacts that would be expected to result from the development of a transfer station have not been completed at this time. These can be developed when reliable forecasts of waste volumes are available.

A location that could significantly benefit from the development of an intermodal transfer facility is Caliente, Nevada. Caliente is a small, rural town with a population of approximately 1,100. An intermodal facility would provide employment and add to the diversity of the town's economy. For a town the size of Caliente, the addition of even a small number of employment positions is significant. In addition to direct employment opportunities that would become available as a result of the facility, there would also be a truck route between Caliente and the NTS. This same route could also be used to transfer commodities from the NTS, or from other communities along the way, back to Caliente. Public services, and food, lodging, and fuel services, may require expansion depending on the volume of rail traffic making use of the intermodal facility.

It should not be overlooked that this same facility would be capable of handling a wide variety of vehicles and container sizes and would be attractive to other customers as well. Construction of a modern transfer station could lead to the development of other industry in the immediate area. The NTS Development Corporation is currently evaluating the construction of an industrial park in Caliente. An intermodal facility can be an essential asset to the development of a successful industrial park. Depending on the capabilities of the new intermodal site, Caliente's proximity to the Las Vegas Valley could lead to its use as a transfer location for goods intended for several destinations in southern Nevada. Additionally, as industrial capabilities in the region are

developed, the site could also be used to transport products to locations throughout the country. Undoubtedly, there will be a need for continued transportation infrastructure development in the area. An intermodal facility located a short distance from the congested metropolitan area may turn out to be very desirable for certain shippers depending on their products and truck transport requirements (i.e., large oversize goods).

The problem with presenting information on a topic that is based on perceived risk is that related facts that do not promote or emphasize the risk are often construed as attempts to soften, dilute, or degrade the risk issue. Such a topic is the transportation of radioactive waste. An example of this can be found in the reaction to work performed on the NTS Environmental Impact Statement. A detailed analysis of potential impacts from transportation, based on the number of shipments and the quantity of radioactive material to be transported to the NTS from off-site locations, determined that there was minimal risk involved. Regardless of the statistical probabilities and the documented estimate of potential risks, the stakeholders thought that transportation of radioactive waste to the NTS was one of the most important issues that required a plan to mitigate the potential for harm to the public and the environment. Even in light of the impact analysis and the historical record of radioactive waste shipments to the NTS which show that the risk of transportation is minimal, the public thought DOE was equipping itself with documentation that could be used to ignore this perceived harmful activity. Similarly, in the Preapproval Draft environmental assessment for *Intermodal Transportation of Low-Level Radioactive Waste to the Nevada Test Site*, identifying the potential for positive socioeconomic impact has resulted in responses that claim the document is attempting to obscure the perceived risk by advertising a possible benefit. Environmental assessments are prepared under detailed National Environmental Policy Act guidelines and are required to describe both positive and negative impacts. Identifying the potential for benefits as a result of intermodal transportation is clearly within, and required by, the scope of the environmental assessment.

Scope of the Environmental Assessment

The scope of the *Intermodal Transportation of Low-Level Radioactive Waste to the Nevada Test Site – Preapproval Draft – Environmental Assessment* is to identify potential environmental impacts and transportation risks of using rail shipments to intermodal transfer sites and alternative truck routes for delivery of low-level waste to the NTS.

PROPOSED ACTION

To encourage Nevada Operations Office approved low-level waste generators and their transportation contractors to use transportation alternatives that would minimize radiological risk, enhance safety, and reduce cost, the Nevada Operations Office does not intend to recommend a single alternative. The Environmental Assessment will be provided to the low-level waste generators and their transportation contractors for their consideration in deciding which combinations of the alternatives studied would best meet their individual needs, meet regulatory requirements, and achieve their objectives.

Alternative 1

Intermodal transportation.

- Alternative 1A: Intermodal facilities at Barstow, California.
- Alternative 1B: Intermodal facility at Caliente, Nevada, using existing rail facilities within the city limits.
- Alternative 1C: Intermodal facility at Caliente located 1.2 km (0.75 mile) south of the in-town location (Alternative 1B).
- Alternative 1D: Intermodal facilities at the Yermo Annex of the Marine Corps Logistics Base, Barstow, California.

Alternative 2

All-truck routes.

- Alternative 2A: Trucks from the east would use Interstate 40 from Kingman, Arizona, to the connecting road with Interstate 15 at Yermo, California, then continue on Interstate 15 north to California State Route 127, north on California State Route 127 to Nevada State Route 373, north on Nevada State Route 373 to U.S. Highway 95, and south on U. S. Highway 95 to the NTS.
- Alternative 2B: Trucks from the northeast would travel southwest on Interstate 15 then north on U. S. Highway 93 to Nevada State Route 375, northwest on Nevada State Route 375 to U.S. Highway 6, west on U.S. Highway 6 to U.S. Highway 95, and south on U. S. Highway 95 to the NTS.

Alternative 3

This is the no action alternative. Shipments of LLW are brought to the NTS via truck over the highway routes currently used.

IMPLICATIONS

It is evident that the perceived risk is in part driven by what appears to be DOE's lack of effort to do something to simply keep the trucks or rail cars (assuming intermodal transportation is adopted by the generators) bearing DOE's LLW out of the Valley. The findings in the NTS Environmental Impact Statement Transportation Study indicating that all routes studied offered no significant risk did not convince stakeholders to alter their concerns of the perceived risk. In the view of stakeholders, DOE, now armed with facts and data, continued to stand-by while carriers continued on with the highway routing that was in place. The proposed intermodal demonstration was quickly dropped by DOE soon after it was learned by members of the Transportation Protocol Working Group the rail/truck transfer would take place in the Valley and the short-haul truck route would be on the same roads through the metropolitan area DOE's carriers had used for over 20 years. The State of Nevada took the official position that DOE could simply interpret DOT regulations (49 CFR Section 397.101) differently and direct its carriers to use alternate routes avoiding the Valley. The State insisted that the All Truck

alternative on a network of highways that avoid the Valley be another alternative in the EA. Elected officials in several southern Nevada jurisdictions took action in the form of resolutions to insist that DOE cease its practice of bringing LLW into Nevada over highways that pass through their community. The bottom line is very direct, if DOE must bring its LLW into Nevada for disposal, it must do so on roads that avoid the Hoover Dam and the urban population of the Valley.

The institutional, legal, and policy implications of using intermodal transportation or all-truck routes that avoid the Las Vegas Valley to transport radioactive waste to the NTS are significant. They are significant to the residents that live along the existing truck routes, the Southern Nevada stakeholders, Nevada elected officials, and the residents who live along the what could become new truck routes or near the intermodal transfer facilities who may not welcome these changes.

The institutional ramifications may be numerous, however, here we focus on two. If there are no significant technical differences among the alternatives tested in the draft EA (No Action, Intermodal, All Truck) in terms of safety and radiological risk to any highway routing, and in reality all that a significant portion of the general population wants is to have trucks avoid the Valley, how does the DOE implement a change that, on the face of it, could drive a wedge between the rural and urban citizens? The present thinking is to modify the *Nevada Test Site Waste Acceptance Criteria* to encourage low-level waste generators to work with their transportation contractor to decide which combination of transportation modes or routes best meets their needs. Will this change ensure that the existing truck routes will no longer be used? The answer to this question is no. However, with good planning by the generator and contractors and oversight by the Nevada Operations Office, this plan could provide enough incentive to bring about this operational change. While modification of the waste acceptance criteria may set change in motion, will it be enough to address the other half of the institutional question? That is, will this apparent shift in the location where activity occurs be tolerated by a different stakeholder group who initially see no benefit to them? Other mitigation efforts most likely will be necessary to change stakeholder attitudes toward perceived risk to a point where they have crossed over the threshold to a reluctant tolerance level of DOE shipments to the NTS.

What are the legal implications? A review of the existing Department of Transportation (DOT) regulations that govern shipments of low-level radioactive waste tells us that the generator's contractor or carrier is responsible for selecting the transportation routes. The main criterion for making this selection is minimizing radiological risk. The *Intermodal Transportation of Low-Level Radioactive Waste to the Nevada Test Site – Preapproval Draft – Environmental Assessment* is being prepared to determine if there is a potential for environmental impacts from the proposed action. The risk and safety data compiled to complete the assessment can be used to help the carriers more thoroughly examine their route options to determine how best to minimize radiological risk.

Historically, a large part of the total volume of radioactive waste is shipped to the NTS from the Fernald Environmental Management Project site near Cincinnati, Ohio. Carriers from Fernald typically have crossed the country on the Interstate 40 corridor. The distance from Cincinnati to the NTS is approximately 2,030 miles. If the All Truck Alternative were used by carriers from

Fernald, the most likely route for non-placarded loads would be the Interstate 70 corridor because this would be the best choice to intersect the All Truck route at the shortest possible distance. The total distance from Cincinnati to Mercury along the Interstate 70 route would be approximately 2,205 miles, an increase of 175 miles. This represents an increase of 8.6 percent over the traditional route.

Will the Department of Energy mandate the carrier use intermodal transportation or the new routes? The answer is no. As stated above, it is the responsibility of the carrier to select the routes to be used. Therefore, it is only proper that the Department of Energy encourage that carriers consider the data contained in the *Environmental Assessment* when planning their shipping campaigns.

What are the policy implications? It is current Department of Energy policy to follow all Department of Transportation regulations when transporting any form of radioactive material. It is the position of the Department of Energy that allowing the carrier to continue to select the transportation routes for LLW after considering the data contained in the *Environmental Assessment* is within its current policy. What may change in the policy arena, once the Intermodal EA is final and it is determined there is a finding of no significant impact to the environment, is the active mode DOE will adopt when it "encourages" its generators and their carriers to consider altering the mode or route used to ship LLW from the current practice.

There is another aspect to policy that is often questioned. Many Nevada stakeholders continue to ask why the Nevada Operations Office does not follow the lead of the Carlsbad Area Office by mandating routes to their carriers. The Carlsbad Area Office is the Department of Energy Office responsible for transporting transuranic waste to the Waste Isolation Pilot Plant, located near Carlsbad, New Mexico. To minimize the need to train first responders and emergency management personnel along the various transportation corridors, the Carlsbad Office made a decision to use Department of Transportation regulations that apply to certain materials designated as highway route controlled quantity (HRCQ)(49 CFR 397.101) and have these regulations apply to transuranic waste. This regulation removes the responsibility of route selection from the carriers and gives it to the states, if the states chose to exercise their authority in the regulations and designate specific routes. If a state does not exercise its authority for HRCQ shipments, the carriers, by regulation, are required to complete their trip on the interstate highway system to the fullest extent possible. In this case, the Carlsbad Office has been successful in reaching agreement with the states on the routes to be used to transport the transuranic waste. In the case of transporting low-level waste to the NTS, the Department of Energy is not willing to declare all low-level waste shipments to be shipments regulated as HRCQ because DOE does not have the authority to do so. It has been shown that the risks associated with the radioactive material in the DOE shipments does not warrant HRCQ designation. A regulatory change by DOT to make radioactive materials HRCQ would apply to thousands of other businesses and institutions who collectively make nearly 3 million shipments of this class of radioactive material each year. The cost implications would be significant. Could we see a change in this aspect of current policy? The authors of this paper do not believe the current position will change.

CONCLUSIONS

- Stakeholders have a perception that there is significant risk to both the health and the economy of Southern Nevada from transporting low-level radioactive waste through the Las Vegas Valley.
- There is a general mistrust of the Department of Energy due to past practices and current programmatic mandates.
- The Department of Energy has attempted to develop trust from stakeholders by fostering better communication and working relationships with interested groups as exemplified by efforts in the Nevada Transportation Protocol Working Group.
- Changing to the use of intermodal transportation or using alternate routes that do not go through the Las Vegas Valley has the potential to eliminate the perceived risk to the majority of Nevada residents.
- Current transportation risk assessments indicate that the actual risk is extremely low and within acceptable limits.
- There will be economic benefits available to locations along new routes and near intermodal transfer stations.
- The Department of Energy has no regulatory authority to force carriers of low-level radioactive waste to adopt alternatives identified in the Intermodal Transportation Environmental Assessment. The Department will encourage generators and their carriers to use options identified in the EA.
- Alternative routes will not be readily accepted by stakeholders along those routes. The shift in opposition will be from areas with large populations to sparsely populated areas.

REFERENCES

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