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July 28, 1994

Sherwood C. Chu
Senior Professional Staff
United States Nuclear Waste Technical Review Board
1100 Wilson Boulevard
Suite 910
Arlington, VA 22209

Dear Dr. Chu,

Enclosed is the written version of the comments I made at the July 13, 1994 meeting on behalf of the Association of American Railroads regarding the transportation of spent nuclear fuel and high level waste. I sincerely hope that they will stimulate further discussions between the railroad industry and the Department of Energy. If you or members of the Board have any questions, please don't hestitate to contact me.

Sincerely,

Peter C.L. Conlon
Chief, Facility Services
and
Technical Liaison to DOE

TRANSPORTATION OF SPENT NUCLEAR FUEL AND HIGH LEVEL WASTE

ISSUES OF CONCERN TO THE AMERICAN RAILROAD INDUSTRY

Comments of Peter Conlon, Association of American Railroads

Before the Nuclear Waste Technical Review Board

July 13, 1994

Denver, Colorado

The Association of American Railroads appreciates the opportunity to speak to the Board about some concerns that the railroad industry has about transportation of spent nuclear fuel and high level waste. These issues include:

-Risk Management
-Cask Performance
-Dedicated Trains
-Uniformity of Regulatory Enforcement
-Train Speed
-Rail Vehicles
-Routing
-Emergency Response

Risk Management

Safe, incident-free transportation of customer's shipments, including Spent Nuclear Fuel (SNF) and High Level Waste (HLW), is a primary goal of the railroad industry. Railroads make every effort to comply fully with the comprehensive federal regulations adopted pursuant to the Federal Railroad Safety Act and the Hazardous Materials Transportation Act. In addition, the railroads have developed a wide range of safety and operating rules, special instructions, and other management practices, which are based on over 150 years of industry experience. Because of the public perception issues, railroads spend a inordinate amount of time, money, and energy to manage the safe and efficient transportation of radioactive materials.

The railroad's goal regarding the transportation of SNF and HLW is to use dedicated trains at timetable speeds following a risk management plan that is mutually acceptable to the carriers, DOE, and other key stakeholders. DOE, in its preliminary draft transportation plan, discusses a plan for stakeholder involvement in identifying transportation risks. We are concerned about the fact that the Multi-Purpose Canister (MPC) and railcar design process has already begun without first

addressing the issue of risk management. If the transportation plan is to be fully effective, all risks should be identified first and plans developed for mitigating or managing them as a system.

Train Speed

The railroad industry believes that casks and railcars should be designed and constructed to meet conditions normally found in rail transportation. As a result of early concern about the integrity of the shipping cask, the rail industry in 1975 adopted a set of operating restrictions to prevent a situation where the threat of a release of SNF or HLW might occur. Shipments of spent nuclear fuel from U.S. Navy facilities have also been restricted to 35 mph by DOE/DOD shipping instructions. According to DOD, this is to prevent damage to the spent fuel cores.

It is becoming more difficult to limit the speed of trains carrying SNF and HLW casks. In recent years, rail traffic has actually grown and the carrying capacity of some lines has been reached. Restricting the speed of trains carrying SNF and HLW has significant impacts to the railroad's operating flexibility, and impairs their ability to meet customer service requirements. Trains operating at slower than normal speeds cause scheduling problems for other trains and adds to

crew scheduling difficulties because it takes longer than normal to traverse a crew district. Slowing down trains affects the railroad's ability to compete effectively with other transportation modes. Since the transportation plans being developed now will guide shipments for the next 20-30 years, it is imperative that a risk management plan be developed in cooperation with the rail industry to identify and control the risks of transporting HLW and SNF.

Cask

Since 1975, the railroad industry has expressed its concern about the integrity of casks in the railroad operating environment. The early controversy surrounding this issue was very contentious and had polarized the industry and the government. A large part of the problem then was that the railroads did not believe that the cask could survive a serious rail accident without a radiation leak. Questions about DOE's emergency response responsibilities and capabilities were also raised. We would like to avoid this situation during the development of the new MPC system and transportation plan.

The railroad industry would like to be confident of the cask's performance. The cask design standards need to be described in terms that can be related to the

railroad operating environment, including accidents. Knowing the limit of safety of the cask in terms of impact and fire and water immersion is essential to gaining the railroad industry's acceptance of the transportation plan and to the development of an acceptable risk-based transportation system.

DOE's plan to develop a 125 ton MPC has raised concerns in the railroad industry. Some railroad companies have objected to the development of a 125 ton cask because some branch lines and secondary routes cannot accommodate the extra weight without strengthening the track and track structures. This will limit the flexibility of the railroads to route the shipments and may expose a shipment to greater risk if the primary or secondary route is unavailable for some period of time. Another concern about the weight of the cask is that emergency recovery in the event of a derailment may pose special lifting problems.

Rail Vehicle

Since it is clear that DOE intends to proceed with development of a 125 ton MPC, railcar design is very important. The primary goal should be to minimize the possibility of a derailment. The process of designing or selecting a railcar should take into account several factors. Design factors such as the capability of a railcar

to move through different radius curves and maintain dynamic stability throughout the intended range of operating speeds should be evaluated. The loaded car should be able to negotiate the weight and clearance limits of all possible routes. Rail-vehicle interaction should be studied to ensure that the vehicle design selected meets an acceptable level of risk for various operating conditions. Factors such as vertical, lateral, and longitudinal forces should be considered in analyzing train and railcar dynamics.

When developing a railcar to carry the MPC, DOE should also consider the design of the other railcars in the dedicated train, including buffer cars and security escort cars. They should all have the same performance characteristics in order to minimize the possibility of derailment or other errant behavior. The past practice of using railroad-supplied railcars as buffer cars and security escorts may not provide the desired level of risk management.

Dedicated Trains

The railroad industry has long supported the use of dedicated train service for the movement of SNF and HLW. Such service allows for the greatest level of risk

management of this sensitive cargo. Some of the benefits of dedicated train service are:

*Exclusion of other cargo limits the mechanical and thermal forces in the event of an accident.

*They are a more manageable train to operate. Slack and run-in are easier to control; a short train can be stopped more quickly. Newly developed electronic-controlled braking systems could be used to further improve stopping ability. In fact, future technological developments would be easier to implement on dedicated trains.

*They are easier to interchange between railroads since there is less switching required. Perhaps half of the railroad industry's traffic currently moves in some form of dedicated train. Examples include unit coal, grain, ore, intermodal, and chemical trains.

*They allow for advance planning for route and train movement.

*They allow for more precise scheduling for day of week and time of day.

*They encounter the fewest possible enroute delays. This increases equipment turnaround thereby reducing the number of railcars required. However, if DOE allows each jurisdiction along a train's route to perform safety inspections, this will result in delays.

*They enable enroute surveillance to be maintained more easily.

*They provide for greater safety of onboard escorts.

*Since railroads own their right-of-way, dedicated train service may alleviate some public opposition over transportation, and may result in greater public confidence in SNF and HLW transportation.

Routing

Routing any shipment is a function of origin, destination, transit time, cost, and other factors. The objective is to move the customers shipment from origin to destination as quickly and as economically as possible. Routing decisions can be made by the shipper or the originating carrier. A shipper-specified route could be selected for a variety of reasons such as cost, transit time, carrier preference, and

perceived safety. The carrier can develop routes using computer models of the rail system, focusing on such factors as weight and dimensional limits of a line, frequency of service, track class and speed, and maintenance situations. If the destination is not on the originating carriers line, the shipment will be interchanged with another carrier. Before the shipment begins, an agreement is made with all connecting carriers concerning the entire route and interchange points.

The route will usually consist of the carrier's main lines between major points and secondary or branch lines at the origin and destination. Main lines are used for most of a railroad's traffic. Main lines are maintained to the highest quality of the railroad's tracks and therefore have the highest speed limits. Secondary and branch lines have lower speed limits, depending on their maintenance condition and FRA Track Class designation. In the event of an accident or natural disaster while a train is enroute, the shipment will be rerouted to the next best available route. This may involve another using carrier's tracks.

Transporting SNF and HLW the shortest possible distance in dedicated trains over the best available track will reduce the possibility of a transportation incident occurring. The best available track is often located in densely populated areas.

Routing to avoid population centers can only increase the possibility of an incident by lengthening transit time and using lower quality track.

The preliminary draft transportation plan indicates that DOE will develop rail routing criteria for OCRWM shipments in the absence of DOT rail routing regulations. The need for such criteria should be carefully considered in light of the present methods used for making routing decisions. The use of dedicated train service would improve shipment planning and response to changing conditions while enroute. Further, a risk management-based transportation plan would consider routing as one element of the management process, rather than simply imposing criteria to address a concern.

Uniformity of Regulatory Enforcement

Throughout the process of stakeholder involvement in the transportation planning process, representatives of state and local governments and Indian Tribes have focused on exercising control over transportation, primarily the highway mode. Since there are no rail routing regulations, the Hazardous Materials Transportation Uniform Safety Act (HMTUSA) addressed the need for uniformity of regulation and

enforcement efforts in connection with the transportation of hazardous materials by rail.

Railroad companies are concerned about the potential for a wide variety of attempts to regulate the transportation of SNF and HLW, even within the requirements of HMTUSA. Rail operations require a high degree of uniformity in order to assure the safety of employees and the public as well as compliance with regulatory requirements.

The lack of consistency between civilian and defense shipping programs is also of concern to the railroad industry. As mentioned, DOD imposed speed limits pose operational problems for the railroads. Differences in current and future cask and railcar equipment may also pose some maintenance and operational problems. For example, casks used for civilian shipments have been designed to part from the railcar in the event of an accident but the defense program casks are integral parts of the railcar which weigh over 400,000 pounds. The DOD requirement for moving their casks at the end of a train is of concern because studies have shown this practice to result in dangerously high longitudinal forces. Uniform use of dedicated trains can resolve these problems.

Emergency Response

Most railroads have some capability, either in-house or through contractors, to respond to emergencies, but no railroad in the country has the capability to effectively respond to a transportation accident involving HLW and SNF. DOE should accept the responsibility and develop the capability to effectively respond to incidents involving such materials including technology, equipment, manpower, and plans.

AAR has been involved in DOE sponsored activities including Transportation External Coordinating Working Group and Transportation Coordinating Committee over the past 3 years, and have participated in the discussions on emergency response and training in connection with Section 180C of the NWPA. Our message has been that the DOE's expectations of railroad transportation companies in emergency response actions should be made clear. The extent to which DOE will be responsible for emergency response activities remains unclear.

Conclusion

Thank you for the opportunity to provide these comments on behalf of the railroad industry. The AAR and the railroad industry remains very interested in working with DOE to resolve these issues. The recent issuance of the Request for Proposal on the MPC has prompted development of a committee of industry representatives to work closely with DOE on the draft transportation plan, environmental impact statement, and other matters related to the movement of SNF and HLW by rail.