Office of
Fissile Materials Disposition

United States Department of Energy

Surplus Plutonium Disposition Final Environmental Impact Statement

Comment Response Document

Volume III - Part B

November 1999

For Further Information Contact:
U.S. Department of Energy
Office of Fissile Materials Disposition, P.O. Box 23786, Washington, DC 20026-3786

Cover Sheet

Responsible Agency: United States Department of Energy (DOE)

Title: *Surplus Plutonium Disposition Final Environmental Impact Statement* (SPD EIS) (DOE/EIS-0283)

Locations of Candidate Sites: California, Idaho, New Mexico, North Carolina, South Carolina, Tennessee, Texas, Virginia, and Washington

Contacts:

For further information on the SPD Final EIS contact:

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Office of Fissile Materials Disposition
U.S. Department of Energy
P.O. Box 23786
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Voice: (202) 586–5368

For information on the DOE National Environmental Policy Act (NEPA) process contact:

Ms. Carol Borgstrom, Director
Office of NEPA Policy and Assistance
Office of Environment, Safety and Health
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
Voice: (202) 586–4600 or (800) 472–2756

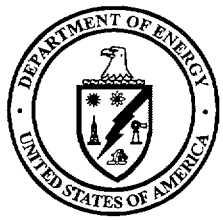
Abstract: On May 22, 1997, DOE published a Notice of Intent in the Federal Register (62 Federal Register 28009) announcing its decision to prepare an environmental impact statement (EIS) that would tier from the analysis and decisions reached in connection with the *Storage and Disposition of Weapons-Usable Fissile Materials Final Programmatic EIS*. At that time, the U.S. Environmental Protection Agency decided to be a cooperating agency. The *Surplus Plutonium Disposition Draft Environmental Impact Statement* (SPD Draft EIS) (DOE/EIS-0283-D) was prepared in accordance with NEPA and issued in July 1998. It identified the potential environmental impacts of reasonable alternatives for the proposed siting, construction, and operation of three facilities for the disposition of up to 50 metric tons (55 tons) of surplus plutonium, as well as a No Action Alternative. These three facilities would accomplish pit disassembly and conversion, plutonium conversion and immobilization, and mixed oxide (MOX) fuel fabrication.

For the alternatives that included MOX fuel fabrication, the SPD Draft EIS described the potential environmental impacts of using from three to eight commercial nuclear reactors to irradiate MOX fuel. The potential impacts were based on a generic reactor analysis that used actual reactor data and a range of potential site conditions. In May 1998, DOE initiated a procurement process to obtain MOX fuel fabrication and reactor irradiation services. In March 1999, DOE awarded a contract to Duke Engineering & Services, COGEMA Inc., and Stone & Webster (known as DCS) to provide the requested services. A *Supplement to the SPD Draft EIS* was issued in April 1999, which analyzed the potential environmental impacts of using MOX fuel in six specific reactors named in the DCS proposal. Those reactors are Catawba Nuclear Station Units 1 and 2 in South Carolina, McGuire Nuclear Station Units 1 and 2 in North Carolina, and North Anna Power Station Units 1 and 2 in Virginia.

DOE has identified the hybrid approach as its Preferred Alternative for the disposition of surplus plutonium. This approach allows for the immobilization of 17 metric tons (19 tons) of surplus plutonium and the use of 33 metric tons (36 tons) as MOX fuel. DOE has identified the Savannah River Site near Aiken, South Carolina, as the preferred site for all three disposition facilities (Alternative 3). DOE has also identified Los Alamos National

Laboratory in New Mexico as the preferred site for lead assembly fabrication, and Oak Ridge National Laboratory in Tennessee as the preferred site for postirradiation examination of lead assemblies.

Public Involvement: In preparing the SPD Final EIS, DOE considered comments on the SPD Draft EIS and the *Supplement to the SPD Draft EIS* received via mail, fax, and email, and comments recorded by phone and transcribed from videotapes. In addition, comments were captured by notetakers during interactive public meetings held on the SPD Draft EIS in August 1998 in Amarillo, Texas; Idaho Falls, Idaho; North Augusta, South Carolina; Portland, Oregon; and Richland, Washington, as well as during a public meeting on the *Supplement to the SPD Draft EIS* held in June 1999 in Washington, D.C. Comments received and DOE's responses to these comments are found in Volume III, the Comment Response Document, of the SPD Final EIS. Information on the surplus plutonium disposition program can be obtained by visiting the Office of Fissile Materials Disposition Web site at http://www.doe-md.com.



DOE/EIS-0283

Surplus Plutonium Disposition Final Environmental Impact Statement

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Volume III - Part B

United States Department of Energy
Office of Fissile Materials Disposition

November 1999

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

September 15, 1998

Mr. Howard R. Canter, Acting Director
Office of Fissile Materials Disposition
P.O. Box 23786
Washington, D.C. 20026-3786

RE: Surplus Plutonium Disposition Draft Environmental Impact Statement (DEIS)

Dear Mr. Canter

The Commonwealth of Virginia Agencies have completed their review of the DEIS for the noted action. The Department of Environmental Quality is responsible for coordinating Virginia's review of federal environmental documents and responding to the appropriate officials on behalf of the Commonwealth. The following locality and agencies participated in this review:

Department of Environmental Quality; and
Hampton Roads Planning District Commission.

In addition, the Department of Health and the Department of Emergency Services were invited to comment through the Department of Environmental Quality.

The document identifies reasonable alternatives and potential environmental impacts for the proposed citing, construction, and operation of three facilities for plutonium disposition. The first is a facility to disassemble and convert pits, a nuclear weapons component, into plutonium oxide suitable for disposition. The preferred sites are Pantex Plant and Savannah River Site (SRS). The second is a facility to immobilize surplus plutonium for disposal in a geologic repository. SRS is the preferred site. The third is a facility to fabricate plutonium oxide into mixed oxide (MOX) fuel. SRS is the preferred site. The EIS also discusses decommissioning and decontamination of the three facilities.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
MICHAEL P. MURPHY
PAGE 2 OF 4

Mr. Howard R. Cantor
September 15, 1998
Page Two

The Commonwealth offers the following comments and recommendations:

- None of the facilities are located in Virginia. The Commonwealth's only concern is with shipment of the surplus plutonium through the state. Will this issue be addressed in the final EIS or in a separate document?

- Any transportation of wastes through Virginia should be preceded with advance notification to the Department of Emergency Services, Brian Iverson, at (804) 674-2400 and the affected localities so that adequate safety precautions may be taken. The localities should be notified directly in advance of any notification to the news media.

- The Department of Environmental Quality will coordinate the Commonwealth's review and response on the final environmental impact statement for this proposal, if appropriate. Correspondence should be addressed to: Director, Office of Environmental Impact Review, Department of Environmental Quality, P. O. Box 10009, 629 East Main Street, Richmond, Virginia 23240-0009.

1

Thank you for the opportunity to comment on the DEIS for the proposed activity. The comments of the reviewing agencies are attached for your review and consideration.

Sincerely,

Michael P. Murphy, Director
Division of Environmental Enhancement

Attachments

cc: Arthur L. Collins, Hampton Roads PDC
Brian Iverson, DES
Kerita L. Kegler, DEQ-TRO

FD308

FD308–1 **Transportation**

After DOE selects an alternative, a transportation plan (in which State, tribal, and local officials in addition to DOE, the carrier, and other Federal agencies would be involved) would be prepared to address the details of implementing the actions analyzed in this SPD EIS, including prenotification of States. The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

DOE reserves the right to consider traversing States in accordance with DOT regulations and route selection criteria. DOE Order 460.2, *Departmental Materials Transportation and Packaging Management*, and 10 CFR 71.97 contain the requirements for notifying States and tribes before shipping waste within or through their jurisdictions.

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

AUG 13 1998

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YORK COUNTY
Sheila S. Noll, Chairman
Daniel M. Stuck, County Administrator

August 11, 1998

Mr. Thomas M. Felvey
Environmental Technical Service Administrator
Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

Re: Surplus Plutonium Disposition
DEQ #98-061F (ENV:NUKE)

Dear Mr. Felvey:

Pursuant to your request of July 31, 1998, the staff of the Hampton Roads Planning District Commission has reviewed Surplus Plutonium Disposition Draft Environmental Impact Statement.

Based on this review, it appears that the report does not indicate whether any surplus plutonium will be transported using the ports or roads of the Hampton Roads region. We need this issue clarified before we can provide any significant comments on the proposed project. 1

We appreciate the opportunity to review this project. If you have any questions, please do not hesitate to call.

Sincerely,

Arthur L. Collins
Executive Director/Secretary

HRV:fh

HEADQUARTERS · THE REGIONAL BUILDING · 723 WOODLAKE DRIVE · CHESAPEAKE, VIRGINIA 23320 · (757) 420-8300
PENINSULA OFFICE · HARBOUR CENTRE, 2 EATON STREET · SUITE 502 · HAMPTON, VIRGINIA 23669 · (757) 728-2667

FD308

To: Thomas M. Felvey@OCS@DEQ
Cc:
Bcc:
From: Kerita L. Kegler@VABC1@DEQ
Subject: Environmental Review
Date: Thursday, August 13, 1998 10:33:32 EDT
Attach:
Certify: N
Forwarded by:

Thank you for the clarification. We don't have any comments on the information presented in the study. We, will however, be on the lookout for the citizen calls once the material starts moving thru tidewater.

Thanks again

FD308

I would like to comment that I do not wish that this plutonium dump site be at Hanford, Washington. I don't think that they have proved that they can clean up the mess that they already have out there. Let's do that first and then project to the future. But right now I do not think Hanford is ready is ready for this. 1

PD010

PD010–1 **Alternatives**

DOE acknowledges the commentor's opposition to siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

ANONYMOUS
PAGE 1 OF 1

Thank you for the opportunity to comment on the Storage and Disposition of Fissile Material. I would like to go on record stating that action should be conducted at Hanford utilizing the FMEF, Feed Material Examination Facility. I think that any other place in the United States would be a total disregard of the capabilities of the Hanford Site and would result in excessive of costs to do the project. Also all the hype about Hanford is exactly that, it is hype relative to what the anti-nuclear activist are saying. There is no shred of proof in anything that they are saying. And I think that it is incumbent upon the Department of Energy to take a strong stance and to tell them where they can put their opinions. It is about time the Department of Energy stands up, does the right thing rather than the politically correct easy way out. Thank you for your time and again FMEF is the name of the game. 1

PD009

PD009–1 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities using FMEF at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost and schedule estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

I believe you should select the Hanford Site as the place to bring the stuff. We have had it out here for years. We know how to handle it. We've never had an accident involving a fatality out here in regards to nuclear radiation or any of the material involved. I believe with an existing structure to house the stuff and handle it you will save yourselves a lot of money. Thank you. 1

PD007

PD007–1 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

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BENTON COUNTY STATEMENT
U.S. Department of Energy Draft EIS for Plutonium Disposition

We appreciate the opportunity to present the Benton County position on plutonium disposition.

Let me say at the outset that Benton County supports plans to vitrify and dispose of scrap plutonium in a national repository and to dispose of excess plutonium in a commercial reactor using mixed oxide (MOX) fuel. 1

We do however, have serious concerns with the decision-making process and the logic used to arrive at the preferred alternatives outlined in the draft EIS.

1st Point

The decision-making process up to this point has not adequately addressed cost. Using the Fuels and Materials Examination Facility (FMEF) for MOX fuel manufacturing provides substantial savings to the American taxpayer and to the DOE cleanup budget over construction of a new MOX manufacturing facility at Savannah River. Cost savings become even more attractive (over $500 million) when you consider co-locating both fuel fabrication and pit disassembly and conversion. To not fully consider these cost savings and share this information with the public is incompetent at best and intentionally misleading at worst. 2

2nd Point

The notion that the cleanup program at Hanford can't be completed effectively while supporting a fuel fabrication and pit disassembly/conversion is ridiculous! Both the environmental cleanup and plutonium disposition missions close the loop on the Cold War. When viewed from this perspective they are extremely compatible and both missions have local and state support. Washington State Governor Gary Locke has stated in a letter sent earlier this year to Secretary Pena that he would accept a MOX program at Hanford on the condition DOE TPA cleanup commitments are met. We support that position. 3

WAD07

WAD07–1 **Alternatives**

DOE acknowledges the commentor's support for the hybrid approach.

WAD07–2 **Cost**

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. Decisions on the surplus plutonium disposition program at Hanford will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

WAD07–3 **Alternatives**

DOE acknowledges the commentor's support for siting the pit conversion and MOX facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Conclusion

My comments are short today. Please see the previous meeting record for our detailed comments. What you are hearing today, and what you heard at the last meeting on this subject, is not new. What is baffling is your dogged determination to ignore the facts and proceed on a pre-determined course. This is not responsible governance. It cheats the American taxpayers and it further damages the credibility of the federal government, and the Department of Energy. 4

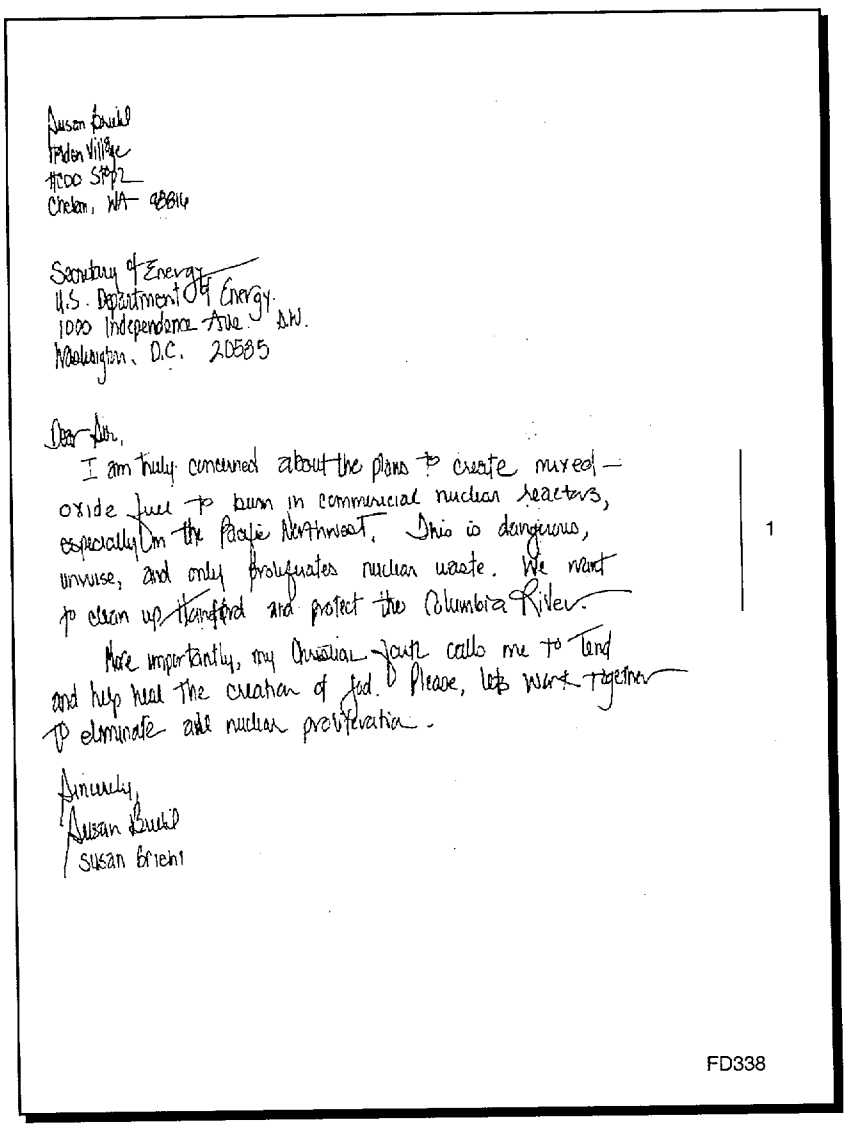
The EIS should be withdrawn, revised and a new draft issued that gives balanced consideration to all pertinent issues. And in the future, please don't come here and take our comments if you aren't willing to listen to what we have to say. It is a waste of time for all involved parties.

WAD07

WAD07–4 **General SPD EIS and NEPA Process**

No decisions on the siting of the proposed surplus plutonium disposition facilities have been made. DOE analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities. All comments, regardless of how or from whom received, were given equal consideration and responded to. Decisions on the surplus plutonium disposition program will be based on public input, environmental analyses, technical and cost reports, and national policy and nonproliferation considerations.

BRIEHL, SUSAN
PAGE 1 OF 1



Susan Briehl
Tyden Village
#C00 S892
Creden, WA 99814

Secretary of Energy
U.S. Department of Energy
1000 Independence Ave. S.W.
Washington, D.C. 20585

Dear Sir,

I am truly concerned about the plans to create mixed-oxide fuel to burn in commercial nuclear reactors, especially in the Pacific Northwest. This is dangerous, unwise, and only proliferates nuclear waste. We want to clean up Hanford and protect the Columbia River. 1

More importantly, my Christian faith calls me to tend and help heal the creation of God. Please, let's work together to eliminate add nuclear proliferation.

Sincerely,
Susan Briehl
Susan Briehl

FD338

FD338–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. To this end, surplus plutonium would be subject to stringent control, and the MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing. After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a potential geologic repository built in accordance with the NWPA.

US DOE needs to hear your voice NOW!

1. ~~Should~~ Clean Up be the sole mission at Hanford?
Yes No

2. Should the United States Government maintain its longstanding policy against the use of weapons Plutonium to fuel civilian nuclear reactors?
Yes No

3. Which alternative would you prefer to see the US Department of Energy pursue:
Immobilization (encasement of plutonium in glass-like tombs)
Or
The MOX plan (burning plutonium to fabricate fuel for use in a civilian nuclear reactor)?

4. Should Plutonium, to be used for processing and fabrication of MOX fuel, be imported to the Hanford site along the Columbia River?
Yes No

5. How concerned are you about the transportation of Plutonium through the Northwest?
Not concerned slightly concerned very concerned completely opposed
B. How concerned are you about the transport through the ~~Northwest of fuel~~ containing weapons Plutonium?
Not concerned Slightly concerned Very concerned Completely opposed

6. Should commercial nuclear power plants be allowed to run on MOX fuel containing weapons Plutonium?
Yes No
B. Should they be subsidized with tax dollars to do so?
Yes No

7. Should MOX fuel containing weapons Plutonium be used to restart the FFTF reactor at Hanford to produce Tritium for ~~nuclear~~ bombs?
Yes No

Name Joan Chantler
Address 1009 Snowden
Phone White Salmon, WA 98672
509-493-1976

Please return this to:
Hanford Action
25-6 NW 23rd Place #406
Portland, OR 97214
(503) 235-2531

MD289

1 2 3 4 5 6

MD289–1 **DOE Policy**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD289–2 **Nonproliferation**

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD289–3 **Alternatives**

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. DOE has determined that 17 t (19 tons) of the surplus plutonium would be immobilized due to the complexity, timing, and cost that would be involved in purifying those plutonium materials to make them suitable for use in MOX fuel. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not considered a reasonable alternative at this time and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

MD289–4 **Transportation**

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

MD289–5 **MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by

meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD289–6 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

Additional Comments

Recreation, including Windsurfing, is becoming our primary economy. A "Nuclear" word can't be tolerated on a nuclear River is not. Please exercise caution with our rivers.

7

MD289

MD289–7 **Water Resources**

As described in Section 4.26.1.2, surface water would not be used in construction and operation of the proposed surplus plutonium disposition facilities at Hanford. Due to the dilution capability of the Columbia River, as well as FMEF's location relative to the Columbia River, there would be no discernible contamination of aquatic biota (fish) or drinking water resulting from the proposed facilities at Hanford, either from minute quantities of air deposition into the river or from any other potential wastewater releases. Therefore, no discernible impacts on the Columbia River would be expected.

Hi, my name is M. B. Condon. I'm leaving a comment for the Surplus Plutonium Draft EIS. This comment is for myself and for Tim Young. Our address is 380 Ilsa Way, Goldendale, Washington, 98620. Our phone number is (509) 773-6991. And I'm going to read a statement we prepared. We tried to fax it into this number according to your message but were not able to get through and we are aware that the deadline is today, September 16. So I'm going to read a long statement in and we're also going to mail it, but I want this included in the public record. We want the following questions, concerns, and assumptions addressed in the Surplus Plutonium Draft EIS.

What classified toxic elements are contained in nuclear warhead pits and how much toxic pollution is going to be created by the separation of those elements from plutonium? Where are the toxic waste products going to be stored and how are they going to be handled? 1

Which specific reactors in the United States are going to be licensed to burn plutonium? How are reactors that were never designed for this fuel going to be tested and certified before allowing plutonium radiation to be generated by them? How are the safety records of commercial reactor operators going to be factored into the decisions to allow them to use plutonium as a reactor fuel? Why should reactors that are scheduled for decommissioning be allowed to continue operating beyond their scheduled life span and then be allowed to utilize a fuel they were never designed to burn? 2

PD062

PD062–1 **Pit Disassembly and Conversion**

A pit is made of plutonium, which consists mainly of the isotope plutonium 239. Pit plutonium can contain trace amounts of a variety of hazardous impurities such as beryllium and lead. These contaminants are expected to remain entrained in the plutonium dioxide material. The very low levels of contaminants do not adversely affect the MOX and immobilization approaches, and inclusion of the polishing step in the MOX facility would remove a good deal of the contaminants. Some pits may also be contaminated with tritium, a radioisotope of hydrogen, which can be removed by heating the pit material in a vacuum furnace to drive off the tritium gas. Another element, which may be present in pit plutonium at low levels, but above trace amounts, is gallium, which is added as an alloying agent. Because high levels of gallium may adversely affect MOX fuel performance, it would be removed during the plutonium polishing process, as discussed in Section 2.4.3.2. The pit conversion process would generate some LLW and TRU waste and a very small amount of mixed LLW and hazardous waste. These wastes include spent filters, used containers and equipment, paper and cloth wipes, protective clothing, shielding, solvents, and cleaning solutions. In general, these wastes contribute to less than 4 percent of the existing wastes at all the candidate sites and would be handled as part of the site waste management practice. A description of waste generation and management is provided in Appendix H.

PD062–2 **MOX Approach**

Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily accommodate a partial MOX core. Therefore, DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As a result of this procurement, DOE identified Catawba, McGuire, and North Anna as the reactors proposed to irradiate MOX fuel as part of the proposed action in this SPD EIS. In accordance with a stipulation of its *RFP for MOX Fuel Fabrication and Reactor Irradiation Services*, these are new reactors, that is, reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. The selected team, DCS, would have to apply for a reactor operating license amendment for each individual

reactor before it can use MOX fuel. For this amendment, the licensee would have to demonstrate that all safety, testing, and environmental impacts have been addressed as well as complete the public hearing process. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and the commercial reactors selected to use MOX fuel to ensure adequate margins of safety. Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents.

Specifically, how much radioactive waste will be created by each step of plutonium reprocessing from the removal of plutonium oxide from bomb cores, the creation of MOX fuels, the transportation of all radioactive materials, including the waste products to the generation of electricity and possibly the production of tritium? How much more radioactive waste will be generated by each reactor that will be allowed to operate beyond its decommissioning date compared to amount of radioactive waste created if the reactor were retired on schedule? 3

How are DOE and the commercial reactor operators going to protect the public and the environment from the radioactive hazards posed by the generation of more nuclear waste from the burning of MOX fuels, when both the DOE and commercials operators have no idea of how to protect the public and the environment from the radiation hazards presently posed by the burning of uranium in reactors? 4

What specific transportation means and routes will be used to transport the weapons grade plutonium, MOX fuels, and the resulting nuclear and toxic waste? How will the public be notified so there elected officials can participate in the creation of disaster plans in the case of a mishap? What specific plans are in place for nuclear mishaps along the transportation routes and are they adequate to protect the public, crops, livestock, and the environment from exposure in the case of an accident or intentional destructive act? 5

PD062

PD062–3 **Waste Management**

DOE acknowledges the commentor's concerns regarding waste generation and management. Waste streams that would be generated by the pit conversion, immobilization, and MOX facilities are detailed in the Waste Management sections in Chapter 4 of Volume I and Appendix H. As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

The transportation requirements for the surplus plutonium disposition program are also evaluated in this SPD EIS. The shipment of waste will be done in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997).

The production of tritium in a commercial light water reactor is being evaluated in a separate DOE EIS, *Final EIS for the Production of Tritium in a Commercial Light Water Reactor* (DOE/EIS-0288, March 1999).

In choosing reactors to use the MOX fuel fabricated under the surplus plutonium disposition program, DOE looked at the criteria of reactor age. DOE chose only reactors whose planned operating life extended through the full life cycle of the surplus plutonium disposition program.

PD062–4 **Human Health Risk**

DOE and NRC are committed to protecting the health and safety of the public. This includes designing, constructing, and operating DOE- and NRC-regulated facilities (e.g., domestic, commercial reactors) in such a way as to continually provide a level of safety and reliability that meets or exceeds established standards. DOE and commercial reactors also have plans and

programs for the safe management and ultimate disposal of their nuclear waste. Section 4.28 addresses the issue of waste generation by those domestic, commercial reactors designated to irradiate MOX fuel.

The remainder of this comment is addressed in response PD062–3.

PD062–5 **Transportation**

DOE anticipates that transportation of plutonium pits, nonpit plutonium, MOX fuel, and HEU (i.e., special nuclear materials) required to disposition surplus plutonium would be done through the DOE Transportation Safeguards Division using SST/SGTs as described in Appendix L.3.2. The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. For emergency response planning, all shipments are coordinated with appropriate law enforcement and public safety agencies. If requested, DOE will assist these officials with response plans, and, if necessary, with resources in accordance with DOE Order 5530.3, *Radiological Assistance Program*. DOE has developed and implemented a Radiological Assistance Program to provide assistance in all types of radiological accidents. Through this coordination and liaison program, DOE offers in-depth briefing at the State level.

The transportation of depleted uranium oxide and waste (i.e., non-special nuclear materials) would be done using commercial carriers. Nuclear material shipments must comply with both NRC and DOT regulatory requirements. Appendix L.3.3 provides details on the transportation of this type of materials and the transportation route selection process. DOT routing regulations require that shipments of radioactive material be transported over a preferred highway network including interstate highways, with preference toward bypasses around cities, and State-designated preferred routes.

The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that will be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http:\\www.doe-md.com.

We, M.B. Condon and Tim Young, are totally opposed to the reprocessing of weapons-grade plutonium into MOX fuel to be burned in commercial nuclear reactors. Furthermore, we believe there should be no taxpayer subsidies to commercial operators to allow them to use MOX fuels in reactors that were never designed to do so and to allow the life of reactors to be extended beyond their scheduled decommissioning date. The DOE and the commercial nuclear industries should not be allowed to initiate any programs that will create more radioactive and toxic wastes when the technology doesn't exist to deactivate and neutralize the waste created over the last 50 years by industry and the Government. We support the isolation and vitrification of weapons-grade plutonium. Although this is an inadequate solution to the radioactive waste problem, it at least offers some assurance that these materials won't find their way into nuclear weapons in the future. 6

Finally, we have no confidence in the DOE's ability to safely and securely transport weapons-grade plutonium and MOX fuel to reactor sites. The public and their elected representatives are totally uninformed and unprepared for any nuclear mishaps that could result. And we don't think that the DOE or the nuclear industry has the will or the resources to adequately prepare the public for the possible dangers that these materials represent to their communities. We are also unwilling to give up any of our rights so that these materials can be moved "securely" through our communities. Thank you and we will be sending our comments through the mail. We would like to be submitted in the public record as we have recorded them on this message of September 16, 1998. Thank you. 7

PD062

PD062–6 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach and support for the immobilization approach to surplus plutonium disposition.

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost

estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

PD062–7 **DOE Policy**

It is DOE's policy that plutonium shipments must comply with applicable DOT and NRC regulatory requirements. The highway routing of nuclear material is systematically determined according to DOT regulations 49 CFR 171 through 179 and 49 CFR 397 for commercial shipments. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE–owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. As indicated in Section 2.18, no traffic fatalities from nonradiological accidents or LCFs from radiological exposures or vehicle emissions would be expected for any of the surplus plutonium disposition alternatives proposed at the candidate sites. A description of the transportation activities is given in Section 2.4.4. Transportation risks and steps to mitigate the risks are analyzed in Chapter 4 of Volume I and Appendix L.

Leslie C. Davenport
Senior Engineer, Nuclear Safety (Retired)
1922 Mahan Avenue
Richland, WA 99352-2121

August 20, 1998

U.S. Department of Energy
Office of Fissile Materials Disposition
c/o SPD EIS
P.O. Box 23786
Washington, D.C. 20026-3786

Gentlemen:

Please include the following in the record of public comments for the "Surplus Plutonium Disposition Environmental Impact Statement" (SPD EIS). If there are questions, please contact me at my home telephone, (509) 946-4409.

I support the **HYBRID APPROACH** of **ALTERNATIVE 4B** for surplus plutonium disposition. I support the use of 33 metric tons or more to make MOX fuel. I support IMMOBILIZATION of the completely unusable scrap and waste (in CERAMIC form) using the CAN-IN-CANISTER method. However, only the initial 8 metric tons that was declared as surplus (waste, low-purity, nonpit plutonium) not suitable for use in MOX fuel should be immobilized promptly. The remaining 9 metric tons that was later declared surplus/waste should be retained until the MOX fuel fabrication process is operating to see if some of this Pu could be used in producing MOX fuel after all. 1

I agree that HANFORD'S TOP PRIORITY MUST REMAIN ENVIRONMENTAL CLEANUP, but do not believe it has to be Hanford's sole mission!

Alternative 4B involves pit storage at Pantex (both continuing long term for weapons stockpile pits, and short term until surplus pits are converted). The Pit Disassembly and Conversion Facility (PD&CF) should be located at Pantex. This will provide high security for the pits at Pantex until they are reduced to an unclassified geometry, since Pantex already has most of the U.S. inventory of pits. The Fuels and Materials Examination Facility (FMEF) at Hanford should be used for MOX Fuel Fabrication Facility and possibly the Immobilization Facility. The alternative would be immobilization at the High Level Waste Vitrification Facility (HLWVF) to be constructed at Hanford. Hanford is the only DOE site with extensive experience in fabrication, irradiation, and testing of MOX fuel (e.g., MOX fuel for FFTF and other research reactors was fabricated at Hanford).

The FMEF is an existing facility that was designed for plutonium processing, is uncontaminated and hence easy to modify, is built to modern safety standards in DOE's General Design Criteria, is licensable by the NRC, and meets NQA-1 equivalent standards. DOE/MD-0005 (1996) states in part that the FMEF is the "... least cost building option... capital cost savings on the order of $200 million... Well suited to accomplish the MOX fabrication mission." FMEF has 250,000 ft^2 on six levels, in which there is space for glovebox operations, hot cell operations, facility services, radiation control, and offices. FMEF offers proven operable systems with the least cost and schedule risk and is the quickest option to address the Congressional recommendation to rapidly reduce proliferation risk through pit disassembly and MOX fuel fabrication. The National Academy of Sciences evaluated FMEF as the lowest cost, most expeditious, and leading candidate option for MOX fuel fabrication. Further, Hanford already has complete infrastructure and waste handling facilities in place, and will soon have a high-level waste vitrification facility and associated analytical laboratories. 2

Please reconsider the initial decision to locate both the PD&CF and Immobilization Facilities at the Savannah River Site (SRS). Please address timing considerations and lowest comparisons to bring existing or new facilities on-line and determine the most expeditious and economical way to proceed in an ACCURATE, POLITICALLY UNBIASED manner. The significant advantages of diversification and utilization of existing resources at Hanford is extremely important, and does not make the mistake of granting one site in the DOE complex all of the new missions.

Sincerely,

Leslie C. Davenport,
Senior Engineer, Nuclear Safety (Retired)
Consultant, Criticality Safety

cc: Senator Slade Gorton, Congressman Doc Hastings

MD123

MD123–1 **Alternatives**

DOE acknowledges the commentor's support of Alternative 4B for surplus plutonium disposition. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. In the *Storage and Disposition PEIS* ROD, DOE committed to immobilizing at least 8 t (9 tons) of surplus, low-purity, nonpit plutonium. Since the ROD was issued, however, DOE has identified that an additional 9 t (10 tons) of low-plutonium-content materials would require additional processing, and would therefore be unsuitable for MOX fuel fabrication due to the complexity, timing, and cost that would be involved in purifying those plutonium materials.

MD123–2 **Alternatives**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium*

DAVENPORT, LESLIE C.
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Disposition (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

August 14, 1998

The U.S. Department of Energy needs to hear you voice NOW!
What do you think about a new era of nuclear proliferation?

Hanford Action of Oregon will forward this questionnaire to USDOE. Please circle your responses.

1. Should clean-up be the sole mission at Hanford? (Yes) No — my folks' taxes made the stuff – now use mine and my kids' taxes to clean up the mess. — 1
2. Should the United States government maintain its longstanding policy opposing the use of weapons plutonium to fuel civilian nuclear reactors? (Yes) No — What about the Salt talks? Who are we kidding? — 2
3. Should commercial nuclear reactors be allowed to run on MOX fuel containing weapons-grade plutonium? Yes (No) — Dumb ideas die hard - Kill this idea. Clean up — 3
3a. Should they be subsidized with tax dollars to do so? Yes (No) — We should stop subsidizing this insane industry. — 3
4. Which alternative would you prefer to see the U.S. Department of Energy pursue:
Immobilization (encasement of plutonium in glass logs or in canisters for entombment), — 4
The MOX plan (processing plutonium into fuel for use in civilian nuclear reactors).
if we can actually do it, but we should at least try it. It may be too hot to bury.
5. How concerned are you about the transportation of plutonium through the Northwest to Hanford?
Not concerned Slightly Concerned (Very Concerned) and (Completely opposed) anywhere — 5
6. How concerned are you about transporting plutonium MOX fuel through the Northwest to Hanford?
Not concerned Slightly Concerned (Very Concerned) and (Completely opposed) anywhere — 6
7. Should MOX fuel be used to restart the Fast Flux Text Facility (FFTF), a risky liquid-metal reactor at Hanford, to produce tritium for nuclear bombs? Yes (No) — Never start up the FFTF again.

Name Rochelle Giddings
Address 6211 C St S Tacoma WA 98444-5118
Phone _____ e-mail _____
Pacos High School Class of 1954 and still waiting for clean up.
Please return to Hanford Action of Oregon by September 10, 1998.

Hanford Action of Oregon
25-6 NW 23rd Pl. #406 tel: (503) 235-2924 fax: (503) 736-0097 e-mail: hanoie@aol.com

MD276

MD276–1 **DOE Policy**

DOE acknowledges the commentor's view on cleanup of former weapons production sites. Weapons production was necessary for national security in the past, and now cleanup is necessary to provide a better environment for future generations.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD276–2 **Nonproliferation**

An objective of the arms reduction is to make sure that the weapons materials declared surplus would not be used for weapons again. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this objective. Turning surplus plutonium into highly radioactive spent fuel would make reuse of this plutonium technically difficult, time consuming, and very costly.

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD276–3 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach to surplus plutonium disposition. Analyses provided in Section 2.18.3 and Chapter 4 of Volume I for the alternatives that include MOX fuel fabrication and irradiation show that potential impacts would likely be minor.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD276–4 **Alternatives**

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. DOE has determined that 17 t (19 tons) of the surplus plutonium would be immobilized due to the complexity, timing, and cost that would be involved in purifying those plutonium materials to make them suitable for use in MOX fuel. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not considered a reasonable

alternative at this time and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

Testing is under way to confirm that the immobilized plutonium would meet the performance criteria for disposal in a potential geologic repository pursuant to the NWPA.

MD276–5 **Transportation**

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in Fissile Materials Disposition Program SST/SGT Transportation Estimation (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

MD276–6 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

HANFORD ATOMIC METAL TRADES COUNCIL
KEITH A. SMITH, JR.
PAGE 1 OF 3

I am concerned that the U S Department of Energy may not give cost the importance it deserves when selecting a site at which Pu pit disassembly will occur and MOX fuel fabrication takes place. The Hanford Atomic Metal Trades Council believes the FMEF at Hanford to be the best location at which to perform pit disassembly and MOX fuel fabrication and should be placed high on the options list for these operations. Siting these operations elsewhere to Hanford would materially add to the taxpayer burden by necessitating the construction of an entire new facilicty in which to perform the the pit disassembly and MOX fuel prouduction. Costs to upgrade Hanford facilities would cost much less. Much more less than to what the DOE now gives credence. That is due to the way the DOE estimates costs, the result of creative perspectives designed to put the best light on the preconceived notions of certain out of touch officials. 1

The Hanford Atomic Metal Trades Council would like to propose an independent review and some cost-benefit analyses of the different Sites which have been or are now lacking in honesty and candor.

The Hanford Atomic Metal Trades Council requests the decision for Siting the MOX fuel program and Pit disassembly operation to be reexamined and the FMEF be given full consideration for implementation in the forseeable future. To fail that and wind up spendiing hundreds of millions of dolllars more than necessary would seem to the Council to result in more reductions in available clean up dollars and put the entire clean up program in jeopardy. 2

WD007

WD007–1 **Alternatives**

DOE acknowledges the commentor's support for siting the pit conversion and MOX facilities in FMEF at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WD007–2 **General SPD EIS and NEPA Process**

DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for the proposed surplus plutonium disposition facilities.

Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

In the interest of saving dollars the Council also offers the represented work force at Hanford as a source of experienced workers and those who are trained to handle fissile material for the MOX fuel and pit disassembly activity. The Council is fully prepared to engage any new employer in a cooperative spirit and to facilitate the movement of experienced and trained workers into new missions with new, private employers, even as we are doing now with Johnson Controls. British Nuclear Fuels, the Vitrification Plant contractor has already expressed and interest in forming a working relationship with the Council and that willingness has been reciprocated.

The lastest edition of the Scientific American contains the report of a study which asserts that an organized work force is sixteen percent above the baseline in efficiency while a non-union work force is eleven percent below the baseline in efficiency. That should clearly place the Hanford Workforce at an advantage for cost effectiveness and thereby free up dollars for clean up. 1

Budget crunch at Hanford has already begun to stretch the existing work force beyond reasonable limits. It has come to the place where in some cases if two people are lost due to vacations or illness, no work can be done. We do not need further cuts and to irresponsibly site the MOX fuel production and pit disassembly somewhere beside Hanford will surely result in fewer dollars for cleanup.

WD007

HANFORD ATOMIC METAL TRADES COUNCIL
KEITH A. SMITH, JR.
PAGE 3 OF 3

The Hanford Atomic Metal Trades Council represents over 2,600 workers on the Site. These are the people who do the work and bear the greatest risk and responsibility on a daily basis, for working with and around nuclear materials of evey type. The U S Department of Energy would not regret siting the disassembly of Pu pits and the manufacture of MOX fuel at the FMEF at Hanford. 1

WD007

Hanford Communities

Richland • Kennewick • Pasco • West Richland • Benton City • Benton County

P.O. Box 190, Richland, WA 99352
Telephone (509) 943-7148 Fax (509) 943-5604

October 27, 1997

Honorable Federico Peña
Secretary of Energy
U. S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Re: Use of Hanford Facilities for Plutonium Disposition

Dear Mr. Secretary:

BACKGROUND

We sincerely appreciated the opportunity to meet with you to discuss the Hanford Communities' concerns about environmental cleanup of the Hanford Site and the potential use of Hanford facilities for plutonium disposition. As a former Mayor, you clearly understand our concerns as elected officials, to see the Hanford cleanup proceed in the most expeditious and cost effective manner possible.

In examining the budget projections for 1998 and budget targets for 1999, even in the highest case budget scenarios, funding will fall short of covering the cleanup requirements in our Tri-Party Agreement. In 1998, in addition to environmental cleanup, the Department will also need to begin the same action to meet its responsibilities for tritium production and plutonium disposition. We anticipate that funds from existing programs will be drawn down to cover costs associated with these two new initiatives. We became aware of this situation in meetings we had with staff at the Office of Management and Budget in March. They informed us that no new money would be allocated to the Department of Energy. We believe, therefore, that it is essential for the Department to put political concerns aside and look for the lowest cost alternative, which would be to use existing Hanford facilities to accomplish these new missions.

1

FAST FLUX TEST FACILITY

Hanford's Fast Flux Test Facility is the newest and most sophisticated reactor in the DOE Complex. Recently completed studies indicate that this facility merits serious consideration for the production of tritium to meet the defense needs of the United States. Its potential for producing medical isotopes is of particular importance to the advancement of medical science and the economic stability of our communities. FFTF has historically run on mixed oxide fuel and therefore should additionally be considered for the role it can play in plutonium disposition.

2

WAD04

WAD04–1 **Cost**

Funds are not being taken from DOE's budget for environmental cleanup in order to support surplus plutonium disposition. Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WAD04–2 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

FUELS AND MATERIALS EXAMINATION FACILITY

At our lunch meeting a month ago we discussed the advantages of using the Fuels and Materials Examination Facility (FMEF) located directly adjacent to FFTF for various tasks associated with plutonium disposition. This unique facility was built for the purpose of manufacturing mixed oxide (MOX) fuel for the nation's breeder reactor program. It is the only existing building in the country that can house both plutonium pit disassembly and conversion and mixed oxide fuel manufacturing in the same facility. Colocating these functions in one building will save hundreds of millions of dollars in operting and capital costs. 3

We also indicated to you that we, and others in the DOE Complex, believe there appears to be a strong bias on the part of DOE Headquarters' staff to locate all aspects of plutonium disposition facilities at the Savannah River Site. We have drawn this conclusion for many reasons. Last year, the Department completed a Programmatic Environmental Impact Statement (PEIS) addressing storage and disposition options for weapons useable fissile materials. The local Advisory Committee we appointed to analyze that PEIS, came to the conclusion that decision making criteria were heavily biased to achieve a Savannah River outcome. For your information, we have enclosed the critiques submitted by our communities and comments provided by DOE-Richland regarding the PEIS and the supporting technical summary documents. While extensive analysis is included in the technical documents regarding Savannah River facilities, virtually no consideration is given to facilities at Hanford. We are seeing this same bias surface in the current Environmental Impact Statement process. 4

NOTICE OF INTENT

In March, several of our local elected officials attended an Energy Communities Alliance meeting in Washington, D.C. While there, we discovered that the Department was about to issue a Notice of Intent to proceed with an Environmental Impact Statement designating Savannah River as the preferred alternative site for both plutonium immobilization and mixed oxide fuel fabrication. When we inquired why such a decision had been made prior to a full environmental impact assessment, we were given the following answers:

1. "It will be easier and cheaper to license a new building with the Nuclear Regulatory Commission as opposed to an existing facility." The NRC has not provided such advice to the Department of Energy. 5

2. "There will be strong opposition on the part of environmentalists in the Northwest to plutonium disposition functions occurring at Hanford." We encourage Department staff to look at a letter they received from the Military Production Network in December opposing any consideration of mixed oxide fuel for plutonium disposition anywhere in the country. Most of the organizations are located in the Eastern United States.

WAD04

WAD04–3 **Alternatives**

DOE acknowledges the commentor's support for collocating pit disassembly and conversion and MOX fuel fabrication in FMEF at Hanford. Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WAD04–4 **General SPD EIS and NEPA Process**

For this SPD EIS, DOE carefully obtained comparable data on all of the alternatives, analyzed the data in a consistent manner using well-recognized and accepted procedures, and presented the results in a full and open manner. To properly address this comment, DOE again reviewed the subject critique together with the source material on the Hanford and SRS sites. The review indicated that all information from Hanford and SRS had been evaluated and used in a consistent, unbiased manner.

WAD04–5 **NRC Licensing**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. An NOI statement on a preferred alternative is not a decision. The DOE statement regarding the potential difficulty of NRC licensing one of a number of facilities collocated in one building was based on DOE's understanding of NRC's regulatory requirements at the time of the Richland scoping hearing. Because a number of attendees at the Richland hearing indicated that there were precedents for NRC licensing collocated facilities, DOE met with NRC to discuss the issue, and included several alternatives (4B, 6B, and 6D) in the SPD Draft EIS that

Additionally, at the EIS Scoping Meeting held in Richland on July 1, 1997, spokesmen for two of the most vocal Hanford stakeholder environmental organizations offered testimony indicating that any plutonium disposition function at Hanford must not have a negative impact on the Hanford cleanup. They did not reject a plutonium disposition role. The combined attendance at the afternoon and evening meetings was over 150 people. The Department received overwhelming testimony in support of plutonium disposition functions being located at Hanford. 5

COST COMPARISONS

During the summer we learned that the Department was not intending to include cost considerations in identifying plutonium disposition sites. We do not know if this decision has been reconsidered. However, the evaluation of capital costs and the operational cost savings of co-locating plutonium disposition tasks would be favorable only to Hanford. By rejecting this increasingly important criteria, advantages of using the Hanford Site are diminished if not eliminated. 6

NRC LICENSING

At the Richland scoping meeting on July 1, 1997, the public was also informed that there would be an NRC licensing problem with co-locating plutonium pit disassembly, plutonium conversion, and MOX fuel assembly in one building. We asked who, in the Nuclear Regulatory Commission, had provided such advice to the Department of Energy and received no response. Our own conversations with NRC indicate that not only has such a decision not been made, but that specific discussions had not begun at that time. 7

SIZE OF FMEF - CO-LOCATION COST ADVANTAGES

We were advised at the scoping meeting that FMEF is not large enough to accommodate these various functions based on an analysis that was done by the National Laboratories. We indicated that nuclear fuel manufacturers, firms who have actually made mixed oxide fuel, have carefully analyzed the layout of the facility and have drawn the conclusion that there is adequate space to accommodate the various functions. This was affirmed as recently as August 1997 when a study team sent by DOE Headquarters visited the facility. A letter submitted by Siemens Power Corporation in July also affirming that the facility has adequate space is enclosed for your information. We are enclosing other documentation about the capabilities of the facility. This material has previously been provided to the Materials Disposition (MD) Office in DOE Headquarters. We keep providing documentation and MD staff keep coming up with new and creative reasons not to accept it. Frankly, this has become extremely frustrating. 8

We recognize that the seniority and political clout of the members of Congress from the State of Washington is not equal to that of members of Congress from the vicinity of the Savannah River Site. However, Congress and the Administration appear fully committed to balancing the budget in the next several years. Based on our conversations with staff at the 9

WAD04

collocate the MOX facility with one of the other proposed facilities in FMEF at Hanford. The decision that all three facilities would not be collocated in FMEF was made not because of potential NRC licensing issues, but rather because there is not enough space in FMEF to accommodate all three facilities. While no specific issues were identified for FMEF, NRC indicated that overall regulation of a collocated facility may be complicated and burdensome, depending on the degree of integration of the MOX facility and other nuclear facilities that would not be regulated by NRC.

WAD04–6 **Cost**

This comment is addressed in response WAD04–3.

WAD04–7 **NRC Licensing**

This comment is addressed in response WAD04–5.

WAD04–8 **NRC Licensing**

Collocation alternatives continue to be considered that involve the use of FMEF at Hanford. Alternatives 2 and 11A include collocating the immobilization and pit conversion facilities; Alternative 4B, the immobilization and MOX facilities; and Alternative 6B, the MOX and pit conversion facilities. The only alternative eliminated for consideration in this SPD EIS was collocating all three proposed surplus plutonium disposition facilities in FMEF based on space requirements. The most current data available shows the size required for each of the three proposed facilities preclude the use of FMEF.

WAD04–9 **Cost**

This comment is addressed in response WAD04–3.

Office of Management and Budget, we don't anticipate that any new money will be provided to the Department for plutonium disposition or tritium production. Therefore, the merits of using existing facilities that will save the Department hundreds of millions of dollars in capital and operating costs should not be ignored. 9

LACK OF LOBBYING EFFORTS

Most recently we have been informed that we will not be chosen for a plutonium disposition role at Hanford because we have not been lobbying the Department of Energy as aggressively as Savannah River. I do not beleive that conclusions should be drawn in an Environmental Impact Statement based on political clout or lobbying efforts in Washington D.C. 10

CONCLUSION

We are simply asking for a fair, balanced evaluation of plutonium disposition alternatives using relevant criteria. Based on what has happened in the last year and our current observations, this is not happening. We believe that a document is being constructed to justify a previously drawn conclusion. If this is the case, it opens the Record of Decision up to legal challenges and accompanying programmatic delays. We stand ready to appeal if it becomes necessary, but hope that such a legal challenge is not required.

We have been informed that last December you indicated to your future staff that you were not happy about the lack of consideration that was given to the role FFTF can play in plutonium disposition and that you would require full, fair evaluation of alternatives in the future. We believe that your personal involvement will be required to be sure that this EIS process involves a full and complete analysis of options. Many studies and reports have been written about the capabilities of FMEF. Jim Mecca and his staff from the Richland Operations Office can easily answer any questions you may have about the facility. 11

We appreciate your attention to this issue and the opportunity to provide information directly to you about the advantages of using Hanford facilities for plutonium disposition.

Sincerely,

Larry Haler
Mayor

Enclosures

WAD04

WAD04–10 **General SPD EIS and NEPA Process**

As discussed in response WAD04–1, DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

WAD04–11 **General SPD EIS and NEPA Process**

Close coordination with the Richland Operations Office was maintained during the preparation of this SPD EIS to ensure that the best possible information was used. Furthermore, personnel from that office participated in detailed reviews and revision of the EIS prior to its approval and release. Liaison with the Richland Operations Office on the disposition of surplus plutonium would continue until such time as all of the surplus plutonium at Hanford had been dispositioned.

TESTIMONY OF
LARRY HALER, CHAIRMAN,
HANFORD COMMUNITIES GOVERNING BOARD

Regarding the Surplus Plutonium Disposition
Draft Environmental Impact statement

I am Richland Mayor Larry Haler, speaking on behalf of the Hanford Communities regarding the draft surplus Plutonium Disposition Environmental Impact Statement.

The "Hanford Communities" is an intergovernmental organization formed by the cities of Richland, Kennewick, Pasco, West Richland, Benton City and Benton County to deal with Hanford related issues that affect our community.

Before I begin, please allow me to express our appreciation to the Department of Energy for holding a Public Hearing in our community. However, I must say that we were very disappointed that the new Director of the Office of Material Disposition did not choose to attend this hearing and hear the views of the people who live in this region. 1

Hanford Communities Position

The five cities and county that comprise the Hanford Communities have done a careful evaluation of the possibility of Hanford playing a role in the disposition of this nation's excess plutonium. We formed an advisory group over two years ago, comprised of 30 people with diverse backgrounds and interests, to study this issue. They divided up into subcommittees to carefully study such topics as transportation, health & safety, MOX fuel & plutonium conversion, reactor burn options, vitrification, socioeconomic issues and national security issues. As a result of their efforts and recommendations, the Hanford Communities collectively and through the unanimous votes of the five city councils and the Benton County Board of Commissioners, have taken the following positions: 2

* We strongly support the reactor burn option as the preferred plutonium disposition alternative.

WAD02

WAD02–1 **General SPD EIS and NEPA Process**

Because of scheduling conflicts, it was not possible for the Director to attend all public hearings. Please be assured, however, that MD will review and consider all public comments made on the SPD Draft EIS regardless of how they were submitted: public hearings, mail, a toll-free telephone or fax line, or the MD Web site.

WAD02–2 **Alternatives**

DOE acknowledges the commentor's support for the surplus plutonium disposition program at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

* We believe Hanford offers the best and most compelling cost and schedule advantage with the least environmental, health and safety and proliferation risks for plutonium processing and mixed oxide fuel assembly. | 2

* Not only can mixed oxide fuel be manufactured here at Hanford, it can also be used in our Fast Flux Test Facility and in the reactor owned by the Washington Public Power Supply System. | 3

EIS Process

A year ago at the scoping meeting that you held in our city, we asked you to conduct a fair analysis of the facts to determine the best location for plutonium disposition facilities.

We were aware that the Department had a strong bias to locate all of these functions at Savannah River.

We presented strong testimony supported by factual information pointing out the significant cost savings of using the only facility in the country designed and built to manufacture mixed oxide fuel. | 4

We pointed out the cost savings of locating two or three Pu disposition functions in one facility. We discussed the fact that MOX fuel has been produced here before and that our workforce has the skills and experience to produce fuel again.

We defined for you the schedule savings of using an existing facility verses designing, permitting and building a new greenfield facility.

Our arguments fell on deaf ears.

The arguments you used to discredit Hanford evolved as they were proven wrong. First you said the Nuclear Regulatory Commission would never license more than one function in one facility. They disagreed. | 5

Then you interpreted a letter from our Governor stressing his concern about progress on the Hanford cleanup to say that he would not accept new | 6

WAD02

WAD02–3 **MOX RFP**

DOE acknowledges the commentor's support for using MOX fuel in FFTF at Hanford and in the Washington Public Power Supply System reactor. As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As a result of this procurement process, DOE identified Catawba, McGuire, and North Anna as the reactors proposed to irradiate MOX fuel as part of the proposed action in this SPD EIS. Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents.

WAD02–4 **General SPD EIS and NEPA Process**

The purpose of this SPD EIS is to evaluate the environmental impacts of siting and operating the proposed surplus plutonium disposition facilities at the candidate sites. Although cost will be a factor in the decisionmaking process, this EIS contains environmental impact data and does not address the costs associated with the various alternatives. Because cost issues are beyond the scope of this EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WAD02–5 **NRC Licensing**

This DOE statement regarding the potential difficulty of NRC licensing facilities collocated in one building was based on DOE's understanding of NRC's regulatory requirements at the time of the Richland scoping hearing. Because a number of attendees at the Richland hearing indicated that there were precedents for NRC licensing collocated facilities, DOE met with NRC to

discuss the issue. As a result, DOE included several alternatives (4B, 6B, and 6D) in the SPD Draft EIS that collocated the MOX facility with one of the other proposed surplus plutonium disposition facilities in FMEF at Hanford. The decision that all three facilities would not be collocated in FMEF was made not because of potential NRC licensing issues, but rather because there is not enough space in FMEF to accommodate all three facilities. While no specific issues were identified for FMEF, NRC indicated that overall regulation of a collocated facility may be complicated and burdensome, depending on the degree of integration of the MOX facility and other nuclear facilities that would not be regulated by NRC.

WAD02–6 **Alternatives**

This comment is addressed in response WAD02–2.

missions. This spring he wrote a new letter to the Secretary of Energy to clarify what was clearly his intent in the first letter. 6

You said FMEF was not large enough to accommodate multiple functions. Documents prepared by nuclear fuel manufacturers disagreed. 7

While understating Hanford's capabilities and refusing to acknowledge documentation paid for by your own Department, some believe that you have clearly overstated capabilities of other sites. 8

Meeting with Secretary Pena

Last September our community officials met with Secretary Pena to discuss several issues of concern to us. At that time we notified him that he could anticipate that this draft EIS would fail to acknowledge the cost and schedule savings that Hanford offers. We told him that there was a clear bias towards Savannah River that could be identified in the technical documents supporting this EIS process. He asked us to document these concerns and provide the information directly to him. We did. 9

We provided him with a notebook of information. Much of the material we cited was prepared by the Department of Energy. We never received the courtesy of a response. I am now submitting this information for the record and I want a response.

Conclusion

The preferred alternatives you have identified will cost U.S. taxpayers hundreds of millions of dollars more than the Hanford alternative. Where do you plan to get this money? Do you plan to take these dollars out of the funds required for environmental cleanup? We are already anticipating a significant shortfall in funding needed in FY 2000 to meet compliance agreements around the country. 10 11

We will take our arguments to the new Secretary of Energy and the new Director of the Office of Fissile Materials Disposition. Perhaps they will bring reason and common sense to this process.

WAD02

WAD02–7 **Alternatives**

Based on all available data, DOE determined that the proposed surplus plutonium disposition facilities can not be located in FMEF because there is not enough space, even if common support functions were shared. See Sections 2.4.1.1, 2.4.2.1, and 2.4.3.1 for design layouts and the amount of space required for each facility is discussed in Section 2.6. Because of space limitations, two facilities would be located in FMEF—in the case of Alternative 2, pit conversion and immobilization. The MOX facility would be located in a new building.

WAD02–8 **Alternatives**

DOE acknowledges the commentor's concern regarding DOE's assessment of Hanford's capabilities relative to the other candidate sites.

WAD02–9 **General SPD EIS and NEPA Process**

For this SPD EIS, DOE carefully obtained comparable data on all of the alternatives, analyzed the data in a consistent manner using well-recognized and accepted procedures, and presented the results in a full and open manner. To properly address this comment, DOE again reviewed the subject notebook together with the source materials provided by the Richland Operations Office. The review indicated that all information from Hanford and SRS had been evaluated and used in a consistent, unbiased manner.

WAD02–10 **Cost**

This comment is addressed in response WAD02–4.

WAD02–11 **DOE Policy**

Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably.

My name is Barry Haus. I am a resident of Richland, WA. I am calling and commenting on your plans for processing spent fuel, specifically the plutonium and processing it into commercial fuel. My comment is that Hanford, the Hanford Site would be more suited for one of the missions which should be, although it is probably not currently planned to reprocess the N Reactor fuel. As I understand, it is probably 1600 tons of spent fuel in the K Reactor basins that needs to be processed, at least handled. I believe if you check into it you will find that approximately 2% of the weight of the fuel is fissile material which would just as well be used for commercial spent fuel, excuse me, new spent, new commercial fuel elements. Anyway you might factor in your thinking that particular problem the 1600 tons of N Reactor fuel that has to be dealt with somehow. Thank you very much. 1

PD011

PD011–1 **DOE Policy**

DOE acknowledges the commentor's support of reprocessing N Reactor spent fuel. However, the U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. Therefore, reprocessing would not be an option for disposing of the N Reactor spent fuel.

HOLTZ, TED
PAGE 1 OF 1

Hello. My name is Ted Holtz and I live along the Columbia River. I built a house there and I would like to express my concerns about (being) directly affected by Hanford not being cleaned up. Express my concerns about how the issue seems to be confounded by corporate interests in creating this MOX uranium or MOX fuel. I think the focus should be on clean up and just cleanup, and proper storage and disposal of the waste and not trying to make a corporate kind of welfare system that will support the failing nuclear industry by creating a sort of taxed corporate welfare system for that industry. So I just want to express that and a household of five and everybody in my household agrees with this statement. Thank you very much. My phone number is (360) 837-3022 if there is any response or questions directed towards me. Thank you very much. Bye. 1

PD035

PD035–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach and to siting the MOX facility at Hanford. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

United States Department of Energy

Comment Form

NAME: (Optional) Leslie Johnson
ADDRESS: 43604 E Shannon Lane
TELEPHONE: (509) 967-3258
E-MAIL: beegbyte@aol.com

Over the years we have spent trillions of taxpayer dollars on making Plutonium. Now is the time for our country to reclaim some of those taxpayer dollars by conversion of surplus Plutonium into MOX. MOX fuel should be burned in commerical reactors so the citizens of this country can receive cheap electricity. After all it is their money. 1

The DOE should avail itself to the use of existing facilities to process excess Plutonium. New facilities are not required. 2

DOE has demonstrated a continual pattern to make decisions based on politics. I implore the DOE to make decisions based on economics and common sense. PLEASE ACT RESPONSIBLY FOR A CHANGE 3

WAD01

WAD01–1 **MOX Approach**

DOE acknowledges the commentor's support for the MOX approach. The use of MOX fuel in domestic, commercial reactors is not proposed in order to produce electricity. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

WAD01–2 **Alternatives**

DOE evaluated the use of existing facilities and identified potential facilities at Hanford (FMEF) and INEEL. Of the alternatives considered, only Hanford had existing facilities suitable for MOX fuel fabrication. After further evaluation of space requirements, DOE concluded that there is not enough space in FMEF to accommodate all three of the proposed surplus plutonium disposition facilities. Therefore, the alternatives include siting one or two of the three proposed facilities in existing facilities at Hanford, and the pit conversion facility in an existing facility at INEEL.

WAD01–3 **General SPD EIS and NEPA Process**

Siting of the proposed surplus plutonium disposition facilities is not a political decision. Decisions on the surplus plutonium disposition program will be based on technical and cost reports, environmental analyses, national policy and nonproliferation considerations, and public input.

KILBURY, CHARLES D.
PAGE 1 OF 1

Good afternoon, ladies and gentlemen:

I am Charles D. Kilbury, mayor of the city of Pasco, but I am speaking for myself only:

It is hard to justify action taken in the Draft Plutonium Disposition Environmental Impact statement. The Record of Decision for the storage and disposition of Weapons - Usable Fissile Materials Programmatic EIS included the Hanford Project for both plutonium disposition options. And certainly the Fuels and Materials Examination Facility is the best and most efficient production of the "burn" as mixed oxide fuel, and the presence of considerable Plutonium on the Hanford Project makes it much more expedient than transporting in all directions over the far reaches of the United States.

The FMEF is an existing, unused facility that has been evaluated for performing a combination of the disposition activities.

- The FMEF is operationally complete with 120,000 square feet of process space.
- Designed and constructed to NRC reactor standards and is deemed capable of NRC licensing.
- Hazardous or radioactive materials have never been used in the FMEF making it easy to install a plutonium disposition mission.
- An FFTF MOX fuel fabrication line was installed, but has never been used.

The evaluation by the Office of Fissile Materials Dispostion indicates that FMEF has sufficient space within the exisiting structure to perform both of the disposition functions (e.g., pit disassembly and MOX Fuel fabrication).

All this can be done cheaper than anywhere else; there is a supply of surplus Plutonium on the Hanford Project, and even reactors to accomplish the burn. It will certainly be difficult to justify not using this magnificant facility built just for this purpose.

1

WAD05

WAD05–1 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

US DOE needs to hear your voice NOW!

1. Should Clean Up be the sole mission at Hanford?
   Yes) No — 1
2. Should the United States Government maintain its longstanding policy against the use of weapons Plutonium to fuel civilian nuclear reactors?
   Yes No — 2
3. Which alternative would you prefer to see the US Department of Energy pursue:
   Immobilization (encasement of plutonium in glass-like tombs)
   Or
   The MOX plan (burning plutonium to fabricate fuel for use in a civilian nuclear reactor)? — 3
4. Should Plutonium, to be used for processing and fabrication of MOX fuel, be imported to the Hanford site along the Columbia River?
   Yes No
5. How concerned are you about the transportation of Plutonium through the Northwest?
   Not concerned slightly concerned very concerned completely opposed
   B. How concerned are you about the transport through the Northwest of fuel containing weapons Plutonium?
   Not concerned Slightly concerned Very concerned Completely opposed — 4
6. Should commercial nuclear power plants be allowed to run on MOX fuel containing weapons Plutonium?
   Yes No
   B. Should they be subsidized with tax dollars to do so?
   Yes No — 5
7. Should MOX fuel containing weapons Plutonium be used to restart the FFTF reactor at Hanford to produce Tritium for nuclear bombs?
   Yes No — 6

Name IAN & AIKO LOW
Address PO BOX 851
Phone STEVENSON, WA 98648 USA

Please return this to:
Hanford Action
25-6 NW 23rd Place #406
Portland, OR 97214
(503) 235-2531

Let's not make anymore mistakes. Lets clean-up Hanford now without fail!
Aiko & Low & family
we live and recreate in and along the Columbia — 7

MD288

3-1067

MD288–1 **DOE Policy**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD288–2 **Nonproliferation**

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD288–3 **Alternatives**

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest

possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. DOE has determined that 17 t (19 tons) of the surplus plutonium would be immobilized due to the complexity, timing, and cost that would be involved in purifying those plutonium materials to make them suitable for use in MOX fuel. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not considered a reasonable alternative at this time and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

MD288–4 **Transportation**

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

MD288–5 **MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD288–6 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

MD288–7 **DOE Policy**

As described in Section 4.26.1.2, surface water would not be used in construction and operation of proposed surplus plutonium disposition facilities at Hanford Due to the dilution capability of the Columbia River, as well as FMEF's location relative to the Columbia River, there would be no discernible contamination of aquatic biota (fish) or drinking water resulting from the proposed facilities at Hanford, either from minute quantities of air deposition into the river or from any other potential wastewater releases. Therefore, no discernible impacts on the Columbia River would be expected.

The remainder of this comment is addressed in response MD288–1.

RESPONCE TO

SPD EIS

BY

CHARLES L. LUMPKIN

Charles L. Lumpkin
603 N. 48th Ave.

FD114

Yakima, wa 98908
Ph.(509)965-8707

August 18,1998

To Whom it may concern;

After reviewing the S.P.D. E.I.S. It is my belief that the decisions to not name Hanford as the primary site for either or both the sites for the MOX Fuels and Immobilization is based solely on POLITICS! It is my opinion that the politicians and D.O.E. department heads that reside in Washington D.C., have once again failed to recognize the true assets of the Hanford Works Area, these being the people and the contributions that they have made to our country over the last fifty years! It is my contention that the bureaucrats in D.C. are afraid to take on the State of Washington, And the Washington Department of Ecology. Since the Honorable Henry M. Jackson passed away, thier have been no new projects at the Hanford Works area related to defense, and all the environmental projects have been delayed or refered to other D.O.E. sites, this political environment has allowed numerous technically advanced projects and facilities to decay to their ruin, F.F.T.F. and F.M.E.F. etc..

To the mater at hand, since F.F.T.F., F.M.E.F. and an already existing D&D work force are already in existence and the vitrification plant slated to be built and on line by the year 2003, I cant understand economically why the Hanford Works wouldn't be the preferred choice site for the MOX Fuels and Immobilization projects. It amazes me that across the river in Oregon a project is on going that poses more danger to the environment and health of people, (Umatilla Army Depot Incinerator Project) than the Hanford works projects now poses, or any future projects will pose! 1

I would like to point out that since 1987, the Hanford works Project has changed its mission from a Department of Defense complex to an Environmental clean-up project, this I believe makes us the leaders in environmental issues and Hanford has a better working knowledge and understanding about environmental issues, I believe that we meet or exceed the other sites in the topics analyzed criteria for the SPD EIS (S.5) pg.S-21 of the summary and should be reconsidered for these projects.

Thank you

Charles L. Lumpkin

FD114

FD114–1 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

MADISON, JIM
PAGE 1 OF 1

Hello, this is Jim Madison from West Pasco. Of course, I grew up as a kid in Richland and stuff like that and spent most of my life there. I personally see no problem with bringing the material back here to dispose of it or whatever. I don't see any problems with transportation and stuff like this, that some of the worry warts are really concerned about because after all the majority of that material originated here. The biggest majority of it got shipped out OK to wherever it went. And I would assume it could be shipped back here the same way with the same care and accident free manner. So I know that some of the hand wringers are going to be all fluttered and everything else, but I hope you really don't pay too much attention to them because most of them really don't know anything about anything anyway except they do make noises on the media. But practically speaking, its the only place to take it. And you will be foolish to take it somewhere else and then have to stockpile it somewhere and build, reduplicate the money for building a building like in the 400 Area that is equipped to do that plus the lead time to wait for the building to be designed and built. So that would push any disposal process several years down the road. And that I think is probably not the best process, not the best procedure either. So all in all, the only thing that makes any sense is to use what you got where it is, which is here. Thank you. 1

PD008

PD008–1 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

I believe that it would be a travesty to bury this very valuable fuel source. DOE would spend billions to prepare it for storage when it could be processed into fuel for commerical nuclear reactors, benefiting all Americans. Various MOX projects are ready to go and should be used to turn weapons materials into electricity. In concept, this is no different than the demobilization of ships, tanks, and planes into commercial materials after WW2. 1

WD004

WD004–1 **MOX Approach**

DOE acknowledges the commentor's support of the MOX approach. The use of MOX fuel in domestic, commercial reactors is not proposed in order to produce electricity. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

MERRILL, DAVID M.
PAGE 1 OF 1

David M. Merrill
513 Wagon Court
Richland, WA 99352
phone: 509 375-8408
E-mail: david_merrill@nfuel.com
4 August 1998

Dear Sirs

I feel the Plutonium Mixed Oxide Fuel fabrication facility should be located on or near the Hanford site, for the following reasons.

First as a chemist and member of the American Chemical Society I am familiar with the talent and skills of many of my colleges who live in this area. Many of these chemists have had experience working with plutonium, and know the safety and handling procedures for both the chemical hazards and criticality safety issues.

Please consider the talent base from which to draw employees when considering where to locate the MOX facility.

Second as Co-president of the "Citizens Advisory Committee to the Richland School Board" I am familiar with the educational concerns and desires of many of the Richland parents. I have worked with parent volunteers to assure our children are given a good education. In this association I have noticed that many of the parents are very interested in providing their children with mathematical, engineering and scientific skills. We would like to see challenging jobs provided for them here. I see the MOX facility as an opportunity for our children to work in an industry we believe in. 1

Please consider the education base of the future employees when considering where to locate the MOX facility.

Third as a quality control chemist I know how important a dry climate is when working with various hygroscopic materials. I realize all facilities handling plutonium use extensive air conditioning systems, but a dry climate provides a much better starting point for facilities which require large amounts of conditioned air. It makes physical sense to locate the MOX facility in this dry climate area where power is inexpensive. As an Example the Siemen's Power Corporation - Nuclear Division facility requires over $1,000,000/year in electricity to operate. A similar MOX facility here would require close to that same amount, but in the south where electricity is more expensive and air conditioning more severe I would guess you are looking at more than 3 times the cost in electricity. 2

Please consider these types of technical and cost details as you review the location for a new MOX facility.

Sincerely
David M. Merrill
David M. Merrill

WAD22

WAD22–1 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Although the education base of the community is not a factor in facility siting selection, site workforce expertise and the existence of complementary activities and missions are considered. Decisions on the surplus plutonium disposition program at Hanford will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

WAD22–2 **Cost**

Power requirements at each of the candidate sites were taken into consideration, and it was determined that the sites under consideration had sufficient available capacity to cover the needs of the proposed MOX facility.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

Hello my name is David M. Merrill. I live at 513 Wagon Court, Richland WA 99352. I'm interested in the MOX facility and in the documentation of that MOX facility. I would like to attend the meeting scheduled for tomorrow evening at the Hotel here in Richland. I have some opinions about the plutonium mixed oxide fuel fabrication facility and feel it should be located on or near the Hanford Site for the following reasons: First, as a chemist and member of the American Chemical Society, ACS, I am familiar with the talent and skills of many of my colleagues who live in this area. Many of these chemist have had experience working with plutonium and know the safety in handling procedures for both the chemical hazards and criticality safety issues. 1
Please consider the talent base from which to draw employees when considering where to locate the MOX facility. Second, as co-president of the Citizens Advisory Committee to the Richland School Board, I am familiar with the educational concerns and desires of many of the Richland parents. We love this area and would like to see our children given a broad base education, however, we have a large percentage of parents very interested in providing their children with mathematical, engineering, and scientific skills. We would like to see challenging jobs provided for them here and we see the MOX facility as an opportunity for our children to work in an industry we believe in. Please consider the education base of the future employees when considering where to locate the MOX facility. Third, as a quality control chemist, I know how important a dry climate is when working with various hygroscopic materials. I realize all facilities handling plutonium use extensive air conditioning systems. 2

PD006

PD006–1 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Although the education base of the community is not a factor in facility siting selection, site workforce expertise and the existence of complementary activities and missions are considered. Decisions on the surplus plutonium disposition program at Hanford will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

PD006–2 **Cost**

Power requirements at each of the candidate sites were taken into consideration, and it was determined that the sites under consideration had sufficient available capacity to cover the needs of the proposed MOX facility.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

MERRILL, DAVID M.
PAGE 2 OF 2

But a dry climate provides a much better starting point for which, for facilities which require large amounts of conditioned air. It makes physical sense to locate MOX facility in this dry climate area where power is less expensive than say down south. As an example, the Seiman's Facility requires over a million dollars per year in electricity to operate. A similar MOX facility here would require close to that same amount. But in the south where electricity is more expensive and air conditioning more severe, I would guess you are looking at three times the cost in electricity. Please consider these types of technical details as a review for location for a new MOX facility. 2

PD006

United States Department of Energy

Comment Form

NAME: (Optional) David M Merrill
ADDRESS: 513 Wagon Ct
TELEPHONE: (509) 375-8408
E-MAIL: david_merrill@ntfuels.com

1) Did you consider converting to oxide at Pantex and using the comercial work force to run the MOX facility at FMEF, and sending immobilization to SRS? 1

2) Is there a potential for much more Pu either from within the US or even offer to convert foreign Pu to MOX. 2

[redacted]

WAD09

WAD09–1 **Alternatives**

The range of reasonable alternatives analyzed in this SPD EIS were developed using criteria listed in Section 2.3.1. The alternative suggested by the commentor was considered and eliminated because it involves placing the three proposed surplus plutonium disposition facilities at three different sites.

WAD09–2 **DOE Policy**

The end of the Cold War has resulted in unprecedented reductions in nuclear arms in both the United States and Russia. During the first week of September 1998, Presidents Clinton and Yeltsin held a Moscow summit and signed a statement of principles with the intention of removing approximately 50 t (55 tons) of plutonium from each country's stockpile. Further agreements on disarmament between the two nations may increase the amount of surplus plutonium in the future.

Understanding the economic dilemma in Russia, the U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue.

MOORE, VICTOR AND ROBERTA
PAGE 1 OF 1

FROM Victor + Roberta Moore
8149 W. clearwater pl.
Kennewick, WA. 99336
8/4/98

Concerning a Draft Environmental Impact statement to expand the Role of Hanford in plutonium Disposition.

After years of inadequate funding to clean up Hanford – Why would Anyone want to expand [redacted] Facilities to accomodate Materials sent from other places? 1

What evidence does anyone have that by getting more processes & more materials, that the old waste Disposal problems will be addressed + Funded?

Contaminated Environments should Not be Looking for more Contaminates if clean up is a priority.

WAD06

WAD06–1 **Alternatives**

DOE acknowledges the commentor's opposition to the surplus plutonium disposition program at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

PACIFIC NORTHWEST NATIONAL LABORATORY
WALT APLEY
PAGE 1 OF 1

August 4, 1998 Public Meeting Comments on
Surplus Plutonium Disposition Draft Environmental Impact Statement

Good Evening. My name is Walt Apley and I am the Deputy Director for Operations at the Pacific Northwest National Laboratory. One of the Laboratory's primary missions is to help apply Hanford Site assets to emerging national and international needs as well as new science-based missions. Given that role, I would like to offer three specific comments on the Surplus Plutonium Disposition Draft Environmental Impact Statement:

(1) **Importance of Plutonium Disposition**

There are few issues today in the world as important as safely and securely withdrawing plutonium from nuclear military programs and taking steps to ensure that such material can never again be used to build a nuclear weapon. To that end, Pacific Northwest National Laboratory staff are working in a wide range of technical areas, including detection, safe handling, and disposition - both in the United States and internationally. The EIS for Surplus Plutonium Disposition is an extremely important document that we all want to see completed as a sound, technically-defensible basis for moving forward for the timely disposition of this material. 1

(2) **Role of Hanford**

Currently the Draft EIS states a preference for using the Savannah River Site. Hanford was not selected, with one of the arguments being that DOE prefers that the cleanup mission remain Hanford's top priority. The cleanup mission is and will remain this site's #1 and overriding priority. But Hanford does have major assets (both physical and personnel) which are capable of making major contributions to the surplus plutonium disposition mission. The DOE budget will continue to face significant pressure and since existing facilities such as the Fuels and Materials Examination Facility may be able to do the job sooner and at a lower cost, we must retain the ability to use those resources. 2

(3) **Fast Flux Test Facility**

Currently the draft EIS states that DOE's preference is to produce MOX fuel and "irradiate in existing, commercial reactors". However, the U.S. - Russian Agreement on Management of Used Plutonium announced at the Gore-Kiriyenko working meeting on July 23-24, 1998 called for using "MOX fuel for nuclear power reactors of various types". Studies have shown that the Fast Flux Test Facility, if dedicated to the mission, could disposition the 33 *t* of surplus weapons plutonium well within the 25 year *Storage and Disposition Final PEIS* criterion using traditional enrichments and a standard core configuration, as well as produce valuable and needed medical isotopes. The FFTF disposition option should be given strong consideration. 3

I'd like to thank the people putting together this draft EIS: I know that it is both a challenge and an ordeal. But it is also critically important to a safe and secure future for all of us. Thank you.

WAD21

WAD21–1 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's reviews on the importance of this SPD EIS.

WAD21–2 **Alternatives**

DOE acknowledges the commentor's support for the surplus plutonium disposition program at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

WAD21–3 **Alternatives**

DOE acknowledges the commentor's support of using MOX fuel to restart FFTF at Hanford. As discussed in Appendix D of the SPD Draft EIS, DOE did consider FFTF in the Storage and Disposition PEIS, but it was eliminated from further study because it was in a standby status and it could not satisfy the criterion of completing the disposition mission within 25 years using the historic FFTF plutonium enrichment specifications. Further, compared with the 2-3 percent plutonium content of spent fuel from commercial reactors, the spent fuel from FFTF would contain approximately 35 percent plutonium by weight. It is questionable whether this greater concentration of plutonium in the FFTF MOX spent fuel would meet repository acceptance criteria. Also, the FFTF liquid-metal reactor would not produce electricity, whereas using commercial light water reactors to dispose of surplus plutonium would generate revenues from the sale of electricity, which in turn would help defray the overall cost of using the MOX approach. As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source.

PEARSON, CHRISTINE
PAGE 1 OF 4

US DOE needs to hear your voice NOW!

1. Should Clean Up be the sole mission at Hanford?
   (Yes) No

2. Should the United States Government maintain its longstanding policy against the use of weapons Plutonium to fuel civilian nuclear reactors?
   (Yes) No

3. Which alternative would you prefer to see the US Department of Energy pursue:
   Immobilization (encasement of plutonium in glass-like tombs) Immobilization !!
   Or
   ~~The MOX plan (burning plutonium to fabricate fuel for use in a civilian nuclear reactor)~~?

4. Should Plutonium, to be used for processing and fabrication of MOX fuel, be imported to the Hanford site along the Columbia River?
   Yes (No)

5. How concerned are you about the transportation of Plutonium ~~through~~ the Northwest?
   Not concerned slightly concerned very concerned (completely opposed)
   B. How concerned are you about the transport through the Northwest of fuel containing weapons Plutonium?
   Not concerned Slightly concerned Very concerned (Completely opposed)

6. Should commercial nuclear power plants be allowed to run on MOX fuel containing weapons Plutonium?
   Yes (No)
   B. Should they be subsidized with tax dollars to do so?
   Yes (No)

7. Should MOX fuel containing weapons Plutonium be used to restart the FFTF reactor at Hanford to produce Tritium for nuclear bombs?
   Yes (No)

1 2 3 4 5 6

Name Christine Pearson
Address 8 Strong Rd
Phone Trout Lake, Wa. 98650

Please return this to:
Hanford Action
25-6 NW 23rd Place #406
Portland, OR 97214
(503) 235-2531

MD296

MD296–1 **DOE Policy**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD296–2 **Nonproliferation**

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD296–3 **Alternatives**

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. DOE has determined that 17 t (19 tons) of the surplus plutonium would be immobilized due to the complexity, timing, and cost that would be involved in purifying those plutonium materials to make them suitable for use in MOX fuel. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not considered a reasonable alternative at this time and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

MD296–4 **Transportation**

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http://www.doe-md.com.

MD296–5 **MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD296–6 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

Additional Comments:
We need to continue to stop the madness of Nuclear proliferation & spend $s on Research on cleaning up waste sites. The Tri cities area is one of the highest incidence areas of Cancer in the Nation. The Hanford being so close to the River is and has created a distribution system for Nuclear leaks & waste products. More energy needs to be devoted to alternative power sources such as Solar/wind generated power. Also we need more education to help people understand how to use less energy & conserve more energy so there is not as much demand for Nuclear power. 7 8

MD296

MD296–7 **DOE Policy**

DOE is implementing the President's nonproliferation policy by converting surplus plutonium to forms that cannot be reused in nuclear weapons again. Cleanup of DOE's former weapons production sites including research and development has continued to receive substantial funding allocations from the U.S. Congress every year. Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably.

MD296–8 **DOE Policy**

DOE acknowledges the commentor's support for alternative energy sources. The purpose of the surplus plutonium disposition program is not to provide an alternative source of energy but to disposition plutonium in an environmentally safe and timely manner. Further, DOE acknowledges and supports the importance of public education. DOE has established reading rooms near DOE sites to provide easy access to information about DOE programs and encourages the use of this source of information. DOE has numerous Web sites, including one for MD (http://www.doe-md.com), that also provide up-to-date information about DOE programs. Likewise, a number of utilities also have their own Web sites with educational material.

RICHLAND
PAM BROWN
PAGE 1 OF 1

MEMORANDUM *CITY OF RICHLAND*
City Manager's Office

TO: Brook Anderson

FROM: Pam Brown, Hanford Analyst

SUBJECT: Response to an Invitation From Secretary Peña to Send Him Information about Cost & Schedule Savings of Locating Plutonium Disposition Functions at Hanford and Documentation of a DOE-HQ Bias Towards Savannah River in the Previous Fissile Material EIS

DATE: October 17, 1997

When Secretary Peña visited Hanford, the local elected officials discussed our strong interest in seeing existing Hanford facilities used for plutonium disposition functions. We pointed out the significant time and schedule savings of using existing Hanford facilities that were built to house mixed oxide fuel fabrication, rather that build new facilities at another site.

We explained that in observing the process followed in developing the Fissile Material Environmental Impact Statement (EIS) last year, we believe that there was a clear bias on the part of Materials Disposition Staff towards placing these functions at the Savannah River Site. In the current EIS process, MD staff are discrediting the usefulness of our Fuels & Materials Examination Facility (FMEF) by ignoring and even denying the existence of reports that explain in detail the capabilities of FMEF. 1

Secretary Peña invited us to send him a package of material documenting the capabilities of our Hanford facilities. He also asked that we provide documentation of what we believe is a clear bias by DOE-HQ staff in favor of the Savannah River Site. He asked that we send this package to you so that it would actually get to him.

The documents enclosed have been submitted by our communities, DOE-Richland and the Siemens Power Corporation to the Office of Fissile Materials Disposition over the last year and a half. Due to the large volume of material we are sending, I have tried to highlight the information that is of most concern. If you have any questions about our position or the documents enclosed please call me at 509-943-7348.

WAD16

WAD16–1 **Alternatives**

DOE acknowledges and appreciates the commentor's continued interest in the surplus plutonium disposition program, and support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities. The use of FMEF in the surplus plutonium disposition program is considered in this EIS under Alternatives 2, 4, 6, 8, 10, and 11. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

The attachments to the commentor's letter represent comments previously submitted and reviewed by MD, and thus addressed in separate responses at that time.

Gordon J. Rogers
1108 N Road 36
Pasco, WA 99301
Phone/ Fax 509 547-7403

September 16, 1998

Mr. Howard R. Canter
Acting Director
Office of Fissile Materials Disposition
U.S. Department of Energy
P.O. Box 23786
Washington, DC 20026-3786

Dear Mr. Canter:

I submit the following comments on the Surplus Plutonium Disposition Draft Environmental Impact Statement.

I find the preferred alternatives for the subject EIS to be fatally flawed and completely unacceptable for the following reasons. 1

- Cost savings from the use of the FMEF at Hanford are not considered.
- The cleanup mission is critical at all the candidate sites. No evidence is given to support the dismissal of Hanford, and the implication is that cleanup at SRS is not equally vital. New missions at a site are accommodated by management actions, and are not an environmental issue.
- There is essentially no difference between the sites in terms of environmental impacts. Therefore, we taxpayers demand that least cost to the government should be the deciding factor.
- The transportation impacts are essentially the same if the pit disassembly and conversion and the MOX fuel fabrication are located at the same site. The statement that the FMEF cannot house both function without new construction is not supported by available studies.

The draft EIS is not a balanced and objective assessment and does not provide a legitimate basis for a decision. Instead, it omits comparative costs and makes unjustified assumptions favoring the SRS site. An objective evaluation of comparative costs must be made; and the document 2

MD241

MD241–1 **Alternatives**

DOE acknowledges the commentor's opposition to the announced preference for siting immobilization and MOX facilities at SRS rather than at Hanford. The preferred alternative was chosen based on the best information and analyses available; all sites were equally considered based on this information. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

MD241–2 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for proposed surplus plutonium disposition facilities.

ROGERS, GORDON J.
PAGE 2 OF 2

must be extensively revised to have a credible basis for site selection. | 2

I will appreciate receiving a copy of the response to comments and any future documents on this subject.

Sincerely,

Gordon J. Rogers

MD241

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. Cost impacts are addressed in the reports identified in response MD241–1.

United States Department of Energy

Comment Form

AUG 23, 1998

NAME: (Optional) STEVE ROYAL
ADDRESS: PO BOX 4821 VANCOUVER, WA 98662
TELEPHONE: ( )
E-MAIL:

RE: SURPLUS PLUTONIUM DISPOSITION DRAFT ENVIRONMENTAL IMPACT STATEMENT
U.S. DOE OFFICE OF FISSILE MATERIALS DISPOSITION

I'm TELLING YOU THIS:

1) I DO NOT WANT NOR NEED A UNITED STATES WHICH IS ENGAGING, KNOWINGLY, IN THE PROLIFERATION OF NUCLEAR (LONG ½ LIVES) MATERIAL WHICH HAS NO ABILITY TO BREAKDOWN & BE ERADICATED AFTER ASSEMBLY

2) I DO NOT WANT NOR NEED A UNITED STATES WHICH IS ENGAGING & OR APPEARS TO BE ENGAGING IN THE COMMINGLING OF NUCLEAR (LONG ½ LIVES) MATERIAL

3) I DO NOT WANT NOR NEED A UNITED STATES WHICH IS ENGAGING & OR APPEARS TO BE ENGAGING IN THE MOVEMENT OF NUCLEAR (LONG ½ LIVES) MATERIAL ON THE U.S. INTERSTATE ROADS, HIGHWAYS, & COUNTY ROADS; ON U.S. WATERWAYS OR INTERNATIONAL WATERWAYS. ON RAILROAD LINES; OR IN THE AIR TRAFFIC LANES ANYWHERE. 1

4) GET OUT OF THE U.S. MILITARY/MONOPOLY ENERGY/GRADUATE COLLEGE RESEARCH/CORPORATE WELFARE INDUSTRIAL COMPLEX SYNDROM BUSINESS, IN ORDER TO SAVE OUR ONE & ONLY EARTH FROM THE MOST LETHAL POISON KNOWN.

S.R.

FD143

FD143–1 **DOE Policy**

DOE acknowledges the commentor's opposition to nuclear material management. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. This would require the handling and transportation of the surplus plutonium. Transportation of special nuclear materials would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material.

SEYER, SAUL
PAGE 1 OF 1

Saul Seyler
Holden Village
#C00 Stop 2
Chelan, WA 98816

Secretary of Energy;
U.S. Department of Energy
1000 Independence Avenue, SW
Washington D.C. 20585

Dear Secretary:

I'm writing in concern to the dangers of MOX Fuels, at sites such as Hanford. This is unacceptable and cannot continue. The preservation of our environment is by far more important than the additional energy that can be gained. It is better to dispose of the stuff now instead of increasing the toxicness of it. Thank you for your understanding in the matter. 1

Sincerely, A concerned voter,

Saul Seyler

FD330

FD330–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach. Use of MOX fuel in domestic, commercial reactors is not proposed in order to produce electricity. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. With immobilization or MOX, the material would be disposed of in the same potential geologic repository.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Re: Comments on the Plutonium Disposition Draft Environmental Impact Statement

I provided oral comments at the meeting in Richland, Washington on the Draft EIS and stated that I would submit my comments in writing, which are on the attached 2 pages.

Ronald C. Liikala
STMC Sisu Technical and Management Consulting
718 Lynnwood Loop
Richland, WA. 99352

FD320

STMC SISU TECHNICAL AND MANAGEMENT CONSULTING
RONALD C. LIIKALA
PAGE 2 OF 3

My three principal concerns about the draft EIS are 1) the alternatives selected for evaluation, 2) omission of a cost-benefit analysis, and 3) the justification for locating the MOX fuel fabrication facility at SRS.

1) The alternatives evaluated omits what appears to me to be a reasonable alternative, namely:
   - Pu Disassembly and Conversion at Pantex;
   - MOX Fuel Fabrication in the FMEF at Hanford;
   - Pu Conversion and Immobilization at SRS.

Section 1502.14 of 40 CFR Chapter V states, "agencies shall rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their being eliminated." 1

The reason why I believe it is reasonable is because it takes advantage of existing infrastructure (i.e., Pit storage at Pantex, the FMEF at Hanford, and the capabilities at SRS for storing and converting nonpit plutonium materials into plutonium dioxide suitable for immobilization coupled along with the immobilization capabilities at SRS. Completion of the existing FMEF for fabricating MOX fuel should cost less than building a new fuel fabrication facility at any of the DOE sites.

2) A cost-benefit analysis was not included in the draft EIS. I question whether the omission of such analysis is in keeping with the letter/spirit of NEPA.

I refer you to the Final Generic Environmental Statement on Use of Recycle Plutonium in Mixed Oxide Fuel in Light Water Cooled Reactors issued by the NRC in August 1976.

In a January 20, 1975 letter to the NRC, the Presidents Council on Environmental Quality expressed the view that, the draft EIS was incomplete because it failed to present a detailed and comprehensive analysis of the environmental impacts of potential diversion of special nuclear materials and of alternative safeguards programs to protect the public from such a threat. The Council believed that such a presentation should be made by the NRC before its final decisions on plutonium recycle. Reflecting on this, the NRC took the position that a cost-benefit analysis of alternative safeguards programs should be prepared and set forth in draft and final environmental impact statements before any Commission is reached in draft and final environmental impact statements. 2

FD320

FD320–1 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities.

As discussed in Section 2.3.1 of the SPD Draft EIS, the range of reasonable alternatives analyzed was developed using equally weighted screening criteria. Over 64 options were evaluated, yielding a range of 23 reasonable alternatives that met all the criteria. Options that involved siting the proposed surplus plutonium disposition facilities at three different sites were eliminated because the goals of minimizing worker and public exposure to radiation, minimizing proliferation concerns associated with transportation, and reducing infrastructure costs would not be met.

FD320–2 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

I believe that the draft EIS is incomplete without including the alternative on Pit Disassembly and Conversion at Pantex, MOX fabrication in FMEF at Hanford and Pu Conversion and Immobilization at SRS and by not including a cost-benefit analysis of alternatives. 2

3) The draft EIS makes mention SRS is preferred for the MOX facility because this activity complements existing missions and takes advantage or existing infrastructure and staff expertise. There was no delineation of in the draft EIS how it compliments existing missions or takes advantage of existing infrastructure and staff expertise. Since the MOX facility will be leased to the contractor and the contractor is responsible for obtaining a license from the Nuclear Regulatory Commission (NRC), I am wondering about why DOE feels its field office and current site contractors will have a significant role in the construction and operation of the MOX facility. For example, here at Hanford, the Washington Power Supply System (WPPSS) leases the site for its plants from DOE and the role of the field operations office is basically limited to site-wide emergency planning. Safety, safeguards and security at the WPPSS site at Hanford are the under the purview of NRC. 3

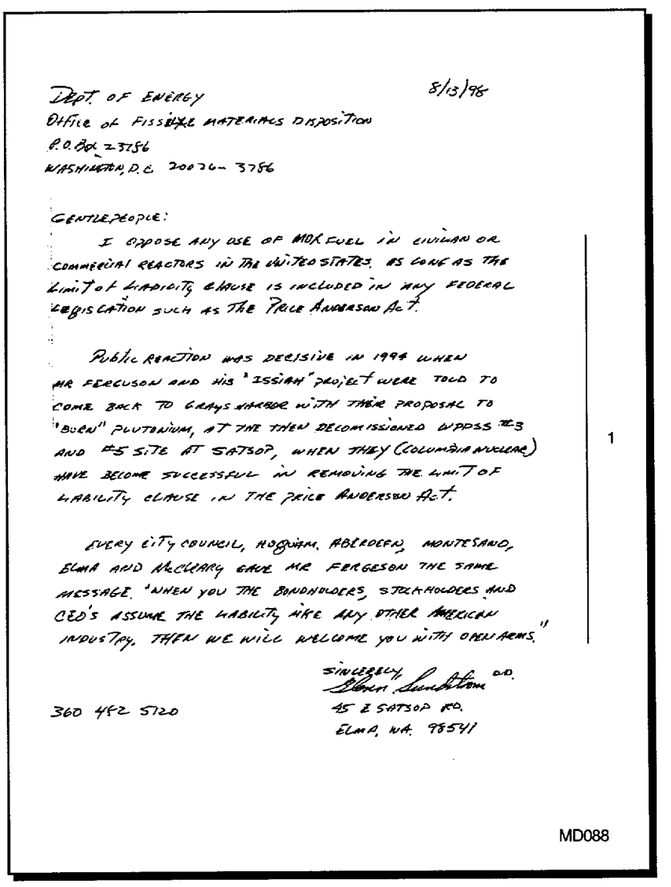
FD320

FD320–3 **Alternatives**

DOE does not plan for facility site contractors to have a significant role in the construction and operation of the MOX facility. The MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

DOE entered into a contract with DCS to construct and operate the MOX facility at one of the four candidate sites evaluated in this SPD EIS. This contract was awarded through a competitive procurement process. Since the MOX facility would use existing site services and infrastructure, the site contractor would be responsible for supporting the construction and operation of the facility to the extent required to ensure availability of those services. The DOE field office would also be involved to a limited extent, in its oversight role for the entire DOE site, and for services such as those identified by the commentor.

SUNDSTROM, GLENN
PAGE 1 OF 1



8/13/96

DEPT. OF ENERGY
OFFICE OF FISSILE MATERIALS DISPOSITION
P.O. BOX 23786
WASHINGTON, D.C. 20026-3786

GENTLEPEOPLE:

I OPPOSE ANY USE OF MOX FUEL IN CIVILIAN OR COMMERCIAL REACTORS IN THE UNITED STATES. AS LONG AS THE LIMIT OF LIABILITY CLAUSE IS INCLUDED IN ANY FEDERAL LEGISLATION SUCH AS THE PRICE ANDERSON ACT.

PUBLIC REACTION WAS DECISIVE IN 1994 WHEN MR FERGUSON AND HIS "ISSIAH" PROJECT WERE TOLD TO COME BACK TO GRAYS HARBOR WITH THEIR PROPOSAL TO "BURN" PLUTONIUM, AT THE THEN DECOMISSIONED WPPSS #3 AND #5 SITE AT SATSOP, WHEN THEY (COLUMBIA NUCLEAR) HAVE BECOME SUCCESSFUL IN REMOVING THE LIMIT OF LIABILITY CLAUSE IN THE PRICE ANDERSON ACT. 1

EVERY CITY COUNCIL, HOQUIAM, ABERDEEN, MONTESANO, ELMA AND MCCLEARY GAVE MR FERGESON THE SAME MESSAGE. "WHEN YOU THE BONDHOLDERS, STOCKHOLDERS AND CEO'S ASSUME THE LIABILITY LIKE ANY OTHER AMERICAN INDUSTRY, THEN WE WILL WELCOME YOU WITH OPEN ARMS."

SINCERELY
GLENN SUNDSTROM O.D.
45 E SATSOP RD.
ELMA, WA. 98541

360 482 5120

MD088

MD088–1 **MOX Approach**

DOE acknowledges commentor's opposition to the use of MOX fuel in domestic, commercial reactors.

United States Department of Energy

TO: OFFICE OF FISSILE MATERIALS DISPOSITION @fax 1-800-820-5156

Comment Form

Page 1

NAME: (Optional) Joseph Teal
ADDRESS: 86103 N. YAKIMA RIVER DRIVE ; WEST RICHLAND, WA. 99353
TELEPHONE: (—) —
E-MAIL: —

COMMENTS ON THE DRAFT SURPLUS PLUTONIUM DISPOSITION ENVIRONMENTAL IMPACT STATEMENT

These comments document my amazement at and protest of the recent decision to construct new facilities for pit disassembly and mixed-oxide fuel fabrication at Pantex and Savannah River rather than take advantage of existing facilities. The justifications for construction of new facilities that were presented in the PEIS, particularly the cost estimates and transportation issues, are so notably wrong as to display departure from sound judgment and common sense. Careful review of the analyses in these two areas may reveal a contrived backfit to justify a predetermined decision. It is requested that an unbiased independent review of these two justifications be performed by an agency such as the OMB.

Over the past 30 or so years, the U.S. Department of Energy has launched projects involving approximately one hundred new major facilities. Of these, perhaps twenty-five have actually been started, a dozen have been completed, and of the twelve, over half have either failed to perform due to technical inadequacies or have never been used due to program direction change. Notable examples of plans and/or intentions gone awry include the 371/374 buildings at Rocky Flats, the PE-41 Storage Vault at Los Alamos, the Fuels and Materials Examination Facility (FMEF) at Hanford, the Fuel Processing Facility at INEEL, the New Special Recovery Facility at SRS, etc. It is hoped that DOE does not repeat or continue this cycle. (continued on page 2 →)

1

FD301

FD301–1 **Cost**

DOE acknowledges the commentor's support for involving existing facilities such as FMEF at Hanford to disposition surplus plutonium. However, according to a technical review of available facilities and an independent cost study, constructing new facilities is the option involving the least risk and the best use of DOE's limited resources. Frequently it is more expensive to try to retrofit for a particular mission a building that was originally designed for another mission. While it is true that FMEF was originally designed to produce MOX fuel for FFTF, it was not designed to accommodate a pit conversion facility as well. Space requirements would make it extremely difficult to use the facility for two missions.

Location of the MOX facility in FMEF by itself was never considered because locating a single proposed facility at three different sites would not meet the screening criteria of minimizing worker and public exposure to radiation, minimizing proliferation concerns associated with transportation, and reducing infrastructure costs.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. Decisions on the surplus plutonium disposition program at Pantex will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

TEAL, JOSEPH
PAGE 2 OF 2

United States Department of Energy

Comment Form
Page 2

NAME: (Optional) Joseph Teal
ADDRESS: —
TELEPHONE: (–) —
E-MAIL: —

These major facility acquisition efforts have averaged expenditures in the range of one-half billion dollars per year for the last twenty years.

How comes another acquisition program to build all-new facilities for disassembly of weapons pits, fabrication of mixed-oxide fuel and storage of plutonium. 1

DOE's failure to make use of existing facilities, particularly the FMEF at Hanford, for this work displays egregious disregard and departure from common sense and sound conduct of business.

Additionally, the DOE arbitrarily refused to consider and analyze the use of the WNP-1 Support Building for this work. This facility in combination with the FMEF offers an abundance of readily available, clean, hardened, NRC licensable space that eliminates the need for any new construction and thus poses very substantial cost savings with no environmental impacts. 2

CC: ATTENTION: DOC HASTINGS
@fax 1-202 225-3251

FD301

FD301–2 **Alternatives**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

TRIDEC TRI-CITY INDUSTRIAL DEVELOPMENT COUNCIL
901 N. Colorado, Kennewick, WA 99336-7685 USA 1-800-TRI-CITY 509-735-1000 509-735-6609 fax tridec@owt.com www.owt.com/tride

STATEMENT REGARDING THE
DEPARTMENT OF ENERGY'S DRAFT
ENVIRONMENTAL IMPACT STATEMENT
FOR
SURPLUS PLUTONIUM DISPOSITION
RICHLAND, WASHINGTON
AUGUST 4, 1998

Thank you for the opportunity to present the views of our organization on this issue, which is of great importance to the Tri-City area. The Tri-City Industrial Development Council (TRIDEC) is a local non-profit organization whose interests are in the economic development and vitality of this area. Our membership is composed of over 500 local business firms, individuals and organizations having a commitment to the Tri-City area.

As we have indicated in previous statements and testimony on this subject, we support the plans to vitrify and dispose of the scrap plutonium containing materials in a national repository. We also support the Department's plans to dispose of the excess plutonium by irradiation in a commercial power reactor through the use of a mixed oxide fuel (MOX). 1

However, we have substantial and significant concerns with the adequacy, objectivity, and balance evident in the Draft EIS that we are commenting on tonight. This document as written is so faulted that it should be withdrawn and extensively revised to reflect a comprehensive and balanced assessment of the siting alternatives for the plutonium disposal program in accordance with NEPA program requirements. The document as written does not provide such an assessment. I will illustrate some of our concerns in this regard. 2

- Scrap Plutonium Immobilization Facility

The draft EIS states that a selection of Savannah River as the site for this facility was made in 1997 in the NOI for this EIS. This selection decision was made in effect without the performance of EIS evaluations. A review of the site impacts contained in this Draft EIS does not show any significant difference between the sites from the construction of new immobilization facilities. Consideration was not given in this Draft EIS to the construction of new plutonium storage facilities at Savannah River to support the scrap disposal program. 3

It is recognized that Savannah River currently has a waste vitrification facility, the DWPF, in operation, which would be utilized to encase the solidified plutonium disposal capsules. 4

1

WAD18

WAD18–1 **Alternatives**

DOE acknowledges commentors' support for the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself.

WAD18–2 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities.

WAD18–3 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). In accordance with CEQ Section 1502.14(e), DOE identified its preferred alternative in the SPD Draft EIS so the public could understand DOE's orientation and provide comment. Prior to the SPD Draft EIS being published, DOE indicated using the can-in-canister technology at SRS would be part of DOE's preferred alternative for immobilization. Although SRS has been identified as the preferred site for the immobilization facility, this is only DOE's preference; it is not a decision. Decisions on the surplus plutonium disposition program at INEEL will be based on public input, environmental analyses, technical and cost reports, and national policy and nonproliferation considerations. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

Hanford is in the process of awarding contracts for the construction of a waste vitrification facility for the processing of its tank wastes, which could perform this same function. | 4

The comparative environmental impacts at the two sites for the new facilities were essentially equal. The additional cost for new plutonium storage facilities at Savannah River were apparently not a factor in this evaluation. | 5

- MOX Fuel Fabrication Facility

The decision to locate this facility at Savannah River in preference to Hanford is based upon the administrative decision that this program would complement other Savannah River site missions and utilize existing site infrastructure and site expertise. Since DOE is currently soliciting proposals from vendors for the installation and operation of the MOX process in DOE provided facilities, this logic is questionable to say the least since Savannah River has not had previous experience with either MOX fuels or commercial reactor fuel development or manufacturing. | 6

Another example of the lack of objectivity in this report is the utilization of a commercial $UF_6 - UO_2$ commercial facilities located in North Carolina in the evaluations of Hanford. Commercial facilities, which are located in Richland, should have been utilized in the Hanford evaluations to provide a balanced perspective. | 7

The most significant issue; however, is the lack of a cost comparison between utilization of the existing Fuels and Materials Examination Facility (FMEF) at Hanford and the construction of a new MOX manufacturing facility at Savannah River. In a time of limited DOE budget the added costs for new unnecessary facilities can only reduce the already constrained Environmental Management cleanup program funding. We understand that DOE has studies available, which identify the potential cost savings available from the siting of this facility in the FMEF. These studies should be available for public review, rather than not addressing this issue in the Draft EIS. | 8

A final issue is the rationale that the Hanford cleanup program is critical and should not be distracted by new programs at Hanford. Savannah River has a critical cleanup program underway which is of approximately the same yearly size as the Hanford program. What we are really addressing in this case is management effectiveness and available EM program funding. | 9

The Governor of the State of Washington, Gary Locke, has stated in a letter to Secretary Peña that he would accept a MOX program at Hanford so long as DOE cleanup program commitments under the TPA are met. (Copy attached for entry into hearing record.)

WAD18

WAD18–4 **Alternatives**

For immobilization alternatives, modification of FMEF at Hanford was considered, with construction of new immobilization facilities considered only at SRS. In addition, this SPD EIS analyses assume that either the SRS DWPF or the Hanford HLWVF would be available to support canister-filling immobilization operations associated with the surplus plutonium disposition program. DOE is presently considering a replacement process for the in-tank precipitation (ITP) process at SRS. The ITP process was intended to separate soluble high-activity radionuclides (i.e., cesium, strontium, uranium, and plutonium) from liquid HLW before vitrifying the high-activity fraction of the waste in DWPF. The ITP process as presently configured cannot achieve production goals and safety requirements for processing HLW. Three alternative processes are being evaluated by DOE: ion exchange, small tank precipitation, and direct grout. DOE's preferred immobilization technology (can-in-canister) and immobilization site (SRS) are dependent upon DWPF providing vitrified HLW with sufficient radioactivity. DOE is confident that the technical solution will be available at SRS by using radioactive cesium from the ion exchange or small tank precipitation process. A supplemental EIS (DOE/EIS-0082-S2) on the operation of DWPF and associated ITP alternatives is being prepared.

WAD18–5 **Cost**

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WAD18–6 **Alternatives**

The preferred alternative for siting the MOX facility at SRS was chosen based on the best information and analyses available; all sites were equally considered based on this information.

WAD18–7 **MOX Approach**

Depleted uranium dioxide is required for the ceramic immobilization of plutonium, and can be used for the fabrication of MOX fuel. It could be produced at a commercial site by the conversion of uranium hexafluoride shipped from one of DOE's storage areas at a gaseous diffusion plant in Kentucky, Ohio, or Tennessee. The GE Nuclear facility in Wilmington, North Carolina was used for the purpose of determining the potential environmental impacts of the conversion of uranium hexafluoride to uranium dioxide as part of the surplus plutonium disposition program (see Section 1.5). Results of the environmental analysis indicate that the radiological risks of shipping either depleted uranium hexafluoride or depleted uranium dioxide would likely be minor, and would contribute little to the total risk of any alternative. The decision on the source of uranium dioxide will depend on DCS, the team selected by DOE to provide the MOX fuel fabrication and irradiation services.

WAD18–8 **Cost**

Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. The remainder of this comment is addressed in response WAD18–5.

WAD18–9 **Alternatives**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

TRI-CITY INDUSTRIAL DEVELOPMENT COUNCIL
PAGE 4 OF 6

- Pit Disassembly and Conversion

  Hanford was again not considered for this portion of the plutonium disposition program on the bases of site cleanup and transportation issues. We have addressed the site cleanup program issue above. 9

  In regards to transportation, the Draft EIS displays an unusual display of creative but fallacious logic in regards to transportation. By making the decision to site the MOX facility at Savannah River, the location of the Pit facility at Hanford would entail an extra transportation step to move the pits from storage at Pantex to Hanford for disassembly and conversion and then to Savannah River for MOX fuel manufacturing. This ignores the more logical and economical approach of co-locating both the MOX fuel manufacturing and pit conversion facilities in the FMEF at Hanford. This dual utilization of both processes at Hanford would provide capital cost savings of over $500M. This potential cost savings cannot be ignored. The current Draft EIS does not address the cost issue. We understand that there is adequate space available in the FMEF for both of these process facilities with appropriate separation to meet anticipated security and safeguards requirements. 10

We wish to make the following general statements in regards to this Draft EIS.

- The draft EIS statement does not address the comparative costs of the preferred alternatives. By eliminating this analysis the capital cost savings, which could be realized by use of the Fuels and Materials Examination Facility (FMEF) at Hanford for the pit conversion and MOX fuel manufacturing operations, have been ignored. Previous studies have identified these savings at over $500 M in capital cost alone. 11

- In considering inter-site transportation issues the EIS identifies an additional 2300 truck shipments which would be required over the 15 year estimated life of the program for location of the plutonium disposition facilities at Hanford. The comparable number of shipments to the Savannah River site is estimated at 2500 over the same 15-year program life. This leads to the conclusion that with both the new MOX and pit conversion facilities located at one site there are no differences between the sites. 12

- The draft EIS analyses a number of environmental issues for each of the four sites, Hanford, Savannah River, INEEL, and Pantex. Although there are some differences between the sites for the various environmental impacts considered, these differences are not significant and no site is clearly less or more acceptable than the others from an environmental standpoint. 13

- In the case of Hanford, the report assumes that a new spent MOX facility will be required to be constructed adjacent to the FMEF, with the pit conversion process installed in the FMEF. Previous Hanford studies have shown that both of these operations can be accommodated within the FMEF with an adequate degree of security and process isolation provided. 14

- Based upon current congressional budget policies the total DOE budget will be held essentially flat or decreasing for the foreseeable future. In order to accommodate potentially expensive programs such as the plutonium disposition and tritium production programs, it is 8

WAD18

WAD18–10 **Alternatives**

DOE acknowledges the commentor's support for siting the pit conversion and MOX facilities using FMEF at Hanford. Of all the alternatives analyzed in this SPD EIS, none include siting the pit conversion facility at Hanford and the MOX facility at SRS.

The remainder of this comment is addressed in response WAD18–5.

WAD18–11 **Cost**

This comment is addressed in response WAD18–5.

WAD18–12 **Transportation**

DOE recognizes that there is not a significant difference in the number of intersite truck shipments if all of the proposed surplus plutonium disposition facilities were located at one site, either Hanford or SRS. However, there are larger differences, but still not significant, between some of the other alternatives analyzed in this SPD EIS.

WAD18–13 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's position on the lack of significant differences in the environmental impacts of the alternatives reflected in this SPD EIS. A separate report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), analyzes the cost and schedule estimates for each alternative, and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), covers recent life-cycle cost analyses associated with the preferred alternative. These reports, along with the SPD EIS and other relevant documents, will be available to the decisionmaker and the public. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

WAD18–14 **Alternatives**

DOE agrees that both the pit conversion and MOX facilities could be collocated in FMEF at Hanford, and has analyzed this scenario as Alternative 6B (see Sections 2.10.2 and 4.11). Also analyzed, as Alternative 6A, is a scenario that involves siting the pit conversion facility in FMEF and the MOX facility in new construction adjacent to FMEF.

expected that the Environmental Management budget, which is a major portion of the total DOE budget will be utilized in part for the required funding for these programs. Reductions in the EM budget will impact Hanford cleanup programs, which are already underfunded. Therefore, we do not see how the issue added program costs for the plutonium disposition program can be ignored in an environmental assessment of the plutonium disposition program. | 8

- There are a number of other issues in the Draft EIS where assumptions have been made which are clearly prejudicial to a balanced and objective evaluation of the alternatives. In the case of the supporting depleted uranium UF_6 to UO_2 conversion process it would be located in North Carolina at an existing commercial facility due to its proximity to Savannah River. A similar facility located at the Siemens plant in Richland was not considered in the Hanford or INEEL evaluations. | 7

- The rationale for focusing on Savannah River or Pantex for the proposed facilities was based upon the need for DOE management to focus on cleanup program issues at Hanford and INEEL. This is an issue of requiring effective site management performance at these sites, which should not be an issue in selecting a site based upon the EIS process. Governor Locke supports Hanford for this mission. | 9

This Draft EIS must be revised to give balanced consideration to the following issues:

- Potential cost savings resulting from the use of the FMEF at Hanford must be considered. The EIS is not credible without consideration of this issue. | 11

- The avoidance of new program assignments to Hanford in order to avoid the diversion of effort from the cleanup program is a management issue – not an environmental assessment issue. | 9

- There is no essential difference between the environmental impacts between the sites; therefore, the least cost for the program is an environmental issue. | 13

- The data in the draft EIS clearly shows that actual transportation impacts between sites are not significant. | 12

- The document as written clearly does not provide a basis for a selection decision between sites. Only by omitting comparative costs and making assumptions favoring a specific site can the preferred site conclusion contained in the draft assessment be supported. | 11

- The draft EIS is not a balanced and objective assessment. It must be extensively revised to reflect an objective evaluation for it to be acceptable and without challenge. | 2

- An objective evaluation of comparative plutonium disposal program costs including facility comparisons must be made. Current DOE studies and documentation regarding these costs must be made available for public review. | 8

WAD18

The Draft EIS as written does not comply with the legal requirements of the National Environmental Policy Act for a balanced evaluation of all feasible alternatives. This document could be the subject of litigation if it is not withdrawn and ~~reviewed~~ revised to comply in all respects with the National Environmental Policy Act. 2

WAD18

TRIDEC TRI-CITY INDUSTRIAL DEVELOPMENT COUNCIL
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September 15, 1998

Mr. Howard Canter, Acting Director
Office of Fissle Materials Disposition
U.S. Department of Energy
PO Box 23786
Washington, D.C. 20026-3786

Surplus Plutonium Disposition
Draft Environmental Impact Statement

During the August 4, 1998 public meeting in Richland, Washington we submitted a statement regarding the subject EIS. In this statement we identified a number of issues with the EIS related to siting this program at Hanford which resulted from erroneous costing data faulty logic and unsupported assumptions contained in the draft EIS. Specifically we were astonished at the cost estimates contained in the EIS, which did not identify the savings which would result from use of the FMEF at Hanford for the plutonium disposition program. 1

The purpose of the Environmental Impact Statement process is to provide an objective, balanced, and defensible evaluation of all viable alternatives to the proposed governmental action. Environmental Impact Statements that are severely flawed and which do not meet the criteria for the evaluation of feasible alternatives, are subject to legal challenges and significant programmatic delays. This EIS and its supporting documentation such as DOE/MO-0009 Rev.0 "Cost Analysis in Support of Site Selection for Surplus Weapons Usable Plutonium Disposition" does not meet any criteria for an objective evaluation of reasonable program alternatives. 2

This document has a publication date of July 22, 1998, yet it was not made available for public review and comment prior to the August 4 hearing in Richland. It has not been widely made available to the public since that date. Perhaps due to the erroneous and faulty analysis contained in this document your office has been reluctant to have it reviewed and commented on by the public. 3

We have worked with local firms and individuals who are knowledgeable regarding the FMEF in the review of the cost data contained in your documentation. These reviews indicated that the cost estimates for surplus plutonium disposition alternatives are biased against the Fuels and Materials Examination Facility at Hanford. Because of this [illegible] estimates are of limited value for comparing costs of different alternatives. 4

MD326

MD326–1 **Cost Report**

Neither the SPD Draft EIS nor the SPD Final EIS contain cost estimates. It is assumed the cost estimates referred to were observed in the associated cost analysis report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998). This comment has been forwarded to the cost analysis team for consideration. The *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, is available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. The information presented in the cost report was based on the best information available from the candidate sites at the time it was published. DOE continues to gather information on the costs associated with constructing the proposed surplus plutonium disposition facilities and has prepared the life-cycle costs document to address changes in the expected costs as well as respond to public comment.

Responses to the issues identified in the August 4, 1998, statement can be found under the comment identification code WAD18.

MD326–2 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities. Use of FMEF in the surplus plutonium disposition program is considered in this SPD EIS under Alternatives 2, 4, 6, 8, 10, and 11. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

TRI-CITY INDUSTRIAL DEVELOPMENT COUNCIL
SAM VOLENTEST
PAGE 2 OF 3

Our analysis of your documentation indicates that installing a MOX line in the FMEF would save just $40 million compared to building a new, stand-alone facility. It is not reasonable that using an existing facility would save less than 10% of total Design and Construction Costs (estimated at $530 million for a new, stand-alone facility).

Examination of the engineering documents from which these figures were derived indicates that Total Estimated Cost (TEC) for Design and Construction of MOX at Hanford is $410 M for a new facility and $340 M for the FMEF. This is less than a 20% reduction for avoiding the construction of a 140,000 S.F. earthquake and tornado resistant, Category I facility.

Detailed analysis of the estimates reveals that they are based upon erroneous assumptions. For example, both estimates assume a completely new HVAC system is required for the FMEF at a cost of $36 M. This may be reasonable for a new facility but is not applicable to FMEF, which already has a complete HVAC system for a MOX line.

The cost of upgrading the FMEF is estimated to be 65% of the cost of a new facility. This is not reasonable with the FMEF costs significantly overstated. Previous detailed cost estimates prepared at Hanford indicate that $24 M is required to modify the FMEF to accommodate MOX program including $9 M in security upgrades.

The cost estimate for the FMEF alternative also includes $38 M for support equipment and facilities that are not needed. All of the required capabilities already exist for the FMEF alternative. Subtracting these costs from the FMEF estimate and substituting in the Hanford estimate for building modifications reduces the TEC for the FMEF alternative to about $250 M or about 60% of the cost of a new facility.

4

However, an independent estimate done at Hanford shows that the MOX process can be installed in the FMEF for about $160 M. This represents savings of $250 M compared to the estimates for a new, stand-alone facility. This estimate was prepared by staff knowledgeable of the facility and was based on detailed equipment lists and glove box layouts. It was prepared and reviewed by experienced estimators.

It is clear that using the FMEF would be substantially cheaper than building a new facility. There are also technical and programmatic risks involved with starting a new major systems acquisition (MSA) in the current federal budget situation. The contingency will be higher for a new facility than for an existing facility. The configuration of the FMEF is well defined and the available space is more than adequate.

The FMEF alternative can be implemented on a shorter schedule than the construction of a new facility. The design and construction of a new facility increases the risk of schedule delays and budget cuts that slow progress and add to the overall life-cycle costs. The FMEF alternative has the unrecognized benefit of being able to proceed immediately and the possibility of accelerating the schedule rather than delaying it.

Finally, in order to understand the best possible benefit to DOE and the taxpayers, it would be appropriate to allow the commercial fuel fabricators to provide their input regarding the

2

MD326

MD326–3 **Cost Report**

The cost analysis report and the life-cycle cost document are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. The cost analysis report was posted on the Internet for public review shortly after its release.

MD326–4 **Cost Report**

Because this comment relates directly to the cost analysis report, it has been forwarded to the cost analysis team.

preferred option for a MOX fuel fabrication facility owned by DOE, but operated by the private sector. Economic factors clearly favor utilizing and existing facility and the private sector is best equipped to advise DOE on the relative cost advantages of using the FMEF. 4

Based on these identified deficiencies and erroneous conclusions in the EIS and its supporting documentation we recommend that the documents be withdrawn and rewritten to provide a factual, balanced, and objective evaluation of the program alternatives including utilization of the FMEF for both the pit disassembly and conversion process and the MOX fuel fabrication. 2

These actions on your part will avoid the potential programmatic delays resulting from potential stakeholder legal action and congressional inquiries.

Thank you for your consideration of these comments.

Very truly yours,

Sam Volpentest

Sam Volpentest
Executive Vice President

C: Secretary Richardson
Senator Slade Gorton
Senator Patty Murray
Congressman Doc Hastings
Congressman Norm Dicks

3

MD326

VENETZ, TED
PAGE 1 OF 1

Public Comment to DOE's Materials Disposition EIS
Richland Public Meeting, August 4, 1998

I disagree with the statement that siting the MOX fuel fabrication facility at Hanford would interfere with the cleanup mission. I believe it would in fact complement it. For example: 1

> A continuing federal interest in the site, such as future site use for material Disposition Activities, is a definitive way to ensure a continued commitment to site cleanup.

> A new Materials Disposition mission would share some of the overhead and infrastructure costs for the site, freeing more of the site cleanup budget and resources for actual cleanup work.

> Use of the Hanford site FMEF facility would save hundred of millions of taxpayer dollars over the alternatives that involve construction of new facilities. As Congress appears unwilling to increase the overall DOE budget, this money would likely come out of existing budget at the expense of cleanup programs, including those at Hanford. 2

Ted Venetz
1101 So Irby
Kennewick, WA

WAD23

WAD23–1 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

WAD23–2 **Cost**

Funds for the surplus plutonium disposition program and the environmental cleanup program come from different appropriation accounts allocated by the U.S. Congress that cannot be used interchangeably.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WA MFG. SERVICES, WSU-TRICITIES
WILLIAM T. SELLERS
PAGE 1 OF 1

I oppose the MOX facility at the Hanford Site for the folowing reasons:

1. Politically impossible to get approval in PacNW, the delays & ill-will would threaten the DOE itself.

2.Other than WPPSS who would burn the fuel? Transport out of here would be impossible

3. Other states (TX or SC) actually want the project, and have powerplants close by to burn it.

4. This dilutes the basic mission at the Hanford Site, which should be to "clean it up and shut it down", period.

1

WD005

WD005–1 **Alternatives**

DOE acknowledges the commentor's opposition to siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

GARY LOCKE
Governor

COPY

STATE OF WASHINGTON
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April 30, 1998

The Honorable Federico Peña, Secretary
U.S. Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

Dear Secretary Peña:

This letter is a follow-up to our discussions earlier this year regarding Hanford.

Department of Energy (Department) compliance with the cleanup program commitments contained in the Tri-Party Agreement (TPA) is of overriding concern to the citizens of Washington state. As I have previously stated, the Department must demonstrate a commitment to the achievement of the TPA milestones and cleanup goals before we can support new programs at Hanford. In particular, effective progress must be made in the removal of spent fuel from the K-Reactor basins and treatment of the tank wastes. Washington State needs the Department to advocate strongly for budgets which will move us ahead in these areas and we need to see substantive progress in these areas this year. 1

I recognize Hanford is potentially a valuable asset for the Department of Energy. The Hanford site can continue to make a contribution, providing that new programs not interfere with the Department's cleanup responsibilities. Just as Hanford fulfilled a critical role for the nation during World War II and the Cold War, we know it could contribute toward international disarmament regarding plutonium disposition. I have also indicated my support for the medical isotope mission for the Fast Flux Test Facility, recognizing tritium production would serve as an interim bridge to meet this goal. 2

In looking ahead at these issues, it would be very helpful to see how the Department proposes to allocate new missions across its facilities nationwide. Washington has served as one of the nation's principal facilities for production of nuclear weapons, an activity that has left us with two-thirds of the Department's high level radioactive waste and seventy-five percent of its spent nuclear fuel. Washington is willing to do its share, but there must be a fully shared responsibility in this regard with other facilities across the country. 3

I look forward to working with the Department of Energy on these issues in the future.

Sincerely,

Gary Locke
Governor

WAD19

WAD19–1 **DOE Policy**

DOE acknowledges the Governor's concern that Tri-Party Agreement commitments be met before new programs at Hanford be initiated. As stated in Chapter 5, it is DOE's policy to conduct its operations in an environmentally safe manner in compliance with all applicable statutes, regulations, and standards, which include the Tri-Party Agreement.

WAD19–2 **DOE Policy**

DOE acknowledges the Governor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

WAD19–3 **DOE Policy**

Section 4.32.1 takes into consideration existing missions (e.g., cleanup at Hanford) at candidate sites, as well as analyzes the potential cumulative impacts of surplus plutonium disposition activities and other programs' current (as well as past and reasonably foreseeable future) activities at the sites. DOE's various program offices individually develop strategic planning documents for their programs. For example, the Office of Environmental Management, whose mission is to manage the HLW and spent nuclear fuel, recently issued *Accelerating Cleanup: Paths to Closure* (DOE/EM-0362, June 1998).

WEST RICHLAND
HONORABLE KEN DOBBIN
PAGE 1 OF 1

Pu Disposition EIS Public Hearing in Richland WA **8-4-98**

I am Ken Dobbin, Councilman from the City of West Richland.

I represent a public fed up with government tax and squander policies.

DOE, what part of NO don't you understand?

The public says NO to ignoring Hanford facilities just to rebuild them in another state.

The Fuels and Materials Examination Facility (FMEF) here at Hanford is well suited to the MOX mission and represents at least $500M of the taxpayers' resources that they want you to utilize.

Those of us who have spent the last 4 years working on restarting the Fast Flux Test Facility (FFTF) in the battle on cancer continue to hear that the DOE funding is a zero-sum game. 1

If so, where will the funds come from you plan to squander on the MOX mission?

Will you eventually tell us cancer fighters that there is no money to restart the FFTF?

The resources saved by using Hanford facilities for plutonium disposition could operate the FFTF in the fight on cancer for a decade. That takes us past the 8-year breakeven point on medical isotope revenues for the FFTF.

DOE, are you telling us cancer fighters that you have additional money to restart the FFTF, or are you telling us that you will let those with cancer continue to suffer and die?

I represent a public that wants answers!

WAD24

WAD24–1 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility in FMEF at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

WEST RICHLAND
HONORABLE JERRY A. PELTIER
PAGE 1 OF 1

CITY OF WEST RICHLAND
3801 Van Giesan St. ◆ West Richland, WA 99353 ◆ Tele: (509) 967-3431 ◆ FAX (509) 967-2251

TESTIMONY OF JERRY A. PELTIER, MAYOR
CITY OF WEST RICHLAND, WASHINGTON

Regarding the Draft Environmental Impact Statement for Plutonium Disposition

One year ago the Department of Energy held scoping meetings on the Surplus Plutonium Disposition Environmental Impact Statement. At those meetings in Richland, a clear message was delivered to the Department. "We want an objective, unbiased assessment of all of the Plutonium disposition challenges and opportunities. Pre-determined outcomes must not drive the EIS and Record of Decision process." The Draft EIS in front of us today is an excellent example of a technical justification of a pre-determined outcome. I would think, with the Department of Energy's current standings with the Congress of the United States, that every effort possible would have been made to write a balance and unbiased document. This draft EIS should be withdrawn and revised to give a fair evaluation of each of the alternatives.

- The EIS does NOT address comparable costs, especially the Fuels and Materials Examination Facility (FMEF) at Hanford.
- The EIS is clearly not a balanced and objective assessment.
- An objective evaluation of comparable disposal programs must be made.
- Misrepresents Hanford by a claim that an additional facility would be required, when in fact both the Pit Dissembly and MOX fuel could be performed in the same facility.
- Ignores the potential cost savings of co-locating the Pit Dissembly and Mox in the same facility.
- Does not address, with the current flat and/or declining budgets, how the additional costs of Plutonium disposition will be programed.

Let me conclude by saying once again I am very disappointed in the Department of Energy's process for developing this EIS. We pre-determined a year ago, based on the political climate, what this EIS was going to say. Believe me the Department has not let us down, this draft EIS is political statement that ignores the tax payers best interest. Hanford is a proud community and we have paid an enormous price in the name of National Defense. We feel that we deserve a fair and unbiased evaluation in regard to Plutonium Disposition.

1

WAD17

WAD17–1 General SPD EIS and NEPA Process

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities. Section 2.10.2 describes Alternative 6B which involves collocating the pit conversion and MOX facilities in FMEF and Section 4.11 presents the potential environmental impacts.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for response. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

SEPT 16, 1998

TO: USDOE,Office of Fissile Materials Disposition,
MD-4 Forrestal Building
1000 Independence Ave., Washington , D.C. 20585

FROM: Tim Young and MB Condon
380 Ilsa Way,Goldendale, WA 98620

RE: Surplus Plutonium Draft EIS

Enclosed is a written text of our comments regarding the SPDEIS. These comments were left by voice on the answering machine at 1-800-820-5156 on Sept. 16,1998 after we were unable to transmit them by fax to your office. Clearer instructions for sending a fax in your message would be helpful.

Tim Young

MD246

FOR THE PUBLIC RECORD

SEPT 16, 1998

TO: USDOE,Office of Fissile Materials Disposition,
MD-4 Forrestal Building
1000 Independence Ave., Washington , D.C. 20585

FROM: Tim Young and MB Condon
380 Ilsa Way,Goldendale, WA 98620

RE: Surplus Plutonium Draft EIS

We want the following questions, concerns, and assumptions addressed in the SPD EIS:

1. What classified toxic elements are contained in nuclear warhead pits and how much toxic pollution is going to be created by the separation of those elements from plutonium? Where are the toxic waste products going to be stored and how are they going to be handled? 1

2. Which specific reactors in the US are going to be licensed to "burn" plutonium? How are reactors that were never designed for this fuel going to be tested and certified before allowing plutonium radiation to be generated by them? How are the safety records of commercial reactor operators going to be factored into the decisions to allow them to use plutonium as a reactor fuel? Why should reactors that are scheduled for de-commissioning be allowed to continue operating beyond their scheduled life span and then be allowed to utilize a fuel they were never designed to burn? 2

3.Specifically, how much radioactive waste will be created by each step of plutonium reprocessing, from the removal of plutonium oxide from bomb cores, the creation of MOX fuels, the transportation of all radioactive materials including the waste products, to the generation of electricity and possibly the production of tritium? How much more radioactive waste will be generated by each reactor that would be allowed to operate beyond its de-commissioning date ,compared to the amount of radioactive waste created if the reactors were retired on schedule? 3

4. How are DOE and the commercial reactor operators going to protect the public and the environment from the radioactive hazards posed by the generation of more nuclear waste from the burning of MOX fuels, when both the DOE and commercial operators have no idea of how to protect the public and the environment from the radiation hazards presently posed by the burning of uranium in reactors? 4

5. What specific transportation means and routes will be used to transport the weapons grade plutonium, MOX fuels, and the resulting nuclear and toxic waste? How will the public be notified, so their elected officials can participate in the creation of disaster plans in the case of a 5

MD246

MD246–1 **Pit Disassembly and Conversion**

A pit is made of plutonium, which consists mainly of the isotope plutonium 239. Pit plutonium can contain trace amounts of a variety of hazardous impurities such as beryllium and lead. These contaminants are expected to remain entrained in the plutonium dioxide material. The very low levels of contaminants do not adversely affect the immobilization and MOX approaches, and inclusion of the polishing step in the MOX facility would remove much of the contaminants. Some pits may also be contaminated with tritium, a radioisotope of hydrogen which can be removed by heating the pit material in a vacuum furnace to drive off the tritium gas. Another element which may be present in pit plutonium at low levels, but above trace amounts, is gallium, which is added as an alloying agent. Because high levels of gallium may adversely affect MOX fuel performance, it is largely removed during the pit conversion process, as discussed in Section 2.4.3.2. The pit conversion process would generate some LLW and TRU waste and a very small amount of mixed LLW and hazardous waste. These wastes include spent filters, used containers and equipment, paper and cloth wipes, protective clothing, shielding, solvents, and cleaning solutions. In general, these wastes contribute to less than 4 percent of the existing wastes at all the candidate sites and would be handled as part of the site waste management practice. A description of waste generation and management is provided in Appendix H.

MD246–2 **MOX Approach**

Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily accommodate a partial MOX core. Therefore, DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As a result of this procurement, DOE identified Catawba, McGuire, and North Anna as the reactors proposed to irradiate MOX fuel as part of the proposed action in this SPD EIS. In accordance with a stipulation of its RFP for MOX Fuel Fabrication and Reactor Irradiation Services, these are new reactors, that is, reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. The selected team, DCS, would have to apply for a reactor operating license amendment for each individual reactor

before it can use MOX fuel. For this amendment, the licensee would have to demonstrate that all safety, testing, and environmental impacts have been addressed as well as complete the public hearing process. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and the commercial reactors selected to use MOX fuel to ensure adequate margins of safety. Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents.

MD246–3 **Waste Management**

DOE acknowledges the commentors' concerns regarding waste generation and management. Waste streams that would be generated by the pit conversion, immobilization, and MOX facilities are detailed in the Waste Management sections in Chapter 4 of Volume I and Appendix H. As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

The transportation requirements for the surplus plutonium disposition program are also evaluated in this SPD EIS. The shipment of waste will be done in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997).

The production of tritium in a commercial light water reactor is being evaluated in a separate DOE EIS, *Final EIS for the Production of Tritium in a Commercial Light Water Reactor* (DOE/EIS-0288, March 1999).

In choosing reactors to use the MOX fuel fabricated under the surplus plutonium disposition program, DOE looked at the criteria of reactor age. DOE chose only reactors whose planned operating life extended through the full life cycle of the surplus plutonium disposition program.

MD246–4 **Human Health Risk**

DOE and NRC are committed to protecting the health and safety of the public. This includes designing, constructing, and operating DOE- and NRC-regulated facilities (e.g., domestic, commercial reactors) in such a way as to continually provide a level of safety and reliability that meets or exceeds established standards. DOE and commercial reactors also have plans and programs for the safe management and ultimate disposal of their nuclear waste. Section 4.28 addresses the issue of waste generation by those domestic, commercial reactors designated to irradiate MOX fuel.

The remainder of this comment is addressed in the spent fuel portion of response MD246–3.

MD246–5 **Transportation**

DOE anticipates that transportation of plutonium pits, nonpit plutonium, MOX fuel, and HEU (i.e., special nuclear materials) required to disposition surplus plutonium would be done through the DOE Transportation Safeguards Division using SST/SGTs as described in Appendix L.3.2. The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. For emergency response planning, all shipments are coordinated with appropriate law enforcement and public safety agencies. If requested, DOE will assist these officials with response plans, and, if necessary, with resources in accordance with DOE Order 5530.3. DOE has developed and implemented a Radiological Assistance Program to provide assistance in all types of radiological accidents. Through this coordination and liaison program, DOE offers in-depth briefing at the State level.

The transportation of depleted uranium oxide and waste (i.e., non-special nuclear materials) would be done using commercial carriers. Nuclear material shipments must comply with both NRC and DOT regulatory requirements. Appendix L.3.3 provides details on the transportation of this type of materials and the transportation route selection process. DOT routing regulations require that shipments of radioactive material be transported over a preferred highway network including interstate highways, with preference toward bypasses around cities, and State-designated preferred routes.

mishap? What specific plans are in place for nuclear mishaps along the transportation routes and are they adequate to protect the public, crops, livestock, and the environment from exposure in the case of an accident or intentional destructive act? 5

We are totally opposed to the reprocessing of weapons-grade plutonium into MOX fuels to be burned in commercial nuclear reactors. Furthermore there should be no taxpayer subsidies to commercial operators to allow them to use MOX fuels in reactors that were never designed to do so and to allow the life of reactors to be extended beyond their scheduled de-commissioning date.

The DOE and the commercial nuclear industry should not be allowed to initiate any programs that will create more radioactive and toxic waste when the technology doesn't exist to deactivate and neutralize the waste created over the last fifty years by industry and the government. 6

We support the isolation and vitrification of weapons-grade plutonium. Although this is an inadequate solution to the radioactive waste problem, it at least, offers some assurance that these materials won't find their way into nuclear weapons in the future.

Finally, we have no confidence in the DOE's ability to safely and securely transport weapons-grade plutonium and MOX fuels to reactor sites. The public and their elected representatives are totally uninformed and unprepared for any nuclear mishaps that could result and we don't think that the DOE or the nuclear industry has the will or the resources to adequately prepare the public for the possible dangers that these materials represent to their communities. 7

We are also unwilling to give up any of our rights so that these materials can be moved "securely" through our communities.

Tim Young and MB Condon

Tim Young
MB Condon

MD246

The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at http:\\www.doe-md.com.

MD246–6 **Alternatives**

DOE acknowledges the commentors' opposition to the MOX approach and support for the immobilization approach to surplus plutonium disposition.

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose

operational life is expected to last beyond the life of the surplus plutonium disposition program.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the cost and schedule estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

MD246–7 **DOE Policy**

It is DOE's policy that plutonium shipments must comply with applicable DOT and NRC regulatory requirements. The highway routing of nuclear material is systematically determined according to DOT regulations 49 CFR 171 through 179 and 49 CFR 397 for commercial shipments. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. As indicated in

Section 2.18, no traffic fatalities from nonradiological accidents or LCFs from radiological exposures or vehicle emissions would be expected for any of the surplus plutonium disposition alternatives proposed at the candidate sites. A description of the transportation activities is given in Section 2.4.4. Transportation risks and steps to mitigate the risks are analyzed in Chapter 4 of Volume I and Appendix L.

ZEPEDA, BARBARA
PAGE 1 OF 2

98-AMF-009

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

JUL 16 1998

FOR: FORMAL COMMENT DUE 9-16-98 ON SPD-EIS
PLEASE ADD THIS 2 PAGE LETTER
? WHY DOESN'T IAEA MONITOR CLEANUP ?

JUL 27 [illegible]

1

FROM
Ms. Barbara Zepeda
~~1937 25th~~ MOVED TO 308 E REPUBLICAN #708
Seattle, Washington ~~98112~~ 98102
PHONE 206-329-8571

Dear Ms. Zepeda:

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA) ACTIVITIES AT HANFORD

Thank you for participating in the March 10, 1998, public meeting in Seattle, Washington, relating to Hanford's Fiscal Year 2000 budget. I am responding to your request for IAEA reports concerning Hanford plutonium-bearing inventories, which have been placed under the IAEA Safeguards regime through international agreement.

First, let me explain the IAEA's role at Hanford, since I believe it to be much more limited than you perceive. The IAEA routinely visits Hanford about once a month for about two days. They visit only the Plutonium Finishing Plant (PFP) complex and specifically, visit only one of the PFP buildings. Their only role at Hanford is to ensure that the quantity of plutonium-bearing materials, approximately one metric ton, placed under their safeguard regime by international agreement at the PFP is stored and monitored in a configuration which assures no possible diversion for weapons or other use. They employ a series of cameras, tamper-indicating seals, and other electronic monitoring systems to ensure that none of the plutonium has been tampered with since their last visit. As part of the IAEA and United States Agreement (INFCIRC 288), the IAEA has the option to do random selection and sampling of this inventory to further ensure that the containers still have the reported plutonium quantities.

The IAEA only verifies that the Hanford plutonium inventory under IAEA control is safe from diversion and is in the exact quantities as declared by the U. S. Department of Energy (DOE). The IAEA does not look at site safety. They do not oversee any waste operations or cleanup operations at Hanford or at any other DOE site. Their charter does not include "safety oversight," but is restricted by charter to international safeguards and nonproliferation. ?

To assist you further, I recommend a review of the IAEA's Information Circular (INFCIRC/288, dated December 1981), entitled "The Text of the Agreement of November 18, 1977, Between the United States of America and the Agency for the Application of Safeguards in the United States of America." This document will assist you in understanding the specific roles and responsibilities of both the IAEA and the United States. If you have internet access, you may visit the IAEA webpage at www.iaea.or.at/worldatom for information in acquiring unclassified IAEA reports. ?

INFCIRC/288 SHOULD BE AVAILABLE AT ALL PUBLIC MEETINGS ON HANFORD.

2

MD002

MD002–1 **General SPD EIS and NEPA Process**

IAEA serves as the world's intergovernmental forum for scientific and technical cooperation in the nuclear field, as well as the international inspector for the application of nuclear safeguards and the verification measures covering civilian nuclear programs. This includes verifying compliance with international nonproliferation policies. IAEA would monitor the surplus plutonium disposition program activities except those involving classified activities. Domestic, commercial reactors that would use MOX fuel are already subject to IAEA inspection.

IAEA also has a Radioactive Waste Safety Standards Programme and an International Waste Management Advisory Committee. DOE's Office of Environmental Management represents the United States on this committee, which oversees and directs the activities of RADWASS. RADWASS has produced standards for construction, operation, and closure of disposal facilities; standards for decommissioning nuclear power plants and nuclear research facilities; and standards for deriving cleanup levels for contaminated land areas. IAEA also provides an international peer review service for radioactive waste management, the Waste Management Assessment and Technical Review Program. Information on these programs can be found on the IAEA Web site for radioactive waste management at http://www.iaea.or.at/worldatom/inforesource/annual/anr9404.html.

MD002–2 **General SPD EIS and NEPA Process**

It is not possible to have every potential source of information about plutonium disposition in each DOE reading room. Therefore, DOE strives to have, as a minimum, a copy of each of its environmental documents (e.g., this SPD EIS). For cases in which a document is not available, the DOE reading room staff will attempt to obtain a copy or provide information on how a copy can be obtained.

JUL 16 1998

Ms. Barbara Zepeda -2-
98-AMF-009

The official DOE material balance reports to the IAEA are detailed listings of Hanford plutonium under the IAEA safeguard regime by discrete location. Official IAEA inspection reports to both the State Department and DOE are similarly detailed. I regret that, due to the specificity of the information, both the IAEA and DOE reports are not available for disclosure.

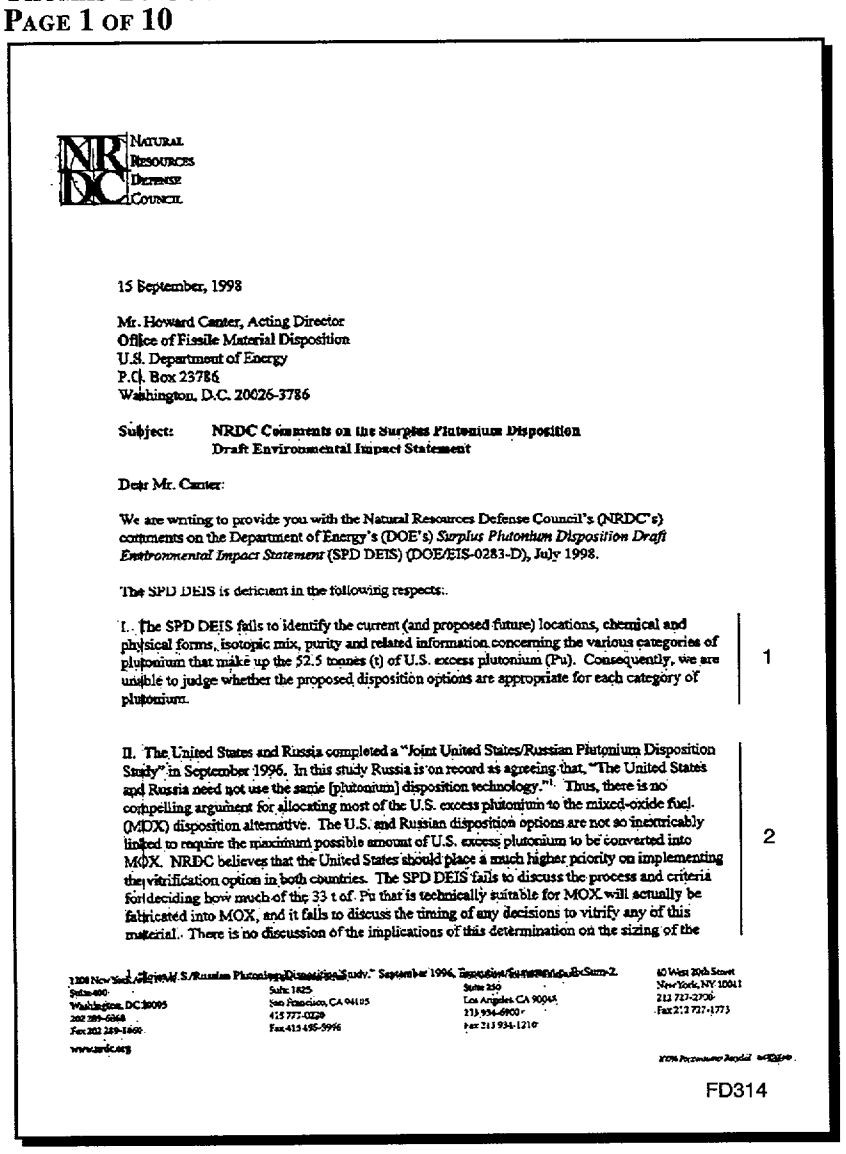
I hope that this information answers your questions regarding the IAEA role at Hanford. If you have any questions regarding this letter, please contact Mr. Angel Joy, of my staff, at (509) 373-7834.

Sincerely,

Peter M. Knollmeyer, Assistant Manager
for Facility Transition

AMF:PMK

MD002



NRDC Natural Resources Defense Council

15 September, 1998

Mr. Howard Canter, Acting Director
Office of Fissile Material Disposition
U.S. Department of Energy
P.O. Box 23786
Washington, D.C. 20026-3786

Subject: NRDC Comments on the Surplus Plutonium Disposition Draft Environmental Impact Statement

Dear Mr. Canter:

We are writing to provide you with the Natural Resources Defense Council's (NRDC's) comments on the Department of Energy's (DOE's) *Surplus Plutonium Disposition Draft Environmental Impact Statement* (SPD DEIS) (DOE/EIS-0283-D), July 1998.

The SPD DEIS is deficient in the following respects:

I. The SPD DEIS fails to identify the current (and proposed future) locations, chemical and physical forms, isotopic mix, purity and related information concerning the various categories of plutonium that make up the 52.5 tonnes (t) of U.S. excess plutonium (Pu). Consequently, we are unable to judge whether the proposed disposition options are appropriate for each category of plutonium. 1

II. The United States and Russia completed a "Joint United States/Russian Plutonium Disposition Study" in September 1996. In this study Russia is on record as agreeing that, "The United States and Russia need not use the same [plutonium] disposition technology."[1] Thus, there is no compelling argument for allocating most of the U.S. excess plutonium to the mixed-oxide fuel (MOX) disposition alternative. The U.S. and Russian disposition options are not so inextricably linked to require the maximum possible amount of U.S. excess plutonium to be converted into MOX. NRDC believes that the United States should place a much higher priority on implementing the vitrification option in both countries. The SPD DEIS fails to discuss the process and criteria for deciding how much of the 33 t of Pu that is technically suitable for MOX will actually be fabricated into MOX, and it fails to discuss the timing of any decisions to vitrify any of this material. There is no discussion of the implications of this determination on the sizing of the 2

1 See "U.S./Russian Plutonium Disposition Study," September 1996, Appendix F of the Record of Decision, Table F.S-2.

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FD314

FD314–1 **DOE Policy**

The locations of the surplus plutonium were provided in the *Storage and Disposition PEIS*, and the information in that document has been summarized in Section 1.1 and incorporated by reference into this SPD EIS. The current locations, with the exception of the pits that were moved from RFETS to Pantex, are the same as those given in the *Storage and Disposition PEIS*. The future locations of the surplus plutonium are specified in the *Storage and Disposition PEIS* ROD and will be documented in the ROD for this EIS. The detailed chemical and physical forms, isotopic mix, purity, and related information on surplus plutonium exist in classified reports that were used as source material in preparing the Storage and Disposition PEIS and this SPD EIS. An unclassified version of this information was prepared and made available to the public in a report titled *Feed Materials Planning Basis for Surplus Weapons-Usable Plutonium Disposition* (MD-0013, April 1997). The bounding isotopic composition of surplus plutonium is provided in Appendix J of this EIS.

In order to support the early closure of RFETS and the early deactivation of plutonium storage facilities at Hanford, DOE modified some of the decisions made in its *Storage and Disposition PEIS* ROD. In the amended ROD for the *Storage and Disposition PEIS*, DOE announced the following actions: (1) the accelerated shipment of all nonpit, surplus weapons–usable plutonium (about 7 t [7.7 tons]) from RFETS to SRS beginning in about 2000 if SRS is selected as the site for the immobilization facility, and (2) the relocation of all Hanford surplus weapons–usable plutonium (about 4.6 t [5.1 tons]) to SRS between about 2002 and 2005.

FD314–2 **Nonproliferation**

Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

DOE reviewed the chemical and isotopic composition of the surplus plutonium and determined in the *Storage and Disposition PEIS* ROD that about 8 t (9 tons) of surplus plutonium were not suitable for use in making MOX fuel. Furthermore, DOE has identified an additional 9 t (10 tons) for a total of 17 t (19 tons) that have such a variety of chemical and isotopic compositions that it is more reasonable to immobilize these materials and avert the processing complexity that would be added if these materials were made into MOX fuel. The criteria used in this identification included the level of impurities, processing requirements, and the ability to meet the MOX fuel specifications. If at any time it were determined that any of the 33 t (36 tons) currently proposed for MOX fuel fabrication was unsuitable, that portion would be sent to the immobilization facility. The addition of this material would not require the immobilization facility to operate longer because it is being designed to handle a throughput of up to 50 t (55 tons) over a 10-year period. Likewise, the MOX facility is being designed to handle up to 33 t (36 tons) of surplus plutonium, but would have the flexibility to operate at a lower throughput. Under either the immobilization-only approach or the hybrid approach, all 50 t (55 tons) of surplus plutonium would be processed out of the proposed plutonium disposition facilities over a 10– to 15–year period beginning in about 2006.

proposed MOX fabrication plant. In addition, the DEIS fails to provide the information needed respond to the following important questions: | 2

1. Is the MOX option more or less expensive than the vitrification option? The SPD Final EIS should provide a comparative cost analysis of the vitrification and MOX methods that would clarify the relative costs of each to better inform future decisions on how much plutonium should be disposed of via each of these methods. | 3

2. Does DOE agree that disposing of a given quantity of plutonium using the MOX disposition option is more likely to take longer than disposing of the same quantity of plutonium using the vitrification option? The SPD Final EIS should provide a comparison of the time required to dispose of a given quantity of plutonium by each option that would clarify the relative processing times of each to better inform future decisions on how much plutonium should be disposed of via each of these methods. | 4

3. Does DOE agree that the MOX option is inherently more dangerous than the vitrification option? The SPD Final EIS should provide a comparison of nuclear material security and proliferation risks associated with each option that would clarify the relative magnitude of the dangers of each to better inform decisions on how much plutonium should be disposed of via each of these methods. | 5

III. The current DOE policy makes construction of the U.S. MOX fabrication plant contingent on "significant progress with Russia on plans for plutonium disposition" by the end-FY 2000 [September 30, 2000].[2] There is no discussion in the SPD DEIS of this policy or its implications. | 6

1. Exactly what is meant by "significant progress?"

2. What did the DOE have in mind when it adopted this policy?

3. Where in DOE's submissions to Congress is this policy set forth?

4. Will DOE move ahead with vitrification of the 17 t of Pu that is unsuitable for MOX even if there is no progress on the Russian side?

IV. In 1996, the U.S. and Russia agreed that "...disposition of U.S. and Russian excess weapons plutonium should proceed in parallel, with the goal of reductions to equal levels of military plutonium stockpiles."[3] However, the DEIS lacks the basic information needed to allow | 7

2 Statement of Howard Cantor, Acting Director, Office of Fissile Material Disposition, at the Council on Foreign Relations "The Management and Disposition of Excess Nuclear Weapons Material," March 9, 1998.

3 "Joint U.S./Russian Plutonium Disposition Study," September 1996, Executive Summary, p. ExSum-2.

FD314–3 **Cost**

As shown in the cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons–Usable Plutonium Disposition* (DOE/MD-0009, July 1998), it is expected that the hybrid approach, which includes both immobilization and MOX fuel, would be more expensive than the immobilization–only approach. However, as discussed in response FD314–2, pursuing the hybrid approach provides the United States important insurance against potential disadvantages of implementing either approach by itself. For an update of the cost of the preferred alternative, see the new report, *Plutonium Disposition Life–Cycle Costs and Cost–Related Comment Resolution Document* (DOE/MD-0013, October 1999). These reports are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS and Washington, D.C. DOE will continue to refine the cost estimates for the proposed surplus plutonium disposition facilities as decisions are made in the ROD and design of the facilities progresses.

FD314–4 **Alternatives**

Operation of the proposed surplus plutonium disposition facilities is expected to take approximately the same amount of time for either approach. The difference in timing for the hybrid approach is associated with the amount of time that MOX fuel would be irradiated in domestic, commercial reactors. However, none of the proposed reactors are expected to operate longer under the hybrid approach than they would if they continued to use LEU fuel.

FD314–5 **Nonproliferation**

DOE does not agree that the MOX approach is inherently more dangerous than the immobilization approach. DOE and NAS have conducted studies to compare risks, including the nuclear material security and proliferation risks of alternatives analyzed in this SPD EIS. These studies include the *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Materials Storage and Excess Plutonium Disposition Alternatives* (DOE/NN-0007, January 1997), *Proliferation Vulnerability Red Team Report* (SAND 97-8203, October 1996), *Management and Disposition of Excess Weapons Plutonium* (March, 1994), and *Management and Disposition of*

Excess Weapons Plutonium, Reactor–Related Options (1995). As discussed in Section 4.28.2.5, studies by NAS have led it to the following conclusion: "no important overall adverse impact of MOX use on the accident probabilities of the LWRs involved will occur; if there are adequate reactivity and thermal margins in the fuel, as licensing review should ensure, the main remaining determinants of accident probabilities will involve factors not related to fuel composition and hence unaffected by the use of MOX rather than LEU fuel."

FD314–6 **Nonproliferation**

The term "significant progress" is not intended to be a singular formulaic benchmark. Rather, it is intended to be used in judging progress in the Russian program by a combination of political actions and commitments, practical steps, and concrete plans and timetables such that the U.S. and Russian programs can reasonably be said to be heading in the same general direction in the same overall timeframe. The United States would not construct new surplus plutonium disposition facilities until that expectation was satisfied. While joint U.S. and Russian efforts to disposition surplus plutonium are part of DOE's mission and while this SPD EIS notes the U.S. policies, the U.S. policies on this issue are beyond the scope of this SPD EIS. The Secretary of Energy has testified on numerous occasions regarding those policies. A recent testimony, to the House Committee on Science on May 20, 1999, can be found on the DOE Web site at http://www.doe.gov. Regardless of Russia's progress, DOE would begin immobilizing surplus plutonium in accordance with the decisions made in the SPD EIS ROD.

FD314–7 **Nonproliferation**

During the first week of September 1998, Presidents Clinton and Yeltsin held a Moscow summit and signed a statement of principles with the intention of removing approximately 50 t (55 tons) of plutonium from each country's stockpile. This document was added to Appendix A of this SPD EIS. The quantities and location of Russian plutonium, military or civil, are beyond the scope of this SPD EIS and are the subject of sensitive negotiations between the United States and Russia. It has never been a requirement or expectation of the United States that Russia's plans and programs for surplus plutonium

Congress, the public, and other government agencies to assess whether disposition is in fact "proceeding in parallel."

1. Exactly what is required on the Russian side in this regard?

2. What is the U.S. Government's best estimate of the total inventory of plutonium in Russia, exclusive of that still in spent civil power reactor spent fuel?

3. What is the U.S. Government's best estimate of Russia's weapon-grade plutonium inventory?

4. What are the U.S. Government's best estimates of Russia's separated fuel-grade and reactor grade inventories?

5. What are the U.S. Government's best estimates of Russia's "military and non-military plutonium stockpiles?

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6. Where are these materials located in Russia to the best of the U.S. Government's knowledge?

7. Is the plutonium recovered from Russian naval reactor fuel that is currently stored at Mayak (along with Pu separated from VVER-440 spent fuel) considered to be part of Russia's military or civil plutonium stockpile?

8. Is the plutonium currently being recovered from plutonium production reactor fuel at Tomsk-7 and Krasnoyarsk-26 considered to be part of Russia's military or civil plutonium stockpile?

9. The terms "military plutonium" or "weapons plutonium" need to be more precisely defined; in particular, do these terms include plutonium derived from research or civil reactors and how do these terms relate to U.S. and Russian plutonium stockpiles as they are currently defined.

10. Please elaborate on the what is military and what is civil plutonium in the two countries.

11. For example, is plutonium in FFTF spent fuel military or civil?

V. On September 2, 1998, Presidents Clinton and Yeltsin signed an agreement that directs officials in both countries to draw up detailed plans and schedules for each country to dispose of 50 t of excess plutonium. The DEIS fails to provide information regarding the following questions:

1. Has Russia identified the sources of its 50 t of excess plutonium?

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2. What fraction is weapon-grade?

3. What fraction is from pits removed from dismantled nuclear weapons, and what fraction, if any, is in other forms?

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disposition would proceed in lock-step with the U.S. program. The intermediate steps of the two programs and their precise timing do not have to be the same, provided the Russians are drawing down their stocks of surplus plutonium along agreed paths and in general consonance with the timing of the U.S. program. What is required of Russia is a combination of political actions and commitments, practical steps, and concrete plans and timetables such that the two programs can reasonably be said to be heading in the same general direction in the same overall timeframe.

The terms "military plutonium" and "weapons plutonium" are not used in this EIS. Weapons-grade and weapons-usable material are defined in Chapter 6. All the plutonium that is the subject of this EIS is considered weapons usable. The vast majority of this material, with the exception of fuel for FFTF, was associated with military use.

FD314–8 **Nonproliferation**

The sources, composition, form, and quantities of Russian surplus plutonium are the subject of sensitive negotiations between the United States and Russia and are beyond the scope of this SPD EIS.

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4. Assuming it is all from pits, which is NRDC's current understanding, if the U.S. and Russia each completed the disposition of their respective 50 t of excess plutonium in accordance with the above cited presidential agreement but disposed of no more plutonium, would the U.S. and Russia have achieved approximately equal levels of military plutonium stockpiles, and therefore be in accord with the 1996 agreement cited above? 8

5. If the answer to V.4. above is "no," how much additional plutonium would Russia and/or the U.S. have to dispose of to achieve approximately equal military plutonium stockpiles?

VI. The SPD DEIS fails to discuss any of the important physical security, material accounting and control, or international safeguards issues that concern the facilities used under the MOX and vitrification options. With regard to physical security, what are the design-basis external-assault threats and internal threats that will be used to judge the adequacy of the physical security at the proposed MOX fabrication facility? 9

VII. For safeguards purposes, the IAEA defines a "significant quantity" (SQ) of nuclear material as "the approximate quantity of nuclear material in respect of which, taking into account any conversion process involved, the possibility of manufacturing a nuclear explosive device cannot be excluded."[4] For direct-use material, the IAEA currently assumes an SQ of 8 kilograms (kg) of plutonium.

The SQ values were recommended to the IAEA by a group of experts, namely, the IAEA's Standing Advisory Group for Safeguards Implementation (SAGSI), and "relate to the potential acquisition of a first nuclear explosive by a non-nuclear weapon state."[5] The direct-use values—8 kg of plutonium, 8 kg of uranium-233, or 25 kg of HEU—are also referred to by the IAEA as "threshold amounts," defined as "the approximate quantity of special fissionable material required for a single nuclear device."[6] The IAEA cites as a source for these threshold amounts a 1967 United Nations document.[7] The IAEA states: 10

> "These threshold amounts include the material that will unavoidably be lost in manufacturing a nuclear explosive device. They should not be confused with the minimum critical mass needed for an explosive chain reaction, which is smaller."[8]

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4 *IAEA Safeguards Glossary, 1987 Edition*, IAEA, IAEA/SG/INF/1 (Rev. 1), 1987, p. 23.

5 Thomas Shea, "On the Application of IAEA Safeguards to Plutonium and Highly Enriched Uranium from Military Inventories," IAEA, (June 1992, with additions: December 1992).

6 *IAEA Safeguards Glossary*, p. 23.

7 *Effects of the Possible Use of Nuclear Weapons ...*, United Nations, A/6858, 6 October 1967.

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FD314–9 **DOE Policy**

DOE has studied these issues in the *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Materials Storage and Excess Plutonium Disposition Alternatives* (DOE/NN-0007, January 1997). As described in Chapter 2 (Volume I) of this SPD EIS, all of the proposed surplus plutonium disposition facilities would be built to DOE's highest security standards and are being proposed at sites where there is already a security force in place. Additional guards and security personnel would be hired to work at each of the facilities as needed and are included in the estimated workforce requirements evaluated in this EIS. Once it is determined where the proposed facilities would be located, a specific security plan would be developed and implemented, which considers all of the threats that could affect the facility. With regard to the MOX facility, physical security would be in accordance with NRC standards and be part of the NRC licensing process. The international safeguards associated with these facilities are the subject of ongoing sensitive negotiations between the United States and Russia. However, space has been allocated in each of the proposed facilities to accommodate such inspections.

FD314–10 **Nonproliferation**

As discussed in Section 2.4, it is likely that the United States would voluntarily offer to have the proposed surplus plutonium disposition facilities placed under international safeguards. However, the process of implementing international safeguards is not as yet fully defined. If these proposed facilities come under IAEA oversight, it is expected that the "significant quantity" as defined by IAEA in safeguarding the proposed facilities would be the same as that used by IAEA for safeguarding plutonium in other nations. Any discussion on the amount of plutonium needed to build a 1-kiloton weapon is classified and is beyond the scope of this SPD EIS.

The remainder of this comment is addressed in response FD314–9.

[4] Using highly sophisticated techniques available to NW States, the critical mass and the corresponding threshold amount can also be significantly reduced, but these are special cases that need not be considered here."

For decades the IAEA has set invalid technical thresholds for the minimum quantity of nuclear material needed for a nuclear weapon, even for a low-technology first nuclear explosive by a non-nuclear weapon state, including consideration of unavoidable losses.

First, the current 8 kg SQ value for plutonium is consistent with assuming a 24 percent loss in fabricating a solid 6.1 kg plutonium core similar to the Trinity device or the Nagasaki bomb—equivalent to losing the outer 0.4 cm of the 4.5 cm core during casting and machining. This degree of imprecision seems exceptionally high for the numerically controlled techniques now available in the commercial marketplace.

Second, if one took the same *Fat Man* design, first tested at the *Trinity* site in New Mexico and dropped on Nagasaki in 1945, and simply substituted a three kg plutonium core for the 6.1 kg core that was used in 1945, the yield of this device would be on the order of one kiloton, still a very respectable atomic bomb that could create catastrophic losses in dense urban areas. Thus, based on this evidence alone, the IAEA is in error to assert that "highly sophisticated techniques available to NW States" are needed to make nuclear weapons with "significantly reduced" quantities of materials.

Third, since the early 1950's, the nuclear-weapon states have been producing nuclear explosives with yields in the several kiloton range from as little as 2 kg of plutonium. The so-called "highly sophisticated techniques available to NW States" referenced by the IAEA were known to U.S. weapons designers in the late-1940s and early 1950s—and are now available to anyone with the patience and skills to search the open technical literature. Nuclear devices using very small quantities of plutonium and HEU—so-called "fractional crit" weapons—with yields on the order of one Kt were tested during the Ranger series in 1951.

10

Finally, a well advised safeguards program for a given country or group of countries would set the "significant quantity" levels at values less than the minimum amount needed for a weapon, to guard against the fact that materials can be diverted from more than one source. The practice of setting higher levels to account for manufacturing losses is likewise imprudent, particularly in view of the fact that a significant fraction of these "losses" are technically recoverable. In sum, *safeguards apply to all non-weapons countries, irrespective of their technological sophistication, and safeguards effectiveness should be assessed with this fact in mind.*

Many IAEA-member countries, including Israel, India and Pakistan and several that are not declared nuclear weapon states, such as Japan, Germany, South Korea, have highly developed nuclear infrastructures, and must be considered technologically sophisticated. Israel is presumed to have deployed boosted fission weapons, and possibly two stage thermonuclear weapons. India claims to have tested a two-stage thermonuclear device this year. This claim is certainly credible given that it has been 24 years since its first nuclear weapon test in 1974. Even for countries that

are in general not sophisticated technologically, such as North Korea, the key technical information needed to establish a program for achieving substantial compression via implosion techniques is now accessible in the unclassified literature. The quantities defining safeguards significance, therefore, must be based on the assumption that the proliferator has access to "advanced" technology (*i.e.*, at least 1950's era). Whatever the nonproliferation "disinformation benefit" that may have flowed from the under-protective IAEA SQ values in the past, it is now far too late in the proliferation game to base the international nuclear control regime on flawed technical premises. As a consequence, the IAEA's SQ value should be lowered to no more than one eighth of the current value.

In 1994, NRDC released a report, "The Amount of Plutonium and Highly-Enriched Uranium Needed for Pure Fission Nuclear Weapons" (NRDC, Revised April 1995). In this report and in accompanying letter to the IAEA, NRDC requested that the IAEA revise its SQ value downward by a factor of eight. At about the same time the NRDC also requested that the United States Government, represented on the IAEA Board of Governors, take appropriate action to have IAEA make this revision.

DOE never responded to NRDC's request. It is our understanding that DOE had drafted a letter to NRDC endorsing lowering the IAEA SQ value by a factor of two—to four kg of plutonium—but that the State Department objected to it and that it was never sent.[8] 10

1. Will the proposed MOX fabrication plant be subject to IAEA and/or bilateral safeguards?

2. What in DOE's view is the technically indicated SQ value that the IAEA should be using?

3. What in DOE's view is the technically indicated SQ value that DOE is, or should be, using?

4. What constitutes a "significant quantity" of plutonium for purposes of judging the adequacy of the material control and accounting measures at the MOX fabrication plant?

5. Is the SQ value for the MOX fabrication plant different from that used by the IAEA? If so, explain why.

6. Does DOE agree that a one-kiloton-yield fission weapon can be made with as little as one to three kilograms of weapon-grade plutonium?

[8] The letter was prepared for Mr. Ken Luongo, Director of the Office of Nonproliferation at DOE, and it was killed by Mr. Robert Einhorn at the State Department.

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VIII. NRDC does not believe the proposed MOX fabrication plant can be operated with adequate material control and accounting procedures. In the parlance of nuclear material accounting, the inventory difference (ID) is defined as:

$$ID = BI + I - R - EI,$$

where BI is the beginning inventory, EI is the ending inventory, and I and R are, respectively, the material added and removed during the inventory period.[9] For the minimum amount of diverted plutonium (assumed by the IAEA to be the SQ value—currently 8 kg of plutonium) to be resolvable from measurement noise with detection and false alarm probabilities of 95% and 5%, respectively, it can be shown that 3.3 σ_{ID} must be less than the SQ value, where σ_{ID} is the uncertainty in the inventory difference.[10] For an SQ of 8 kg the σ_{ID} would have to be about 3 kg; and if the SQ value for plutonium were lowered to one kg, σ_{ID} should not exceed about 300 grams.

At Japan's Tokai Plutonium Fuel Production Facility (PFPF), where MOX fuel has been fabricated for Japan's Joyo and Monju fast-breeder reactors since 1988, the production line consisted of 17 interconnected glove boxes monitored by unattended, tamper-proof instruments, such as neutron coincidence counters. Following an April 1994 inspection conference with the IAEA, Japanese sources disclosed that on the order of 70 kg of plutonium was "held up" in the remotely monitored process line, and that the uncertainty in the hold-up material exceeded the 8 kg SQ value used by IAEA. 11

1. Identify the limit on σ_{ID} that DOE believes must be achieved in the MOX fabrication plant to provide technical detection with high confidence of the theft or diversion of a technically valid SQ of special nuclear material.

2. Explain how this limit will be achieved?

3. Please provide the historical ID data for other MOX and related facilities relevant to making an informed judgment as to whether technically adequate material control and accounting standards can be achieved at the proposed MOX plant.

4. What is the basis, if any, for believing that the proposed MOX plant would achieve inventory differences significantly less than those experienced at Japan's PFPF.

IX. To improve material control, large facilities that process or store nuclear weapon-usable materials are subdivided into numerous "material balance areas." The inventories and inventory differences within individual balance areas can be significantly smaller than those for the entire 12

9 In the literature "inventory difference" (ID) is sometimes called "material unaccounted for" (MUF).

10 Marvin Miller, "Are Safeguards at Bulk-Handling Facilities Effective?, Nuclear Control Institute, Washington, D.C., August 1990.

FD314–11 **Nonproliferation**

NRC material control and accountability requirements would apply to the MOX facility, or potentially a combination of NRC and DOE requirements. If the decision is made in the SPD EIS ROD to go forward with the MOX facility, a limit on σ_{ID} would be established based on discussions with NRC and the approved NRC facility design. Any material control and accountability requirements would have to also satisfy international safeguards requirements agreed to between the United States and Russia. Existing IAEA standards, which would likely be similar to those implemented at the proposed MOX facility, are in place at MOX fuel fabrication facilities in Europe. These facilities have been able to meet the IAEA standards supporting DOE's belief that the proposed MOX facility would be able to meet similar standards. DOE is aware of the issues surrounding the problems referred to by the commentor in the Japanese facility and would work to avoid similar problems at the MOX facility.

FD314–12 **Nonproliferation**

The specific arrangements for applying international safeguards (including significant quality limits) at the MOX facility have not been fully determined. As discussed in response FD314–9, international safeguards are part of the sensitive negotiations between the United States and Russia. Final arrangements would be made during design and construction of the facility. Safeguards and security requirements, as well as material control and accountability requirements, would take into consideration internal and external threats involving the theft and diversion of nuclear materials and limits would be set accordingly.

facility. The SQ limits are often applied to the separate material balance areas. It must be recognized, however, that this approach does not afford adequate protection against state-sponsored diversions or a collusion of individuals removing materials from separate material balance areas. 12

1. In the SPD Final EIS indicate whether DOE agrees that the SQ limits should apply to the entire MOX facility? If not, explain why.

X. NRDC does not believe an adequate timely detection criterion can be met. Detection time (the maximum time that should elapse between diversion and detection of a significant quantity) should be in the same range as the conversion time, which is defined as the time required to convert different forms of nuclear material into components of nuclear weapons. For metallic plutonium, the conversion time is 7-10 days; for other forms of plutonium, it is 1-3 weeks. These conversion times are already much shorter than the period between inventories at any MOX plant operating today. Thus, there can be no assurance that the primary objective of safeguards—the timely detection of the theft, loss, or diversion of significant quantities of plutonium—will be met at the proposed MOX fabrication plant. 13

1. What timely warning criterion will be used for judging the adequacy of safeguards at the proposed MOX fabrication plant?

2. What is the basis for DOE's belief that the timely detection criterion can be met?

This concludes NRDC's comments on the SPD DEIS.

Sincerely,

Thomas B. Cochran
Director, Nuclear Program

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FD314–13 **Nonproliferation**

Specific domestic and international safeguards would be developed during design and construction of the MOX facility. Because the surplus plutonium is weapons usable, the safeguards would include physical inventories as well as several active and passive measures. A single, integrated system of material control measures and accountability measurements would be used to monitor storage, processing, and transfer of nuclear material in the MOX facility. The facility accountability program would include an accounting system, a measurement and measurement control program, physical inventory programs, a material transfer program, and a program to assess material control indicators.

The accounting system would be a near real–time system that would require the prompt reporting of any change in the accountable quantity, location, user, or form of the nuclear material. This system would include measurement subsystems, and both destructive and nondestructive assay to ensure that quantities of nuclear materials were stated with the timeliness, accuracy, and precision required in DOE/NRC regulations and any international agreements. These material control and accountability measures would ensure that potential theft, loss, or diversion of material would be detected well before that material could be converted into a nuclear weapon.

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September 16, 1998

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**Comments of the Nuclear Control Institute
on the Surplus Plutonium Disposition
Draft Environmental Impact Statement**

The Nuclear Control Institute ("NCI") submits the following comments on the Department of Energy's Surplus Plutonium Disposition Draft Environmental Impact Statement (DOE/EIS-0283-D, July 1998) ("draft EIS"). Bracketed page numbers in these comments refer to this document.

1. The Department of Energy should utilize exclusively the immobilization approach to surplus plutonium disposition in the United States. The MOX approach under the "dual track" disposition policy is not justified even if there is a need to proceed in parallel with Russia.

DOE's January 1997 Record of Decision on Plutonium Disposition outlined a "dual track" approach utilizing both immobilization and MOX. The Department has defended this approach as a prerequisite to working in parallel with Russian counterparts who view plutonium as "national treasure" and are unwilling to dispose of it as waste. NCI remains unconvinced by this argument, for reasons explained in detail elsewhere.[1] 1

However, DOE's rationale for the "dual track" was recently superseded by the plutonium disposition agreement signed by Presidents Clinton and Yeltsin at their Moscow summit meeting. This agreement marked Russia's first formal acknowledgement of the acceptability of the immobilization approach. The agreement specifies that "[t]he two governments will cooperate to pursue this goal [of each nation disposing of 50 metric tons of surplus weapons plutonium] through consumption of plutonium fuel in existing nuclear reactors (or reactors which may enter

[1] Edwin S. Lyman and Paul Leventhal, "Bury the Stuff," Bulletin of the Atomic Scientists, March/April 1997, pp. 45-48.

Strategies for stopping the spread and reversing the growth of nuclear arms.
Paul L. Leventhal, *President*, Peter A. Bradford, David Cohen, Denis A. Hayes, Julian Koenig, Sharon Tanzer, Roger Richter, Dr. Theodore B. Taylor
BOARD OF DIRECTORS

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FD327–1 **Nonproliferation**

DOE acknowledges the commentor's opposition to the use of plutonium in MOX fuel. Russian cooperation is not the only reason DOE has identified as its preferred alternative the hybrid approach for the disposition of U.S. surplus plutonium. The environmental impacts associated with the immobilization-only alternatives—as well as the hybrid (MOX and immobilization) and the no action alternatives—are discussed in this SPD EIS. Costs are discussed in two reports prepared by DOE, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, and *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative. These reports are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

DOE believes the hybrid approach provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Pursuing both the immobilization and MOX approaches also provides important insurance against potential disadvantages of implementing either approach by itself. DOE reserves the option to immobilize all the surplus plutonium as discussed in Alternatives 11 and 12 and has evaluated the environmental impacts of these alternatives (including considering the number of facilities, the number of processing stages, and the transportation requirements).

In regard to the MOX facility, DOE intends to design, construct, and operate it in such a fashion as to provide a level of safety that meets or exceeds applicable Federal, State, and local requirements. The MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition

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STEVEN DOLLEY

into service during the duration of our cooperation) or the immobilization of plutonium in glass or ceramic form mixed with high-level radioactive waste."[2] [emphasis added]

In light of this agreement, and DOE's acknowledgement in both the ROD and draft EIS that it is technically feasible to immobilize all 50 tons of surplus U.S. weapons plutonium, there is no imperative to pursue a MOX approach in the United States at all. DOE's own studies demonstrate that immobilization would be cheaper, faster and safer than the MOX approach,[3] and is therefore the more desirable method now that it is clear MOX need not be pursued in the United States to satisfy Russian concerns. 1

In the most straightforward sense, immobilization has clear-cut environmental and safety advantages. Fewer processing stages, fewer facilities, and less transportation are involved with immobilization than with MOX. The immobilization-only approach also offers great flexibility for the U.S. disposition program. If desired, the United States could promptly and unilaterally immobilize all 50 tons of its surplus plutonium, as a demonstration and incentive to Russian disposition. If parallelism and Russian reciprocity were deemed important but did not materialize, a U.S. immobilization-only approach could be put on hold with far less disruption than a MOX/reactor approach.

2. The draft EIS comparison of MOX and immobilization is unfairly skewed in favor of MOX.

The draft EIS assesses site-specific environmental impacts of the immobilization process all the way through to production of the final waste form. The MOX approach, on the other hand, is only analyzed on a generic basis after the point at which fresh MOX fuel is fabricated. Analysis of environmental and safety questions related to use of specific reactors and storage of spent MOX fuel is relegated to a separate "environmental critique" which will not be available until the final EIS is released. This provides an unbalanced comparison of the MOX and immobilization options. NCI is preparing an in-depth technical analysis of safety issues related to the use of weapons-plutonium MOX fuel in light-water reactors, and this analysis would be greatly enhanced by the availability of reactor-specific data. Environmental impacts of MOX fuel use could vary widely from site to site (i.e., the North Anna plant vs. WNP-2). Therefore, issuance of the final EIS should be deferred until the public has a reasonable opportunity to 2

[2] Joint Statement of Principles for Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes," September 2, 1998.

[3] For example, ceramic can-in-canister immobilization could begin two years sooner than a MOX-immobilization "hybrid option," and be completed six years sooner. U.S. DOE, Office of Fissile Materials Disposition, Technical Summary Report for Surplus Weapons-Usable Plutonium Disposition, Rev. 1, October 31, 1996, Table ES-2, p. ES-11. DOE estimates that an immobilization-only alternative would cost from $1.7 to $1.9 billion, whereas the hybrid alternatives would cost from $1.8 billion to $2.1 billion (with fuel offset) or from $2.7 to $2.9 billion (without fuel offset). U.S. Department of Energy, Office of Fissile Materials Disposition, Cost Analysis and Support of Site Selection for Surplus Weapons Usable Plutonium Disposition, DOE/MD20009, July 22, 1998, Table 3-2, p. 3-17; Table 3-3, p. 3-18.

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of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provides general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. Sensitive negotiations between the two countries have indicated that the Russian government accepts the technology of immobilization for low-concentration, plutonium-bearing materials, but that the MOX approach would be considered for higher-purity feed materials.

FD327-2 **MOX RFP**

The SPD Final EIS was not issued until the proposed reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

review and comment upon the reactor-specific environmental critique. 2

3. Issues related to plutonium oxide "hold up" in the MOX fuel fabrication facility should be addressed.

In modern MOX fuel fabrication facilities, almost all operations are carried out by remote handling in glove boxes. Significant portions of the plutonium oxide throughput of these plants can become "held up" in these glove boxes. Since opening in 1988, the small, pilot PFPF MOX plant in Japan accumulated a hold-up of over 70 kilograms of plutonium, and the plant operator was eventually required by the International Atomic Energy Agency to clean out and account for this material, at a cost of over $100 million. 3

NCI has expressed concern about the hold-up issue in a non-proliferation and safeguards context.[4] From a NEPA perspective, it should be noted that plutonium hold-up constitutes a safety and health risk, not only to MOX plant workers but to the general public by increasing the plant's source term in case of an accident. If required later because of excessive hold-up, a full facility clean-out would also pose significant risks of worker exposure to plutonium. The draft EIS does not address the hold-up issue. It is important that the final EIS do so.

4. The "plutonium polishing" option should not be pursued.

DOE has offered respondents to its request for proposals for MOX disposition work the opportunity to propose aqueous processing, so-called "plutonium polishing," to remove gallium and other impurities from plutonium prior to its fabrication into MOX fuel. The detrimental effects of gallium on fuel cladding and reactor safety have not been fully documented and could prove significant. "Plutonium polishing" would significantly increase the environmental impact of the MOX option by creating large amounts of TRU and low-level waste, an increase of 10 to 20 percent over non-polishing options.[5] It would also contravene U.S. non-proliferation policy, in that it would be likely to provide strong support of Russia's plans for aqueous treatment of its own surplus weapons plutonium. Because trace amounts of gallium do not affect the immobilization process or final waste form, the plutonium polishing step could be avoided entirely if the U.S. were to pursue an immobilization-only approach. 4

5. Lengthy storage of fresh MOX fuel at reactor sites poses security risks and should be avoided.

The draft EIS foresees a 10-year operational life for the MOX fabrication plant, but considerable additional time, possibly years, would be required to cycle all this MOX fuel through reactors. NCI objects to long-term storage of fresh MOX fuel at reactor sites on security grounds. Such fresh MOX fuel lacks a radiation barrier, and if stolen, weapons-grade plutonium 5

[4] Steven Dolley, Nuclear Control Institute Comments on the Draft PEIS for Plutonium Disposition, June 7, 1996.

[5] "Appendix N: Plutonium Polishing," draft EIS, pp. N-8 - N-9.

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FD327–3 **Nonproliferation**

DOE is aware of a Japanese plutonium processing incident in which the holdup of a significant amount of MOX powder in the processing lines made it difficult to measure the exact quantity of materials from outside the sealed gloveboxes. The design and operation of the MOX facility would incorporate lessons learned (regarding procedures and equipment) to ensure a low net plutonium loss and would be compatible with NRC and international safeguards. Physical inventories, measurements, and inspections of material both in process and in storage would be used to verify records and ensure that there was no significant holdup of plutonium in the gloveboxes.

FD327–4 **Plutonium Polishing and Aqueous Processing**

DOE acknowledges the commentor's opposition to the MOX approach and plutonium polishing. On the basis of public comments received on the SPD Draft EIS, and the analysis performed as part of the MOX procurement, DOE has included plutonium polishing as a component of the MOX facility to ensure adequate impurity removal from the plutonium dioxide. While it is true that plutonium polishing would add to the amount of LLW and TRU waste generated, this amount should be a small fraction of the total amount of these waste types generated at the candidate sites. For example, at SRS, which is the preferred site for the MOX facility, the addition of the plutonium-polishing process would be expected to increase the site's projected generation of LLW and TRU waste by less than 1 percent and 2 percent, respectively. Section 4.32.4 discusses the cumulative impacts of the proposed action at SRS; Sections 4.32.1, 4.32.2, and 4.32.3, the cumulative impacts of the proposed action at Hanford, INEEL, and Pantex, respectively.

FD327–5 **MOX Approach**

DOE acknowledges the commentor's concern about the storage of fresh MOX fuel at reactor sites. The proposed action does not involve lengthy storage of fresh fuel at reactor sites. Moreover, as discussed in Section 2.4.3.2, the MOX fuel would be managed in essentially the same way as fresh LEU fuel (with tighter security because of the plutonium), which is usually received at the reactor site shortly before it would be inserted into the reactor. The MOX facility includes space for storage of up to 2 years' worth of fresh fuel

could be separated from this MOX by straightforward chemical means. EDF, the French nuclear utility, does not permit fresh MOX fuel to be stored at its reactor sites for more than two weeks, and does not allow any dry storage of such fresh fuel.[6] The same strict security requirement should be imposed on MOX fuel storage, and the additional costs of meeting this storage standard, and of additional security at reactor sites, should be included in the EIS. 5

6. The "216 process" is an inappropriate approach to safety analysis of MOX candidate reactors.

DOE proposes to analyze environmental impacts of specific commercial reactors offered by consortia for MOX fuel irradiation by means of the process specified in 10 CFR 1021.216 (the "216 process"). This regulatory language is part of DOE's NEPA Implementing Regulations, and provides for an "environmental critique," to be prepared by DOE, which "may contain proprietary information which will, therefore, not be made available to the public." [p. S-12] A synopsis will be published in the final EIS, but the full environmental critique would never be made public.

The proposed implementation of the 216 process is entirely unacceptable. First, DOE has indicated that consortia bidders will have complete discretion to determine which information they submit to DOE should be considered "proprietary" and withheld from the public. Thus, any information bearing on the safety of reactors fueled with MOX that the industry does not want subjected to public scrutiny could be withheld. Second, the public synopsis would not be made available until the *final* EIS is released, i.e., after the public input process under NEPA is completed. Public comments on the final EIS are unlikely to have any significant impact on DOE's record of decision. 6

An example of the abuse that can arise from excessive discretion to withhold release of "proprietary" data in regulatory proceedings is the recent revelation in Great Britain that "a supposedly independent report by the accountancy firm Touche Ross - used to provide the economic justification for the Thorp reprocessing plant - had never been drawn up....Environmentalists, independent scientists and the Labour Party in opposition all called for the report to be published, but BNFL which runs Sellafield, refused to do so on the grounds that it was commercially confidential. Recently the Environment Minister, Michael Meacher, asked to see the report but was told, to his amazement, that it did not exist."[7]

DOE has discretion to apply the standards of law in order to determine whether data that the consortia want to be withheld in fact meets these standards. DOE should review this material, with a presumption in favor of public release. The provisions of DOE NEPA regulations which require withholding of "commercially confidential" information should be narrowly interpreted

[6] D. L. Williams Jr., "Licensing Issues Associated with the Use of Mixed-Oxide Fuel in U.S. Commercial Nuclear Reactors," Oak Ridge National Laboratory Report, ORNL/TM-13421, April 1997, p. 9.

[7] Geoffrey Lean, "Report that Justified Thorp Nuclear Plant Never Existed," Independent on Sunday, September 13, 1998.

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assemblies, which was included in the cost estimates for the MOX facility. Any actual restrictions or requirements related to the storage of fresh MOX fuel at the proposed reactor sites would be imposed by NRC as part of the operating license amendment process.

FD327–6 **MOX RFP**

DOE has withheld no information regarding reactor-specific safety analyses conducted for this SPD EIS. Those analyses are discussed in Section 4.28.2.5.

The remainder of this comment is addressed in response FD327–2.

and applied, in order to assure that the maximum amount of data is made available to the public consistent with the requirements of law. The Department should err on the side of disclosing, rather than withholding, and this policy governing the 216 process should be stated clearly in the final EIS. 6

7. Issues related to burnup levels of irradiated MOX fuel should be addressed.

The draft EIS merely refers to the 1996 PEIS's generic safety analysis of MOX fuel irradiation in LWRs. It does not incorporate new information on safety issues related to the burnup level of MOX fuel. In light of recent findings that "MOX fuel shows a higher failure potential than UO_2 at comparable burn up," as revealed by a recent MOX fuel experiment at the Cabri test reactor in France,[8] significant consideration should be given to limiting average burnup of MOX fuel to the regulatory ceiling of 36,000 MW-D/MTHM now imposed in France.[9] This is the only way to avoid with assurance the risks associated with the propensity of high-burnup MOX fuel to catastrophically rupture in the event of reactivity transients or loss-of-coolant accidents (LOCAs). 7

This problem may be more severe for weapons-grade MOX because the phenomenon believed to be responsible for the inferior behavior of MOX fuel (locally high burnups and fission gas release because of the inhomogenous distribution of plutonium in MOX fuel) would be exacerbated by the higher fission rates that occur in weapons-grade plutonium.

8. Additional NEPA analyses might be required.

A number of significant federal actions are mentioned in the draft EIS as potential options that might be pursued in the disposition program. These actions include the "plutonium polishing" option, irradiation of U.S. and Russian MOX in CANDU reactors in Canada, and fueling the Fast Flux Test Reactor (FFTF) with weapons-plutonium MOX to produce tritium for the U.S. nuclear arsenal. We note and concur with DOE's position in the draft EIS that, in each case, additional NEPA analysis beyond the SPD EIS would be required if any of these actions were to be pursued. 8

Sincerely,

Steven Dolley
Research Director

[8] F. Schmitz, Institute de Protection et de Surete Nucleaire (IPSN), "The Status of the Cabri REP-Na Test Programme: Present Understanding and Still Pending Questions," presentation to the NRC/Industry Meeting on High-Burnup Fuel Issues, Rockville, Maryland, November 18-20, 1997.

[9] Jean-Luc Provost, Electricite de France, "Plutonium Recycling and Use of MOX Fuel in PWR: EDF Operating Experience," Industry Presentation to NRC on the Use of MOX Fuel, Rockville, Maryland, February 21, 1997.

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FD327–7 **MOX Approach**

Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents. The referenced failure of the Cabri fuel in the French experiment was not related to the fact that the failure involved MOX fuel. Even if the test failure were actually related to MOX fuel, the significance would be questionable, for tests were conducted on a contrived set of conditions to explore regions of performance well outside the operating regime for commercial reactors. The tests were designed to test enthalpies of high burnup fuels, both LEU and MOX, under severe transient conditions. Although other factors would also invalidate the application of the Cabri test data to the U.S. MOX fuel case, the most important characteristic of the test fuel—high burnup—would not apply because the MOX fuel is planned for irradiation for only two cycles, resulting in a maximum burnup of only 45,000 MW-day/MTHM. The acceptability of burnups at this level has been aptly demonstrated in Belgian, French, and German reactors.

FD327–8 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's views that additional NEPA analysis beyond this SPD EIS would be required for the use of CANDU reactors and the restart of FFTF. In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999.

Both of these documents can be viewed on the MD Web site at http://www.doe-md.com. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russian's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. DOE has included plutonium polishing as a component of the MOX facility. Section 2.18.3 and the hybrid alternatives analyses in Chapter 4 of Volume I were revised to include the impacts associated with plutonium polishing.

NUCLEAR ENERGY INSTITUTE

Felix M. Killar
DIRECTOR,
MATERIAL LICENSING
& NUCLEAR INSURANCE

September 21, 1998

Mr. G. Bert Stevenson
NEPA Compliance Officer
Office of Fissile Materials Disposition
U.S. Department of Energy
SPD EIS
P.O. Box 23786
Washington, DC 20026-3786

Subject: Request for Comments on "*Surplus Plutonium Disposition Draft Environmental Impact Statement*" (SPD EIS) (DOE/EIS-0283-D)

Dear Mr. Stevenson:

The Nuclear Energy Institute (NEI)[1] is pleased to provide comments on "*Surplus Plutonium Disposition Draft Environmental Impact Statement*". The U.S. nuclear industry supports the disposition of weapons grade plutonium, in the United States and Russia as a very important national security and nonproliferation initiatives. We believe that consistent with the recommendation of the National Academy of Science, both mixed oxide fuel and the immobilization options must meet the spent fuel standard. As indicated in our attached comments we are concerned that the EIS and therefore the program may not be bringing the immobilization option to this standard. 1

We look forward to your consideration of our comments and to effectively and expeditiously implement this critical non-proliferation initiative. The industry has a great deal of interest in the MOX program and you will certainly receive comments from individual companies as well as those

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

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MD283–1 **DOE Policy**

DOE acknowledges the commentor's concern regarding the ability of the immobilization approach to meet the Spent Fuel Standard. In the *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives* (DOE/NN-0007, January 1997), DOE identified two potential liabilities of the immobilization alternatives relative to the Spent Fuel Standard. These liabilities involve ensuring sufficient radiation levels and providing removal-resistant can-in-canister designs. Since that time, DOE has modified the can support structure inside the canisters and has focused its research on the ceramic form of immobilization. As part of the form evaluation process, an independent panel of experts determined (*Letter Report of the Immobilization Technology Peer Review Panel*, from Matthew Bunn to Stephen Cochran, LLNL, August 21, 1997) that the can-in-canister design would meet the Spent Fuel Standard. In terms of plutonium 240 content, it is not necessarily required that isotopic dilution be used to make the material as inaccessible and unattractive for weapons use as the plutonium that exists in highly radioactive spent nuclear fuel from commercial reactors. In addition, NAS is currently conducting studies to confirm the ability of the ceramic can-in-canister immobilization approach to meet the Spent Fuel Standard. DOE is confident that immobilization remains a viable alternative for meeting the nonproliferation goals of the surplus plutonium disposition program.

Mr. G. Bert Stevenson
U.S. Department of Energy
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submitted herein. If you have any questions concerning the information contained in this letter, please do not hesitate to contact me.

Sincerely,

Felix M. Killar

Attachment

MD283

Comments on the Department of Energy's (DOE's)
Surplus Plutonium Disposition Draft Environmental Impact Statement

Location	Comment	
Executive Summary p. S-8	Specification of "can-in-canister" immobilization as a preferred alternative. DOE is proposing "can-in-canister" immobilization as its preferred alternative for immobilization. However, the DOE's own reports[2,3] indicate that "can-in-canister" immobilization does not currently meet the Spent Fuel Standard for long-term nonproliferation resistance. The United States must deploy an effective, accepted plutonium disposition technology or technologies if it wants to encourage international support for plutonium disposition. NEI expects that concurrent action on the part of Russia to dispose of its surplus plutonium will be predicated on the disposition of United States material in a manner that provides high confidence in its resistance to theft, diversion, or re-use. *Recommendations:* DOE should consider only those alternatives that meet the Spent Fuel Standard [i.e., mixed oxide (MOX) fuel and homogeneous immobilization] as preferred alternatives. If the DOE pursues deployment of "can-in-canister" immobilization, the DOE should explain how it will demonstrate, in an open, objective, and peer-reviewed process, that the "can-in-canister" plutonium disposition approach will meet this fundamental program requirement - the Spent Fuel Standard. DOE should also explain why immobilized/"can-in-canister" does not have to meet the denatured aspect of the spent fuel standard i.e. the Plutonium 240 content will not be greater than 20%.	1
Location	Comment	
Executive Summary p. S-14.	Quantities of plutonium considered in the EIS for disposal using the two approaches. The draft EIS states, "Since the ROD was issued, however, DOE has determined that an additional 9 tonnes of low plutonium content materials would require additional processing and would, therefore, be unsuitable for MOX fuel fabrication." DOE alternatives include disposing of a maximum of 33 tonnes of plutonium as MOX fuel, while the alternatives include immobilizing 50 tonnes of surplus plutonium. DOE has never provided justification that any surplus plutonium is not suitable for MOX use. The DOE has not explained what form this "unsuitable" plutonium is in. The technology descriptions in the draft EIS make it clear that various kinds of processing will be used in the Conversion and Immobilization Facility. It would appear to be possible that some of this processing would render material that is suitable for fabrication into MOX fuel. Finally, the DOE has specified no requirements that the plutonium destined for either MOX fuel or immobilization must satisfy. Therefore, it seems very unlikely that there is any technical basis for any decision about quantities of plutonium that are suitable or unsuitable for either option.	2

[2] Sandia National Laboratories, SAND97-8203 - Proliferation Vulnerability Red Team Report, October 1996.

[3] U. S. Department of Energy, DOE/NN-0007 - Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives, January 1997.

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MD283–2 **Feedstock**

DOE reviewed the chemical and isotopic composition of the surplus plutonium and determined in the *Storage and Disposition PEIS* ROD that about 8 t (9 tons) of surplus plutonium were not suitable for use in making MOX fuel. Furthermore, DOE has identified an additional 9 t (10 tons) for a total of 17 t (19 tons) that have such a variety of chemical and isotopic compositions that it is more reasonable to immobilize these materials and avert the processing complexity that would be added if these materials were made into MOX fuel. The criteria used in this identification included the level of impurities, processing requirements, and the ability to meet the MOX fuel specifications. Section 2.2 includes a description of the forms of plutonium that would be used for MOX feed and immobilization feed. None of the material planned for immobilization is in the form of spent fuel, and all of it is considered weapons usable. A further description of the types and amounts of plutonium currently planned for disposition can be found in *Feed Materials Planning Basis for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0013, April 1997).

NUCLEAR ENERGY INSTITUTE
FELIX M. KILLAR
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Recommendation:
Given the lack of justification for any decision about quantities of material for the two options, DOE should include the evaluation of a 100% (50 tonne) MOX fuel alternative in the SPD EIS. This is the only way to preserve all appropriate options until the time that the DOE can make a technically defensible evaluation and decision on the allocation of material to the two plutonium disposition approaches. We have recently learn that the Russians do not believe the material that is planned for immobilization is truly weapons grade plutonium. If it is already in the form of spent fuel or contains contaminants such that it can't be used for weapons then it should not be considered as part of this program and additional pits should be identified. 2

Location	Comment	
Appendix D, p. D-2	The appendix states "If it were determined that MOX fuel (rather than uranium-only fuel) were needed for the FFTF operations, the MOX fuel fabrication alternatives may be eliminated, depending on the amount of surplus plutonium that would be required for tritium production." However, it is our understanding that the capability to fabricate significant quantities of MOX fuel for the FFTF does not currently exist within the DOE complex.	3

Recommendation:
DOE should acknowledge that use of the FFTF with plutonium fuel in this manner would require the design and construction of a MOX fuel fabrication facility for the FFTF fuel or consider off shore production of MOX fuel. It is the light water reactor irradiation of MOX fuel that might be eliminated by such a course of action.

Location	Comment	
Sections 2.17 and 2.18.	Hot cell examinations of irradiated lead assembly fuel. The environmental impacts in the draft EIS do not appear to include those impacts associated with hot cell examinations. In particular, there is no acknowledgment that the hot cell facilities would be responsible for the disposal of the spent nuclear fuel that results from destructive hot cell examinations.	4

Recommendation:
DOE should revise the EIS to include these impacts, or note that such impacts are already included in other environmental evaluations.

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MD283–3 **DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source.

MD283–4 **Lead Assemblies**

Section 2.18 was revised to include a description of the impacts of postirradiation examination of lead assemblies.

Nuclear Information and Resource Service
1424 16th St. NW. Suite 404, Washington, DC 20036; 202-328-0002; fax:202-462-2183; e-mail:nirsnet@igc.apc.org web:www.nirs.org

September 15, 1998

Laura Holgate, Director
Office of Fissile Materials Disposition
US Department of Energy
PO Box 23786
Washington, DC 20026-3786

Ms Holgate:

Thank you for this opportunity to comment on the Surplus Plutonium Draft Environmental Impact Statement (EIS) of the U.S. Department of Energy. These comments are supplemental to comments already submitted by me on behalf of Nuclear Information and Resource Service in North Augusta, SC in August (provided again below to insure their inclusion in the record).

We remain unalterably opposed to the use of plutonium fuel in reactors, here in the US, in Russia, Canada, anywhere. 1

I take this opportunity to formally protest the fact that a major federal action is being undertaken without providing side by side parallel levels of information on the various options. Plutonium disposition via immobilization only should be compared to a specific analysis of the dual track putting MOX in an existing light water reactor (LWR) and immobilization. It seems the Department of Energy (DOE) is already completely committed to following the dual track MOX option prior to the issuance of the Record of Decision (ROD) on this EIS (which is ostensibly to inform that decision) and prior to any substantive analysis of the impacts that the MOX option would have on specific existing reactors. 2

The evidence for this is DOE's issuance of a Request for Proposal from MOX fabricators and irradiators (reactors) and the intention to forge a contract on MOX work, possibly before the ROD is out.

It would seem that communities around the DOE sites under consideration for plutonium processing and MOX fuel fabrication can look for protection under the National Environmental Policy Act, but those who will be directly affected by the introduction of experimental, never-been-tried-before fuel in the local nuclear power reactor. This is not acceptable. (European MOX does not have gallium added, not is it pure Pu-239.) 3

It is also not acceptable the on three separate occasions members of your Office staff have offered to me the advice that reactor communities can impact the federal decision-

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FD328–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach. Currently, there is no domestic or international consensus on a single approach to be employed to dispose of surplus plutonium. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

FD328–2 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for proposed surplus plutonium disposition facilities. DOE has not precluded any alternative, including immobilizing all the surplus plutonium or taking no action. A side-by-side comparison of the various alternatives are shown in Table 2–4, which summarizes the environmental impacts for all of the alternatives on an individual basis by DOE candidate site.

The SPD Final EIS was not issued until the proposed reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE

source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD. As stipulated in DOE's phased contract with DCS, until and depending on the decisions regarding facility siting and approach to surplus plutonium disposition are made and announced in the ROD, no substantive design work or construction can be started by DCS on the MOX facility. Should DOE decide to pursue the No Action Alternative or the immobilization-only approach, the contract with DCS would end. The contract is phased so that only nonsite-specific base contract studies and plans can be completed before the ROD is issued, and options that would allow construction and other work would be exercised by DOE if, and only if, the decision is made to pursue the MOX approach.

FD328–3 General SPD EIS and NEPA Process

Irradiation of MOX fuel in reactors is a well–established technology with commercial application in several countries. Because MOX fuel derived from weapons–usable plutonium has not been produced on a commercial scale, DOE has conducted experiments in a test reactor to obtain detailed engineering performance information. It will also conduct a lead assembly project to ensure the availability of all information (including safety parameters) necessary to obtain a license modification for the irradiation of this specific type of MOX fuel.

As discussed in response FD328–2, the public was provided an opportunity to comment on reactor- specific information. In addition, an opportunity for public comment will likely be provided by NRC during DCS's application for

making process by intervention in the Nuclear Regulatory Commission's (NRC) license amendment process for any reactor that may use MOX fuel.

This is completely inappropriate. It is almost like saying – the automobile manufacturer doesn't have to bother with any safety analysis or tests of a completely new design of an automobile – just go ahead and build it and sell it and then we will see what happens with the local license inspection. Your office, the Secretary of Energy and the President and Vice President have the responsibility to make a decision based on information about all of the impacts that a MOX program may have. The current document is completely lacking in any consideration of the reactor impacts. 3

In a recent conversation with members of your staff, I was referred to the Programmatic Environmental Impact Statement (PEIS) on Plutonium Disposition when I raised issues associated with the use of aging power reactors for this challenging mission. A return to this document yields the comments I offer below. By the way, they left the existing civilian reactor so-called "low-level" waste out of the PEIS, no matter what the NEPA officer says! 4

I do however, want to assure you that the reactor communities across the country are well aware of their right to intervene on the license amendment process. I also want to point out that even in areas where the community is not what might be called "anti-nuclear," there is already official and documented willingness to oppose use of weapons plutonium in existing reactors. We recommend that you add this information to the uncertainty factor on any cost estimates you make for this program. 3

I would also commend to you the fact that novel procedures such as using environmental reports previously filed with the NRC that may be decades old or the invocation of "proprietary information" under a vendor procurement deal which may require that a local community has to "take DOE's word for it" will not build DOE credibility. In fact, such an approach by your office may also provide procedural loopholes that could result in administrative or legal delays. 5

We sincerely hope that your office retains and pursues its stated high level of commitment to the non-MOX options for plutonium disposition, since there is wide consensus that this disposition should proceed. 1

FOR CONSIDERATION UNDER A TRUE NEPA PROCESS:

Utilization of the environment reports filed at the time of reactor licensing may be decades out of date. What are the plans to upgrade and update this information? 6

Given the aging of nuclear reactors—including embrittlement of major components that has caused multiple reactor shut-downs (permanent) well in advance of license expiration (Trojan, Yankee Rowe, Big Rock, Oyster Creek (soon), Maine Yankee to name a few in the last 5 years), combined with the environment of utility restructuring and competition 7

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the reactor operating license amendments required for each individual reactor before it can use MOX fuel pursuant to 10 CFR 50.91 should the MOX approach be selected.

FD328–4 **Waste Management**

Section 3.7 was added and Section 4.28 was revised to include information specific to operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

FD328–5 **General SPD EIS and NEPA Process**

In analyzing the reactors proposed to use MOX fuel, DOE has not relied on information from the original environmental reports filed with NRC. Furthermore, DOE has withheld no information regarding reactor-specific safety analyses conducted for this SPD EIS. Those analyses are discussed in Section 4.28.2.5.

FD328–6 **MOX Approach**

The data used in the SPD EIS analyses of the reactors that would use the MOX fuel were provided by DCS and independently reviewed and verified by DOE. In addition, some information was supplemented by DOE, as discussed in Section 4.28.

The remainder of this comment is addressed in response FD328–5.

FD328–7 **MOX Approach**

The MOX approach is not intended to affect the viability of nuclear power generation at any particular reactor. The reactor owner(s) does (do) not have to continue to use MOX fuel if it determines that it is uneconomical to operate

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among electrical service providers, it is plausible (even likely) that tax-dollars for the service of plutonium irradiation will keep reactors on-line that would other-wise close.

THEREFORE, a true NEPA analysis of the existing reactor MOX option MUST include the shut-down scenario. It is not only a comparison between LEU (scenario: reactor continues to operate on LEU but all surplus plutonium is immobilized) and MOX (scenario: plutonium fuel is loaded in x many specified existing-LWRs and they get costs plus some financial benefits). It must go one step further: LEU vs MOX vs no reactor (scenario: all plutonium is immobilized and the reactor closes due to market forces). 7

In any economic analysis running parallel to the NEPA analysis, there must be a consideration of the impact of federal tax-dollar protectionism of these reactors on the utility markets that they are part of. What are the long-term environmental consequences of privileging nuclear over bio-mass, wind, solar, small hydro and energy efficiency? 8

If we assume that there will be full-core MOX, which is widely assumed by the industry, and we assume a fast thru-put rate, which will be required if predictions hold on the relatively small number of reactors that will remain viable through the entire program, then the MOX program will have extensive impact on the on-site storage of irradiated fuel. The requirement of ten years wet storage for irradiated MOX will certainly force accelerated movement of LEU fuel into dry storage. Once MOX fuel is being put in dry storage, the requirement of relatively few assemblies per container will expand the overall total number of dry casks required. 9

This NEPA analysis should consider how to factor any local or state requirements and restrictions applied to on-reactor-site interim storage. For instance, the Minnesota Supreme Court ruled that cask storage is different than pool storage and is subject to State Legislature approval. Nevada has outlawed storage and Vermont and California also have restrictions in place, to name a few. There has yet to be the constitutional test over the ability of the federal programs to override state law on behalf of nuclear enterprises. This should not be forgotten.

Does DOE intend to start moving "National Security" fuel around [illegible] facilities and the communities and States that have been put at severe economic risk now, and Governors should be advised as well. Again, it is completely unsupportable that these decisions are being made with a systematic exclusion of the reactor impacts analysis at any level where it can inform this decision, and without the active inclusion of the reactor communities. 3

USE OF A GENERIC REACTOR AS PROXY FOR SITE SPECIFIC ANALYSIS

There is no such thing as a generic nuclear power reactor. Each was built in a unique place, as a unique fabrication, and many on effectively unique designs. Over the years they have become MORE unique, as can be demonstrated by the very high percentage that are now out of compliance with their own Final Safety Analysis Report and Design 10

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the reactor. If a reactor withdraws from the team, DCS must accommodate the loss of capacity. The actions to accommodate might include changing MOX fuel loadings in the remaining reactors and finding a replacement reactor. This ensures that DOE is not driving the continuation of reactor operations solely for the surplus plutonium disposition program. Furthermore, DCS would only be reimbursed for costs that are solely and exclusively related to MOX fuel irradiation. This would ensure that the taxpayers were not underwriting otherwise uneconomical electricity-generating assets.

The purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. If DOE were to choose the immobilization-only approach, these reactors are expected to continue to operate using LEU fuel for at least as long as it would otherwise take to complete the irradiation of the MOX fuel. So, while this SPD EIS does consider the immobilization-only approach (Alternatives 11 and 12) advocated by the commentor, it does not analyze the environmental impacts associated with shutting down the specific reactors proposed to use MOX fuel before the end of their useful life because DOE did not choose to use MOX fuel in those reactors.

FD328–8 **Cost Report**

Because this comment relates directly to the cost analysis report, it has been forwarded to the cost analysis team for consideration. The *Plutonium Disposition Life–Cycle Costs and Cost–Related Comment Resolution Document* (DOE/MD–0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, is available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS and Washington, D.C. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this

Bases documents. It is not at all credible to suggest that the generic analysis provided (such as it is) in the PEIS can stand for a reactor impacts analysis.
Some reactor items which are NOT generic·

Reactor design
Reactor modifications, historic and needed for MOX use
Reactor vessel chemistry
Reactor vessel and internal component aging
Irradiated Fuel storage—wet and dry status, physical, social, political
Fuel storage siting issues and authorities
So-called "Low-Level" waste disposal factors, handling, on-site issues
Transport factors
Population
Emergency planning
History of management/regulatory issues including safety factors and performance
History of emissions
Degree of extant contamination and radiological impact on humans/environment

10

This is not the complete list.

The PEIS references Appendix E for information about the waste associated with the existing-LWR MOX option. Nowhere in Appendix E is the existing-LWR option listed. There is a very cursory discussion of so-called low-level (civilian LLRW includes plutonium even in class A waste, and reactor "low-level waste" may also include sludges from primary coolant and components such as steam generators and the reactor vessel as well as reactor internals that will deliver a lethal dose if unshielded) waste, associated with the Evolutionary LWR scenario. There is no section on the existing-LWR option in Appendix E.

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References to reactor-site burial of such waste certainly require a site-specific analysis, not a generic dismissal. Disposal off site is simply given as the other option; end of analysis. There is no documentation of the array of radionuclides in so-called low-level radioactive waste (LLRW) that would result from irradiation of MOX fuel vs LEU fuel. There is no consideration of the environmental impacts of shipment to or emplacement of this MOX LLRW in any of the existing "low-level" unlined trench dump sites: Barnwell in South Carolina near SRS, Envirocare in Utah or Richland in Washington State next to Hanford.

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Needless to say, there is no analysis of the potential impacts of this plutonium fuel generated waste in any of the proposed new "low-level" dumps – of greatest interest being Ward Valley in California and Sierra Blanca in Texas because of the ongoing debates about whether these facilities may jeopardize major water supplied in the Colorado and Rio Grande rivers.

Another area of nuclear infrastructure completely ignored by the PEIS are all the nuclear services that reactor operators require. These include: nuclear laundries, incineration and

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proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The comparison of the environmental impacts of nuclear power with those of alternative energy sources is beyond the scope of this EIS.

FD328–9 **MOX Approach**

As discussed in Section 4.28, a partial, not full, MOX core is proposed. After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a potential geologic repository built in accordance with the NWPA, as amended. As described in response FD328–4, additional spent fuel would be produced, but in amounts that are not expected to dramatically change the reactors' spent fuel storage plans (e.g., no new cooling ponds would be required at the proposed reactor sites). State requirements applicable to the reactors' spent fuel storage plans would be considered during the NRC operating license amendment process pursuant to 10 CFR 50.90.

FD328–10 **MOX Approach**

Reactor-specific analyses are presented in the revised Section 4.28 and replaced the generic reactor analysis presented in the SPD Draft EIS.

FD328–11 **Waste Management**

The estimated waste generation associated with the proposed reactors is discussed in Sections 3.7 and 4.28 of this SPD EIS.

FD328–12 **Waste Management**

None of the proposed reactors plan to bury LLW on the site. LLW would continue to be disposed of at offsite commercial facilities licensed by NRC. There are differences in fission product inventories and activation products between an LEU and MOX core during a fuel cycle. The only time significant quantities of fission products could be released to the environment would be in the event of a large–scale fuel leak. In regard to normal operations, FRAGEMA's (a subsidiary of COGEMA; one of the companies chosen to operate the proposed MOX facility) experience with fabricating MOX fuel indicates a leakage rate of less than one-tenth of 1 percent. FRAGEMA alone has provided 1,253 MOX fuel assemblies, with more than 300,000 fuel rods

for commercial reactor use. There have been no failures and leaks have occurred in only 3 assemblies (a total of 4 rods). All leaks occurred as a result of debris in the reactor coolant system and occurred in 1997 or earlier. The French requirements for debris removal were changed in 1997 to alleviate these concerns. Since that time, there have been no leaks in MOX fuel rods. In the event of a leaker, fission products are released into the primary containment and are ultimately either passed through a series of resins (for liquid releases) or through a HEPA filtration system (for releases to the atmosphere) that would capture approximately 99.99 percent of the radionuclides.

The use of MOX fuel would not be expected to result in any additional LLW from refuelings because the reactors would continue to operate on the same schedule as if they were using only LEU fuel.

FD328–13 **Human Health Risk**

As indicated in the revised Section 4.28 of this SPD EIS, the use of MOX fuel would not significantly change the reactor effluents or the amounts of spent nuclear fuel and wastes generated. Therefore, wastes and emissions from reactor nuclear services would not appreciably change. As such, any changes in worker and public health risk and other environmental impacts associated with these nuclear services would likely be minor.

compaction facilities for so-called "low-level" waste, decontamination services for components that are not yet considered waste and off-site storage warehouses for all of the above. The question is very real, and as yet unanswered: what does the use of MOX fuel do to the workers, the air and water emissions, and waste streams from each of these nuclear services? How does this impact the environment and public health and safety? 13

Don't the communities that affected by these nuclear service facilities have a right to this information? This information should be factored when considering immobilization only [illegible] facilities? 3

It is ridiculous that the "criteria pollutants" for air emissions under the PEIS generic reactor analysis does not include radionuclides. No numbers are given for MOX radionuclide emissions vs LEU air emissions. It is well documented the there has been a history of fuel failure in US reactors with LEU fuel. There is evidence that European MOX fuel is more prone to cladding failure, and that Weapons Pu MOX may be even more prone to cladding failure than European MOX. The interaction of gallium and zircaloy and other factors, such as the chemistry of the core are factored into this projected incident rate. A credible analysis of the existing-LWR MOX option will need to quantify this in a reasonable and defensible manner, and include it in the projected air emissions. 14

It should be noted that the generic reactor portrayed by the PEIS is based on data that is already today 6 to 10 years old. This is not going to reflect the aging issues that are coming to the forefront of reactor hazard concerns. The difference in neutron activity associated with MOX fuel also needs to be assessed for the possible contribution to further acceleration of the aging of these components, and the consequent reduction in the margin of safety at the site. 15

Additionally, there needs to be some assessment of the institutional issues. Weapons Pu-239 fuel will be a first-time experiment. What are the human factors that are affected by changing basic features of an aging system? 16

The generic reactor analysis further does not give an assessment of the source term associated with the reactor core, the fuel pool or a dry storage unit. Again, the LEU vs MOX comparison must be made, and should be compared to the shut-down reactor possibility. 7

There is ample evidence to suggest that the use of weapons plutonium MOX in existing aging light water reactors subject to utility deregulation may not only increase the probability of a major reactor accident, but would also increase the effects of such an accident, were it to happen. No where in the NEPA process to date are these issues addressed by DOE. What is the justification for taking a major federal action with such potentially grave consequences, without the least consideration of these factors? 17

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FD328–14 **Air Quality and Noise**

Section 4.28.2.4 indicates the doses from atmospheric and liquid releases that would be expected from the continued operations of the proposed reactors with MOX fuel. A plutonium-polishing process was added as a component of the MOX facility to address concerns about the presence of gallium and other impurities in the MOX fuel. Therefore, it is not expected that the MOX fuel would be more prone to cladding failure than LEU fuel.

FD328–15 **MOX Approach**

Section 4.28 of this SPD EIS was revised to provide current reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents. The higher flux associated with MOX fuel can accelerate reactor component aging. However, this would be taken into account when developing fuel management strategy, including fuel assembly placement in the reactor core. Safety issues would also be addressed during the NRC license amendment process.

FD328–16 **MOX Approach**

Some procedural modifications relating to fresh fuel handling, reactivity control, and spent fuel management may be required for the reactors using MOX fuel. None of these modifications would be expected to result in increased environmental impacts from the continued normal operation of these reactors. These changes would likely be covered in an ongoing training program for operators and would be discussed during the NRC license amendment process.

FD328–17 **Facility Accidents**

As discussed in Section 4.28.2.5, studies by NAS have led it to the following conclusion: "no important overall adverse impact of MOX use on the accident probabilities of the LWRs involved will occur; if there are adequate reactivity and thermal margins in the fuel, as licensing review should ensure, the main remaining determinants of accident probabilities will involve factors not related to fuel composition and hence unaffected by the use of MOX rather than LEU fuel." Section 4.28 was revised to include an analysis of the potential accidents and risks associated with using MOX fuel in the proposed reactors.

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Finally, there is no justification whatsoever for taking the recommendation for a linear no-threshold model for radiation dose response from the BIER-V report and then applying an arbitrary risk reduction factor to it. Indeed, real-world health studies done by credible scientists are showing a supra-linear dose-response curve, where per-unit of dose there are more health consequences in the low-dose range. | 18

All taken together, we recommend that the current EIS be suspended and a design phase for this NEPA process be initiated so that there is no decision on the MOX option until these, and other concerns that may be raised by concerned citizens are addressed. | 2

Thank you for your consideration.

Mary Olson
NIX MOX Campaign Coordinator
Nuclear Information & Resource Service

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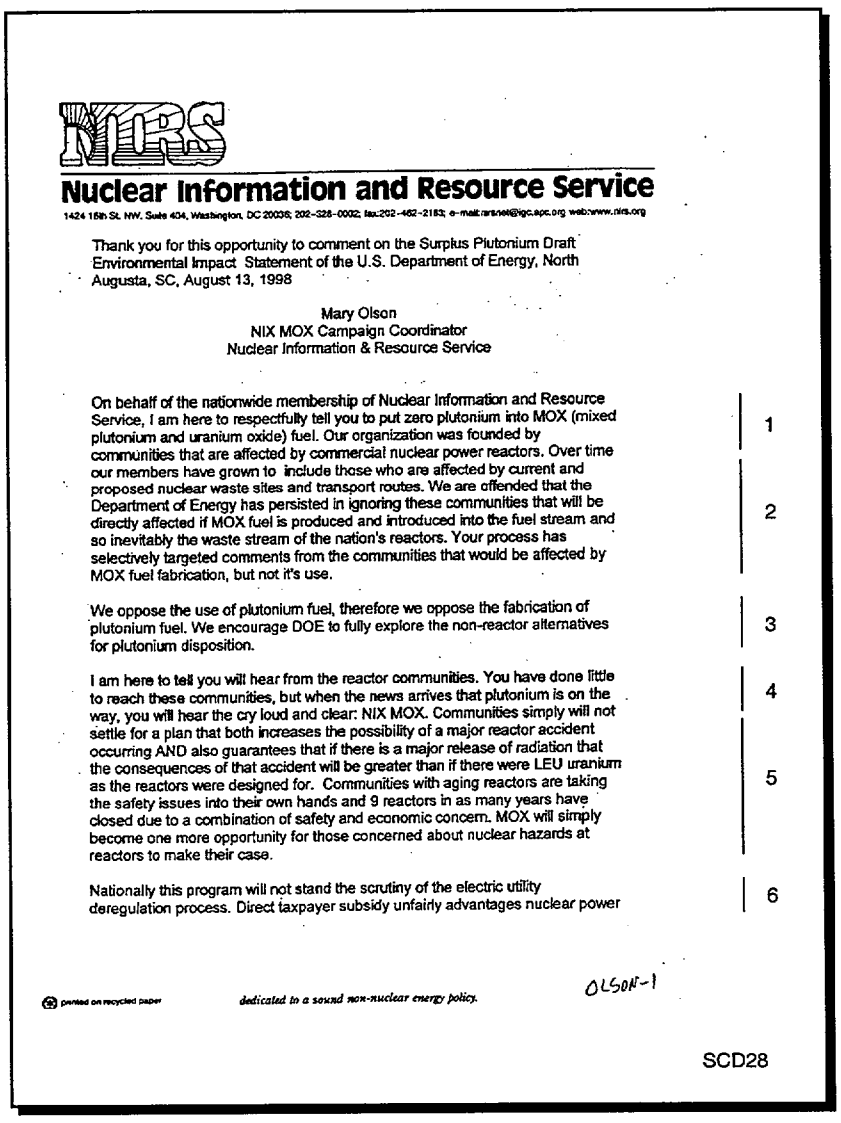
The SPD Final EIS was not issued until the proposed reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

FD328–18 **Human Health Risk**

As indicated by the commentor, the estimates of adverse health effects from radiation doses for this SPD EIS are based on the linear, no-threshold theory of radiation carcinogenesis, including the application of a dose-rate effectiveness factor (risk reduction factor). The no-threshold model postulates that all radiation doses, even those close to zero, are harmful. The approach used in this EIS, including the application of a dose-rate effectiveness factor of 2 is consistent with the recommendations made by the Committee on Interagency Radiation Research and Policy Coordination (*Use of BEIR V and UNSCEAR 1988 in Radiation Risk Assessment, Science Panel Report, No. 9*, ORAU 92/f-64, December 1992). However, it is generally acknowledged that the model results in conservative predictions of adverse health effects.



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Thank you for this opportunity to comment on the Surplus Plutonium Draft Environmental Impact Statement of the U.S. Department of Energy, North Augusta, SC, August 13, 1998

Mary Olson
NIX MOX Campaign Coordinator
Nuclear Information & Resource Service

On behalf of the nationwide membership of Nuclear Information and Resource Service, I am here to respectfully tell you to put zero plutonium into MOX (mixed plutonium and uranium oxide) fuel. Our organization was founded by communities that are affected by commercial nuclear power reactors. Over time our members have grown to include those who are affected by current and proposed nuclear waste sites and transport routes. We are offended that the Department of Energy has persisted in ignoring these communities that will be directly affected if MOX fuel is produced and introduced into the fuel stream and so inevitably the waste stream of the nation's reactors. Your process has selectively targeted comments from the communities that would be affected by MOX fuel fabrication, but not it's use. 1

We oppose the use of plutonium fuel, therefore we oppose the fabrication of plutonium fuel. We encourage DOE to fully explore the non-reactor alternatives for plutonium disposition. 2

I am here to tell you will hear from the reactor communities. You have done little to reach these communities, but when the news arrives that plutonium is on the way, you will hear the cry loud and clear: NIX MOX. Communities simply will not settle for a plan that both increases the possibility of a major reactor accident occurring AND also guarantees that if there is a major release of radiation that the consequences of that accident will be greater than if there were LEU uranium as the reactors were designed for. Communities with aging reactors are taking the safety issues into their own hands and 9 reactors in as many years have closed due to a combination of safety and economic concern. MOX will simply become one more opportunity for those concerned about nuclear hazards at reactors to make their case. 3 4 5

Nationally this program will not stand the scrutiny of the electric utility deregulation process. Direct taxpayer subsidy unfairly advantages nuclear power 6

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SCD28–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach to surplus plutonium disposition. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

SCD28–2 **General SPD EIS and NEPA Process**

At the time the SPD Draft EIS was issued for comment, no domestic, commercial reactors had been identified for the possible irradiation of MOX fuel.

The SPD Final EIS was not issued until the proposed reactors had been identified and the public had an opportunity to comment on the reactor-specific information. As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

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SCD28–3 **MOX Approach**

DOE acknowledges the commentor's support for the immobilization-only approach. DOE considers the use of a nonreactor alternative in Alternatives 11 and 12, immobilization of all the surplus plutonium.

SCD28–4 **MOX Approach**

This comment is addressed in response SCD28–2.

SCD28–5 **Facility Accidents**

Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

SCD28–6 **MOX Approach**

Use of MOX fuel in commercial reactors is not proposed in order to subsidize the commercial nuclear power industry in the event of deregulation. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

reactors over other forms of electricity. Ultimately, when the consumer decides, DOE may have to pay a lot to keep MOX reactors on line. 6

When it comes to transportation, MOX will necessarily involve more transportation steps than any other alternative. Our experience is that communities are extremely unhappy to hear about nuclear shipments on their roads and rails. The Department's own research has shown that this opposition runs very deep. More than 20 % of those queried (in a social science survey done by the University of New Mexico for DOE) said that they thought that civil disobedience (breaking laws) was justified to stop nuclear shipments through heir town, and 80% said that they would vote against any elected official who supported such a plan, as well as give money to groups that would help fight it. People feel very strongly about this, perhaps Vice President Gore should listen! 7

One of the most disturbing aspects of the DEIS that we are here to comment on, aside from the obvious commitment to taking the MOX option, is the plan to ship plutonium in the powder or oxide form. We would oppose this idea if it were just a few miles, but the current consideration of shipping it across 6 states is ridiculous. Not only is it a enormous security risk, if there were some form of catastrophic disruption of such a shipment, the containment of the plutonium oxide would present a much greater challenge than other forms of the material. The potential dispersal by air (wind or fire plume) or run-off would place countless human generations at greater risk of cancer, birth defects and other health problems, as well as affecting other species adversely. We firmly believe that the U.S. DOE has no right whatsoever to take risks, the consequences of which could result in nuclear devastation, particularly in the name of reducing nuclear dangers. 8

We are further alarmed to realize that recent changes in Nuclear Regulatory Commission requirements for plutonium shipping containers no longer require a double walled vessel. DOE should not ship plutonium oxide in bulk at all and any other type of plutonium shipment, the Department should voluntarily use a double (or more) walled container. What is the excuse for increasing risk? This is an inherently hazardous activity, which long term consequences. 9

There would be many advantages to the plutonium disposition mission if the MOX program were canceled. Here is a brief overview along with our recommendations for how to proceed with a successful disposition for this plutonium which we all agree is far better removed from the weapons inventory.

Plutonium "polishing" would be minimal for most immobilization methods. An aqueous "pre-processing" step, much like the reprocessing step that separated the plutonium in the first place could be avoided. Reprocessing is known to produce some of the most dangerous and difficult to contain wastes in the history of the nuclear age. There is no reason for the DOE to compound this disaster as 10

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SCD28–7 **Transportation**

DOE acknowledges the commentor's concern about public reaction to the transportation of nuclear material. The hybrid alternatives in this SPD EIS would require more transportation than the immobilization-only alternatives as shown in Section 2.18 and Appendix L.

SCD28–8 **Transportation**

Table L-6 summarizes the analysis of risks attributed to alternatives that involve transportation of nuclear materials. The Type B packages that would be used to transport radioactive material are designed to withstand test conditions described in Appendix L.3.1.6, which represent extremely severe accidents (estimated to be more severe than over 99 percent of all accidents that could occur). Type B packages have been used for years to ship radioactive materials in the United States and around the world. To date, no Type B package has ever been punctured or has had its contents released, even in actual highway accidents. As described in Appendix L.3.1.6, the Type B package is extremely robust and provides a high degree of confidence that even in extremely severe accidents, the integrity of the package would be maintained with essentially no loss of the radioactive contents or serious impairment of the shielding capability. As discussed in Section 2.18, no traffic fatalities from nonradiological accidents or LCFs from radiological exposures or vehicle emissions are expected. DOE's decision will be based on analysis in this SPD EIS and will include consideration of public comments.

SCD28–9 **Transportation**

Appendix L contains information on the shipping containers that would be used to transport plutonium. Transportation of the plutonium material would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. Under NRC regulations (10 CFR 71), plutonium in excess of 20 Ci per package must be packaged in a separate inner container placed within an outer container (i.e., double-walled system). This requirement would apply to DOE shipments of surplus plutonium.

SCD28–10 **Alternatives**

DOE is not considering reprocessing any surplus plutonium from spent nuclear fuel; plutonium polishing is not reprocessing and would be a relatively small component of the MOX facility. As described in the Waste Management sections in Chapter 4 of Volume I, the wastes generated would not have a major impact on waste management resources at any of the candidate sites. If Pantex were chosen as the site for any of the proposed surplus plutonium disposition facilities, additional LLW and TRU waste capabilities may be required, as discussed in the appropriate sections in Chapter 4 and Appendix H.3. DOE also appreciates the commentor's concern regarding environmental consequences of surplus plutonium disposition activities. As described in Chapter 4 and summarized in Section 2.18, potential impacts to the public from any of the proposed activities during routine operations at any of the candidate sites would likely be minor. To avoid contamination that has occurred in the past at some DOE sites, DOE would design, build, and operate the proposed in compliance with today's environmental, safety, and health requirements.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons–Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site–specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life–Cycle Costs and Cost–Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life–cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe–md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington D.C.

Commercial reactors currently have armed security forces, primarily to protect against perimeter intrusion. There would be increased security for the receipt and storage of fresh MOX fuel, as compared with that for fresh LEU fuel, for additional vigilance inside the perimeter. However, the increased security surveillance would be a small increment to the plant's existing security plan.

The remainder of this comment is addressed in responses SCD28–7, SCD28–8, and SCD28–9.

is already evident in the environmental devastation of nuclear pollution here at and around Savannah River Site and the Hanford Reservation.

Fewer facilities would have to be built, reducing the coat as well as the inevitable difficulty associated with approvals, licenses and such.

Plutonium would travel less. Nuclear Information and Resource Service is not taking a position on where the immobilization program should be pursued, or even if it should be done in one place. Nonetheless, it is pretty obvious that weapons-usable material would be transported less and spend more time within the boundaries of the DOE complex than in the MOX option. Before it is fissioned in the reactor core MOX fuel is still weapon's usable, requiring only reprocessing technology, not enrichment. Thus it would require national security level security in transport. 10

Further, there would have to be the same level of security instituted at reactor sites. We object to DOE endowing private security services in our communities with a shoot-to-kill authority.

Obtaining reactor license amendments for this new fuel type will offer the opportunity to review the reactor safety systems and also t he aging issues inherent in the long-term exposure to he heat and radiation of LEU uranium fuel. The increased capacity of plutonium fuel to age components, particularly in the full-MOX cores that the Department seems to be assuming in the DEIS, will provide a wonderful opportunity to target reactors for early closure. 11

On the waste front, immobilization also offers the Department some relief, since the storage of an immobilization end-product can be designed from the ground-up to be appropriate for this new waste type. In contrast, irradiated MOX fuel in the hands of nuclear utilities that are already facing challenges of waste storage is a very different picture. Over-filled fuel pools, many already strained far beyond their original design capacity will not be easier to manage with the greater thermal and criticality factors, as well as cladding stress issues that MOX will introduce. If dry storage is in use at the time that MOX waste would be moving out of the fuel pools, attempted use of current cask designs may also result in problems that will be the Department's to deal with at some point. What is going to become of all that damaged fuel if we ever do have a repository? 12

All this spells more expense, more regulatory and administrative combat with local communities and ultimately if great care is not take and more money is not spent, far greater environmental impact than a system that is designed specifically for the unique aspects of plutonium wastes.

The list of all the reasons MOX is a bad idea goes on, and we will supplement these oral comments with further written comments. The bottom line is that MOX will cost a tremendous amount of money to do at all, and then it will cost even

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SCD28–11 **NRC Licensing**

The higher flux associated with MOX fuel can accelerate reactor component aging. However, this is taken into account when developing fuel management strategy, including fuel assembly placement in the reactor core. The proposed action anticipates partial, not full, MOX cores in the selected reactors. This issue, along with other issues important to safety, would be addressed during the NRC license amendment process.

SCD28–12 **Waste Management**

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository. MOX fuel would be handled the same as other fuels with regard to pools and dry casks. MOX fuel assemblies would be the same size and shape as the LEU fuel for the specific reactor. The only difference would be the additional decay heat from the higher actinides, especially americium, in the MOX fuel. Dry casks are designed and certified for a maximum heat load, so the additional decay heat would contribute to the total heat load and not require any redesign. The additional heat load may result in less spent fuel stored per cask. A more likely option is that the MOX fuel would be selectively packaged with cooler LEU fuel to obviate any overall heat output restriction. As a result, DOE does not expect any changes in the cask design. An amendment to the Certificate of Compliance for the cask, and the reactor operating license, would be needed to include storage of MOX fuel assemblies.

The remainder of this comment about cost is addressed in response SCD28–10.

NUCLEAR INFORMATION AND RESOURCE SERVICE
MARY OLSON
PAGE 6 of 6

more to deal with the legal and administrative aspects of trying to oppose the people you serve, and then it will cost even more than that, since the probability of a real problem at some point are not our imagination, but rather based on 50 years of experience with the Department and three decades of suffering reactor operation. 12

Recommendations for responsible immobilization of surplus weapons plutonium..

The Department must insure a zero release policy for every site where plutonium is handled. There is no acceptable amount of this material in the environment, in our bodies, in our food, in our air in our water.

This means that there has to be a plan for ALL the waste at every step to insure that it is tracked into 100% containment, and that there is no idea that it is OK to vent. 13

The Department should insure that state of the art monitoring will instituted -- with redundancy to insure that this policy is in-force at all times. One of the monitoring systems should be administered completely in the control of the local community.

This means that there is a commitment to zero dose to the public in this process.

The Department should institute a low as achievable dose policy for workers. This is NOT ALARA – remove the word "reasonably" before achievable. Cancel MOX and spend the money you would save on meeting these goals, and there will be far greater acceptance of plutonium disposition mission in whatever community you approach to host this vital contribution to the welfare of our planet.

Equally important to protecting the people and the environment from DOE's plutonium handling is the security of this vulnerable material. We recognize that steps must be taken to insure that this material is not diverted. At the same time this must not be at the expense of an open and accessible information base to insure that environment and safety commitments are being met. 14

Thank you.

OLSON-4

SCD28

SCD28–13 **DOE Policy**

The health and safety of workers and the public is a priority of the surplus plutonium disposition program, regardless of which approach is chosen. Operation of the proposed surplus plutonium disposition facilities would comply with applicable Federal, State, and local laws and regulations governing radiological and hazardous chemical releases. Within these limits, DOE believes that the level of contamination should be kept as low as is reasonably achievable, so that the benefit of reducing the already low level of contamination would warrant the additional cost of that reduction. Chapter 5 summarizes the applicable environmental statutes, regulations, and permits that cover emissions, waste, and ALARA standards.

SCD28–14 **DOE Policy**

DOE acknowledges the commentor's concern about the security of plutonium materials. The proposed DOE surplus plutonium disposition facilities are all at locations where plutonium would have the levels of protection and control required by applicable DOE safeguards and security directives. Safeguards and security programs would be integrated programs of physical protection, information security, nuclear material control and accountability, and personnel assurance. Security for the proposed facilities would be implemented commensurate with the usability of the material in a nuclear weapon or improvised nuclear device. Physical barriers; access control systems; detection and alarm systems; procedures, including the two-person rule (which requires at least two people to be present when working with special nuclear materials in the facility); and personnel security measures, including security clearance investigations and access authorization levels, would be used to ensure that special nuclear materials stored and processed inside are adequately protected. Closed-circuit television, intrusion detection, motion detection, and other automated materials monitoring methods would be employed. Furthermore, the physical protection, safeguards, and security for the MOX facility and domestic, commercial reactors would be in compliance with NRC regulations. International inspections of the proposed facilities would be conducted strictly by procedure so as not to compromise security. None of the policies, programs, or procedures implemented for safeguarding this material would inhibit compliance with safety or environmental regulations.

Sept 10, 1998

U.S DOE, Office of Fissile Materials Disposition: 1952 Palisades Dr.
Comment on SPD EIS (DOE/EIS-0283-D) Appleton, WI
54915

I am pleased to see this effort with
Russia to reduce the threat of nuclear proliferation. I certainly 1
hope an agreement on this is being made. We need to set an
international example in this "gift of time" we now have.

I strongly advocate immobilizing all of the
surplus plutonium and not using any of it as MOX in commercial
reactors. I think your SPD EIS does not deal with what
is "really happening" with spent fuel at commercial reactors and
paints a rosy picture of mox fuel being tested by lead
assemblies, and NRC approved, and everything going fine. If
you look at what has happened with spent fuel at commercial
reactors in relation to the VSC-24 and Yuckons dry cask storage
in the past 10 years, it is very clear that Commercial vendors
and commercial utilities (as licensees) have been very lax
in the way things were handled — and the NRC had its
share of mistakes too. There were so many nonconformances
and violations and fines given out, that in the end Vectra
and Sierra Nuclear both were on the verge of bankruptcy
and not allowed to fabricate casks — which means reactors 2
were stuck with full fuel pools and no casks to load spent
fuel into. The explosion of a VSC-24 at our St. Lucie
reactor was a real black eye to the whole system —
vendors, utilities, and the NRC. Now you ask us to put
MOX fuel in their hands? I think not. We have enough
problems already.

Commercial reactors are aging; steam generators are
corroding, brittleness is a problem, pools are aging, more
and more safety factors are coming to light. How

MD178

MD178–1 **Nonproliferation**

The United States and Russia recently made progress in the management and disposition of plutonium. In late July 1998, Vice President Gore and Russian Prime Minister Sergei Kiriyenko signed a 5-year agreement to provide the scientific and technical basis for decisions concerning how surplus plutonium will be managed. This agreement enables the two countries to explore mutually acceptable strategies for safeguarding and dispositioning surplus plutonium. During the first week of September 1998, Presidents Clinton and Yeltsin held a Moscow summit and signed a statement of principles with the intention of removing approximately 50 t (55 tons) of plutonium from each country's stockpile. The United States does not currently plan to implement a unilateral program; however, it will retain the option to begin certain surplus plutonium disposition activities in order to encourage the Russians and set an international example.

MD178–2 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach and support of the immobilization approach. In choosing reactors to use the MOX fuel, DOE looked at the criteria of reactor age. DOE chose only reactors whose planned operating life extended through the full life cycle of the surplus plutonium disposition program. Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel. The spent fuel generated from the use of the MOX fuel in the commercial reactors would be stored at the reactors in accordance with all applicable NRC regulations and shipped to and disposed of at a potential geologic repository as would other commercial reactor spent fuel. Transportation of commercial spent fuel to a potential geologic repository is analyzed in the *Draft 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* (DOE/EIS-0250D, July 1999). As far as reactor modifications and liability, the commercial reactor licensee is responsible to maintain and modify the reactor as needed.

2

is no time to put more stress on the public system by promoting the use of military waste in commercial reactors. The military and public were always to be separate on this. If you mix this now, it will only lead to future troubles. I see it as a cheap bailout for the nuclear industry which is facing huge problems and costs with dry cask storage and decommissioning woes. They'd love to get some cheap MOX fuel and have DOE (the public as tax payers) liable for any problems. Once this MOX is spent fuel, then what??? Will DOE pay for dry casks for it and be responsible? If reactors need changes, or fuel handling at reactor pools require changes, or casks need design changes, is DOE responsible for costs and liabilities or what? You have to look at the details here. The public could get saddled with a huge bill. Let the commercial reactors pay for their own fuel, and be responsible for their own problems. Don't get the military and DOE interwoven in utility spent fuel problems. It will be a mess! 2

Question:

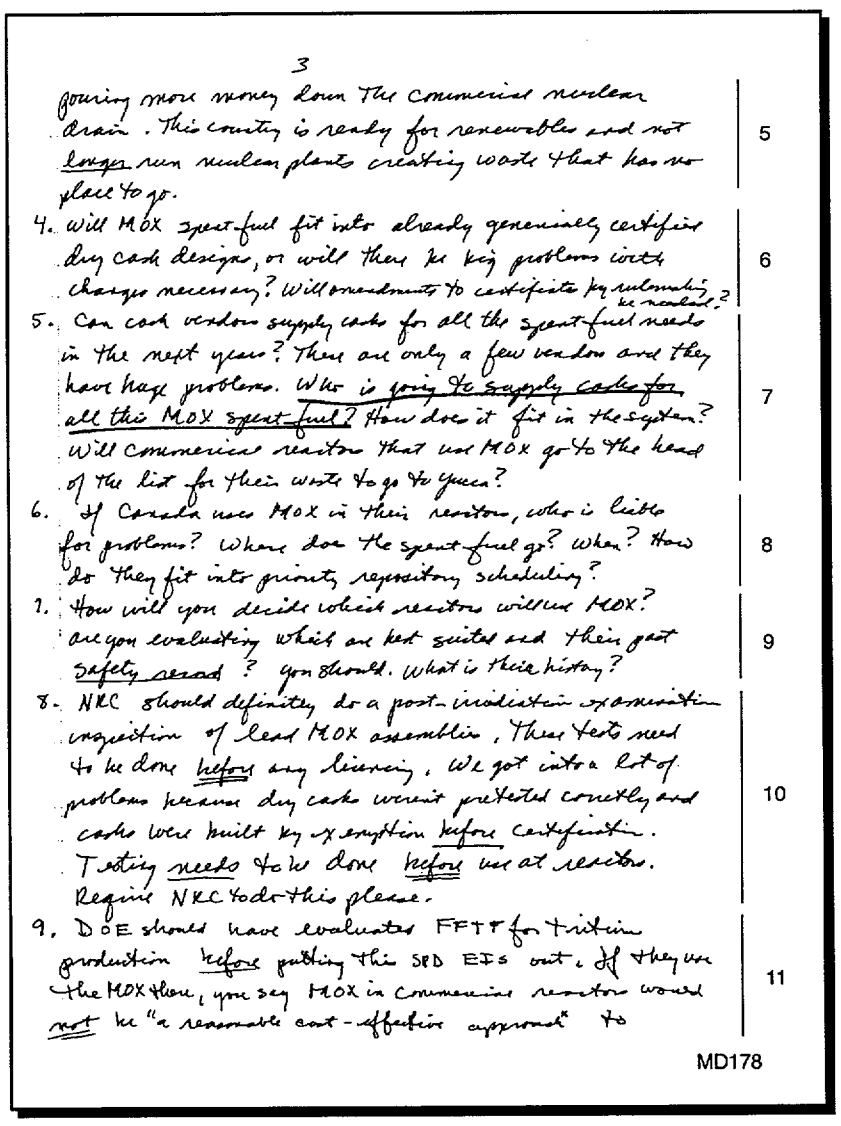
1. If Yucca Mt does not open, will DOE be responsible for MOX in dry cask storage at reactors? Who pays for problems? 3
2. If Yucca Mt. does open, will MOX spent fuel take priority ahead of other commercial spent fuel to go in first? How will other commercial reactors feel about this? 4
3. The capacity of Yucca is too small for total waste now, where will other repositories be sited? How many will we need, if MOX fuel promotes relicensing of aging plants so that they run longer on this cheap subsidy? We should be closing these plants now, not 5

MD178

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

MD178–3 **Repositories**

This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for all immobilized plutonium and MOX spent fuel. As directed by the U.S. Congress through the NWPA, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for HLW and spent fuel. DOE has prepared a separate EIS, *Draft 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* (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geologic repository. The characteristics of the MOX spent fuel would be similar to those of normal spent LEU fuel. As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository. Following irradiation, the MOX fuel would be removed from the reactor and managed at the reactor site as spent fuel in accordance with the site's normal spent-fuel-handling procedures. Reactors would require NRC operating license amendments and, as part of that process, safety and operational arrangements (e.g., spent fuel management plans) would be evaluated. In any event, it would be the licensee's responsibility to ensure that spent fuels, MOX or LEU, were safely managed.



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growing more money down the commercial nuclear drain. This country is ready for renewables and not longer run nuclear plants creating waste that has no place to go. 5

4. Will MOX spent-fuel fit into already generically certified dry cask designs, or will there be big problems with changes necessary? Will amendments to certificate for unloading be needed? 6

5. Can cask vendors supply casks for all the spent-fuel needs in the next years? There are only a few vendors and they have huge problems. Who is going to supply casks for all this MOX spent-fuel? How does it fit in the system? Will commercial reactors that use MOX go to the head of the list for their waste to go to Yucca? 7

6. If Canada uses MOX in their reactors, who is liable for problems? Where does the spent-fuel go? When? How do they fit into priority repository scheduling? 8

7. How will you decide which reactors will use MOX? Are you evaluating which are best suited and their past safety record? You should. What is their history? 9

8. NRC should definitely do a post-irradiation examination inspection of lead MOX assemblies. These tests need to be done before any licencing. We got into a lot of problems because dry casks weren't pretested correctly and casks were built by exemption before certification. Testing needs to be done before use at reactors. Require NRC to do this please. 10

9. DOE should have evaluated FFTF for tritium production before putting this SPD EIS out. If they use the MOX then, you say MOX in commercial reactors would not be "a reasonable cost-effective approach" to 11

MD178

MD178–4 **Repositories**

The order of acceptance of the spent fuel for final disposition in the potential geologic repository would be in accordance with agreements made between DOE and the licensee and in compliance with NEPA.

MD178–5 **Repositories**

This comment is addressed in responses MD178–2 and MD178–3.

MD178–6 **Waste Management**

MOX fuel would be handled the same as other fuels with regard to pools and dry casks. MOX fuel assemblies would be the same size and shape as the LEU fuel for the specific reactor. The only difference would be the additional decay heat from the higher actinides, especially americium, in the MOX fuel. Dry casks are designed and certified for a maximum heat load, so the additional decay heat would contribute to the total heat load and not require any redesign. The additional heat load may result in less spent fuel stored per cask. A more likely option is that the MOX fuel would be selectively packaged with cooler LEU fuel to obviate any overall heat output restriction. As a result, DOE does not expect any changes in the cask design. An amendment to the Certificate of Compliance for the cask, and the reactor operating license, would be needed to include storage of MOX fuel assemblies.

MD178–7 **Waste Management**

DOE acknowledges the commentor's concern that dry cask storage at the reactor sites may be limited by the availability of casks. Little or no additional wet pool or dry cask storage space would be needed for the MOX spent fuel generated at the selected commercial reactor sites. DOE does not expect that MOX spent fuel would get preferential treatment over other reactor spent fuel for disposal in a potential geologic repository.

MD178–8 **Parallex EA**

In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among

Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at http://www.doe-md.com. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russian's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

MD178–9 **NRC Licensing**

As part of the procurement process, bidders were asked to provide environmental information to support their proposals. This information was analyzed in an Environmental Critique prepared for the DOE source selection board prior to award of the MOX fuel fabrication and irradiation services contract. DOE then prepared an Environmental Synopsis on the basis of the Environmental Critique, which was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively).

As discussed in Section 4.28.2.5, studies by NAS have led it to the following conclusion: "no important overall adverse impact of MOX use on the accident probabilities of the LWRs involved will occur; if there are adequate reactivity and thermal margins in the fuel, as licensing review should ensure, the main remaining determinants of accident probabilities will involve factors not related to fuel composition and hence unaffected by the use of MOX rather than

LEU fuel." Further, as discussed in the revised Section 4.28, the most recent systematic assessment of licensee performance conducted in 1997 on the reactors selected to irradiate MOX fuel resulted in ratings ranging from good to superior with respect to operations, maintenance, engineering, and plant support.

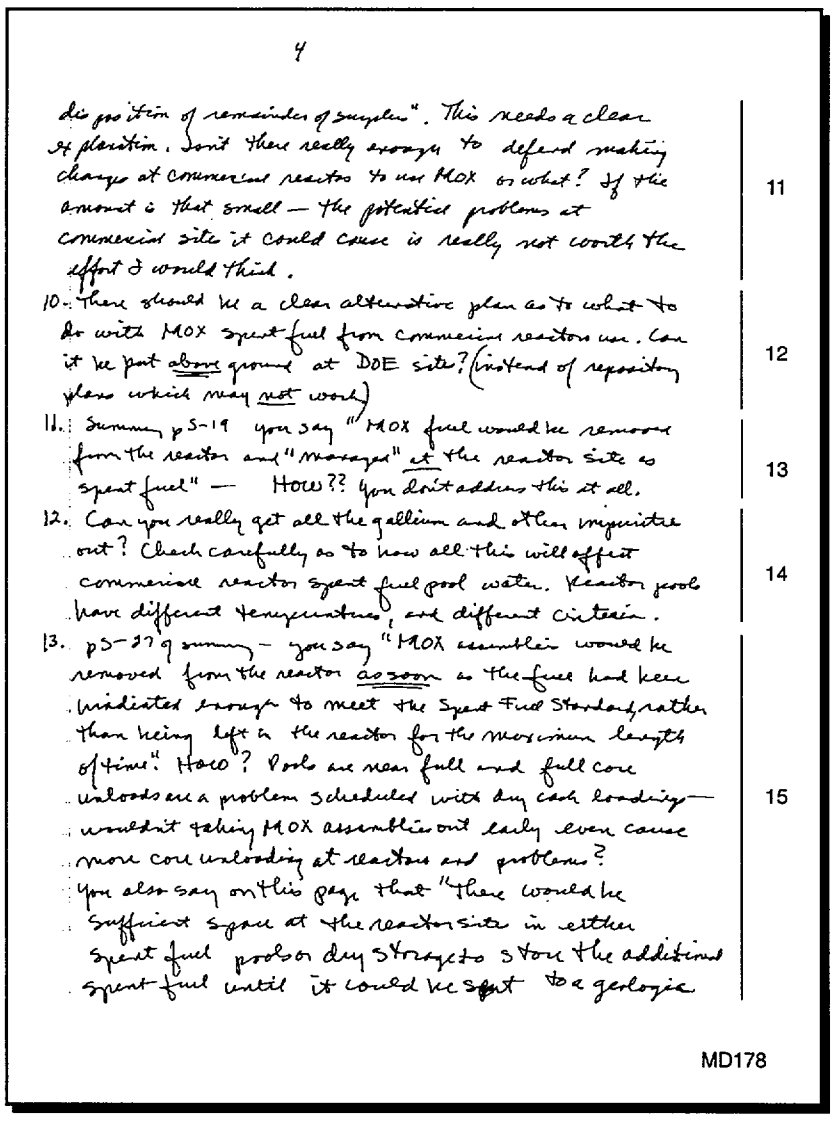
An NRC reactor operating license amendment will be required for each individual reactor before it can irradiate the MOX fuel. The regulatory process will be the same as for any 10 CFR 50 operating license amendment request in accordance with 10 CFR 50.90. The reactor licensee will initiate the process by submitting an amendment request. Safety and environmental analyses commensurate with the level of potential impact are submitted in support of, and as part of, the amendment to NRC. NRC reviews the submitted information and denies or approves the request.

MD178–10 **Lead Assemblies**

In consultation with DCS, the team selected to fabricate and irradiate the MOX fuel, DOE believes that limited lead assembly fabrication and postirradiation examination would be required. This SPD EIS analyzes the potential environmental impacts of the fabrication of lead assemblies and their postirradiation examination. Domestic, commercial reactors operate under NRC license; therefore, the use of MOX fuel lead assemblies would be subject to review and regulation by NRC prior to it being used in any of the proposed reactors.

MD178–11 **DOE Policy**

DOE acknowledges the commentor's concern regarding the use of MOX fuel in FFTF to produce tritium. As discussed in Appendix D of the SPD Draft EIS, DOE did consider FFTF in the *Storage and Disposition PEIS*, but it was eliminated from further study because it was in a standby status and it could not satisfy the criterion of completing the disposition mission within 25 years using the historic FFTF plutonium enrichment specifications. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium. As discussed in Section 1.7.4, Appendix D was deleted from this SPD EIS because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source.



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disposition of remainder of samples". This needs a clear explanation. Isn't there really enough to defend making changes at commercial reactors to use MOX or what? If the amount is that small — the potential problems at commercial site it could cause is really not worth the effort I would think. 11

10. There should be a clear alternative plan as to what to do with MOX spent fuel from commercial reactors use. Can it be put above ground at DOE site? (instead of repository plans which may not work) 12

11. Summary p S-19 you say "MOX fuel would be removed from the reactor and "managed" at the reactor site as spent fuel" — HOW?? You don't address this at all. 13

12. Can you really get all the gallium and other impurities out? Check carefully as to how all this will affect commercial reactor spent fuel pool water. Reactor pools have different temperatures, and different criteria. 14

13. p S-27 of summary — you say "MOX assemblies would be removed from the reactor as soon as the fuel had been irradiated enough to meet the Spent Fuel Standard rather than being left in the reactor for the maximum length of time". How? Pools are near full and full core unloads are a problem scheduled with dry cask loading — wouldn't taking MOX assemblies out early even cause more core unloading at reactors and problems? You also say on this page that "there would be sufficient space at the reactor site in either spent fuel pools or dry storage to store the additional spent fuel until it could be sent to a geologic 15

MD178

MD178–12 **Repositories**

This comment is addressed in response MD178–3.

MD178–13 **Repositories**

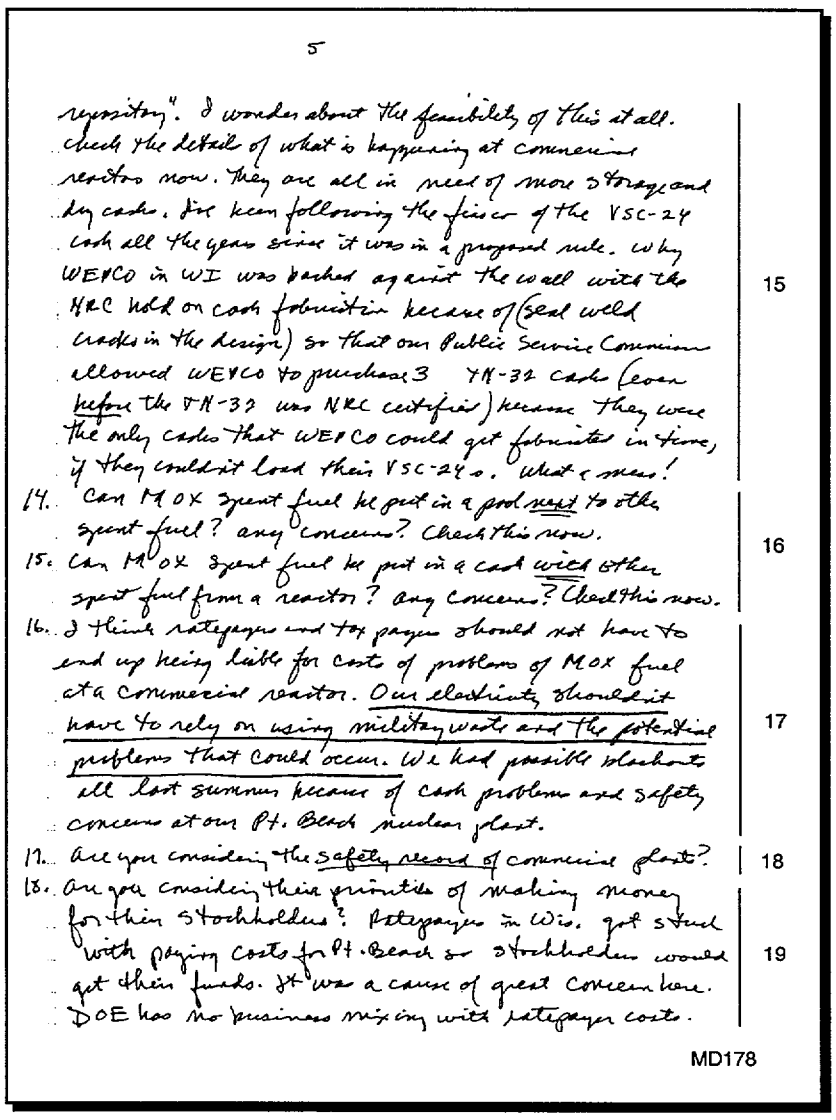
This comment is addressed in response MD178–3.

MD178–14 **Plutonium Polishing and Aqueous Process**

At the time DOE issued the SPD Draft EIS, it believed the gallium content in the plutonium dioxide feed specifications for MOX fuel could be reached using the dry, thermal gallium removal method included in the pit conversion process. However, in response to public interest on this topic and to ensure adequate NEPA review in the event that the gallium specification could not be met with the thermal process, an evaluation of the potential environmental impacts of including a small-scale aqueous process (referred to as plutonium polishing) as part of either the pit conversion or MOX facilities was presented in Appendix N of the SPD Draft EIS. On the basis of public comments received on the SPD Draft EIS, and the analysis performed as part of the MOX procurement, DOE has included plutonium polishing as a component of the MOX facility to ensure adequate impurity removal from the plutonium dioxide. Appendix N was deleted from the SPD Final EIS, and the impacts discussed therein were added to the impacts sections presented for the MOX facility in Chapter 4 of Volume I. Section 2.18.3 was also revised to include the impacts associated with plutonium polishing. Therefore, it is not expected that there would be gallium or other impurities present in sufficient quantity to adversely affect the reactor pools. However, information would likely be needed by NRC during the reactor license amendment process on the proposed plan for storing MOX spent fuel at the selected reactor sites.

MD178–15 **Waste Management**

DOE acknowledges the commentor's concern about core unloading and cask storage. The statement quoted by the commentor that MOX assemblies would be removed from the reactor as soon as the fuel had been irradiated was originally stated in the *Storage and Disposition PEIS* to demonstrate that there would be sufficient spent fuel storage capacity under the MOX approach. Actual planned operations, however, include refueling on the



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repository". I wonder about the feasibility of this at all. check the details of what is happening at commercial reactors now. They are all in need of more storage and dry casks. Just keep following the fiasco of the VSC-24 cask all the years since it was in a proposed rule. Why WEPCO in WI was backed against the wall with the NRC hold on cask fabrication because of (seal weld cracks in the design) so that our Public Service Commission allowed WEPCO to purchase 3 VA-32 casks (even before the VA-32 was NRC certified) because they were the only casks that WEPCO could get fabricated in time, if they could at least their VSC-24's. What a mess!

14. Can MOX spent fuel be put in a pool next to other spent fuel? any concerns? Check this now.

15. Can MOX spent fuel be put in a cask with other spent fuel from a reactor? any concerns? Check this now.

16. I think ratepayers and tax payers should not have to end up being liable for costs of problems of MOX fuel at a commercial reactor. Our electricity should it have to rely on using military waste and the potential problems that could occur. We had possible blackouts all last summer because of cash problems and safety concerns at our Pt. Beach nuclear plant.

17. Are you considering the safety record of commercial plants?

18. Are you considering their principle of making money for their stockholders? Ratepayers in Wis. got stuck with paying costs for Pt. Beach so stockholders would get their funds. It was a cause of great concern here. DOE has no business mixing with ratepayer costs.

MD178

same schedule that is currently used for LEU fuel with no modification to permit the early withdrawal of MOX fuel.

MD178–16 **Waste Management**

This comment is addressed in response MD178–6.

MD178–17 **MOX RFP**

DOE agrees that it should not be involved in the business of generating electricity or delivering electricity to customers. DOE's *RFP for MOX Fuel Fabrication and Reactor Irradiation Services* (May 1998) ensures that these businesses reside solely in the domain of the utilities without any DOE involvement.

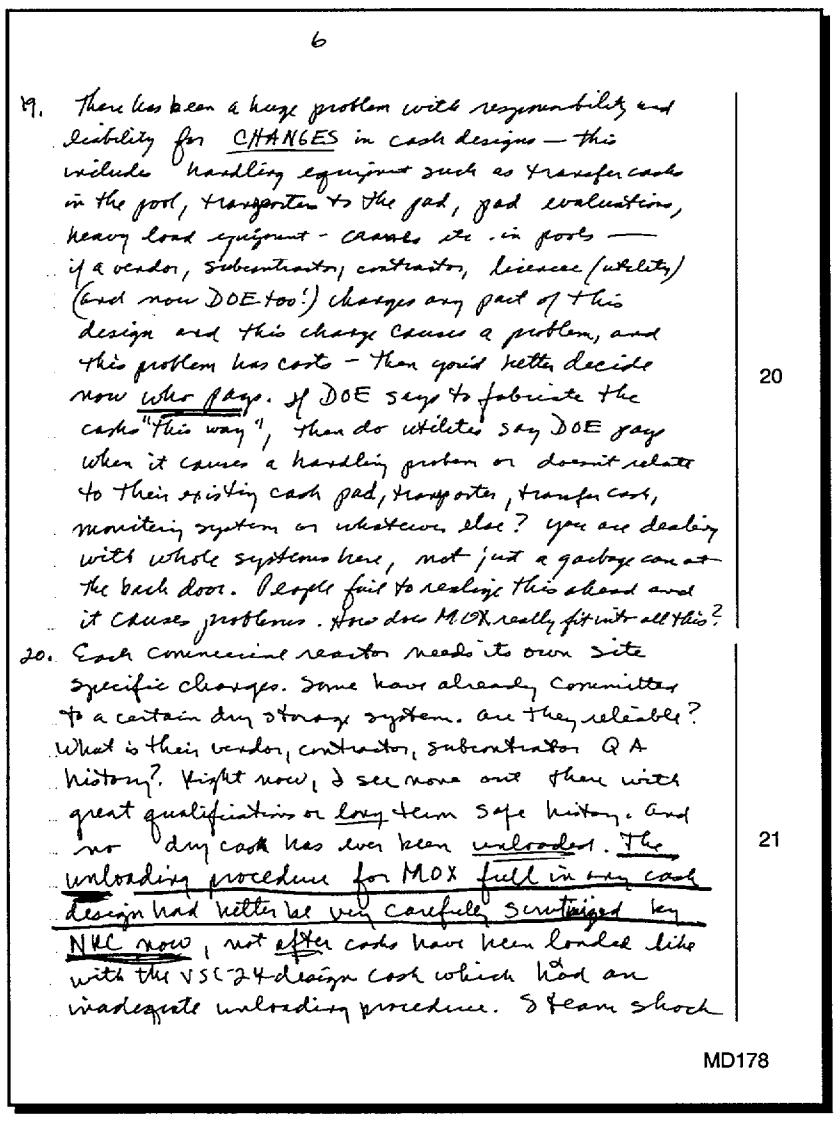
MD178–18 **MOX RFP**

The operating records of the selected reactors was considered by DOE prior to awarding the contract for MOX fuel fabrication and irradiation services.

The remainder of this comment is addressed in response MD178–9.

MD178–19 **MOX RFP**

DOE agrees that it should not be involved in ratepayers costs; the RFP was written to ensure that the generation and delivery of electricity to customers be performed solely by the utility with no DOE involvement. The intention is for the use of MOX fuel to be revenue neutral for utilities. Commercial reactors in the United States are capable of safely burning MOX fuel. DOE believes that the cost to make existing reactors suitable for using MOX fuel would be relatively low and would be limited to some analyses and operating license amendments.



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19. There has been a huge problem with responsibility and liability for CHANGES in cask designs — this includes handling equipment such as transfer casks in the pool, transporters to the pad, pad evaluations, heavy load equipment - cranes etc. in pools — if a vendor, subcontractor, contractor, licensee (utility) (and now DOE too!) changes any part of this design and this change causes a problem, and this problem has costs - then you'd better decide now who pays. If DOE says to fabricate the casks "this way", then do utilities say DOE pays when it causes a handling problem or doesn't relate to their existing cask pad, transporter, transfer cask, monitoring system or whatever else? You are dealing with whole systems here, not just a garbage can at the back door. People fail to realize this ahead and it causes problems. How does MOX really fit into all this?

20. Each commencing reactor needs its own site specific changes. Some have already committed to a certain dry storage system. Are they reliable? What is their vendor, contractor, subcontractor Q A history? Right now, I see none out there with great qualifications or long term safe history. And no dry cask has ever been unloaded. The unloading procedure for MOX fuel in any cask design had better be very carefully scrutinized by NRC now, not after casks have been loaded like with the VSC-24 design cask which had an inadequate unloading procedure. Steam shock

MD178

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21

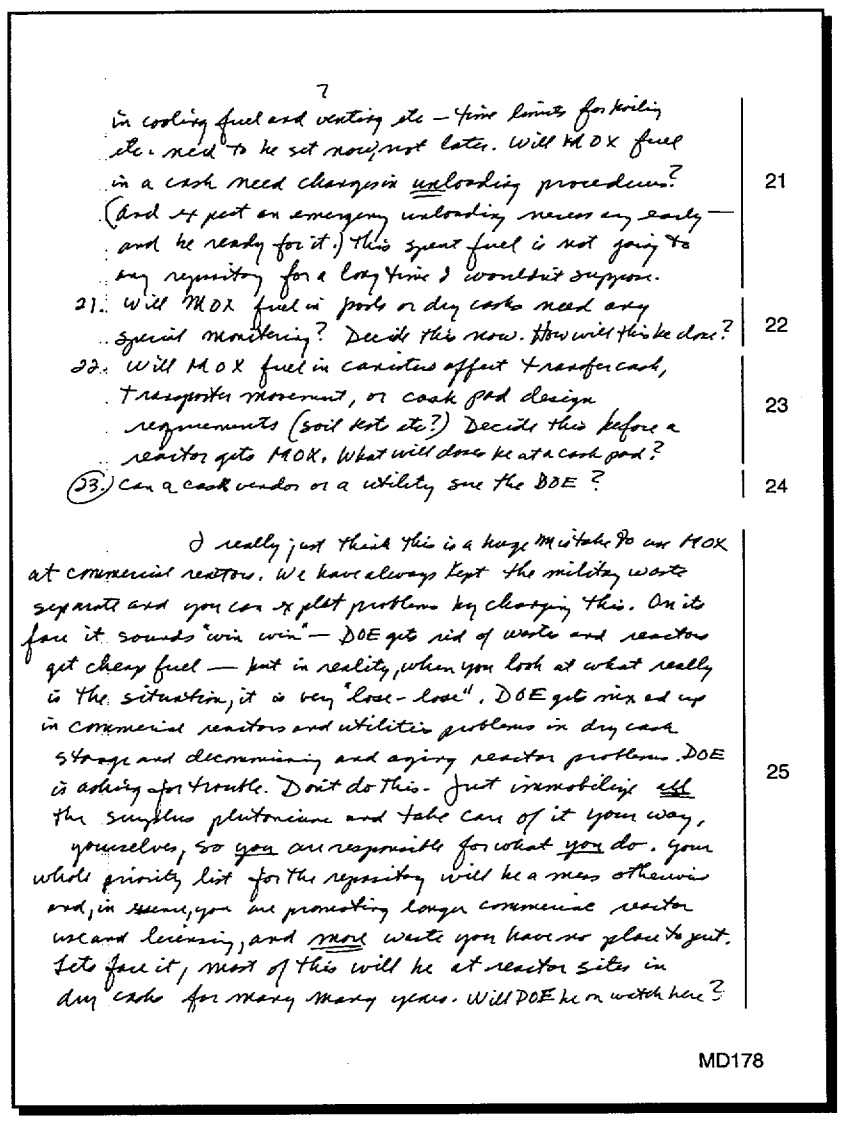
MD178–20 **Waste Management**

This comment is addressed in response MD178–6.

MD178–21 **Waste Management**

DOE acknowledges the commentor's concerns regarding dry storage reliability, vendors, and quality assurance. NRC will review these issues as part of the reactor operating license amendment process. These are utility operational responsibilities that would have to be addressed regardless of fuel type.

The remainder of this comment is addressed in response MD178–6.



MD178–22 **Waste Management**

MOX fuel would be handled the same as other fuels with regard to pools and dry casks, and there is no need for special monitoring.

MD178–23 **Waste Management**

Dry casks are designed and certified for a maximum heat load; therefore, doses at the cask pad would be expected to be same for MOX fuel as for other fuels.

MD178–24 **Waste Management**

DOE cannot be sued by a cask vendor or a utility in the event a cask fails due to the inclusion of MOX fuel. The reactor licensee would be responsible for safely storing MOX spent fuel and must make all the calculations to show that this can be done properly before the fuel is put into the cask. Cask operations would be subject to the NRC operating license amendment process.

MD178–25 **DOE Policy**

Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The remainder of this comment is addressed in responses MD178–2 and MD178–3.

SHILLINGLAW, MRS. JOHN
PAGE 10 OF 27

8.

24. The gallium problem is a big concern. If it chemically attacks zirconium and some is left in the spent fuel, then what happens in a cask stored 20–100 years? We need to be sure of what might happen here. Take time to do the necessary tests — not just computer models or paper. 26

25. How much will gallium removal cost? Is it worth it?

26. What is the morphology of hydride-derived powder? 27

22. The rest of the world does not have an NRC. How do we know their casks are safe or their MOX fuel has no gallium etc.? Why are we setting the example of proposing to use MOX fuel in reactors? Surely Russia and other countries will want to too. Won't this be more of a risk? They aren't regulated as we are. The more plutonium you allow in the public sector, the more they will want to also. Don't do it and don't allow them to either. Canada either (we don't regulate Canada). 28

28. Just read where even the manufacture of mixed-oxide fuels creates serious risks of criticality because plutonium tends to stick to the surface of remotely-operated processing equipment. If this is so, here is another problem. 29

29. Seems to me other countries will use the pretext of military plutonium disposal to build and operate nuclear plants to depend on the plutonium for fuel. This would be a concern. 30

30. We need to take the lead in straightforward plutonium immobilization or it will have to be transported long distances, with much handling, and stored at civilian reactors. This is asking for trouble worldwide. 31

31. There would be a greater heat load at reactors and then in any repository too, wouldn't there? 32

32. Will Mox fuel be "free" to reactors? If so, why??? 33

MD178

MD178–26 Plutonium Polishing and Aqueous Processing

As discussed in response MD178–14, DOE has included plutonium polishing as a component of the MOX facility so it's not expected that there would be gallium and other impurities present in sufficient quantity to adversely affect the reactor spent fuel plans. However, these plans would be subject to NRC review and approval prior to using the MOX fuel in the selected reactors.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. The *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999) covers recent life-cycle cost analyses associated with the preferred alternative, including the cost of plutonium polishing. This document is available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

MD178–27 Pit Disassembly and Conversion

Plutonium metal parts separated from pits and other nonpit plutonium metals and alloys undergo a hydride-oxidation process as described in Section 2.4.1.2, to produce clean plutonium dioxide powder that is suitable as feed material for MOX fuel fabrication. This powder is free of moisture and impurities, such as tritium and halide. It is stored in stainless steel cans that are welded shut to ensure purity and accountability.

MD178–28 Nonproliferation

As discussed in Section 2.4, there are provisions for international inspections of each of the proposed surplus plutonium disposition facilities. International monitoring and inspection of the unclassified plutonium would also allow the United States to demonstrate to the world, including Russia, Iran, Iraq, Pakistan, India, and North Korea, that disposition is being carried out under stringent nonproliferation controls, and that the excess plutonium is not being diverted for reuse in weapons. The United States is working closely with Russia to develop a bilateral inspection agreement which would allow the United States to monitor Russian plutonium disposition efforts and vice versa.

In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at http://www.doe-md.com.

MD178–29 **Nonproliferation**

DOE is aware of an incident involving a Japanese plutonium processing plant in which a significant amount of MOX powder was held up in the processing lines so that it was difficult to measure the exact quantity of materials from outside the sealed gloveboxes. This problem was solved by implementing a model schedule of selective clean-outs so that the powder could be collected and accurately accounted for. The design and operation of the MOX facility would incorporate lessons learned (regarding procedures and equipment) to ensure low net plutonium loss and would be compatible with NRC and IAEA safeguards. Physical inventories, measurements, and inspections of material both in process and in storage would be used to verify inventory records.

MD178–30 **Nonproliferation**

DOE acknowledges the commentor's concern regarding the use of nuclear reactors to disposition weapons-usable plutonium. The United States will not support any plans to build a plutonium economy.

The remainder of this comment is addressed in response MD178–2.

MD178–31 **Alternatives**

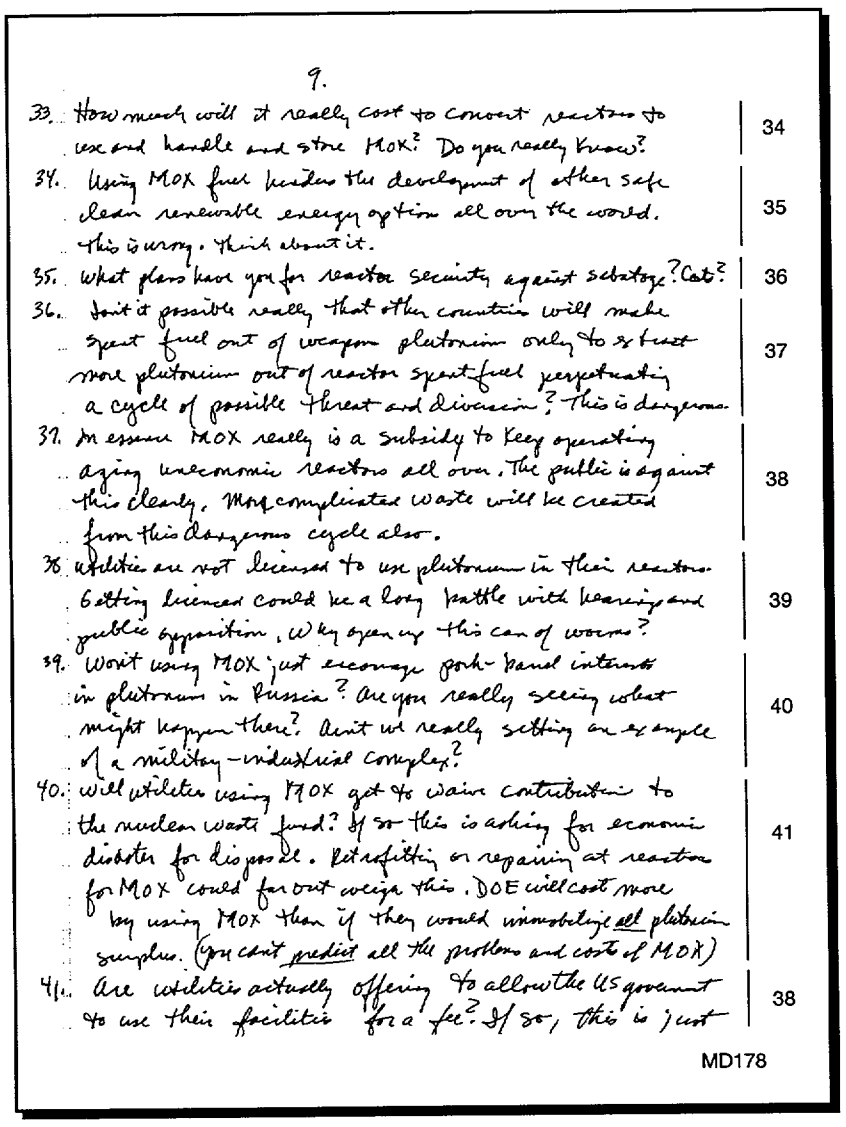
As indicated in Appendix L, several of the hybrid alternatives would require less transportation of special nuclear materials than some of the 50-t (55-ton) immobilization alternatives. However, the risks from transportation for all of the alternatives would likely be minor.

MD178–32 **Repositories**

After the first 5 years or so, there would be more decay heat produced by the MOX spent fuel than traditional LEU fuel, hence a greater heat load at both the fuel storage locations and the potential geologic repository. However, the additional heat load is about 10 percent per assembly and would be considered in the total heat load calculations for any storage facilities and the repository.

MD178–33 **MOX Approach**

The MOX fuel would not be free to the reactors selected to use it. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.



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33. How much will it really cost to convert reactors to use and handle and store MOX? Do you really know? 34
34. Using MOX fuel hinders the development of other safe clean renewable energy option all over the world. This is wrong. Think about it. 35
35. What plans have you for reactor security against sabotage? Cost? 36
36. Isn't it possible really that other countries will make spent fuel out of weapon plutonium only to extract more plutonium out of reactor spent fuel perpetuating a cycle of possible threat and diversion? This is dangerous. 37
37. In essence MOX really is a subsidy to keep operating aging uneconomic reactors all over. The public is against this clearly. More complicated waste will be created from this dangerous cycle also. 38
38. Utilities are not licensed to use plutonium in their reactors. Getting licenced could be a long battle with hearings and public opposition. Why open up this can of worms? 39
39. Won't using MOX just encourage pork-barrel interests in plutonium in Russia? Are you really seeing what might happen there? Aren't we really setting an example of a military-industrial complex? 40
40. Will utilities using MOX get to waive contributions to the nuclear waste fund? If so this is asking for economic disaster for disposal. Retrofitting or repairing at reactors for MOX could far out weigh this. DOE will cost more by using MOX than if they would immobilize all plutonium surplus. (You can't predict all the problems and costs of MOX) 41
41. Are utilities actually offering to allow the US government to use their facilities for a fee? If so, this is just 38

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MD178–34 **Cost**

This comment is addressed in response MD178–26.

MD178–35 **DOE Policy**

By fabricating MOX fuel from surplus plutonium, the United States is not encouraging domestic or foreign commercial use of plutonium as an energy source. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this.

The development of alternative or renewable energy sources is beyond the scope of this EIS.

MD178–36 **MOX Approach**

Reactor sites in the United States have significant security requirements to prevent sabotage. Sabotage scenarios are considered conjecture and not reasonably foreseeable. Although they were excluded from this SPD EIS, the results of such sabotage would be bounded by the accidents presented in Appendixes K and L. The possibility of sabotage would be controlled through the safeguards and security provisions including security requirements associated with facility workers. The reactors selected to use MOX fuel would continue to be operated in accordance with applicable NRC requirements. Additional information on specific security issues is discussed in *Nonproliferation and Arms Control Assessment of Weapons-Usable Fissile Material Storage and Excess Plutonium Disposition Alternatives* (DOE/NN-0007, January 1997).

MD178–37 **Nonproliferation**

Approximately 726 t (800 tons) of plutonium exists in spent fuel in the world today. The spent fuel assemblies are so large and radioactive that any attempted theft of the material would require a dedicated team willing to suffer large doses of radiation, along with substantial equipment for accessing

and removing the spent fuel from the storage facility and carrying it away. A terrorist group must also have a shielded reprocessing facility to recover the plutonium from the highly radioactive spent fuel.

MD178–38 **DOE Policy**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

The remainder of this comment is addressed in response MD178–2.

MD178–39 **NRC Licensing**

DOE acknowledges the commentor's concern about licensing reactors to use MOX fuel. Although no U.S. commercial reactors are licensed to use plutonium-based fuel, several are designed to use MOX fuel, and others can easily accommodate a partial MOX core. DOE understands that DCS would have to apply for a reactor operating license amendment for each individual

reactor before it can use MOX fuel and what that process entails, including the public involvement opportunities provided by NRC per 10 CFR 50.91. DOE is conducting regular meetings with NRC on the MOX approach, including fuel design and qualification. In addition, DCS would work closely with NRC to ensure that the license amendment process can be accomplished in a timely manner.

On June 15, 1999, DOE held a hearing on the Supplement to the SPD Draft EIS which focused on the use of MOX fuel at the selected reactors. As a result, DOE does not anticipate the licensing requirements would present a significant impediment to implementing its decisions on surplus plutonium disposition. Efforts have been made to contact persons living near the selected reactor sites and inform them of the proposed use of MOX fuel. Approximately 1,300 copies of the Supplement were mailed, and an NOA postcard was mailed to an additional 5,800 members of the public.

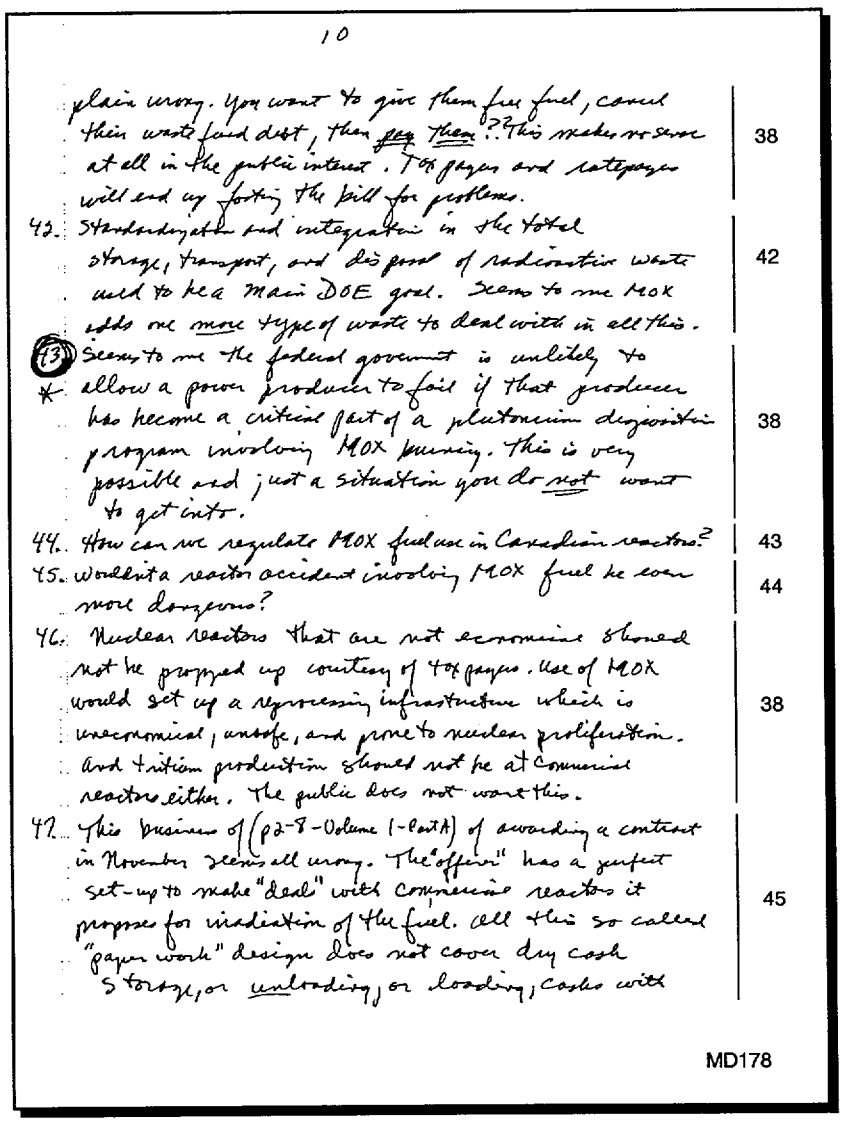
The remainder of this comment is addressed in response MD178–25.

MD178–40 **Nonproliferation**

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Close cooperation between the United States and Russia is required to ensure that nuclear arms reductions cannot be easily reversed. Understanding the economic dilemma in Russia, the U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue.

MD178–41 **MOX Approach**

Utility contributions to the nuclear waste fund would not be waived for those reactors selected to use MOX fuel. The cost-related aspects of this comment are addressed in response MD178–26.



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plain wrong. You want to give them free fuel, cancel their waste fund debt, then pay them ??? This makes no sense at all in the public interest. Taxpayers and ratepayers will end up footing the bill for problems. 38

42. Standardization and integration in the total storage, transport, and disposal of radioactive waste used to be a main DOE goal. Seems to me MOX adds one more type of waste to deal with in all this. 42

43. Seems to me the federal government is unlikely to allow a power producer to fail if that producer has become a critical part of a plutonium disposition program involving MOX burning. This is very possible and just a situation you do not want to get into. 38

44. How can we regulate MOX fuel use in Canadian reactors? 43

45. Wouldn't a reactor accident involving MOX fuel be even more dangerous? 44

46. Nuclear reactors that are not economical should not be propped up courtesy of taxpayers. Use of MOX would set up a reprocessing infrastructure which is uneconomical, unsafe, and prone to nuclear proliferation. And tritium production should not be at commercial reactors either. The public does not want this. 38

47. This decision of (p2-8-Volume 1-part A) of awarding a contract in November seems all wrong. The "offeror" has a perfect set-up to make "deals" with commercial reactors it proposes for irradiation of the fuel. All this so called "paper work" design does not cover dry cask storage, or unloading, or loading, casks with 45

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MD178–42 **Waste Management**

Standardization and integration of the treatment, storage, transport, and disposal of waste is a DOE priority as evidenced by the preparation of the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (WM PEIS) (DOE/EIS-0200-F, May 1997) and *Accelerating Cleanup: Paths to Closure* (DOE/EM-0362, June 1998). In addition, decisions in the *Storage and Disposition PEIS* ROD included reducing the number of storage locations where plutonium is stored by consolidating the storage of pits at Pantex and nonpit materials at SRS. This action reduces the number of DOE sites generating wastes related to plutonium storage activities. As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies.

MD178–43 **Parallex EA**

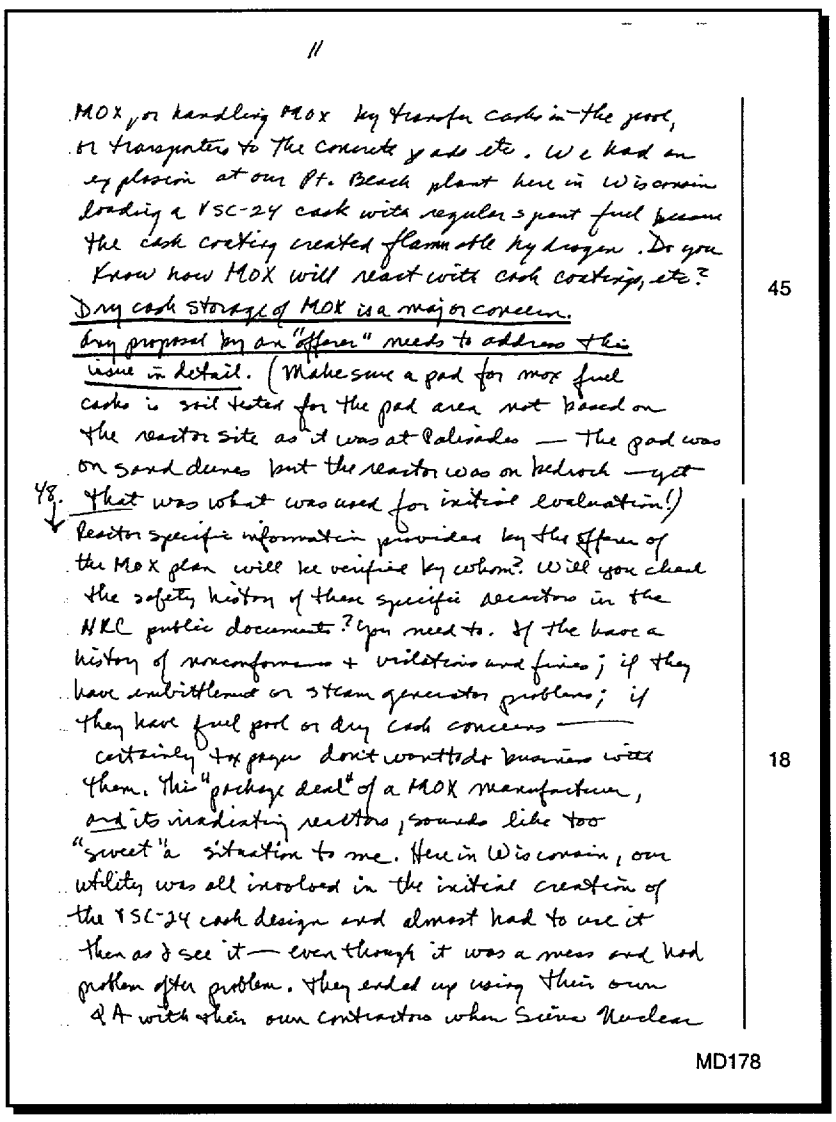
This comment is addressed in response MD178–8.

MD178–44 **Facility Accidents**

Section 4.28 was revised to provide reactor-specific analyses and discuss the potential environmental impacts of using a partial MOX core during routine operations and reactor accidents.

MD178–45 **MOX RFP**

The schedule for award of the MOX fuel fabrication and irradiation contract was in accordance with DOE's procurement and NEPA policy. DOE's NEPA implementing regulations in 10 CFR 1021.216 requires DOE to phase contract work in a way that will allow the NEPA review process to be completed in advance of a go/no-go decision. In the case of this SPD EIS, the go/no-go decision will be determined by which alternative is selected by the decisionmaker. Further, the provisions of 10 CFR 1021.216 call for DOE to prepare a publicly available synopsis of the environmental information to provide to the source selection official in order to document the consideration



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MOX, or handling MOX by transfer casks in the pool, or transporters to the concrete pads etc. We had an explosion at our Pt. Beach plant here in Wisconsin loading a VSC-24 cask with regular spent fuel because the cask coating created flammable hydrogen. Do you know how MOX will react with cask coatings, etc? 45

Dry cask storage of MOX is a major concern. Any proposal by an "offeror" needs to address this issue in detail. (Make sure a pad for mox fuel casks is soil tested for the pad area not based on the reactor site as it was at Palisades — The pad was on sand dunes but the reactor was on bedrock — yet 48. that was what was used for initial evaluation!) Reactor specific information provided by the offeror of the MOX plan will be verified by whom? Will you check the safety history of these specific reactors in the NRC public documents? You need to. If they have a history of nonconformance + violations and fines; if they have embrittlement or steam generator problems; if they have fuel pool or dry cask concerns — certainly tax payers don't want to do business with them. This "package deal" of a MOX manufacturer, and its irradiating reactors, sounds like too "sweet" a situation to me. Here in Wisconsin, our utility was all involved in the initial creation of the VSC-24 cask design and almost had to use it then as I see it — even though it was a mess and had problem after problem. They ended up using their own QA with their own contractors when Sierra Nuclear 18

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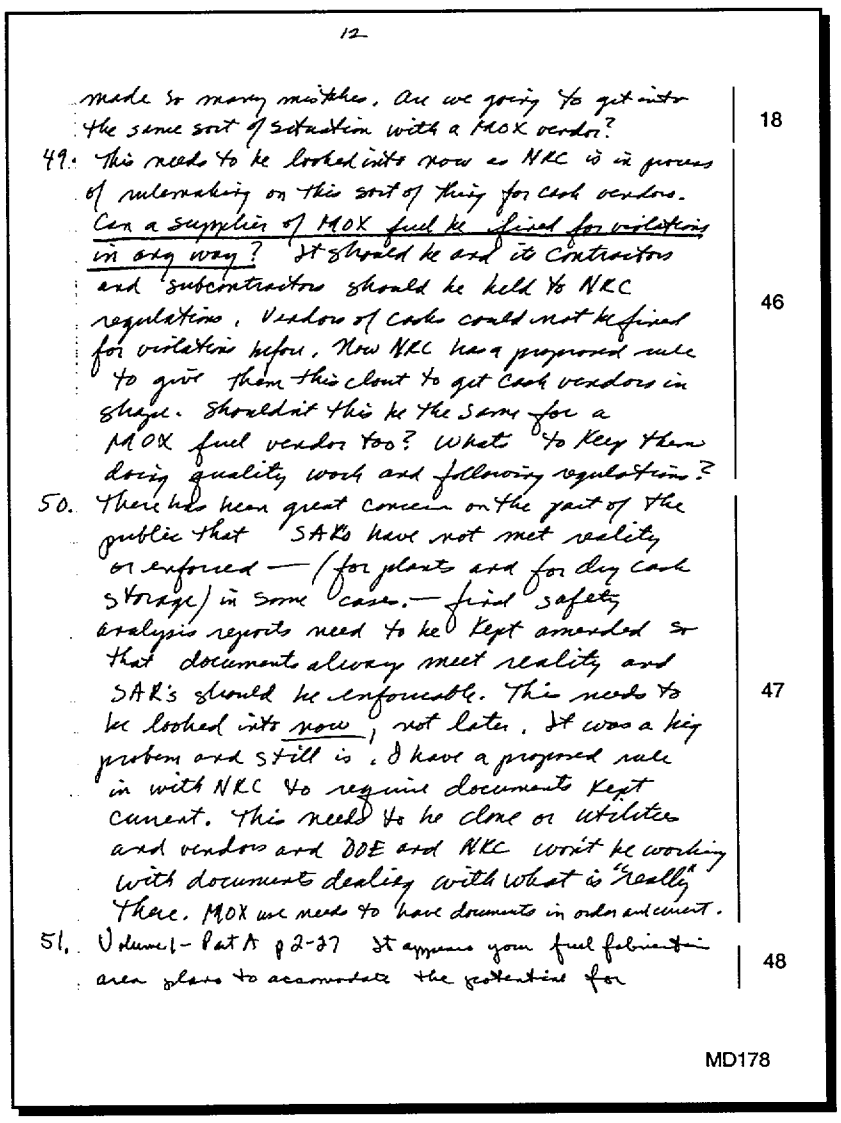
given to environmental factors and to record that the relevant environmental consequences of reasonable alternatives have been evaluated in the selection process.

DOE prepared an Environmental Synopsis on the basis of the environmental information reviewed by DOE in the selection process. This was released to the public as Appendix P of the *Supplement to the SPD Draft EIS* in April 1999. This *Supplement* included a description of the affected environment around the three proposed reactor sites, and analyses of the potential environmental impacts of operating these reactors using MOX fuel (Sections 3.7 and 4.28 of this SPD EIS, respectively). During the 45-day period for public comment on the *Supplement*, DOE held a public hearing in Washington, D.C., on June 15, 1999, and invited comments. Responses to those comments are provided in Volume III, Chapter 4.

Any requirements related to the storage of MOX fuel would be imposed by NRC as part of the reactor operating license amendment. For this amendment, the licensee would have to demonstrate that all safety, testing, and environmental impacts have been addressed as well as complete the public hearing process. In addition, NRC would evaluate license applications and monitor the operations of both the MOX facility and the commercial reactors selected to use MOX fuel to ensure adequate margins of safety.



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made so many mistakes. Are we going to get into the same sort of situation with a MOX vendor? 18

49. This needs to be looked into now as NRC is in process of rulemaking on this sort of thing for cask vendors. Can a supplier of MOX fuel be fined for violations in any way? It should be and its contractors and subcontractors should be held to NRC regulations. Vendors of casks could not be fined for violations before. Now NRC has a proposed rule to give them this clout to get cask vendors in shape. Should it this be the same for a MOX fuel vendor too? What to keep them doing quality work and following regulations? 46

50. There has been great concern on the part of the public that SARs have not met reality or enforced — (for plants and for dry cask storage) in some cases. — final safety analysis reports need to be kept amended so that documents always meet reality and SAR's should be enforceable. This needs to be looked into now, not later. It was a key problem and still is. I have a proposed rule in with NRC to require documents kept current. This needs to be done on utilities and vendors and DOE and NRC won't be working with documents dealing with what is "really" there. MOX use needs to have documents in order and current. 47

51. Volume I - Part A p 2-37 It appears your fuel fabrication area plans to accommodate the contention for 48

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MD178–46 **NRC Licensing**

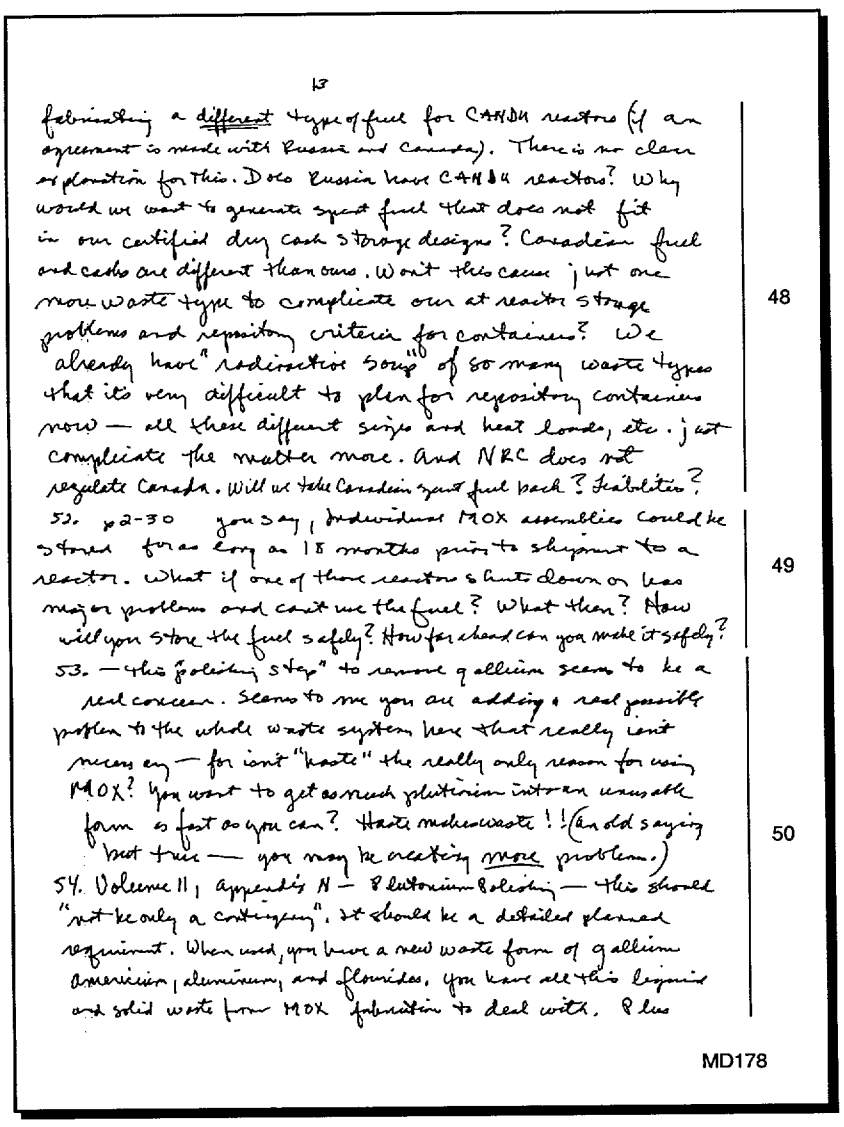
The MOX fuel fabricator would be an NRC licensee under 10 CFR 70, *Domestic Licensing of Special Nuclear Materials*, and as such, would be subject to fines and penalties for violations of NRC regulations, up to and including license revocation.

MD178–47 **NRC Licensing**

The reactors selected to irradiate MOX fuel are operating domestic, commercial reactors and are licensed by NRC. DCS would be required to submit an application for a reactor operating license amendment under 10 CFR 50.90 for each individual reactor before it can use MOX fuel. Reactor licensees are responsible for maintaining reactor SARs current in accordance with NRC regulations. NRC regulations in 10 CFR 50.59 allow changes that meet certain requirements to be made without prior NRC approval. Proper review and documentation of the review must be retained at the reactor site for NRC inspection. Changes other than these must be approved by NRC prior to implementation, and all changes must be included in biennial SAR updates. Reactor SARs would be updated to reflect the use of MOX fuel once the operating license amendment was issued.

MD178–48 **Parallex EA**

This comment is addressed in response MD178–8.



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fabricating a different type of fuel for CANDU reactors (if an agreement is made with Russia and Canada). There is no clear explanation for this. Does Russia have CANDU reactors? Why would we want to generate spent fuel that does not fit in our certified dry cask storage designs? Canadian fuel and casks are different than ours. Won't this cause just one more waste type to complicate our at reactor storage problems and repository criteria for containers? We already have "radioactive soup" of so many waste types that it's very difficult to plan for repository containers now — all these different sizes and heat loads, etc. just complicate the matter more. And NRC does not regulate Canada. Will we take Canadian spent fuel back? Scabilities?

52. p2-30 you say, individual MOX assemblies could be stored for as long as 18 months prior to shipment to a reactor. What if one of those reactors shuts down or has major problems and can't use the fuel? What then? How will you store the fuel safely? How far ahead can you make it safely?

53. — this "polishing step" to remove gallium seems to be a real concern. Seems to me you are adding a real possible problem to the whole waste system here that really isn't necessary — for isn't "waste" the really only reason for using MOX? You want to get as much plutonium into an unusable form as fast as you can? Waste makes waste!! (Arnold saying not true — you may be creating more problems.)

54. Volume II, appendix N — Plutonium Polishing — this should "not be only a contingency". It should be a detailed planned requirement. When used, you have a new waste form of gallium, americium, aluminum, and flourides. You have all this liquid and solid waste from MOX fabrication to deal with. Plus

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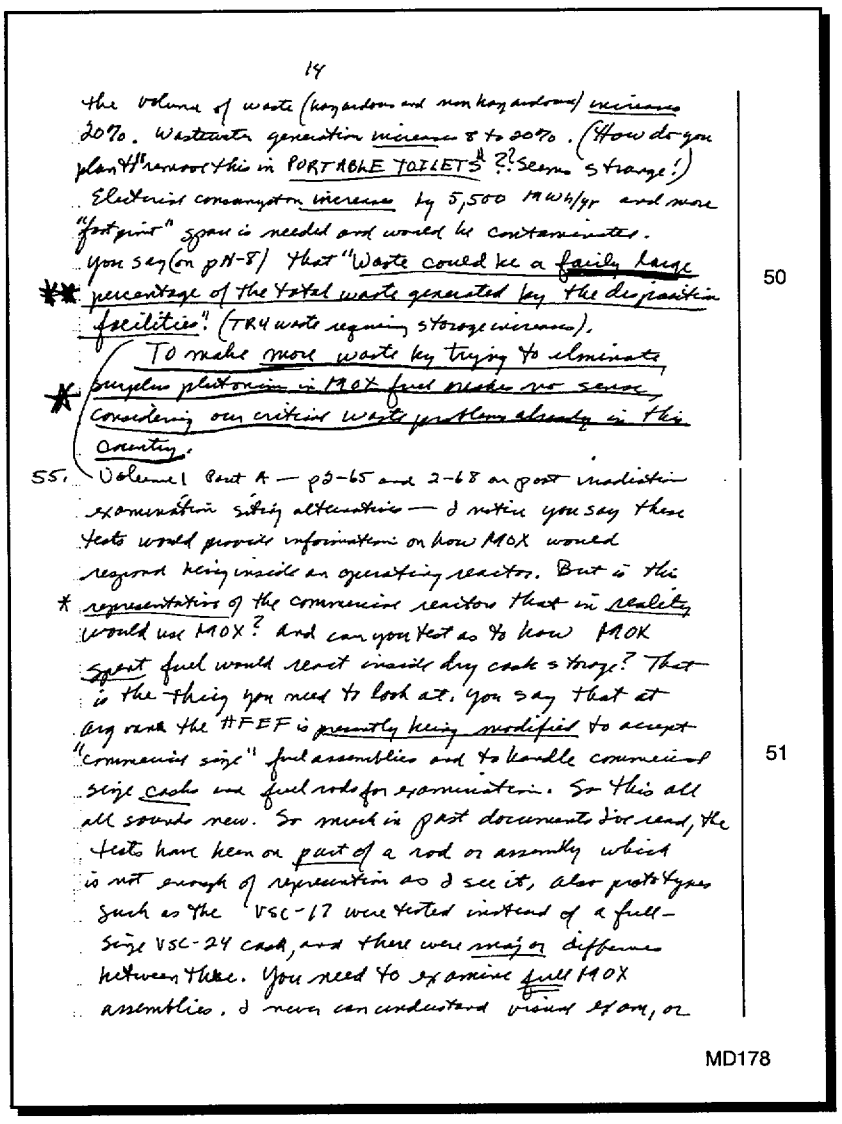
MD178–49 **MOX Approach**

Fresh fuel would remain safe and stable indefinitely. It would be stored at the MOX facility in a storage vault meeting security requirements for special nuclear materials. The MOX facility would be built at an existing DOE site that has the levels of protection and control (including access control) required by applicable DOE safeguards and security directives. In addition to DOE sitewide security services, the facility would have its own security features and procedures. The general security requirements for the proposed surplus plutonium disposition facilities are described in Section 2.4.

The SPD Draft EIS's specification of assembly storage for up to 18 months is a bounding assumption for planning and analysis purposes. This SPD EIS reflects an extension of the possible storage time of individual assemblies to up to 2 years, a storage period that is neither expected nor desirable from a business standpoint. As stated in Section 2.4.3.2, production would closely follow product need. Reactor licensees typically order LEU fuel to coincide with their refueling outages, and fuel shipment is usually scheduled so that fuel does not have to be stored very long at the reactor site. Licensees work closely with each of the vendors involved in the fuel fabrication process, as well as the fuel fabricators, to ensure that the fuel is ready when needed. The only likely difference in this process for MOX fuel would be a closer relationship between the licensee and the fabricator; the two would work as a team. Reactor shutdowns and other operational issues that could affect the need for fuel would be accommodated in the fuel fabrication schedules, and adjustments would be made as required. Fuel fabricated and later not needed would constitute no long-term storage problem, for the components could be recycled and reused—a routine commercial practice for off-specification materials and completed assemblies that is accounted for in this EIS. The fuel rods would be disassembled and the pellets either reused directly or returned to the processing facility for reformulation. The metal components of the fuel rods would also be reused or recycled.

MD178–50 **Plutonium Polishing and Aqueous Processing**

Section 2.18.3 was revised to include the impacts associated with plutonium polishing. As indicated by the analyses, additional waste generation or



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the volume of waste (hazardous and non hazardous) increases 20%. Wastewater generation increases 8 to 20%. (How do you plan to remove this in PORTABLE TOILETS ?! Seems strange!)
Electrical consumption increases by 5,500 MWH/yr and more "footprint" space is needed and would be contaminated.
You say (on pN-8) that "Waste could be a fairly large percentage of the total waste generated by the deposition facilities." (TRU waste requiring storage increases).
To make more waste by trying to eliminate surplus plutonium in MOX fuel makes no sense, considering our critical waste problems already in this country.
55. Volume I Part A — p2-65 and 2-68 on post irradiation examination siting alternatives — I notice you say these tests would provide information on how MOX would respond being inside an operating reactor. But is this representative of the commercial reactors that in reality would use MOX? And can you test as to how MOX spent fuel would react inside dry cask storage? That is the thing you need to look at. You say that at any rate the HFEF is presently being modified to accept "commercial size" fuel assemblies and to handle commercial size casks and fuel rods for examination. So this all all sounds new. So much in past documents I've read, the tests have been on part of a rod or assembly which is not enough of representation as I see it, also prototypes such as the VSC-17 were tested instead of a full-size VSC-24 cask, and there were major differences between these. You need to examine full MOX assemblies. I never can understand visual scans, or

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resource consumption associated with the plutonium-polishing process is not expected to materially affect the ability of any of the candidate sites to handle MOX fuel fabrication.

The remainder of this comment is addressed in response MD178–14.

MD178–51 **MOX Approach**

The lead assemblies would be irradiated in domestic, commercial reactors and then subjected to postirradiation examination. Thus, the tests conducted as part of the postirradiation examination would provide information on how MOX fuel would respond inside a commercial reactor. The MOX fuel assemblies would be placed in accordance with specific reactor fuel management plans, which exist at all reactors regardless of fuel type.

The remainder of this comment is addressed in responses MD178–3, MD178–6, MD178–7, and MD178–10.

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even 4T, gamma spectroscopy, neutron radiography of an assembly? Do you take it apart in any way to evaluate the different effects in the reactor from outer rods to center rods in the assembly? This should be done.

And — where in the reactor will these MOX assemblies be inserted? This is crucial information, as certainly the placement in the reactor dictates the effect on the assembly. Can you really foretell reactions over time in a real reactor from these tests? I fear all the "what ifs" could be covered. The last thing we need is to build this MOX fabrication facility - put these assemblies in commercial reactors, and find we have an unexpected problem in the public arena. Why take this risk when it just is not necessary. Get rid of all the surplus plutonium in immobilized form the same for all of it without using MOX problems.

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Can you really predict how MOX spent fuel will react when put in the pool with regular spent fuel? Overtime? How will it react in dry cask loading in the pool? How will it react in dry cask unloading in the pool? Can you expect to have dry transfer from a cask on the pad in the future to a transport cask without necessitating it go back to the pool and get wet again for transport to a repository? All this future handling. Are you looking at the details? Consider this: MOX fuel in the reactor (dry), in the pool (wet), in casks at the plant (dry), unloaded in the pool (wet again), transported to a repository or interim storage site (dry again), put in a repository (maybe transfer to a disposal cask (wet or dry handling?) then dry in

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the repository (hopefully if dry shields work and humidity and evaporation predictions are correct) — and in the end, after many years we hope, — wet in the repository. Look at the total waste future for MOX fuel. What problems do you foresee? When it finally gets wet in the repository next to other waste forms, what can happen? And if MOX fuel goes to a repository wet, what happens? And what storage, and disposal, and transport containers do you need for immediate MOX spent fuel? Can they be certified, and tested in time? NRC has a full load on its hands now just trying to keep up with the certification of dry cask designs for regular spent fuel — and fabrication changes cause a problem in QA and scheduling. Time is crucial and reactors pools are loaded. And then too, will local public opposition and Public Service Commission procedures or transportation concerns etc cause hold-ups in schedules? The longer you wait to get MOX really tested and everything in place, the more the reactors are aging and their pools filling. MOX fuel will add to the overload in the volatile spent fuel waste problem. Don't do it.

51

56. We don't know how well WIPP will work yet. We don't know if Yucca will ever open? We don't even dare to think of siting a necessary 2nd or 3rd repository yet. However, everybody acts like a hole in the ground will take all the military and commercial waste and take care of it. I don't believe this. I predict it will mostly be kept above ground, reracked periodically like Russian dolls inside each other, and monitored and safeguarded

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MD178–52 **Repositories**

The management of TRU wastes generated by the proposed surplus plutonium disposition facilities is evaluated in this SPD EIS. DOE alternatives for TRU waste management are evaluated in the WM PEIS (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). WIPP began receiving shipments of TRU waste for permanent disposal on March 26, 1999. As described in Appendix F.8.1, and the Waste Management sections in Chapter 4 of Volume I, it is conservatively assumed that TRU waste would be stored at the candidate sites until 2016, at which time it would be shipped to WIPP in accordance with DOE's plans. This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada, would be the final disposal site for all immobilized plutonium and MOX spent fuel.

The remainder of this comment is addressed in response MD178–3.

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foreign. The public and even native american tribes cannot be bribed to accept this waste in their backy and any place — as history has proven over time. Yet the nuclear industry and DOE just keep acting as if repositories are the answer. TIME is a concern here. The longer you keep reactors going, the more spent fuel is created and that in itself is the crux of the problem with MOX fuel. You are creating more and more spent fuel nobody knows what to do with or where to store or dispose. Commercial reactors hope DOE will take it from their sites — out of their hands as far as liability and responsibility — they hope to put it in cheap casks, which may allow spent fuel degradation, then dump it in the government lap and walk away from nuclear power in the end. No new nuclear plants have been built — the public doesn't want the plants or more spent fuel — MOX just adds to the problem — all over the world. What do you think Russia will do with their spent fuel? Put it in the most expensive, safest canister? I doubt it. Costs will be cut wherever possible and that means problems. You know that.

52

57. I just find section 4.28 "Summary of Storage and Disposition PEIs Generic reactor analysis" very lacking. Just 2 pages here to cover the public. Specific reactors are not generic. Each is very different. We found that out when NRC tried to certify a "generic" cask. It ended up needing many site specific changes in design and handling procedures for each plant. Pool water is

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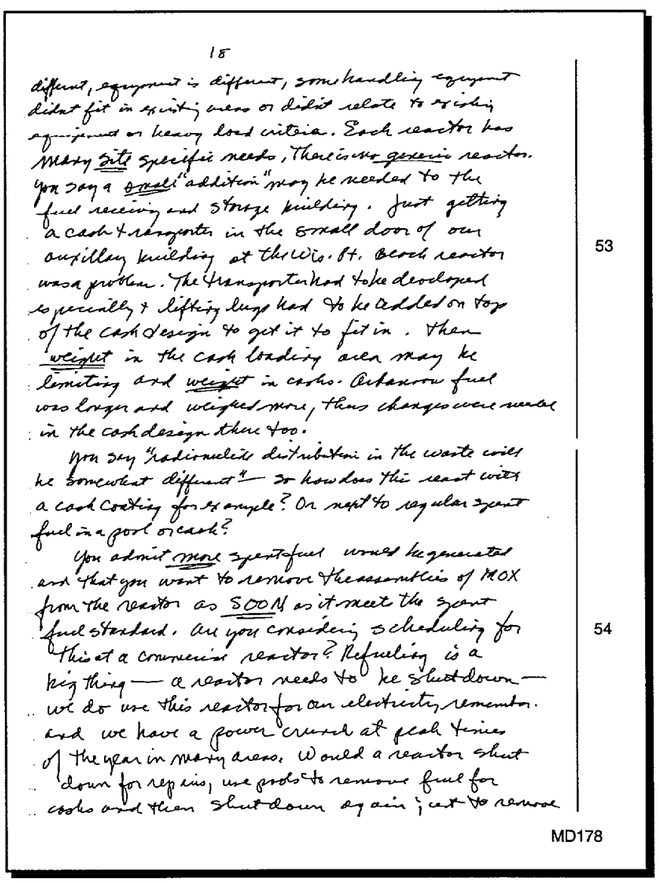
MD178

MD178–53 **MOX RFP**

Generic reactors were presented in the SPD Draft EIS because the specific reactors had not yet been identified. Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba Nuclear Station Units 1 and 2 in South Carolina, McGuire Nuclear Station Units 1 and 2 in North Carolina, and North Anna Power Station Units 1 and 2 in Virginia, the reactors selected to use the MOX fuel.



15

different, equipment is different, some handling equipment didn't fit in existing areas or didn't relate to existing equipment or heavy load criteria. Each reactor has many site specific needs, There is no generic reactor. You say a small "addition" may be needed to the fuel receiving and storage building. Just getting a cask transporter in the small door of our auxiliary building at the Wis. St. Lucie reactor was a problem. The transporter had to be developed especially & lifting lugs had to be added on top of the cask design to get it to fit in. Then weight in the cask loading area may be limiting and weight in casks. Enhanced fuel was longer and weighed more, thus changes were made in the cask design there too.

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You say "radionuclide distribution in the waste could be somewhat different" — so how does this react with a cask cooling for example? Or next to regular spent fuel in a pool or cask?

You admit more spent fuel would be generated and that you want to remove the assemblies of MOX from the reactor as SOON as it meets the spent fuel standard. Are you considering scheduling for this at a commercial reactor? Refueling is a big thing — a reactor needs to be shut down — we do use this reactor for our electricity generation. and we have a power crunch at peak times of the year in many areas. Would a reactor shut down for repairs, use probe to remove fuel for casks and then shut down again just to remove

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MD178

MD178–54 **MOX Approach**

This comment is addressed in responses MD178–3, MD178–9, MD178–15, MD178–18, and MD178–36.

19

some MOX fuel? Are you looking at the reality as to how fuel removal from a commercial reactor would affect its operation? MOX adds to worker overdose already.

Plus you say there is an increase in worker dose, public dose (even if just from more dry cask handling + storage) and increase in accident and certainly sabotage possibilities. I am certainly not comforted that you expect no more problems "if there are adequate reactivity and thermal margins in the fuel, as licensing review should ensure." Well it should, but will it? This is an experiment in the public arena really. You don't really know all the possible ramifications of using MOX fuel at commercial reactors.

54

A truck bomb at a dry cask storage pad holding MOX fuel really is a possibility. Is a truck bomb still not considered at a cask pad at a reactor? You reference a Final Generic EIS from the 1970's for using MOX. I find this really unacceptable. Get some current information. A lot has changed since 1970. I find these "final" EIS's really faulty. (They certainly were for dry cask storage.)

55

The NRC had an awful time with generic licensing for dry cask storage at reactors. It took many years before all the problems were addressed and, in the meantime, vendors were repeatedly shut down and reactors not able to load casks. Will the same happen in licensing for MOX fuel in reactors and in casks? This is all new — there will be problems. As one NRC person said "I expect

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MD178

MD178–55 **Facility Accidents**

The possibility of a truck bomb was considered to be beyond the scope of this SPD EIS analysis based on DOE NEPA guidance. This guidance states that impacts should be analyzed if they are reasonably foreseeable, requiring that the analysis is supported by credible scientific evidence and is not based on pure conjecture. The terrorist scenario is considered conjecture and although it was excluded from this EIS, the results of such terrorism would be bounded by the accidents presented in Appendixes K and L.

20

everything to go wrong that can go wrong" —
and it did — this is not a perfect world and
the human element for mistakes enters in.

Well, I'm tired of all this — your 3 volume report
is huge and very repititious. I agree that you need
to get surplus plutonium all over the world in
a safe unuseable form. I hope the agreement with
Russia gets going before it's too late. BUT
using MOX fuel at commercial reactors is a mistake.
I've watched closely for many years now how spent
fuel and dry cask storage has been licensed and
certified and I foresee the same situation and problems
with generic consideration of MOX fuel at commercial
reactors. You have to view it in the whole waste system
in the future. See the total picture and plan the details.
The world is getting less and less safe. Why put MOX
fuel into the hands of the public? It isn't necessary
and should not be done. Please.

I am the mother of two fine sons, with a grandchild
coming this Christmas. I don't want these kids to face
a world full of nuclear waste problems and MOX fuel
at our local reactors. We need to phase out spent fuel
reactors and work toward a safe clean renewable
energy system for this world for our kids. A native
american saying states "We have not inherited
the earth from our fathers, we are borrowing it
from our children." Think about that carefully.

Thank you,
Mrs. John Shillinglaw

(whomever reads this — you — yourself — try to do the right thing — please)

MD178

MD178–56 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for proposed surplus plutonium disposition facilities.

I'm just calling to comment on this transfer of plutonium to Canada and your policies in general. I approve 100 percent. I think you're doing a great thing and I figured a lot of people are going to be calling and bitching so you might want to hear something favorable. Keep it up. Thank you. 1

PD041

PD041–1 **DOE Policy**

DOE acknowledges the commentor's support for DOE policy and the surplus plutonium disposition program. In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at http://www.doe-md.com. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russian's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

ANONYMOUS
PAGE 1 OF 1

Yes, I'm calling to make a comment about the DOE using MOX plutonium fuel in the nuclear reactors that we have already. I am totally opposed to this 100 percent. I don't want to even, I don't want anything that has to do with radioactivity. And I don't think it's good for the earth. I think that, that burning bomb material, nuclear bomb material is a big mistake for existing reactors. I think the public is against building new reactors for such a thing. I think burning radioactive materials is a very scary thing to begin with. I'm opposed to traveling it through, by rail or highway. Gosh I could go on forever. So, thank you for listening and I do urge that the government just stay away from this. It is very scary. Thank you. 1

PD045

PD045–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing. Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel, should the decision be made to proceed with the hybrid approach.

The transportation requirements for the surplus plutonium disposition program are also evaluated in this SPD EIS. Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material.

Yes, I've recently learned that the plan or the plan that's being formulated to dispose of plutonium by having commercial utilities use it as mixed oxide fuel. And as a person who works in the electric utility field I want to express an extreme concern about this very dangerous practice. Not only are commercial , commercial utilities likely to not manage the plutonium safely, some will but many won't, but the risk of an accident or even worse a high-jacking of trucks carrying plutonium around the country is just totally unacceptable. And this my comment is a very strong argument that this is a bad choice. That vitrification of plutonium is probably the only safe way to handle it. Thank you. 1

PD051

PD051–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. Section 4.30.1.6 and Appendix L address the impacts of transportation, and Appendix K, the impacts of accidents. The analyses indicate that the impacts from the hybrid approach would likely be minor. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

ANONYMOUS
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Hello, I definitely want to say no to the mixed oxide fuel containing plutonium or MOX. It's not to be used in commercial reactors because of the transportation and safety problems. As plutonium fuel is hazardous process and it adds more to the radioactive waste to be disposed of which we haven't done to good a job of yet. Weapons grade plutonium has been in the hands of the military. Changing the U.S. policy to put it in the hands of commercial businesses all over the country, it's a highly, and it changes our policy to put it in the hands of commercial businesses. Highly carcinogenic and extreme threat to life support systems. So it should be immobilized with vitrification in ceramic or glass surroundings. Thank you. Bye

1

PD054

PD054–1 **Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. Section 4.30.1.6 and Appendix L address the impacts of transportation, and Appendix K, the impacts of accidents. The analyses indicate that the impacts from the hybrid approach would likely be minor.

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

MALESK, JIM
PAGE 1 OF 1

Yes, my name is Jim Malesk. I want to express my deep concern over the use of plutonium that is being suggested. I think that plutonium is the most dangerous of element in the world. The size of a grain of sand can cause instant cancer that confines itself in the lungs. Using it to, as part of a burning off process, I am totally against. I think it is environmentally insanity and I want to register my complaint. Thank you. 1

PD005

PD005–1 **MOX Approach**

DOE acknowledges the commentor's opposition to the MOX approach. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. The analysis conducted for this SPD EIS indicate potential environmental and human health impacts would likely be minor as discussed in Chapter 4 of Volume I.

Why did the initial EIS [*refers to the scoping process*] not explore or identify all possible alternatives for using the Fuels and Materials Examination Facility (FMEF)? Alternatives were added later, why not from the beginning? 1

DOE should take advantage of the existing complex infrastructure by considering the following combination as an alternative option/ alternative: locate pit disassembly and conversion at Pantex; locate MOX fuel fabrication mission at FMEF; locate plutonium conversion and immobilization at the Savannah River Site (SRS). 2

Why does the preferred alternative consider infrastructure and the workforce if the MOX facility is being privatized? Optics are that the EIS is biased toward SRS. 3

RICHLD–1 **General SPD EIS and NEPA Process**

The SPD Draft EIS evaluated all alternatives for FMEF at Hanford considered reasonable by DOE. FMEF was identified as a candidate location in the NOI for the SPD EIS, which starts the scoping process. The possible mix of activities that might be located in FMEF was refined during the scoping process. In fact, the number of alternatives considering FMEF was increased during scoping, even though collocation of all three proposed surplus plutonium disposition facilities in FMEF was eliminated because DOE concluded that the available space in FMEF would not be sufficient to accommodate the efficient operation and maintenance of all three facilities. Analyses do not begin until completion of the scoping process, so these alternatives were evaluated from the earliest possible time, along with all the other SPD EIS alternatives.

RICHLD–2 **Alternatives**

DOE acknowledges the commentor's suggestion to locate the proposed surplus plutonium disposition facilities at three different sites. As discussed in Section 2.3.1 of the SPD Draft EIS, the range of reasonable alternatives analyzed was developed using equally weighted screening criteria. Over 64 options were evaluated, yielding a range of 23 reasonable alternatives that met all the criteria. Options that involved siting the proposed surplus plutonium disposition facilities at three different sites were eliminated because the goals of minimizing worker and public exposure to radiation, minimizing proliferation concerns associated with transportation, and reducing infrastructure costs would not be met. Alternatives considered reasonable were further reduced to 15 that are analyzed in the SPD Final EIS because the 8 alternatives that included using portions of Building 221–F at SRS for immobilization were eliminated based on the increased size requirements.

RICHLD–3 **Alternatives**

DOE's proposed action for surplus plutonium disposition is not a privatization effort, although the acquisition of MOX fuel fabrication and irradiation services has some similarities to DOE's privatization initiative. While the necessary infrastructure may be available in a number of places, only certain DOE sites and other facilities have the security infrastructure and radiological

Environmental cleanup and plutonium conversion missions are not exclusive of each other; one can work effectively with the other [*at Hanford*]. | 4

What are the increased costs associated with three separate sites? | 5

monitoring services and systems in place to protect special nuclear materials. Although SRS has been identified as the preferred site for the MOX facility, this is only DOE's preference; it is not a decision. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

RICHLD–4 **Alternatives**

DOE acknowledges the commentor's view that environmental cleanup and plutonium conversion missions can work effectively together. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–5 **Cost**

Section 2.3.1 explains the development of the facility siting alternatives that were analyzed in this SPD EIS. The equally weighted criteria used were worker and public exposure to radiation, proliferation concerns due to transportation of materials, and infrastructure cost. These criteria would not be met if DOE were to build one facility at each of three candidate sites.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at

Unions are concerned that DOE has not adequately considered costs and the potential impacts presented by overextending limited funds. 6

DOE is not including the total cost as a consideration in selecting its preferred alternative. The U.S. Nuclear Regulatory Commission (NRC) said cost benefits should be prepared. This is not in keeping with the spirit of the law in applying NEPA. I believe the EIS is incomplete. 7

http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

RICHLD–6 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

RICHLD–7 **Cost**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively), which do not require that a cost benefit analysis be performed. The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium*

Benton County supports the plutonium disposition process and MOX mission, but feels the EIS has not adequately addressed the cost issue; cost savings are more attractive when viewing the overall DOE funding picture. | 8

The national security threat needs further discussion [*this refers to the presentation*]. Focusing on reducing the national security threat posed by surplus plutonium alone is too restrictive to be the program's primary goal. | 9

Disposition (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–8 **Cost**

DOE acknowledges the commentor's support for the surplus plutonium disposition program at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–9 **DOE Policy**

DOE acknowledges the commentor's concerns regarding national security. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely

All communities will be working to ensure DOE that they are the best location for performing the MOX and immobilization mission. Hanford's ability to manufacture and produce MOX fuel and to meet nonproliferation concerns is not reflected in the current SPD EIS. 10

DOE has not adequately considered the budget and technical realities of Hanford's existing facilities in favor of building new facilities down south. 11

The Hanford workforce is already at a critical low; we can't perform work now when two people are on vacation. Further workforce reductions place the site's ability to perform necessary work in jeopardy. Hanford's workforce is well trained and well versed in the type of work required by the MOX mission. Hanford's workforce is the most efficient workforce in the DOE system and is capable and ready to work on the MOX fuel program. A *Scientific American* study shows a 16 percent productivity level above baseline by using union workers. Nonunion is 11 percent below. Moving to SRS will reflect that level of reduction in efficiency. 12

manner. By working in parallel with Russia to reduce stockpiles of excess plutonium, the United States can reduce the chance that weapons-usable nuclear material could fall into the hands of terrorists or rogue states and help ensure that nuclear arms reductions will never be reversed.

RICHLD–10 **Alternatives**

DOE acknowledges the commentor's support for siting the immobilization and MOX facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–11 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

RICHLD–12 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Hanford's workforce is recognized by industry leaders for their specialized abilities and skills. Hanford workers can establish relationships with any employers who come there. | 13

FMEF can handle multiple functions/missions effectively. | 14

Have there been other analyses conducted that consider pit disassembly and conversion at Pantex with a cost analysis for transporting materials to either SRS or Hanford? The transportation argument falls short. SRS biases are very apparent in the technical documents. Analyses highlighting benefits at other sites were not conducted at Hanford. | 15

RICHLD–13 **Alternatives**

DOE acknowledges the commentor's support of the Hanford workforce. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–14 **Alternatives**

DOE acknowledges the commentor's support for using FMEF at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

RICHLD–15 **General SPD EIS and NEPA Process**

For a better understanding of cost and transportation issues, consult the following reports: *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), and *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998). These documents are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities.

I am involved with four different organizations monitoring the program's progress and have made several trips to Washington, D.C., to discuss the issue with various government officials. The barriers and inefficient communication channels that exist at DOE Headquarters block effective cross-fertilization. The communication process has failed, and the message is not getting through. 16

The decision is not about money, it's about political expediency. I wish the decision was based more on the health and safety of the American people. 17

There is a concern that the Portland meeting, attended primarily by Hanford opponents, will disrupt and distort DOE's perception of Hanford's willingness and ability to do the job. The Portland meeting stacks the deck against Hanford. There are no other places where meetings are being held 200 miles from the site. 18

RICHLD–16 **DOE Policy**

DOE acknowledges the commentor's concern regarding effective communication channels at DOE Headquarters. Since its creation, MD has supported a vigorous public participation policy. This policy is facilitated by the availability of a substantial amount of information and the implementation of numerous communication mechanisms (e.g., hearings, workshops, toll-free telephone and fax line, Web site).

DOE gave equal consideration to all comments received during the comment period on the SPD Draft EIS and incorporated changes, as appropriate, in this SPD EIS. Each environmental document is prepared and reviewed by qualified professionals and is subjected to independent review within DOE to ensure that all actions are properly coordinated.

RICHLD–17 **DOE Policy**

DOE acknowledges the commentor's concern regarding the criteria used in the decisionmaking process. The health and safety of both workers and the public is a priority of the surplus plutonium disposition program. DOE would comply with all pertinent Federal, State, and local laws and regulations and would meet all required standards. Chapter 5 summarizes the pertinent environmental regulations and permits required by the disposition program. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

RICHLD–18 **Alternatives**

DOE acknowledges local support for new missions at Hanford and the commentor's concern that other areas in Washington and the State of Oregon do not support new missions. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

DOE needs to consider the technical knowledge of the people when going to Portland. | 19

I dislike DOE responding to each comment or remark. I am familiar with the opinions from the officials, and it takes time away from the public comments. | 20

Are comments being received as part of a public meeting or a public hearing? Will the testimony be recorded? DOE needs to clearly state at the beginning of the meeting what type of format is in effect. | 21

I have been a citizen of Richland for 40 years and am a retired member of the American Nuclear Society. I agree with other statements that there is a bias in the decision process, as well as other comments offered by previous speakers. I want to see an advance agenda prior to the meetings taking place. | 22

Dividing up the EIS into environmental impact topics is faulty. | 23

RICHLD–19 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's concern about the hearing in Portland.

RICHLD–20 **General SPD EIS and NEPA Process**

In the opening remarks, the facilitator announced that DOE was using an interactive meeting format so that members of the public could obtain immediate answers to their questions and provide DOE with comments that truly represented their concerns. Written comments were also accepted at these hearings from those members of the public who preferred not to speak. The hearings continued until all participants desiring to speak had the opportunity.

RICHLD–21 **General SPD EIS and NEPA Process**

The format of SPD EIS hearings was described in a fact sheet presented to participants at the start of each hearing and was announced by the facilitator who conducted the hearing. In opening remarks, the facilitator explained that all comments were to be recorded by trained notetakers and that an electronic recording was to be made of the hearing as a backup.

RICHLD–22 **General SPD EIS and NEPA Process**

DOE does not have a bias against placing the proposed plutonium disposition facilities at Hanford. The preferred alternative was chosen based on the best information and analyses available to allow for a fair comparison among the candidate sites for the proposed surplus plutonium disposition facilities. In the case of Hanford, DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–23 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). It is

From my review of records from past meetings, I feel that DOE is proceeding on a predetermined path. If you don't listen to us, do not come here and waste our time and yours. 24

The SPD EIS should be withdrawn, revised, and reissued from a balanced perspective. 25

intended as a source of environmental information for the DOE decisionmakers and the public. The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. As with any EIS, technical information is included to the extent that it is required to understand those actions and impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities.

RICHLD–24 **General SPD EIS and NEPA Process**

The preferred alternative was chosen based on the best information and analyses available to allow for a fair comparison among the candidate sites for the proposed surplus plutonium disposition facilities. In the case of Hanford, DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Since its creation, MD has supported a vigorous public participation policy. This policy is facilitated by the availability of a substantial amount of information and the implementation of numerous communication mechanisms (e.g., hearings, workshops, toll-free telephone and fax line, Web site).

DOE gave equal consideration to all comments received during the comment period regardless of how they were submitted. Further, the hearings continued until all participants desiring to speak had the opportunity to do so.

RICHLD–25 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementation regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). DOE has analyzed each environmental resource area in a consistent manner across

Why was privatization not discussed during the presentation? Has privatization been excluded from further consideration? | 26

I am skeptical about relying on the consortium contract; doesn't the handling of special nuclear material fall under NRC regulation? | 27

The cleanup function [*resulting from plutonium disposition*] is left out of the EIS. | 28

There is a total of 12 DOE sites. How much plutonium is at SRS? The EIS should look at where the plutonium is. | 29

all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities.

RICHLD–26 **DOE Policy**

DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. Section 4.28 was revised to discuss the procurement process as well as the potential environmental impacts of the reactors that would use the MOX fuel. Regarding pit disassembly and conversion and immobilization, neither process is sufficiently defined or understood to enable the Government to privatize these activities. Plutonium pits of various designs would be disassembled and converted to oxide. The multiplicity of designs may present uncharacterized scopes of work. There are also uncertainties associated with the nature and forms of materials to be immobilized.

RICHLD–27 **NRC Licensing**

NRC is responsible for regulating special nuclear material in the private sector; DOE, for the safe handling and regulation of its own special nuclear material. Under the MOX contract, the possession and use of plutonium by both the MOX facility and the commercial reactors selected to use the MOX fuel would be regulated by NRC.

RICHLD–28 **General SPD EIS and NEPA Process**

Deactivation and stabilization of the surplus plutonium disposition facilities on completion of their mission are discussed in Section 4.31. Options for D&D would be assessed at the end of the useful life of the facilities. The assessments would include engineering evaluations, environmental studies, and NEPA review of various courses of action.

RICHLD–29 **Transportation**

The amount of surplus plutonium at each DOE site is shown in Chapter 1 of Volume I. These amounts and locations are the starting points for determining

Does constructing a new MOX fuel fabrication facility at SRS adjacent to the Actinide Packaging and Storage Facility (APSF) mean that most of the material will be immobilized in a ceramic versus a glass form and not be used for fuel? | 30

Is APSF a major factor in determining the preferred alternative? | 31

the potential transportation impacts for each of the alternatives analyzed in this SPD EIS. Should DOE decide to implement one of these alternatives, all of the surplus plutonium at each of these sites would eventually be sent to a potential geologic repository. None of the alternatives involve moving Hanford materials to Pantex.

RICHLD–30 **MOX Approach**

A MOX facility would only be constructed to convert the surplus plutonium into MOX fuel. Under the preferred alternative, the immobilization and MOX facilities would be sited next to APSF, if built, at SRS, and a hybrid approach to surplus plutonium disposition would be implemented. MOX fuel would be made from all but the approximately 17 t (19 tons) of surplus plutonium that is unsuitable for such use because of the complexity, timing, and cost that would be involved in purifying the material. All the plutonium unsuitable for use as MOX fuel would be immobilized, preferably in the ceramic rather than the glass form.

RICHLD–31 **Alternatives**

APSF was a factor, but not a major consideration, in selection of the preferred alternative. As discussed in the revised Section 1.6, SRS is preferred for the proposed surplus plutonium disposition facilities because the site has extensive experience with plutonium processing, and these facilities complement existing missions and take advantage of existing infrastructure. Section 2.4 of the SPD Draft EIS discusses the alternatives that considered locating pit conversion or immobilization facilities at SRS and using APSF as the site of a receiving facility for SST/SGT shipments, nondestructive assay facilities, and storage vaults for plutonium dioxide and metal. However, DOE has recently decided to delay the construction of APSF, so this SPD EIS was revised to exclude any benefit of APSF.

The location of DWPF was the major factor in the preference for SRS as the site of the immobilization facility. DOE is presently considering a replacement process for the in-tank precipitation (ITP) process at SRS. The ITP process was intended to separate soluble high-activity radionuclides (i.e., cesium, strontium, uranium, and plutonium) from liquid HLW before vitrifying the high-activity fraction of the waste in DWPF. The ITP process as presently configured cannot achieve production goals and safety requirements for

Could the Fast Flux Test Facility (FFTF) be used? The draft document evaluated FFTF as the sole venue for surplus plutonium disposition. If FFTF is used to produce tritium, plutonium could not be disposed of in the indicated timeframe. Previous reports said that FFTF could dispose of plutonium in 19 years. 32

The SRS decision for MOX fuel fabrication is based on administrative issues. Is it logical to site MOX at SRS considering the site has no previous MOX experience? 33

There are no other alternatives that also ship oxides to Hanford and the Idaho National Engineering and Environmental Laboratory (INEEL). Alternatives also did not consider a MOX-only function at FMEF. All alternatives consider the cost of creating a MOX facility with one new stand-alone facility. 34

processing HLW. Three alternative processes are being evaluated by DOE: ion exchange, small tank precipitation, and direct grout. DOE's preferred immobilization technology (can–in–canister) and immobilization site (SRS) are dependent upon DWPF providing vitrified HLW with sufficient radioactivity. DOE is confident that the technical solution will be available at SRS by using radioactive cesium from the ion exchange or small tank precipitation process. A supplemental EIS (DOE/EIS-0082-S2) on the operation of DWPF and associated ITP alternatives is being prepared.

RICHLD–32 **MOX Approach**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

RICHLD–33 **Alternatives**

The selection of SRS as the site of the MOX facility was not an administrative issue. As indicated in Section 1.6, SRS is preferred for the MOX facility because this activity complements existing missions and takes advantage of existing infrastructure and staff expertise. While SRS does not possess previous MOX experience, it possesses, like Hanford, a wealth of plutonium processing experience. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

RICHLD–34 **Alternatives**

Section 2.3.1 explains the development of the facility siting alternatives that were analyzed in this SPD EIS. A range of 15 reasonable alternatives remained after evaluating over 64 options against the three screening criteria, which are analyzed in the SPD Final EIS. The equally weighted criteria used were worker and public exposure to radiation, proliferation concerns due to transportation of materials, and infrastructure cost. The resulting reasonable facility and building combinations did not include those options involving shipments of oxides to Hanford and INEEL, or a MOX-only function in FMEF at Hanford because those options do not meet all the screening criteria.

Converting pits and other plutonium sources into MOX fuel is a wise use of resources; why not use all, or as much as possible, in fuel? Why immobilize any plutonium?	35
Who will operate the MOX facilities?	36
Wasn't MOX eliminated as a commercial product a number of years ago?	37

RICHLD–35 **Alternatives**

All of the surplus plutonium would not be made into MOX fuel because some of it is not suitable for fabrication due to the complexity, timing, and cost that would be involved in purifying those plutonium materials to make them suitable for use in MOX fuel. As described in this SPD EIS, DOE has identified 17 t (19 tons) of impure plutonium. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not considered a reasonable alternative at this time. In order to simplify the manufacture of MOX fuel and help produce a consistent product, DOE considers it advantageous to use a feed stream consisting of only plutonium from clean metal, pits, and clean oxide. Sending the remaining materials to the immobilization facility avoids extensive characterization and purification of materials. While it is possible to use impure plutonium, the incremental burden to do so is unnecessary and complicates the MOX approach.

RICHLD–36 **MOX Approach**

DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As discussed in the revised Section 4.28, it would be the selected team, DCS' responsibility to design, request a license, construct, operate, and deactivate the MOX facility, and to irradiate the MOX fuel in a domestic, commercial reactor. The MOX facility would be subject to DOE and NRC safety requirements.

RICHLD–37 **MOX Approach**

R&D efforts involving MOX fuel were halted in the 1970s when fuel reprocessing and breeder reactor programs were eliminated. However, these were political decisions based on proliferation concerns, and did not reflect the viability of the technologies. The use of MOX fuel as an approach to surplus plutonium disposition does not run counter to this position. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

Page 27 of the SPD Draft EIS Summary indicates that DOE plans to irradiate MOX fuel only until it reaches the Spent Fuel Standard. Some commercial companies may resist running partial rather than full fuel cycles. | 38

Most utilities will argue that receiving plutonium for free alone is insufficient compensation for conducting the MOX program; utilities will want additional compensation (e.g., domestic reactors requiring highly enriched uranium that the utility had to buy). | 39

Is this material [*MOX fuel*] going to go to foreign reactors? | 40

RICHLD–38 **MOX Approach**

As discussed in Chapter 2 of Volume I, MOX fuel would be left in the reactor for a full cycle. Under the current reactor options, there are no plans to leave it there only long enough to meet the Spent Fuel Standard. The statement in the Draft Summary refers to an analysis from the *Storage and Disposition PEIS* that assumed MOX fuel would be removed from the reactor as soon as it had been irradiated sufficiently to meet the Spent Fuel Standard. The point being made in that PEIS was that even if this were the plan, there would still be enough space at the reactor sites to store the spent fuel until it could be sent to a potential geologic repository.

RICHLD–39 **MOX Approach**

DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. Furthermore, to ensure that taxpayers would not underwrite what might be uneconomical electricity-generating costs, DOE specifically excluded from the contract reimbursement of any costs for continuing operation of any plant unless those costs are solely and exclusively related to MOX fuel irradiation.

RICHLD–40 **MOX Approach**

This SPD EIS addresses the use of MOX fuel only in domestic, commercial reactors. In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project*

Have any commercial reactors been identified by DOE? MOX fuel can be irradiated in a commercial domestic reactor (Gore/Korenko meeting). | 41

Will the provider conduct the analysis for the core reactor? | 42

Has DOE considered the use of existing commercial facilities such as the Siemens plant for manufacturing MOX fuel? | 43

Fuel Manufacture and Shipment (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at http://www.doe-md.com. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russia's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

RICHLD–41 **MOX RFP**

DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. The selected team, DCS, would design, request a license, construct, operate, and deactivate the MOX facility as well as irradiate the MOX fuel in domestic, commercial reactors. However, these activities are subject to the completion of the NEPA process. As a result of its procurement process, DOE identified the reactors proposed to irradiate MOX fuel, Catawba, McGuire, and North Anna, as part of the proposed action in this SPD EIS. Section 4.28 was revised to discuss the potential environmental impacts of operating those reactors.

RICHLD–42 **MOX RFP**

One of the inherent responsibilities of the reactor licensee is assurance that the fuel inserted into its reactors meets all licensing requirements. This responsibility is not isolable from the reactor license. Many utilities choose to subcontract core analysis to fuel vendors, but some perform their own analyses; the decision, whether LEU or MOX fuel is involved, is the utility's alone to make.

RICHLD–43 **MOX RFP**

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For

Time is critical for reducing weapons materials; using existing facilities [*rather than taking time to build new ones*] will reduce the timeframe for dispositioning this material. | 44

Has DOE considered doing a pilot scale of plutonium conversion? Should DOE test 1-1/2 to 2 tons as a trial run? Existing Hanford facilities could be used as a pilot plant to test the process. | 45

Cost was left out of the EIS. | 46

reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing. Therefore, the use of the Siemens Plant approach is beyond the scope of the alternatives evaluated for this SPD EIS.

RICHLD–44 **Purpose and Need**

Although use of existing facilities might save some time in the disposition process, such facilities would still require considerable modification. Timeliness, however, is only one of many factors in decisionmaking with respect to surplus plutonium disposition. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

RICHLD–45 **Pit Disassembly and Conversion**

DOE is currently in the process of testing the plutonium conversion process as an integrated system at LANL. Up to 250 pits will be disassembled and converted to plutonium dioxide using the same techniques proposed in this SPD EIS. Details of this test may be found in the *Pit Disassembly and Conversion Demonstration EA* (DOE/EA-1207, August 1998), which is available on the MD Web site at http://www.doe-md.com. The resulting experience from this demonstration would be used to supplement information developed to support the design of the full-scale pit conversion facility should DOE decide to construct that facility. There is no need to duplicate this effort at any other DOE site.

RICHLD–46 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013,

Where are the funds for MOX coming from? | 47

DOE needs to compare the cost of using existing facilities against the costs of building a new facility. I can't believe that the preferred site is cheaper than Hanford. FMEF cost $200 million to build 20 years ago. The National Academy of Sciences estimates that it will cost $500 million to $1 billion to build a new MOX facility. It would cost only $150 million to $175 million to modify the existing FMEF. Funds generated from FMEF could run FFTF to produce medical isotopes. | 48

The current cost analysis is in conflict with an independent cost analysis, and this will have future ramifications. | 49

November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–47 **Cost**

Funding for MOX fuel fabrication and the rest of the surplus plutonium disposition program comes from DOE's budget, which is authorized and appropriated by the U.S. Congress. The MOX facility would produce nuclear fuel to displace the LEU fuel that utilities otherwise would have purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

RICHLD–48 **Cost**

Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–49 **Cost Report**

Because this comment relates directly to the cost analysis report, it has been forwarded to the cost analysis team for consideration. The *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, is available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

Are the United States and Russia close to a bilateral agreement on the disposition of plutonium? | 50

Is the United States getting close on the Spent Fuel Standard (15 percent/240)? | 51

I understand that Russia prefers to burn, not immobilize. The General Accounting Office (GAO) said the Russian mission will not fly without funding. Will the United States wait on disposition until Russia is ready to begin? | 52

RICHLD–50 **Nonproliferation**

In September 1998, the United States and Russia, in a joint statement, affirmed the intention of each country to remove, by stages, approximately 50 t (55 tons) of plutonium from its stockpile and to convert this material so that it can never be used in nuclear weapons. The two countries also agreed to seek to develop appropriate international verification measures and stringent standards of physical protection, control, and accounting for the management of plutonium.

RICHLD–51 **DOE Policy**

The Spent Fuel Standard does not require a specific plutonium 240 isotopic content of 15 percent. Although isotopic dilution of the surplus plutonium resulting in a higher plutonium 240 content would support nonproliferation objectives, it is not necessarily required to make the material as inaccessible and unattractive for weapons use as the plutonium that exists in highly radioactive spent nuclear fuel from commercial reactors. Other factors considered in attaining the Spent Fuel Standard include the incorporation of physical (size and weight) and radioactive barriers to reduce the possibility of proliferation.

RICHLD–52 **Nonproliferation**

To date, Russia has not made a final decision on which disposition option it will use. DOE is working diligently to ensure that Russia continues to pursue plutonium disposition with the same vigor as the United States. Understanding the economic dilemma in Russia, the U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue. The United States does not currently plan to implement a unilateral program; however, it will retain the option to begin certain surplus plutonium disposition activities in order to encourage the Russians and set an international example.

Who is funding the Russian component of the plutonium disposition process? The DOE or the G-7? | 53

The largest store of weapons-grade plutonium is here at Hanford. The location of plutonium should be looked at. This was not included in the EIS. | 54

Hanford was not treated fairly in the SPD EIS. Of eleven alternatives, only one considered Hanford for all three facilities, and in this one alternative (2), the MOX facility at Hanford would be a new facility, while ignoring FMEF capabilities. I feel that this is a clear example of the inherent bias reflected in the SPD EIS. Alternatives 4A and 4B calls for a new facility for MOX and immobilization, respectively. There is no case presented that allows Hanford to do more than two of three tasks, and Hanford is always required to build a new facility. | 55

RICHLD–53 **Nonproliferation**

DOE is working diligently to ensure that Russia continues to pursue plutonium disposition with the same vigor as the United States. The U.S. Congress has appropriated funding for a series of small-scale tests and demonstrations of plutonium disposition technologies jointly conducted by the United States and Russia. For fiscal year 1999 (starting October 1998), Congress further appropriated funding to assist Russia in design and construction of a plutonium conversion facility and a MOX fuel fabrication facility. This funding would not be expended until the presidents of both countries signed a new agreement. Although the amount appropriated by Congress is not sufficient to fund the entire Russian surplus plutonium disposition program, the United States is working with Russia and other nations to resolve this issue.

RICHLD–54 **Transportation**

Pantex has the largest volume of surplus plutonium, in the form of pits and metal; Hanford, most of the nonpit surplus plutonium. Appendix L was revised to show the number of shipments for each alternative. Alternatives 2, 4, 6, 8, and 10 in this SPD EIS involve siting one or more of the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–55 **Alternatives**

DOE acknowledges the commentor's concern regarding the development and evaluation of the surplus plutonium disposition alternatives. Section 2.3.1 explains the development of the facility siting alternatives that were analyzed in this SPD EIS. A range of 15 reasonable alternatives remained after evaluating over 64 options against the three screening criteria, which are analyzed in the SPD Final EIS. The equally weighted criteria used were worker and public exposure to radiation, proliferation concerns due to transportation of materials, and infrastructure cost. Every alternative that considered Hanford used, to

The MOX mission should be located at Hanford because Hanford has an experienced workforce with the technical skills and knowledge to perform the MOX mission. | 56

The plutonium disposition mission will help to maintain a highly skilled workforce [*at Hanford*]. | 57

Hanford's dry climate is better suited for conducting the MOX mission. | 58

Cheap power should be considered when looking to site mission; power is much more expensive in the south. | 59

the maximum extent possible, FMEF. In the case of Alternative 2, it was determined that the available space in FMEF would not be sufficient to accommodate the efficient operation and maintenance of all three proposed facilities. Therefore, the MOX facility was proposed to be located in a new building in part because, unlike the other facilities, it would be licensed by NRC.

RICHLD–56 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–57 **Alternatives**

DOE acknowledges the commentor's support for the surplus plutonium disposition program at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–58 **Alternatives**

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–59 **Cost**

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis*

FMEF is an ideal facility for performing the MOX mission. It is the best choice for achieving an optimal timeframe for startup. FMEF is built to NRC standards, is ready to license, is clean, and can be easily modified to meet the demands of a MOX mission. Infrastructure considerations are offered by existing facilities, FMEF, over new facilities. It makes sense to use the facility rather than walking away from it in order to build a similar facility elsewhere. The National Academy of Sciences has pointed this out. 60

DOE should apply Hanford's assets to emerging national and international needs. I would like to reemphasize the importance of plutonium disposition: it's critical to withdraw surplus plutonium from the weapons supply. The SPD EIS is an extremely important document, and it needs to be technically sound. 61

FFTF, if dedicated to the plutonium disposition mission, could dispose of the plutonium within 25 years as required while at the same time producing medical isotopes. 62

in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–60 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility in FMEF at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

RICHLD–61 **Alternatives**

DOE agrees with the commentor's views on the importance of plutonium disposition. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–62 **Alternatives**

DOE acknowledges the commentor's support for the surplus plutonium disposition program using FFTF at Hanford. As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source.

DOE should give further consideration that FFTF could handle burning 33 tons. I think that all excess plutonium could be burned and FMEF could produce MOX fuel. The taxpayers would save a lot. | 63

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

RICHLD–63 **Alternatives**

DOE acknowledges the commentor's support for the surplus plutonium disposition program using FFTF and FMEF at Hanford. As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source.

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission, especially in regard to the use of existing facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

I am concerned that with cleanup as the only mission at Hanford, it is a signal that no new missions will be given to Hanford. The plutonium disposition mission is consistent with the cleanup mission, contrary to EIS findings. Hanford can handle more than one mission at a time. 64

SRS also has an extensive cleanup mission to consider; why is DOE only penalizing Hanford and INEEL? 65

The SPD EIS misrepresents Hanford by claiming additional facility requirements while ignoring dual-mission capability, which incurs additional costs. 66

RICHLD–64 **Alternatives**

DOE acknowledges the commentor's view that the surplus plutonium disposition program is consistent with the cleanup mission. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–65 **Alternatives**

Cleanup is, and will remain, a priority at SRS and will be unaffected by other DOE initiatives. As indicated in the revised Section 1.6, SRS is preferred for the proposed surplus plutonium disposition facilities because the site has extensive experience with plutonium processing, and these facilities complement existing missions and take advantage of existing infrastructure.

RICHLD–66 **Alternatives**

DOE acknowledges the commentor's concern regarding DOE's assessment of Hanford's capabilities relative to the other candidate sites for the surplus plutonium disposition program. The preferred alternative was chosen based on the best information and analyses available to allow for a fair comparison among the candidate sites for the proposed surplus plutonium disposition facilities.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate cost report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the site-specific cost estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

What were the discriminating factors for selecting SRS? If there were no major differences in the environmental impacts at the sites, then the mission should be given to Hanford. Hanford is the most contaminated site; therefore, it should have a priority in receiving new missions. 67

DOE would be shipping out more plutonium from Hanford than it would take in if the plutonium mission were to be sited at SRS. We would be shipping more plutonium to SRS than they would be shipping here. That was left out of the EIS. 68

Locating a MOX facility at SRS requires an extra step in moving materials from Hanford to Pantex. 69

I would like to address the political side of the decision. The Northwest community sent a message to DOE during the scoping process that they expected an objective, unbiased assessment of all options and opportunities, and that the previous PEIS should not drive the current SPD EIS. The SPD EIS is not balanced and objective. Hanford deserves fair and unbiased consideration. 70

RICHLD–67 **Alternatives**

The preferred alternative was chosen based on the best information and analyses available to allow for a fair comparison among the candidate sites for the proposed surplus plutonium disposition facilities. In the case of Hanford, DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

RICHLD–68 **Transportation**

The amount of surplus plutonium at each DOE site is shown in Chapter 1 of Volume I. These amounts and locations are the starting points for determining the potential transportation impacts for each of the alternatives analyzed in this SPD EIS. Should DOE decide to implement one of these alternatives, all of the surplus plutonium at each of these sites would eventually be sent to a potential geologic repository.

RICHLD–69 **Transportation**

None of the alternatives involve moving Hanford materials to Pantex.

RICHLD–70 **General SPD EIS and NEPA Process**

DOE has prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementing regulations (40 CFR 1500 through 1508 and 10 CFR 1021, respectively). The primary objective of the EIS is a comprehensive description of proposed surplus plutonium disposition actions and alternatives and their potential environmental impacts. DOE has analyzed each environmental resource area in a consistent manner across all the alternatives to allow for a fair comparison among the alternatives and among the candidate sites for surplus plutonium disposition facilities. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

I am disappointed in DOE's process for developing this EIS; I feel that it is a predetermined process. It could be litigated. | 71

I hope DOE recognizes that there is more than one voice speaking for the Northwest. Not everyone agreed or supported the recent lawsuit, so don't hold that lawsuit against Hanford. | 72

Will public comments on the cost analysis be accepted? | 73

Can domestic facilities be licensed to produce MOX fuel? Will MOX be licensed by the NRC? | 74

The SPD EIS added additional spent fuel difficulties (americium, high-heat levels, etc.). DOE has a questionable record when it comes to storing spent fuel. How will DOE help the sites store spent fuel? | 75

RICHLD–71 **General SPD EIS and NEPA Process**

DOE prepared this SPD EIS in accordance with the provisions of NEPA (42 U.S.C. 4321 et seq.) and the related CEQ and DOE implementing regulations (40 CFR 1500 through 1508 and 10 CFR 21, respectively). Decisions on the surplus plutonium disposition program are not predetermined; they will be based on the environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

RICHLD–72 **General SPD EIS and NEPA Process**

DOE acknowledges the commentor's concern for equal representation. DOE provided opportunities and means for public comment on the surplus plutonium disposition program and gave equal consideration to all comments.

RICHLD–73 **Cost Report**

Public comments on the cost analysis are addressed in the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which is available on the MD Web site at http://www.doe-md.com and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

RICHLD–74 **NRC Licensing**

Domestic facilities can be licensed to produce MOX fuel. Both the MOX facility and the domestic, commercial reactors selected to use the MOX fuel would be licensed and monitored by NRC.

RICHLD–75 **MOX Approach**

MOX fuel assemblies would be the same size and shape as the LEU fuel for the specific reactor. The only difference would be the additional decay heat from the higher actinides, especially americium, in the MOX fuel. Dry casks are designed and certified for a maximum heat load, so the additional decay heat would contribute to the total heat load and not require any redesign. The additional heat load may result in less spent fuel stored per cask. A more likely option is that the MOX fuel would be selectively packaged with cooler LEU fuel to obviate any overall heat output restriction.

If there are to be no new missions at the DOE Hanford facility, is DOE prepared to give up their space in the Federal Building [*in Richland*]? I suggest transitioning the Federal Building from DOE use to the City of Richland use. | 76

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

RICHLD–76 **Other**

The use of the DOE space in the Federal Building is beyond the scope of this SPD EIS.