

Overview of Requirements for Using Overweight Vehicles to Ship Spent Nuclear Fuel – 8472

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ABSTRACT

The U.S. Department of Energy's (DOE's) *Final Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, considered a range of options for transportation. In evaluating the impacts of the mostly-legal weight truck scenario, DOE assumed that some shipments would use overweight trucks. The use of overweight trucks is also considered in the *Draft Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada*, issued for public comment in Fall 2007. With the exception of permit requirements and operating restrictions, the vehicles for overweight shipments would be similar to legal-weight truck shipments but might weigh as much as 52,200 kilograms (115,000 pounds). The use of overweight trucks was determined to be acceptable for the Office of Civilian Radioactive Waste Management (OCRWM) Program because the payload is not divisible and the packaging alone may make shipments overweight. Overweight truck shipments are common, and states routinely issue overweight permits, some for vehicles with a gross vehicle weight up to 58,500 kilograms (129,000 pounds). This paper will present an overview of state overweight truck permitting policies and national and regional approaches to promote safety and uniformity.

INTRODUCTION

In April 2004, DOE selected the mostly rail scenario analyzed in the Final Repository EIS as the transportation mode both on a national basis and in the State of Nevada. Under the mostly rail scenario, DOE will rely on a combination of rail, truck and possibly barge to transport spent nuclear fuel (SNF) and high-level radioactive waste (HLW) to the repository, with most being transported by rail. Final decisions regarding which mode

will be used to transport the waste from specific sites have not been made. Final decisions on mode from each site will be made several years before shipments begin, based on specific site conditions. The majority of shipments would move by rail to Yucca Mountain, but shipments of SNF from commercial sites that do not have the capability to handle rail casks could be made by overweight or legal weight trucks.¹

Trucks with a gross weight of 80,000 pounds or less are considered legal weight by Federal law and cannot be prohibited on the Interstate Highway System and those non-interstate highways also designated as part of the National Highway System. Trucks with a gross vehicle weight in excess of 80,000 pounds are considered overweight. A great majority of states require overweight vehicles to have an overweight permit. In the *Draft Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (Draft Repository SEIS), DOE states that the vehicles carrying SNF in truck casks could have gross weights ranging from 80,000 to 115,000 pounds, making them overweight.

This paper discusses the requirements that are currently imposed by states on overweight truck shipments. It does not address requirements for heavy-haul vehicles that could be used to carry rail casks from reactors lacking direct rail access to nearby railroads or barge sites which would involve much different state and local regulations based on weight and dimensions.

GENERAL REGULATIONS

Federal regulations governing vehicle weight are designed to preserve the nation's infrastructure and stemmed from the Federal-Aid Highway Act of 1956, which was the basis for the Interstate and Defense Highway System. The regulations mandate that the maximum gross vehicle weight on Interstates and routes providing reasonable access to the Interstates is 80,000 pounds. Vehicles over this limit may use these highways if they meet certain axle configurations and have obtained the necessary permits. A permit, according to the Department of Transportation (DOT), is an authorization issued to a motor carrier allowing it to transport oversize or overweight cargo. It is available for a limited period of time and is tailored to the needs of each particular vehicle or load. States, not the Federal government, issue these permits. States have issued overweight permits to vehicles with gross vehicle weights of up to 129,000 pounds. Permits may be issued by states without regard to the axle, gross weight, or Federal bridge formula requirements for nondivisible loads. A nondivisible load is one that cannot be broken down. Federal regulations at 23 C.F.R. § 658.5 define nondivisible loads and include "casks designed for the transport of spent nuclear materials".

¹ Other transport options could include shipments by heavy-haul truck or by barge. For the 22 commercial sites that have the capability to handle and load rail casks but do not have direct railroad service, DOE could ship the casks by heavy-haul truck relatively short distances to nearby railroads. Barge shipments of rail casks could also be considered from 15 (a subset of the 22 commercial sites without direct rail access) commercial sites that are on or near navigable waterways.

OVERWEIGHT TRUCK SHIPMENT EXAMPLE

To illustrate the types of requirements states may reasonably impose on overweight truck shipments of SNF, consider a hypothetical commercial shipment from the Pilgrim Station, a nuclear power plant in Plymouth, Massachusetts, to the proposed repository. Pilgrim has been identified in the Draft Repository SEIS as a potential site for truck shipments. For the sake of the hypothetical, the route from the reactor to the repository would be the representative route used in the Draft Repository SEIS for the analysis of the various potential impacts associated with truck shipments of SNF.² The routes that were used in the SEIS are representative routes that could be used and conform to DOT regulations for Highway Route Controlled Quantities of radioactive materials. The states traversed in this example would be the following: Massachusetts, Connecticut, New York, Pennsylvania, Ohio, Indiana, Illinois, Iowa, Nebraska, Wyoming, Utah, Arizona, and Nevada.

While the exact specifications of the vehicle that would be used for these shipments are not known at this time, it is reasonable to assume that a vehicle would be available with weight and dimensions that would allow permitting in the states in the example. All of these states routinely issue overweight truck permits to commercial carriers.

STATE OVERWEIGHT PERMIT POLICIES

Overweight permit policies vary from state to state with differences in maximum weights and axle configurations and loadings. A conventional vehicle configuration and cask load could likely be used that would allow permitting in all states involved. The permits issued by states may only be valid for state highways and Interstate Highways within the state. Additional permits may be required by localities or turnpike authorities if these are included in the route. Permits specify the length of time the permit is valid and may include operational requirements such as time of day restrictions, weekend and holiday travel rules, and frost restrictions. The following is a discussion of these requirements in the states traversed in this hypothetical shipment:

Massachusetts (MA): Permit covers only those routes or sections of routes designated as state highways. It does not cover sections of I-90 controlled by the MA Turnpike Authority; a separate permit is required for this. The permit is valid for five consecutive days. Permitted vehicles may travel from Monday until noon Saturday and Sunday morning until noon. Travel is prohibited on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

Connecticut (CT): Unless specifically stated, the permit is valid for three days and for one trip between the points designated, in this case, state line to state line. The vehicle can only move during daylight hours unless given special permission. No movement is allowed on Saturdays, Sundays, or holidays (holiday periods are published annually).

² At this time, years before the projected first shipment, DOE has not identified the actual routes that would be used to ship SNF to Yucca Mountain.

New York (NY): The New York State (NYS) DOT, as well as the NYS Thruway Authority and the NYS Bridge Authority, have each established procedures for permitting overweight vehicles across highways which they own and operate. Permits issued by the NYS DOT are only valid for highways under its jurisdiction. An overweight vehicle transporting radioactive material must obtain a Type 1R permit which authorizes movement from one location to another on approved routes. The permit is valid for five permissible hauling days. A permissible hauling day is any normal working day, Monday through Friday, during daylight hours and Saturday until noon. No movements are allowed on Sundays, New Year's Day Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

Pennsylvania (PA): The permit is valid only for highways under jurisdiction of the PA DOT and does not include the PA Turnpike. It is a single-trip permit and expires after five authorized weekdays have elapsed. Movement under the permit is not authorized sunset to sunrise, Saturday after noontime, and Sunday. Also not allowed is travel on the following holidays and the day preceding these holidays – New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

Ohio (OH): A trip permit is granted for a particular overweight vehicle to make one move during a five day period between two specific locations over prescribed routes. Overweight vehicles that are traveling under the authority of a special hauling permit are not restricted as to travel hours or days so long as they can move without obstructing the normal flow of traffic.

Indiana (IN): Permits are issued for one trip, one way, and are valid for 15 days. There are no time of day, weekend, or holiday restrictions.

Illinois (IL): Single trip permits are only valid for highways under IL DOT jurisdiction. Overweight movements over the IL Toll Highway System require additional permits. Permits may be issued for the movement of an overweight legal size container, empty or loaded, designed for transporting radioactive materials. These moves are made under the same conditions and provisions as other overweight moves, except it is recommended they not be made in congested areas over critical highway facilities or during rush hour periods. There are no time of day, weekend, or holiday restrictions associated with these permits.

Iowa (IA): Single trip permits are valid for five days. Movement is allowed seven days a week except for Memorial Day, Independence Day, and Labor Day. Movement is also prohibited after noon on days preceding these holidays. When a holiday falls on a Saturday, Sunday, or Monday, movement is prohibited after noon on the Friday preceding the holiday weekend and through the duration of the holiday weekend and the holiday. There is no restriction on time of day.

Nebraska (NE): Overweight vehicles are issued a single trip permit which is good for 10 days. Movement under this permit is authorized 24 hours a day, 7 days per week. Movement by this permit may at any time be delayed when traffic, weather or other conditions on the state highways are determined to be hazardous.

Wyoming (WY): Permits are issued by the WYDOT Commercial Carrier Division for separate movements of indivisible loads. There are no time of day, holiday, or weekend restrictions unless specified on the individual permit.

Utah (UT): A permit maybe issued by the UT DOT for a nondivisible load that does not exceed a gross weight of 125,000 pounds. A single trip permit is valid for four days. There are no time of day, holiday, or weekend restrictions.

Arizona (AZ): A permit is issued for a single trip and is good only for travel on state routes. There are no time of day, holiday, or weekend restrictions.

Nevada (NV): NDOT Overdimensional Permit Section issues single trip permits good for five days. There are no time of day, holiday, or weekend restrictions. There are frost restrictions on selected state highways from February through April. Maps of these routes are available from the Permit Section. Frost restrictions do not apply to Interstate highways in the state.

The following chart summarizes the operational restrictions for a permitted load in the hypothetical shipment example:

STATE	TIME OF DAY RESTRICTIONS	WEEKEND RESTRICTIONS	HOLIDAY RESTRICTIONS	FROST RESTRICTIONS
Massachusetts	no	yes	yes	no
Connecticut	yes	yes	yes	no
New York	yes	yes	yes	no
Pennsylvania	yes	yes	yes	no
Ohio	no	no	no	no
Indiana	no	no	no	no
Illinois	no	no	no	no
Iowa	no	no	yes	no
Nebraska	no	no	no	no
Wyoming	no	no	no	no
Utah	no	no	no	no
Arizona	no	no	no	no
Nevada	no	no	no	yes

STATE EFFORTS TO ENCOURAGE UNIFORMITY

States have recognized the need to promote common permitting practices for overweight vehicles to advance transportation safety and efficiency goals. At least two associations—one national and the other regional representing State highway and transportation officials—have addressed the issue of uniform permitting.

The American Association of State Highway and Transportation Officials (AASHTO) is an important link to state practices and policies. In a 1990 effort to evaluate the feasibility of overweight trucks to ship SNF, OCRWM sponsored an AASHTO study

addressing concerns raised about their use such as the potential for road damage. The use of overweight trucks was determined to be acceptable because the payload is not divisible and the packaging alone may make the shipments overweight. AASHTO recommended specific length and axle-loading for routine permitting.

In 2004, AASHTO's Subcommittee on Highway Transport issued a *Guide for Vehicle Weights and Dimensions*. Originally issued in 1991, the Guide provides information for states and for commercial carriers that can be used in connection with vehicle size and weight issues and permit practices directed towards improving safety, managing highway and bridge infrastructure, and streamlining regulatory processes. It contains definitions of commonly-used terms, descriptions of vehicles in regular operation, dimension and weight limits, and an overview of the permitting process for overweight, oversize vehicles.

A regional approach has been undertaken by the Western Association of Highway Transportation Officials (WASHTO) understanding that commercial highway users need assistance to navigate through the various administrative practices established by each jurisdiction. The organization's Committee on Highway Transportation developed a *Guide for Uniform Laws and Regulations Governing Truck Size and Weight among the WASHTO States*. The Guide, first published in 1990, provides recommendations for a more unified approach including minimum standards for use by states enabling industry to move more easily between jurisdictions while maintaining a balance between freight, infrastructure, and safety.

CONCLUSION

Overweight truck shipments are made routinely by carriers throughout the country. State permits are obtained by the carriers or by companies that provide permitting services to the carriers. While varying state permit restrictions may add complexity to OCRWM's planning activities, the well-established experience of commercial carriers and efforts to bring uniformity to the permitting process should allow the overweight shipment of SNF to be a viable option.