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Department of Energy

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MAY 29 1997
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Mr. Thomas Wagner
Fernald Citizens Task Force
1086 W. Galbraith Road
Cincinnati, OH 45231

Dear Mr. Wagner:

RESPONSE TO REQUEST FROM THE TRANSPORTATION COMMITTEE OF THE FERNALD CITIZENS TASK FORCE FOR AN EVALUATION OF THE COMBINED RISK ASSOCIATED WITH TRANSPORT OF OPERABLE UNIT 1 AND OPERABLE UNIT 4 FERNALD WASTE

The following information was prepared in response to specific follow-on questions regarding differential risks which surfaced in the meeting of the Transportation Committee of the Fernald Citizens Task Force (CTF), held on February 6, 1997. This response provides an evaluation of the total estimated non-radiological risk to transportation workers and the general public associated with transportation of Operable Unit 1 (OU1) waste to Envirocare of Utah, Inc. and Operable Unit 4 (OU4) waste to the Nevada Test Site (NTS). The information provided here does not reflect the risk associated with radiological exposure during transport of the waste. The evaluation offers a comparison between the following three transportation alternatives:

1) Direct rail transport of OU1 waste to Envirocare of Utah, Inc. and direct truck transport of OU4 waste to the NTS (Figure 1);

2) Direct rail transport of OU1 waste to Envirocare of Utah, Inc. and intermodal transport of OU4 waste to the NTS with transfer to truck in North Las Vegas, Nevada (Figure 2); and,

3) Direct rail transport of OU1 waste to Envirocare of Utah, Inc. and intermodal transport of OU4 waste to the NTS with transfer to truck in Salt Lake City, Utah (Figure 3).

For the second alternative, treated Silo 3 waste would be shipped in conjunction with OU1 shipments until the waste reached North Platte, Nebraska. At that point, the rail shipments would be separated with Silo 3 waste continuing on in manifest service to the transfer point in North Las Vegas, Nevada. The OU1 waste would continue by rail as a unit train to Envirocare of Utah, Inc. For the third alternative, treated Silo 3 waste would be shipped

Recycled and Recyclable

along with OU1 unit train shipments until they reached Salt Lake City, Utah, where the Silo 3 treated waste would be transferred to truck. *Please note that the transfer points selected are those in the closest proximity of the requested transfer point and do not represent a site selection or evaluated location.*

Treated Silos 1 and 2 wastes would have block car rail shipments to North Las Vegas, Nevada or Salt Lake City, Utah for the second and third alternatives respectively, because the shipment of this extends beyond the estimated completion date for shipment of OU1 waste. At either North Las Vegas, Nevada or Salt Lake City, Utah, all OU4 waste would be transferred to truck for transport to the NTS.

The assumptions for determining the risks associated with transporting OU1 waste to Envirocare of Utah, Inc. by rail are:

- Total number of rail shipments - 126
- Estimated rail mileage from Fernald, Ohio to Envirocare of Utah, Inc. - 2,000 miles

The assumptions for determining the risks associated with transporting OU4 waste to the NTS by direct truck are:

- Total number of truck shipments for Silo 3 waste - 540
- Total number of truck shipments for Silos 1 and 2 wastes - 1,900
- Estimated road mileage Fernald, Ohio to the NTS - 2,065 miles

The assumptions for determining the risks associated with transporting OU4 waste to the NTS by intermodal transport are:

- Under Scenario 2, rail shipments of Silo 3 waste would be combined with rail shipments of OU1 waste through North Platte, Nebraska. At that point, rail shipments would be separated with OU1 waste continuing on to Envirocare of Utah, Inc. and Silo 3 waste continuing on to North Las Vegas, Nevada, for transfer to truck for shipment to the NTS.
- Under Scenario 3, rail shipments of Silo 3 waste would be combined with rail shipments of OU1 waste through Salt Lake City, Utah. At this point, the Silo 3 waste would be transferred to truck for shipment to the NTS.
- Under Scenario 2 rail shipments of Silos 1 and 2 wastes would go to North Las Vegas, Nevada. At North Las Vegas, Nevada, the Silos 1 and 2 waste would be transferred to truck for shipment to the NTS.

- Under Scenario 3 rail shipments of Silos 1 and 2 waste would go to Salt Lake City, Utah. At Salt Lake City, Utah, Silos 1 and 2 waste would be transferred to truck for shipment to the NTS.

- Total number of combined OU1 and Silo 3 rail shipments to North Platte, Nebraska - 126 (9 of the 126 rail shipments would be combined OU1 and Silo 3 waste).

- Total number of OU1 rail shipments from North Platte, Nebraska to Envirocare of Utah, Inc. - 126

- Total number of Silo 3 rail shipments from North Platte, Nebraska to North Las Vegas, Nevada - 9

- Total number of Silo 3 truck shipments from North Las Vegas, Nevada to the NTS - 540

- Total number of Silos 1 and 2 rail shipments to North Las Vegas, Nevada - 16

- Estimated rail mileage from Fernald, Ohio to North Platte, Nebraska - 1,100 miles

- Estimated rail mileage from North Platte, Nebraska to Envirocare of Utah, Inc. - 900 miles

- Estimated rail mileage from North Platte, Nebraska to North Las Vegas, Nevada - 1,350 miles

- Estimated rail mileage from Fernald, Ohio to North Las Vegas, Nevada - 2,450 miles

- Estimated road mileage from North Las Vegas, Nevada to the NTS - 100 miles

- Estimated rail mileage from Fernald, Ohio to Salt Lake City, Utah - 2,000 miles

- Estimated road mileage from Salt Lake City, Utah to the NTS - 540 miles

In addition to the risk associated with transporting OU1 and OU4 waste, there would be an additional risk to workers during transfer of containers from rail to truck for the intermodal shipments of Silos 1, 2, and 3 waste. It was assumed that the task of transferring a Sea/Land container from rail to truck would take approximately ten minutes. Current estimates indicate approximately 540 Sea/Land containers would be needed for shipping the Silo 3 waste and approximately 1,900 Sea/Land containers would be needed for shipping

the Silos 1 and 2 waste. The risk numbers to transportation workers involved with transfer of containers from rail to truck were calculated using the following standard risk factors for mechanical hazards developed by the U.S. Department of Labor:

Occupational Injury	3.4×10^{-5}/person-hour (3.4 injuries per 100,000 person - hours worked)
Occupational Fatality	5.0×10^{-7}/person-hour

The following table provides a comparison of the potential non-radiological risks of injuries and fatalities to the public and transportation workers that may result from direct rail shipments of OU1 waste combined with intermodal (including risk to workers during transfer of material from rail to truck) and direct truck shipments of OU4 waste over the lifetime of the OU1 and OU4 projects. The risk numbers were calculated using the following standard risk factors for truck and rail shipments developed by the Insurance Industry:

	Truck	Rail
Public Injury	1.2×10^{-7} injuries/mile	6.8×10^{-6} injuries/mile
Public Fatality	1.3×10^{-8} fatalities/mile	1.8×10^{-6} fatalities/mile
Occupational Injury	4.1×10^{-8} injuries/mile	4.6×10^{-6} injuries/mile
Occupational Fatality	2.1×10^{-9} fatalities/mile	4.8×10^{-8} fatalities/mile

Comparison of Non-Radiological Risks to Workers and the Public Resulting from Transport of Operable Unit 1 and Operable Unit 4 Wastes

Scenario	Public Injury	Public Fatality	Worker Injury	Worker Fatality
Direct Truck Shipments of Silos 1, 2, and 3 Waste and Direct Rail Shipments of OU1 Waste	2.32	0.52	1.37	0.02
Intermodal Shipments of Silos 1, 2, and 3 Waste with Transfer in North Las Vegas Combined with Direct Rail Shipments of OU1 Waste	2.09	0.55	1.42	0.02
Intermodal Shipments of Silos 1, 2, and 3 Waste with Transfer in Salt Lake City Combined with Direct Rail Shipments of OU1 Waste	2.09	0.53	1.37	0.02

The values presented in the table represent the estimated number of potential fatalities and injuries to transportation workers and the public that may result from non-radiological accidents during transportation of OU1 and OU4 wastes to either Envirocare of Utah, Inc. or the NTS, respectively. There would be additional risks associated with the return shipments to Fernald of empty gondola cars from Envirocare of Utah, Inc., as well as additional risks associated with the potential return shipments to Fernald of empty Sea/Land containers used for intermodal shipments, from the NTS. Based on the values presented in the Table, no one mode of transportation offers a clear advantage toward safety of the public and workers. It is the intent of Fluor Daniel Fernald, Inc. (FDF) and the Department of Energy, Fernald Environmental Management Project (DOE-FEMP) to reduce the risk to the public and workers to the minimum achievable levels and to operate a transportation program with exemplary safety records in a cost effective manner.

If intermodal shipments of OU4 waste are used, discussions with the Union Pacific Railroad (UPRR) indicate their preference to use the storage facilities in North Platte, Nebraska rather than the storage facilities in Salt Lake City, Utah. This is primarily due to the storage facilities in Salt Lake City, Utah being located in the middle of the city where there is not enough room to accommodate this type of transfer. Additionally, UPRR prefers OU4 rail shipments be transferred to truck in North Las Vegas, Nevada rather than Salt Lake City, Utah. Truck shipments from Salt Lake City, Utah would still go to the NTS through Las Vegas, Nevada. Interstate 15 is a major artery that connects Salt Lake City, Utah and Los Angeles, California. Interstate 15 is maintained to keep it open to commercial traffic, including other hazardous materials shipped in commerce, traveling between Salt Lake City, Utah and Los Angeles, California. Although there are routes to the NTS that would avoid Las Vegas, Nevada, these alternate routes could present additional road hazards to the transporter, since these routes would not be maintained to the same level as Interstate 15. If the rail transfer point in North Las Vegas, Nevada was used, the concerns regarding transport of OU4 waste over Hoover Dam and through Las Vegas could be alleviated.

The Department of Energy, Fernald Environmental Management Project (DOE-FEMP) is working with the Department of Energy, Nevada Operations Office (DOE-NV) to evaluate, through a pilot intermodal transport study using non-hazardous and non-radioactive material, the use of an intermodal transfer facility in the Las Vegas area. The pilot study is being planned to take place during the Summer/Fall of 1997 time frame. Stakeholders at the NTS have been informed of the proposed pilot study, and through established outreach programs stakeholder concerns and alternatives have been solicited and are being evaluated. Initial responses from stakeholders have resulted in changes prior to the official release of the intermodal work plan. Concerns of the Nevada stakeholders include the use of the rail transfer point in North Las Vegas, Nevada, storage of containers at the transfer point, minimization of transportation of radioactive material on city streets, and avoiding transportation of radioactive material during "rush hours."

Changing conditions over time will require that DOE-FEMP continue to revisit all options to determine the safest, most cost-effective means of transporting Fernald wastes to the appropriate disposal facility, either Envirocare of Utah, Inc. or the NTS. The use and/or location of an intermodal transfer facility will be evaluated using the results of the pilot intermodal transport study and stakeholder feedback and concerns.

Sincerely,

Glenn Griffith

for Jack R. Craig
Director

FEMP:Rast

cc:

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