Hanford Communities

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April 29, 1999

Mr. Jim Hummer
Science Applications International Corp.
3250 Port of Benton Boulevard
Richland WA 99352

Dear Mr. Hummer:

This letter is to ask your help in our review of the draft Programmatic Environmental Impact Statement (PEIS) just released by the Department of Energy on long-term storage and disposal of weapons-usable plutonium surplus to the nation's defense needs. Because the PEIS covers a wide range of issues from transportation safety to environmental and socioeconomic impacts, the Hanford Communities will coordinate a review of the document and recommend a response to member jurisdictions.

Hanford is one of six DOE sites listed in the PEIS as candidates for long-term storage of weapons-usable plutonium. Rather than listing potential disposal sites, the PEIS suggests alternate technologies. Hanford is particularly well situated to support two of those listed -- vitrification and incorporation of plutonium into mixed oxide fuel (MOX) for use in nuclear reactors. 1/08.03.01

We believe our community's response to the PEIS should be carefully developed. It is our responsibility -- not that of "distant stakeholders" -- to appraise the health and safety, transportation, and socioeconomic impacts of weapons-usable plutonium mission for Hanford. If properly understood by the public, disposal of weapons-usable plutonium could be embraced as a respectable and noble mission for Hanford. If this issue is not well understood and is strongly opposed by the general public, plutonium transport and long-term storage could have a very negative impact on the Tri-Cities region.

We need to determine whether this community should accept additional plutonium and, if so, under what circumstances. To accomplish this, we have asked a group of 20 individuals to work with us to review the draft PEIS and help us develop a position paper. We would sincerely appreciate your participation in this process. We anticipate that your involvement would include reviewing the draft PEIS working with our consultant to define and shape the issues to be addressed in the white paper and, if you are interested, participating in an issue briefing to convey this information to the community. Pam Beam of my staff will be contacting you to ask if you will be willing to help us on this project.

Sincerely,

Joseph C. King
Richland City Manager and Chairman of
Hanford Communities Administrative Board

Independent Communities With Common Interests

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08 03 01 Comment Number 1

The Department of Energy acknowledges the commentor's support for new missions at Hanford. Decisions on storage and disposition of weapons-usable fissile materials will be based on environmental analyses, technical and economic studies, national policy considerations, and public input.

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James H. Hummer
168 Canyon Street • Richland WA 99352 • (509) 627-6176

May 2, 1996

Mr. Craig Williamson
Richland Fire & Emergency Services
1000 George Washington Way
Richland, WA 99352

Dear Mr. Williamson:

Subject: Review of DOE/EIS-0229-D, *Storage and Disposition of Weapons-Usable Fissile Materials Draft Programmatic Environmental Impact Statement*

Following is a compilation of comments from the EIS review for transportation issues. To better the review I solicited support from personal acquaintances from the Westinghouse Hanford Company (WHC) Transportation and Packaging Function. Their participation, and my own, is personal and does not represent the views of either WHC or Science Applications International Corporation (SAIC). Reviewers include me and:

Mr. W. F. (Bill) Irvine	Manager, Transportation and Packaging
Mr. J. G. (Greg) Field	Manager, Packaging Engineering
Ms. J. R. (Janet) Green	Engineer, Transportation Risk Assessment
Mr. J. H. (Jim) Portsmouth	Manager, Traffic Management

Overall, we found nothing we would characterize as a *showstopper*. Safety in transportation of radioactive materials has an excellent track record. However, transportation is an issue because it is visible and may involve (by proximity) persons that *would otherwise be miles away from the material. For these, and other reasons, the* Department of Energy has an extensive program of public liaison and communication to inform and solicit comments from the public on transportation issues. They also administer training on all aspects of radioactive and other hazardous material transportation and conduct emergency response training and accident recovery exercises. Other programs include self assessment of traffic management and radioactive and hazardous material packaging and transportation operations and third-party evaluation of commercial carriers. The DOE Office of Transportation, Emergency Management, and Analytical Services manages these programs (EM-76). They have not, but should, review this EIS. These programs help the DOE retain its track record in radioactive and hazardous materials transportation. The EIS does not, but should, exploit the benefits of these programs.

Westinghouse Hanford Company is an active participant in several of these programs, particularly training and motor carrier evaluation. As the normal follow-up to WHC's carrier registration, four inspectors from the Department of Transportation (DOT) conducted a

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formal review the week of March 7, 1994, to verify compliance with the federal regulations. They spent the entire week conducting random vehicle inspections, document reviews and personnel interviews in various departments and facilities across the site.

The review included all shipping documents for hazardous materials and wastes leaving the site during the previous year, driver qualification files, vehicle maintenance and inspection records, procedures and policies, hazardous materials employee training records, driver substance abuse testing results, medical files, and liability insurance and hazardous materials registration documentation. The review team found only four discrepancies, which they characterized as minor.

WHC received a "Satisfactory" rating, the highest granted by DOT, and was described in the exit briefing as the best transportation operation in the DOE complex. This may be another advantage that Hanford has concerning this scope of work.

Specific Comments:

The EIS assessment seems thorough, given that the numbers would withstand more rigorous scrutiny. There is concern that the packaging certifications (pedigrees) are not clearly explained; i.e., not all packagings possess the Nuclear Regulatory Commission endorsement. The other overall concern is that the relative risk bases are not presented clearly. 2/10.00.00

Alternatives in chapter 2 do not address material transportation adequately or consistently. For example, Section 2.4.1, *Pit Disassembly/Conversion Facility*, states that originator will have ultimate responsibility for safe transfer and shippers, transporters, and receivers are responsible for complying with applicable regulations. This is always the case, whether DOE is involved or not so it really says very little about what DOE does, or will do, to safely transport the materials. In Section 2.4.5.2, *Existing Light Water Reactor Alternative*, transportation addresses five types of radioactive material shipments including low-level waste, fresh MOX fuel, and spent fuel. Section 2.4.5.4, *Evolutionary Light Water Reactor Alternative*, discusses low-level waste, mixed low-level waste, hazardous waste, nonhazardous waste, transuranic waste, and spent fuel yet transportation is summed up as "Intersite transfers would be made by rail, truck transport, or pipeline as appropriate." All these sections should address all the applicable transportation streams and what special requirements apply such as security or special routing. 3/10.00.00

There are several references to a DOT Specification 6M in Section 4.4, *Intersite Transportation of Fissile Materials*, and Appendix G, *Intersite Transportation*, as a DOT specification 6M Type B packaging, a DOT approved 6M Type B packaging (using 2R inner containers), a 6M, a 6M-2R, and a model 6M. In addition there is a statement that "A typical 6M, Type B packaging approved for use by DOE is covered by Certificate of Compliance Number 9859, dated January 5, 1994." This infers NRC certification in 4/10.00.00

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10 00 00 Comment Number 2

The analysis for the storage and disposition alternatives evaluates the potential risks for transporting shippable forms of fissile materials (that is, Pu and HEU) that have been stabilized and packaged for shipment at the originating site. All packaging processes (and certifications) meet DOT and DOE requirements. NRC certification criteria is applied to all Type B packagings, as required by the DOT regulations. Section 4.4.2.2 of the PEIS presents information on packaging criteria established and enforced by Federal agencies. A thorough explanation of risk basis is presented within Sections G.1.1 and G.1.2 for truck/rail and port transit modes, respectively.

10 00 00 Comment Number 3

The transportation issues raised require site-specific knowledge in order to describe the transportation streams and the special requirements which apply to each transportation scenario (security, special routing). Transportation of radioactive material from an existing LWR site and evolutionary LWR site may include several modes of transportation (truck, rail, and barge) depending on the location of the site. Specific transportation streams and special requirements will be addressed if these alternatives are selected for further consideration. Appendix G presents additional information on transportation of radioactive materials and types of packaging specific to the material to be transported.

10 00 00 Comment Number 4

The PEIS uses the terminology "6M Type B package" to designate both the generic package type identified in the DOT specification and the specific variation of the package type used by DOE. The specific package type used by DOE is denoted as the 6M-2R, consisting of the 6M Type B package using 2R inner containers.

All aspects of the transportation of radioactive materials within the United States are regulated at the Federal level by the DOT. The Federal regulations are implemented by both NRC licenses and DOE for the transportation of

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comparison to a DOT specification packaging. The inconsistent terminology and the careless use of "6M, Type B packaging" can be very misleading. One is an apple (DOT specification packaging), the other an orange (NRC certified packaging). As described, the EIS could lead to unnecessary criticism or debate about the validity of the risk analysis. The DOT specification packaging is not subject to the test sequence on page G-7. There is some controversy, mainly among the regulators (DOT and NRC) and DOE, regarding the DOT specification packaging. The EIS needs to identify clearly which packaging is which. — 4/10.00.00 cont

Section 4.4.2.2, *Packaging*, does not adequately describe the safety basis of the DOT-6M packaging, an old grand fathered DOT Specification packaging container, as shipped in the SST, particularly when compared with the safety basis of a state-of-the-art NRC certified spent fuel cask, or the BUSS Cask. The public is probably not aware of the various systems that authorize Type B packages: DOT Specification (old), DOT Certificate of Competent Authority, NRC Certificate of Compliance, and DOE Weapons Program authorizations which include operational considerations. They need to be defined and considered in the risk analysis. — 5/10.00.00

The correct designator for some of these containers would be Type BF versus Type B.

Potential fatalities need to be defined better in Section 4. It is not clear that the potential fatalities reported represent an integrated risk of cancer fatalities from accident and non-accident radiological hazards and non-radiological risks associated with increased automobile emissions and highway fatalities. The numbers in this section would be more meaningful if they reported the radiological and non-radiological results separately. — 6/10.02.00

The section also infers that RADTRAN calculates the non-radiological risk, which it does not.

Page 4-772: The first sentence states "materials would be transported by SST or commercial equivalent truck." There is no commercially available equipment like the SST. — 7/10.00.00

Page 4-773: The second sentence states "For relatively low-level radioactive materials, DOT Specification Type A packaging are used."Strong tight containers are also allowed for low specific activity radioactive material shipments. — 8/10.00.00

Page 4-780: Given more time to digest the information provided, these items may become more clear. For the "Deep Borehole" emplacement alternative, it is not clear why shipments would follow immobilization and come from lag storage. The shipping volumes of 5.5 tons per year seem slow, when the immobilized pellets could be shipped at a rate of 551 tons per year. Why the large difference in shipping volume capacity? — 9/10.00.00

Page 4-781: The fifth paragraph mentions shipping one rail cask at a time for a total of sixty-four shipments per year. Is this in regular train service or "special train?" There is a — 10/10.00.00

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radioactive materials. Package designs meeting the Type B package performance criteria are considered by NRC and DOE to provide adequate protection of the public and operating personnel in the event of a transportation accident. The NRC has no regulatory authority regarding DOE transport of radioactive materials, although DOE does use NRC criteria for the certification of Type B packaging, including the 6M-2R.

The approval process followed by DOE regarding Type B packaging and transportation of radioactive materials is established by DOE Orders. Package design, testing, and safety information must be prepared for shipping packages proposed for use within the DOE complex. Review and approval of this information results in DOE's issuance of a Certificate of Compliance for the package and its use. In the case of the 6M Type B package, although the package meets DOT specification, the DOE approval process provides additional requirements prior to the package's use within the DOE complex.

10 00 00 Comment Number 5

A discussion of the safety basis of certified nuclear packaging is beyond the scope of the PEIS. The transport index (TI), which is a regulatory characteristic of a package, was estimated to be the maximum allowed by regulatory requirements and used in the transportation risk analysis. A discussion of transport packaging is presented in Appendix G.

10 02 00 Comment Number 6

The human health risks from the transportation of radioactive materials between sites includes both radiological and nonradiological impacts to the public and workers. The categories of calculated risk include nonradiological accident impacts to the public and workers, nonradiological normal operation impacts to the public (air pollution), radiological accident impacts to the public, and radiological normal operation impacts to the public and workers. The risk to the public from radiological accidents is an order of magnitude less than either nonradiological accidents or radiological exposures during normal operations.

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big difference in cost associated with the two options. | 10/10.00.00 cont

Page 4-783: Risk numbers are difficult to understand and follow. For example, it seems that the deference in level of risk between processing in the U.S. versus processing in Europe, as depicted in Table 4.4.3.3-4, would be much greater than shown. | 11/10.02.00

Appendix G: The risk associated with the transportation of the materials would be better understood if it were broken into radiological and non-radiological categories. The radiological risks would also be more meaningful if they reported them for both accident and normal modes. Summing all risks results in numbers that are only useful to compare the alternatives being considered in this EIS. One cannot easily compare them with the other reports, which do not use this method. | 6/10.02.00 cont.

Not enough information was given about the RADTRAN input values used. For instance, the following values should be included and referenced: release fractions (RFAC, HERSOL, RESP), atmospheric dispersion values (for truck and rail, and oncoming highway traffic statistics. | 12/10.02.00

NUREG-0170 severity categories were used for all truck shipments. This may not be appropriate for the 6M shipments or for the 55-gallon drum shipments. | 13/10.02.00

Page G-3: Second paragraph, second sentence states that the 6M packages would be placed on Cargo Restraint Transporters (CRS) to facilitate loading and securing in the SST. At one time, we were told at Hanford to recum our CRT's. Are they still being used on the SST's? Just a question. They worked well. | 14/10.00.00

Page G-3: The second sentence in the third paragraph mentions transferring the CRT's from an SST to a standard ISO container. Standard ISO containers do not have the floor tie down capability associated with the CRT's and available in the SST. The CRT's have wheels, and a proper tie down pattern would have to be developed for ocean transport in ISO containers. | 15/10.00.00

In addition, I have reviewed the other material you sent me and offer the following comments for your use.

Both Jordon Rogers and Rob Davis state their belief that transportation is a fully developed technology and with proper coordination and route selection, risk can be minimized. agree with this conclusion. The DOE will likely prepare a plan for a long term shipping campaign such as this, conduct emergency response training along the routes, and perform several other extra-regulatory activities to ensure safety in transportation.

Robert M. Jefferson commented that there seemed to be a complete lack of concern for criticality safety. They do not analyze criticality safety in the EIS. However, several

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10 00 00 Comment Number 7

If commercial trucks were to be utilized, additional requirements (physical and administrative) would be applied to provide equally effective safety and security measures as provided by SST.

10 00 00 Comment Number 8

The commentor is correct that strong, tight packagings can be used for low-level radioactive materials of less than Type A quantities. The text in Section 4.4.2.2 of the Final PEIS was changed to concur.

10 00 00 Comment Number 9

The Deep Borehole Alternative discusses the disposition of surplus weapons-usable Pu in two forms: (1) direct emplacement of Pu without immobilization and (2) Pu-loaded, ceramic-coated pellets. The amount of Pu to be transported for direct emplacement is estimated to not exceed 5 t (5.5 tons) per year. The amount of Pu-loaded, ceramic-coated pellets to be transported for emplacement is estimated to be 500 t (551 tons) per year. The Pu-loaded, ceramic-coated pellets contain 1-percent Pu. Therefore, the amount of Pu-loaded, ceramic-coated pellets would be 100 times as great as the amount of Pu for direct emplacement, or approximately 500 t (551 tons) per year.

10 00 00 Comment Number 10

Although shipments may be consolidated into "dedicated trains" of more than one car, the risk analysis has considered regular train services for these shipments. Several court decisions have shown there is no safety basis for the use of "special trains" for high-level nuclear materials. DOT, DOE, and NRC have provided no such direction that special trains will be used for radioactive materials.

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aspects of the Department of Transportation and Nuclear Regulatory regulations deal with criticality safety as to packaging design requirements, content limitations, and transport vehicle loading. A later comment states that the Transport Index (TI) is based on criticality considerations for fissile materials. Criticality safety is an important subject that the governing regulations address.

Sincerely,

J H Hummer

cc: J. G. Fiskl
J. H. Green
W. F. Irvine
C. H. Morrill
J. H. Portsmouth

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10 02 00 Comment Number 11

The values given in Table 4.4.3.3–4 of the PEIS represent the "Total Potential Fatalities" associated with the transportation of Pu oxide, uranium oxide, and MOX, for the Reactor Alternative category. The quantities presented are a result of direct risk calculations which yield results in "numbers of human fatalities." In regard to accumulating the risks associated with a given transportation process, the maximum risk impacts from the transport of Pu oxide, uranium oxide, and MOX fuel under the Reactor Alternatives may be summed directly from Table 4.4.3.3–4. According to results calculated by the "industry-wide accepted" RADTRAN code, the highest number of total potential fatalities from the transportation of materials from lag storage to fuel fabrication and then to a reactor site is 4.16 for MOX fuel fabrication in the United States. In Europe, the number of potential fatalities for a similar procedural operation would be 4.62. The difference between 4.62 and 4.16 fatalities is essentially negligible. Risk differences between the two "regional" alternatives (that is, the United States vs. Europe) are very small for all stages involved.

10 02 00 Comment Number 12

Appendix G of this PEIS discusses the pertinent methodology and associated parameters utilized in the transportation modeling via the RADTRAN code. The scope of this document does not require scientific detail regarding input parameters to exceed that of a programmatic level.

10 02 00 Comment Number 13

This PEIS evaluated the potential for highway accidents and radioactive releases from the 6M shipments during transport in terms of eight accident severity categories identified in NUREG-0170 and implemented through analysis by the RADTRAN 4.0 computer code. The accident categories ranged from the least severe and most frequent accident (Category I) to the most severe and least frequent accident (Category VIII). NUREG-0170 characterizes package response to these accident categories in terms of release fractions based on the package type, transportation mode, and accident category. DOE considers the accident category information presented in NUREG-0170 to adequately cover the transport mode and package types addressed in the PEIS.

10 00 00 Comment Number 14

The Cargo Restraint Transporters (CRTs) are still being used on the SST.

10 00 00 Comment Number 15

Transportation component design specific to this situation is beyond the scope of this PEIS. If design changes are necessary for International Standards Organization (ISO) transport to occur, proper modifications would be expedited to meet the necessary criteria.