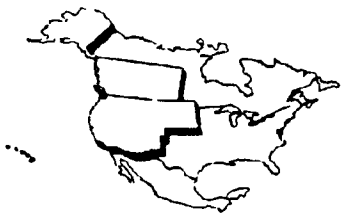

Western Interstate Energy Board/ WINB

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July 17, 1996

Mr. William Knoll
Department of the Navy
Code NAVSEA 08U
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Dear Mr. Knoll:

Enclosed are the comments of the Western Interstate Energy Board's High-Level radioactive Waste Committee on the Navy's *Draft Environmental Impact Statement for a Container System for the Management of Naval Spent Nuclear Fuel.*

A The Committee appreciates the opportunity to provide input during the Navy's process of developing its spent fuel container system. However, the Committee regrets that the limited time which the Navy allotted for comment on the *Draft EIS* did not allow for further, more in-depth analysis.

B The Committee wishes to stress that the scope of the *Draft EIS* is very limited. This document therefore can only be used to potentially satisfy NEPA requirements for the shipment of naval spent fuel and special case waste. It cannot be used to support decisions on the transportation of other types of wastes under the Nuclear Waste Policy Act (NWPA). Nor can this document be used to satisfy NEPA requirements for the shipment of naval spent fuel and special case waste to any other location outside of Yucca Mountain, or from any other origin outside of the Idaho National Engineering Laboratory.

C The *Draft EIS* clearly needs to provide more analysis and information to support a variety of its assumptions. In its present form, the document does not adequately address western stakeholder concerns with regard to ensuring the safe and uneventful transportation of naval nuclear waste.

Sincerely,

Daniel Nix, Co-Chair
High-Level Radioactive Waste Committee

Richard Moore, Co-Chair
High-Level Radioactive Waste Committee

cc: Richard A. Guida, Associate Director for Regulatory Affairs, Naval Nuclear Propulsion Program, Department of the Navy
Daniel Dreyfus, Director, Office of Civilian Radioactive Waste Management

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Comments of the High-Level Radioactive Waste Committee
of the Western Interstate Energy Board
on the
Department of the Navy Draft Environmental Impact Statement
for a Container System for the Management of Naval Spent Nuclear Fuel

The following comments of the High-Level Radioactive Waste Committee of the Western Interstate Energy Board are focused solely on the transportation aspects of the Draft EIS. The Committee consists of representatives of the states of Arizona, California, Colorado, Idaho, Nebraska, Nevada, New Mexico, Oregon, Utah and Washington.

Inapplicability of the EIS to Non-Navy Shipments Under the NWPA

D The scope of the Draft EIS is very limited (shipments of Navy fuel and special case waste by rail from INEL to Yucca Mountain). As a result, the EIS cannot satisfy NEPA requirements for shipment of Navy waste to other locations or to support decisions on the transportation of other types of wastes under the Nuclear Waste Policy Act (NWPA). The Committee recognizes the budget shortfalls at DOE which caused the narrowing of the scope of the EIS. However, it is unfortunate, and probably wasteful of government resources in the long-run, to piecemeal the analysis of shipping containers that may be used in shipping campaigns to a repository or interim storage site under the NWPA.

Inconsistency Between the Transportation Mode Assumptions in the Draft EIS and Potential Access to a Yucca Mountain Repository and Interim Storage Facility Near Yucca Mountain

E All the alternatives examined in the Draft EIS assume rail shipments from INEL to Yucca Mountain. However, at present there is no rail access to Yucca Mountain. Pending legislation to amend the Nuclear Waste Policy Act proposes to use heavy haul trucks to transport rail casks from a transfer station at Caliente, Nevada. However, based on national security concerns the Air Force has objected to the proposed route from Caliente to Yucca Mountain.

F Furthermore, the Draft EIS notes that the ultimate modal decision will be made by DOE (pages S-6, 3-12). DOE may decide not to ship Navy fuel by train. In such an event the Draft EIS will have failed to be of sufficient scope to cover the shipment decision.

To rectify this shortcoming, the final EIS should examine rail, rail/heavy haul truck, and legal-weight truck shipments to Yucca Mountain.

No Evaluation of General Commerce Versus Dedicated Train Shipment

The Draft EIS assumes shipments from INEL to Yucca Mountain will use "commonly

scheduled trains." In several places in the Draft EIS (e.g., page 3-7) it is stated that shipment by "commonly scheduled trains...is an extension of the proven safe, historical practices used to transport naval spent fuel from shipyards to INEL since 1957." It is the Committee's understanding that naval spent fuel has also been shipped by special trains that carried only spent fuel and which followed special operating procedures.

G The Committee believes that dedicated trains employing special measures offer an increased margin of safety compared with general commerce trains. The final EIS should evaluate the use of dedicated trains employing various special precautions (e.g., controlling the time of day of travel) which may not be available on general commerce trains.

The National Environmental Policy Act requires the examination of all reasonable alternatives and the Committee believes that the use of dedicated trains is a very reasonable alternative, and possibly the preferred alternative, and therefore must be evaluated in the final EIS.

Risk Assessment May Be Inappropriately Based on an Extrapolation of the Findings of Modal Study to the Six Alternative Casks in the Draft EIS

H The models and analysis used in the Draft EIS relies heavily on the findings of the NRC-sponsored Modal Study. The Modal Study, however, has limitations, including the use of a generic cask for determining the potential releases from accidents. It is not clear that the types of casks being evaluated in the Draft EIS would perform under accident conditions in the same manner as the generic cask in the Modal Study. Therefore, it is not clear that the consequences of severe accidents are accurately portrayed in the Draft EIS.

The Draft EIS includes a section on "Analysis of Uncertainties" in Appendix B *(Detailed Evaluation of the Radiological and Nonradiological Risks Associated with Transportation of Naval Spent Nuclear Fuel)*. The Appendix notes that: "An extensive discussion of uncertainty analysis related to this Environmental Impact Statement can be found in Volume 1, Appendix D, Attachment F, Section F.1.5 of the Programmatic SNF and INEL EIS (DOE 1995)."

I Unfortunately, this Attachment does not discuss any of the uncertainties involved in extrapolating the findings of the Modal Study to the six alternative casks being evaluated in the Draft EIS. Other factors, such as the increasing train speeds on western railroads, may also need to be incorporated into any review of the applicability of the findings of the Modal Study to the risk factors reported in the Draft EIS.

See *Nuclear Waste Shipping Container Response to Severe Accident Conditions: A Brief Critique of the Modal Study*, December 1990, Nevada Nuclear Waste Project Office.

Draft EIS Shipping Schedule May Not Be Realistic

Tables B.3 and B.4 present yearly shipping schedules. The text accompanying the tables states that the numbers are "...consistent with the expectation that naval fuel will be among the

J earliest placed in the centralized interim storage site or geologic repository." The Committee notes that pending legislation would generally place naval fuel low in priority for acceptance at an interim storage facility.

Other Comments

K 1. The Draft EIS provides little information about the character of Navy fuel (other than that it is rugged). The lack of information on the fuel makes it difficult to evaluate the validity of the analysis in the Draft EIS.

L 2. The Draft EIS does not evaluate the impacts from transporting spent fuel/special case waste in transportable storage casks following an extended period of storage (e.g., 20 years). In addition, there is some confusion surrounding the statement in the Draft EIS that: "Likewise, decay heat calculations have been made which demonstrate that no fission product releases will occur from naval spent nuclear fuel inside a container even assuming about 3 years of cooling after reactor
M operation." (page 2-4) The analysis of fission product releases should cover a period substantially longer than three years.

N 3. The comparison of radiological exposure from each of the cask alternatives may be skewed in the Draft EIS by the use of actual radiation levels for the M-140 cask and maximum allowable radiation levels for all other alternatives. Thus the relative risk associated with use of the M-140 may be understated when compared to the alternative casks.

O 4. The Committee is interested in understanding the sources of data supporting the statement that "...transportation accident rates in general commerce are higher per truck mile than per rail mile." (page 3-11)

P 5. The Draft EIS appropriately notes that: "The analysis in this EIS covers transportation from INEL to the Yucca Mountain location as a representative or notional destination. This EIS does not make presumptions concerning the Yucca Mountain site's suitability for a geological repository or designation for use as a centralized interim storage site." The identification of three rail shipping routes may be adequate for bounding rail routing options in this EIS, but it is clearly not adequate to support shipments.

Commenter: Daniel Nix - Western Interstate Energy Board, Colorado

Response to Comment:

A. The Navy extended the comment period from 45 to 60 days (ending July 18, 1996) in response to requests from the state of Nevada. A further extension could not be provided because of the need to complete the EIS to support actions required under a court agreement among the Department of Energy, Navy, and State of Idaho covering spent fuel management at the Idaho National Engineering Laboratory.

B.&D. The Board's comment is correct that the EIS is limited to naval spent nuclear fuel and Navy-generated special case waste. The Board's comment is incorrect in the implication that transportation to Yucca Mountain is supported by the EIS. The proposed action of this EIS does not entail actual shipment to a repository or a centralized interim storage site. Rather such a shipment to a notional repository or centralized interim storage site is evaluated to help distinguish among the six container alternatives. As stated in the EIS, the proposed action is the selection of a container system for the management of post-examination naval spent nuclear fuel and Navy-generated special case waste. The proposed action also includes:

- Manufacturing the container system.
- Loading, handling and storage of the container system at Idaho National Engineering Laboratory.
- Modifications to the Expended Core Facility and the Idaho Chemical Processing Plant at Idaho National Engineering Laboratory to support loading the containers at Idaho National Engineering Laboratory.
- Selection of the location of the dry storage area at Idaho National Engineering Laboratory.
- Evaluating the impacts of transporting the container system to a representative or notional interim storage facility or repository and unloading the container system at that hypothetical location.

In evaluating alternatives for such a system, it is incumbent upon the Navy under National Environmental Policy Act to evaluate how the system affects ultimate transport to an interim storage facility or repository, since such an action is reasonably foreseeable. Including the impacts of transporting the container system to, and unloading at, a representative or notional interim storage facility or repository ensures that the container system selected is compatible with these operations at the facilities to the extent they are defined at this time. The location of the facilities is not known at this time and waste acceptance criteria have not yet been established. The site for a geologic repository or centralized interim storage facility is neither a decision which the Navy will make nor a matter covered under this EIS. Likewise, the routes for transporting loaded containers to that specific location are not selected by the Navy. For the former, further National Environmental Policy Act evaluation will be needed in site-specific environmental documentation for an interim storage facility or repository when the specific location is established. A possible location (Yucca Mountain) has been included in this EIS only for transportation analysis purposes, since it is the only location identified for characterization in the Nuclear Waste Policy Act. Routes to Yucca Mountain as examples were chosen with different distances and through different population densities to identify whether different routes or different population densities would have a significant impact on the container system selection. Since the impacts of transporting to and unloading at this representative or notional location are shown to be small, and little difference exists among the alternate containers evaluated, this enables the Navy to select a container system now, taking these factors into account in the most reasonable and appropriate fashion.

Commenter: Daniel Nix - Western Interstate Energy Board, Colorado

C.&K. The level of information in the Container System EIS is sufficient. Although the detailed design of Navy fuel is classified, the EIS contains significant information concerning its performance characteristics and the contents of the loaded container systems such that the environmental impacts from its shipment, storage, and management can be assessed and independent analyses can be performed to verify the results presented in this EIS. Chapter 2, Section 2.3 of the EIS presents the general characteristics of naval nuclear fuel, including design description, U-235 enrichment range, the amount of U-235 in a loaded container, criticality control measures, and the results of decay heat calculations. Appendices A and B contain detailed numerical data on the source terms and on corrosion product and fission product releases expected for each container system for each hypothetical accident scenario analyzed. The Appendices also identify the computer programs which were used, along with the specific assumptions for each accident scenario.

For example, Appendix B, Table B.8 provides a list of the radioactive nuclides which might be released in a shipping accident involving naval spent nuclear fuel. The data on the amount of radioactivity are divided into the amounts released from the fission products in the fuel and the amount in the activated corrosion products attached to the surface of the fuel. The data are provided for typical spent fuel in nuclear-powered submarine and surface ship fuel assemblies to demonstrate the range of radioactivity. Using the information in this table, along with the other detailed information on the calculations provided in Appendix B, allows independent reviewers to evaluate the adequacy of the calculation of impacts of a hypothetical accident on human health and the environment. It also permits an independent reviewer to perform analyses using alternate methods, such as other computer programs, or utilizing other conditions, such as different weather or accident conditions. The information in Appendix A, including the amount of radioactivity released and the fraction of the total activity in naval spent nuclear fuel it represents, is provided in similar detail to permit independent analyses for normal and accident conditions.

The Navy has provided in this EIS, and in documents referenced in the EIS, a substantial amount of information on the handling, storage, and shipment of naval spent nuclear fuel and the types and amounts of radiation or radioactive material involved in releases from normal operations and postulated accidents in this EIS. The Navy has attempted to provide enough information on radiation, radioactivity, and other aspects of operations or hypothetical accidents to allow independent calculation and verification of all estimates of environmental impacts.

D. See the response to comment B above.

E. Comparison of specific heavy-haul transportation routes is properly the subject for a site-specific repository EIS. Comparison of heavy-haul transportation routes is pertinent to this EIS to the extent that it helps to discriminate among the alternatives considered.

All of the alternative container systems would be suitable for heavy-haul transportation, as illustrated by prior use of the M-140 containers in heavy-haul transport. However, it is accurate to state that the M-140 based alternatives would be less suitable due to size, height, and weight. This statement has been added to Chapter 3, Sections 3.2, 3.8.4 and Chapter 7, Section 7.3 of the EIS.

The Navy is aware that no rail link to the Yucca Mountain site currently exists, and that if it were to become the site of a repository or centralized interim storage facility, heavy-haul transport might be used in place of a rail connection. However, the resolution of that issue will depend on the site eventually selected and the evaluation of the environmental impacts and

other factors specific to that site. The routes, distances, and potentially affected populations would be the same for all of the alternative container systems considered for naval spent nuclear fuel because the shipments will use the same route--the route selected for shipment of commercial spent nuclear fuel and high-level radiological waste to the repository or centralized interim storage site. Similarly, all container systems considered would have the same design dose rate, a maximum of 10 millirem per hour at 2 meters, as required by the Department of Transportation regulations (49 CFR 100 et seq.). Therefore, the key difference in the alternatives for the purposes of comparing the impacts associated with heavy-haul transport for naval spent nuclear fuel using the alternative container systems is the number of shipments. Text which explains this matter has been added to Appendix B, Section B.4.

The radiological risks of shipping naval spent nuclear fuel have been conservatively analyzed in this EIS and are described in Section B.5.1. The analyses use a train speed of 15 miles per hour. This is slower than the actual expected transport speed. Using slower train speeds is more conservative because that results in a higher calculated radiation exposure to the public (trains spend more time proximate to the public). This conservatively slow train speed means that the exposure associated with the transport speeds for possible heavy-haul transport would be similar to the results for rail shipments of the same length over similar routes.

Containers used for legal-weight truck transfer would also be designed to produce a maximum exposure rate of 10 millirem per hour at 2 meters in accordance with Department of Transportation regulations and their use would present the same opportunity for the elevated vehicles to be in traffic with them as would occur for heavy-haul transport. Further, many more legal-weight truck shipments would be required to move all spent nuclear fuel. Text has been added to Chapter 3, Section 3.7 which summarizes the evaluation of legal-weight truck use.

The range of accidents analyzed in Appendix B, Section B.5.2 would bound the impacts from a hypothetical heavy-haul transportation accident at an intersection in Las Vegas, such as at the intersection of I-15 and U.S. Route 95 on a week day during rush hour. Such an event would be expected to produce impacts which would be within the scope of the accidents analyzed in Section B.5.2, using an urban population density of 3,861 people per square kilometer. These severe hypothetical accidents have also been analyzed for the rural population density of six people per square kilometer and would produce estimates of effects similar to those which might result from the scenario postulating an accident at the intersection of Nevada State Routes 375 and 318 at Crystal Springs.

Text has been added to Section B.5.2 to specifically cover these points.

F. If the Department of Energy should decide to adopt a method of transportation for naval spent nuclear fuel which does not make use of containers suitable for rail shipment, a new evaluation would be performed. Appropriate environmental review would also be performed to support that decision should it become necessary.

G. The shipment of naval spent nuclear fuel containers in general commerce, i.e., as part of freight trains carrying other cargo to many destinations has proven to be acceptable and practical in almost 40 years of experience, during which over 660 shipments of naval spent nuclear fuel have been done safely. This practice is not especially complex and has been proven to cause no increase in difficulty or hazards of point-of-entry inspections for railroad or other personnel. It has not contributed to any derailments and the railroads have provided clearance for the shipments and associated railcars, frequently being involved in the design process for the systems. The shipping containers are designed to meet the requirements for

shipping in general commerce, including withstanding high temperature fires, and safety precautions, such as using buffer cars, have worked well over time.

The use of general freight trains has been proven safe during the almost 40 years of shipping over 660 container shipments of naval spent nuclear fuel. These shipments have been made with no release of radioactivity to the environment. Dedicated trains have been used only when the need for urgent delivery or other considerations justified the increased cost. The DOE's Notice of Intent for Preparation of an 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 (60 FR 40164), states that "The potential impacts associated with national and regional shipments of spent nuclear fuel and high-level radioactive waste from reactor sites and DOE facilities will be assessed. Regional transportation issues include: (a) technical feasibility, (b) socioeconomic impacts, (c) land use and access impacts, and (d) impacts of constructing and operating a rail spur, a heavy haul route, and/or a transfer facility...". The Navy will work with the Department of Energy to ensure naval spent nuclear fuel is properly addressed in the Repository EIS analyses.

From the mid-1970s to the early 1990s the U.S. Department of Energy and U.S. Department of Defense argued before the Interstate Commerce Commission and civil courts in multiple proceedings against the railroads imposition of special (dedicated) train service on radioactive shipments. In every case, including exhaustive reviews of safety and railroad and train operations, the Interstate Commerce Commission and courts determined and upheld that special train service for radioactive shipments, including spent nuclear fuel, was unnecessary, wasteful and unlawful. In 1993, the railroad industry refunded to the federal government $8 million it had collected, plus interest, for imposed special train service.

The Navy remains of the view that any additional safety resulting from dedicated train service is insignificant and when compared to the substantial increase in cost associated with dedicated trains simply cannot be justified. A dedicated train may be used in a particular instance if schedule or other considerations dictate that it is necessary but not as a matter of policy or routine and clearly not to increase safety.

The safety of naval spent nuclear fuel shipments rests squarely on the robust shipping containers and the rugged nature of the contents as discussed below in the response to comment I. Generally speaking, naval spent nuclear fuel shipments do not need to be treated or handled any differently than any other hazardous materials handled by the railroads in interchange service. Certainly unnecessary or lengthy delays and layovers in railyards and at interchanges should be avoided; but the normal times required for train switching and makeup, train crew reliefs, and connections between railroads are not a concern during movement of naval spent nuclear fuel just as they are not a concern during movement of any other hazardous material. Expedited movement beyond what the Code of Federal Regulations, Title 49, Section 174.14 requires for any hazardous material is not necessary for naval spent nuclear fuel shipments for safety.

The Government will own the escort and container cars to be used in the future for shipping naval spent nuclear fuel to a geologic repository or centralized interim storage site just as it has for almost 40 years of naval spent nuclear fuel movements. This equipment is unique to the purpose and cargo and must be dedicated to naval spent nuclear fuel shipments without availability for other railroad customers, therefore it is appropriate for it to be government, not railroad owned. Current practice is and future practice will be to ensure in careful fashion that the equipment meets all railroad industry standards of railcar construction and operation, including Association of American Railroads review of the railcar design prior to construction

and testing of new equipment at the Transportation Test Center in Pueblo, Colorado for dynamic handling. Association of American Railroads requirements for railcars used to transport radioactive material, for example as set forth in Field Manual Of Interchange Rule 88.A.15.c.(2), will be met.

If onboard defect detection equipment is required under Department of Transportation regulations, it will be used for naval spent nuclear fuel shipments.

Naval spent nuclear fuel shipments are intended to move in regular interchange freight service. Since specially designed buffer cars are not necessary for any other hazardous material which moves in regular interchange freight service in order to achieve 49 CFR separation and segregation requirements, then they should not be necessary for naval spent nuclear fuel shipments.

The current fleet of six escort cabooses has been used successfully, without any significant operational problems, in regular and dedicated interchange freight service in conjunction with naval spent nuclear fuel and other Naval Nuclear Propulsion Program shipments for approximately 20 years. Scrapping this equipment in favor of newer equipment before the existing equipment's useful life of 40 years, as defined by railroad industry standards, is not considered warranted. Navy equipment would be replaced after the year 2010. When the time comes to replace the existing escort cabooses, the Naval Nuclear Propulsion Program will work closely with the Association of American Railroads, as it does for container cars, to ensure the new equipment meets railroad industry standards.

H.&I. The assertion by the commenter that the EIS relies excessively on the Modal Study is not correct. The analyses presented in this EIS use the Modal Study in only one portion of the development of the probabilistic estimate of the risks associated with accidents which might occur during shipment of naval spent nuclear fuel. Other key data required to perform the assessment were developed from the best available information. The estimate of risk is based on potential routes through representative population areas over a range of distances (Section B.4). The national average probabilities of accidents are used (Appendix B, Section B.3.2). The population densities and the fraction of each route in rural, urban, and suburban areas were input to the analysis (Section B.3.2). Pasquill D and F meteorological conditions were used to represent the 50% and 95% conditions, as shown to be appropriate by the National Oceanic and Atmospheric Administration. The amounts of radioactive material which might be released for accidents of specified severity were determined specifically for naval spent nuclear fuel, using the characteristics of naval fuel and the amounts of fission and activated corrosion products present in both typical submarine and surface ship fuel (Section B.5.2 and Table B.8). The relative capacity of each alternative container type is provided in Table B.1 and the release for each container type can be estimated by multiplying information in Tables B.1 and B.8.

The Modal Study was used to provide only one parameter in the equation in Section B.3.2 used to estimate accident risk: the probability that, if an accident were to occur, the severity of the accident might exceed a given level. That is, the Modal Study was used only for the purpose of estimating that if an accident were to occur what the probability might be that the temperatures and strains produced by the accident would exceed certain levels. The accident risk calculations were performed especially for naval spent nuclear fuel using the RADTRAN and RISKIND computer programs.

The Modal Study offers the best available data for estimating the probability that a given level of severity might be exceeded if an accident occurs during shipping. The commenter does not suggest a better source for such data. The Modal Study has become the standard source for estimating such probabilities in probabilistic analyses of risks for shipping spent nuclear fuel and radioactive waste, as documented in the Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement (DOE/EIS-0203-F), in the Environmental Assessment of Urgent-Relief Acceptance of Foreign Research Reactor Spent Nuclear Fuel (DOE/EA-0912) and in the Environmental Impact Statement on a Proposed Nuclear Weapons Nonproliferation Policy Concerning Foreign Research Reactor Spent Nuclear Fuel (DOE/EIS-0218-F).

The Naval Nuclear Propulsion Program's 35 mile per hour speed limitation is not a requirement for safety purposes or railcar stability; nor is it imposed because of a concern over the ability of the container to maintain its integrity in an accident. There is utmost confidence in the containers. The railcars have been tested and have demonstrated satisfactory performance. The speed restriction is imposed to minimize the financial and schedule risk of exterior damage requiring refurbishment to a scarce, multi-million dollar asset. The ability to get a container back in service quickly at minimal refurbishment cost is the overriding concern. The Navy does note that based on our extensive public interface, we have also found the fact that the speed of these shipments is restricted has been reassuring to many member of the general public.

J. The Navy realizes that the shipping schedules presented in Appendix B, Tables B.3 and B.4 cannot be guaranteed. The EIS notes in Appendix B, Section B.3.2 that these schedules are presented "...for the purpose of analysis... and "...there would be little difference in impacts if the schedule were accelerated or delayed..."

K. See response to comment C above.

L. The 20 years of storage mentioned by the commenter has been covered in the EIS analyses. The containers are designed to be stored for periods of this length without degradation and naval spent nuclear fuel has been demonstrated to experience no deterioration over such periods.

M. The discussion of decay heat calculations in Chapter 2, Section 2.3 for 3 years of cooling after reactor operations is part of the discussion on the characteristics of naval nuclear fuel and is not specific to the EIS analysis periods. The 3-year cooling period refers to the earliest possible time after reactor operations that naval spent nuclear fuel could be placed into dry storage containers without the possibility of fuel damage due to decay heat generation.

The fission product inventories or source terms used for transportation analysis are provided in the EIS, Appendix B, Section B.5.2, Table B.8. The source terms are based on the fission product inventory at 5 years after reactor operations. The source terms are conservative because transportation to a repository or centralized interim storage site is expected to occur at least 5 years after reactor operation. Fission product releases which could occur during transportation accidents with naval spent nuclear fuel that has been shut down for 5 years, would be even lower than those analyzed in this EIS.

N. The Navy agrees with the commenter that any as-fabricated cask often produces dose rates which are lower than the regulatory limit. In the EIS Executive Summary, Section S.6.1, in Chapter 3, Section 3.8 and in Tables S.6 and 3.2 it is clearly stated that the actual historic

doses have been used for the M-140 based alternatives and not for the other container systems. Section 3.8 of the EIS describes the Navy's preferred alternative which is not the M-140 based containers. The best available data have been used in this EIS to estimate environmental impacts. Actual measurements are available for the M-140 container but none of the other containers have been used for naval fuel so the regulatory limit which serves as the design basis represents the best estimate of the external exposure rate for such containers. The use of actual measurements did not bias the selection of preferred equipment systems.

O. The reference for this statement is Trends in State-Level Accident Rates: An Extension of the Risk Factor Development for RADTRAN 4 (Saricks 1994b) which states that rail fatalities per kilometer due to accidents are 2.8×10^{-8} and the fatalities per kilometer due to truck accidents are 5.82×10^{-8}. The national average for rail accidents per kilometer in rural, urban and suburban zones for rail is 5.57×10^{-8} while for truck accidents in rural zones the national average is 2.03×10^{-7} and in urban and suburban zones it is 3.58×10^{-7}. This reference has been added to the EIS, Chapter 3, Section 3.7 and to the references.

P. A range of routes to a repository or centralized interim storage site is used for the transportation analysis in this EIS in order to determine whether different routing characteristics, such as distance or differences in population distribution, would affect the comparison of the alternative container types. Since no repository or centralized interim storage site has yet been selected, the transportation routing in this EIS uses a site evaluated by the Department of Energy pursuant to the Nuclear Waste Policy Act as the destination point for naval spent nuclear fuel shipments.

The DOE's Notice of Intent for Preparation of an 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 (60 FR 40164), states that "The potential impacts associated with national and regional shipments of spent nuclear fuel and high-level radioactive waste from reactor sites and DOE facilities will be assessed. Regional transportation issues include: (a) technical feasibility, (b) socioeconomic impacts, (c) land use and access impacts, and (d) impacts of constructing and operating a rail spur, a heavy haul route, and/or a transfer facility...". The Navy will work with the Department of Energy to ensure naval spent nuclear fuel is properly addressed in the Repository EIS analyses.

Additional discussion to clarify these points has been added to the EIS in Chapter 7, Section 7.1 and Appendix B, Section B.1.