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One-hundred percent immobilization does not require gallium removal. The polishing process is not needed. Why was this not included in the analyses? 1

Nonpit materials: can the chosen facility be modified to accommodate a hydride-oxidation process for single processing? Did the Department analyze pit disassembly and conversion without gallium removal, or can it be attached to the facility? 2

IDFALS–1 Plutonium Polishing and Aqueous Processing

The commentor is correct in that immobilization of the full 50 t (55 tons) of surplus plutonium is not anticipated to require a plutonium polishing process to remove gallium concentrations. This SPD EIS analyzed the option to immobilize all the surplus plutonium as discussed in Alternatives 11 and 12. In terms of hybrid alternatives, which also consider plutonium disposition through a combination of immobilization and use as MOX fuel, there has been some discussion that the pit conversion process might not be able to produce plutonium dioxide powder that would consistently meet specifications for MOX fuel. 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. Section 2.4.3 and the hybrid alternatives analyses in Chapter 4 of Volume I were revised to include a discussion of plutonium polishing.

IDFALS–2 Plutonium Polishing and Aqueous Processing

The final configuration of the pit conversion facility, which could also process nonpit plutonium metal and oxide, will be based on information collected from the demonstration project under way at LANL. This could include a hydride-oxidation 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.

DOE should go with the No Action Alternative and store the material in a secure place.	3
Define a pit. Immobilizing pits could be as little as changing shape?	4
Is it technically possible to attach immobilization to the front end of pit disassembly and conversion?	5
How was the decision made to designate some plutonium for MOX and some for immobilization?	6

IDFALS–3 **Alternatives**

The No Action Alternative would not satisfy the purpose of and need for the proposed action, which 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 has identified as its preferred alternative the hybrid approach (i.e., immobilization and MOX) to surplus plutonium disposition.

IDFALS–4 **Pit Disassembly and Conversion**

A pit, the design of which is classified, is the core component of a nuclear weapon's "primary" or fusion component. The immobilization process is more complicated than just changing the shape of the pits. Changing the shape of the pits would not render the plutonium proliferation resistant or remove the classified nature of the pit. The plutonium, present in pits as metal, must be removed from the other components of the pit and converted to an oxide powder before it can be further processed for disposition. This process would occur at the pit conversion facility. The plutonium dioxide powder would then be transferred to the immobilization facility where it would be mixed with other materials and turned into a ceramic or vitrified form, then loaded into stainless steel cans approximately the size of a coffee can. These cans would then be placed on racks and loaded into HLW canisters which would then be filled with the vitrified HLW.

IDFALS–5 **Pit Disassembly and Conversion**

It is technically possible to locate the two processes together. However, pit disassembly and conversion would have to occur prior to immobilization.

IDFALS–6 **Alternatives**

The amount directed to each option is related to the suitability of the plutonium for use as MOX fuel. In the ROD for the *Storage and Disposition PEIS*, DOE decided that approximately 8 t (9 tons) of the current surplus plutonium were not suitable for use in MOX fuel and therefore would be immobilized. As

I support DOE's efforts to get plutonium off the market. The nuclear proliferation threat is a real danger and must be contained. I advocate full immobilization as the single source disposition method. MOX costs more, has a longer timeframe for startup, and threatens the nonproliferation policy. The Program's goal should be to get rid of plutonium, not to produce electricity. Given these factors, the SPD EIS should address decision factors for determining whether to go to MOX or to full immobilization. This issue needs to be further addressed. 7

described in this SPD EIS, an additional 9 t (10 tons) of surplus plutonium were identified as unsuitable for MOX fuel fabrication. The 17 t (19 tons) of surplus plutonium are not suitable for fabrication due to the complexity, timing, and cost that would be involved in purifying the material. The remaining 33 t (36 tons) of the 50 t (55 tons) of surplus plutonium would be fabricated into MOX fuel.

IDFALS–7 **Alternatives**

DOE acknowledges the commentor's support for the immobilization-only 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.

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.

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

I am amazed at the number of people making their livelihood maintaining problems. MOX as the preferred option falls short. | 8

There are a lot of misconceptions in the public about plutonium. Plutonium has always been burned in reactors; there's nothing new about burning plutonium in reactors. The hybrid strategy was chosen in case one of the options fails. | 9

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.

IDFALS–8 **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.

IDFALS–9 **Alternatives**

DOE acknowledges the commentor's 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. 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.

We know that 17 metric tons must be immobilized, so why is MOX still being considered? What are the factors for determining success or failure? 10

Is the MOX fuel fabrication process designed to fabricate Russian-originated plutonium? 11

The INEEL Citizens' Advisory Board (CAB) researched and considered the MOX decision. We could not reach a consensus, but will continue looking at the issue. The INEEL CAB has concerns about the MOX program. 12

Immobilizing plutonium is disposing $2.5 billion dollars. Taxpayers are throwing money down the hole in the form of glass. DOE is making plutonium available free. Recycling it is not hazardous. It's reducing waste, not adding it. 13

IDFALS–10 **Purpose and Need**

Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. 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.

IDFALS–11 **Alternatives**

MOX fuel fabrication is essentially the same regardless of the origin of the plutonium used in the process. The surplus plutonium disposition program proposed in this SPD EIS would only process 50 t (55 tons) of U.S.-origin plutonium.

IDFALS–12 **MOX Approach**

DOE acknowledges the commentor's concern regarding the MOX approach. Decisions on the surplus plutonium disposition program at INEEL will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

IDFALS–13 **Alternatives**

DOE acknowledges the commentor's opposition to the immobilization 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

Is the end use of MOX to replace highly enriched uranium for power purposes? Is there a commitment from power companies to use MOX?	14
Will the commercial industry's response determine the final decision of whether to use MOX or to go to a 100 percent immobilization option? Does DOE's decision of going to 33 metric tons or 0 metric tons [*for MOX fuel*] depend on commercial end-users?	15
MOX fuel replaces commercial fuel that would exist anyway. The facilities analyzed in SPD EIS are anticipated to classify material to meet WIPP waste acceptance criteria requirements. Shouldn't the MOX facility be a classified facility?	16

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.

IDFALS–14 **DOE Policy**

The MOX approach is not intended to affect the viability of nuclear power. The purpose of the MOX approach is to convert surplus plutonium to a form that meets the Spent Fuel Standard, thereby providing evidence of irreversible disarmament and setting a model for proliferation resistance. 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. 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.

IDFALS–15 **DOE Policy**

Potential users of MOX fuel have been identified by DOE and are part of the DCS team contracted to operate the MOX facility and offer irradiation services in the hybrid approach is selected.

IDFALS–16 **DOE Policy**

It is DOE's policy that the various wastes generated from the surplus plutonium disposition program would meet the performance criteria for disposal at the respective repositories. The feed material for the MOX facility, plutonium dioxide, is made from pits or pure plutonium metal that have been declassified. The MOX fuel produced from the facility (licensable by NRC) would be used in domestic, commercial reactors. Therefore, the MOX facility would not be a classified facility.

I am aware of the economic impact on nuclear energy. I am concerned about the economic impact of MOX. What will the program cost? Who bears the cost? 17

Modifications to commercial reactors will be required for MOX, also relicensing will be required. Who is responsible for paying for this? Any estimate on cost? 18

IDFALS–17 **Cost**

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.

Because cost issues are beyond the scope of this EIS, this comment has been forwarded to the cost analysis team for response. For a better understanding of the cost and schedule estimates for each alternative, consult *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999). 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.

IDFALS–18 **MOX RFP**

DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As a result of this 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. Because commercial reactors in the United States are capable of safely using MOX fuel. DOE believes that the cost to make these reactors suitable for using MOX fuel would be relatively low. The costs would be limited to some analyses and

What is Russia planning to do? Are there agreements in place to ensure that Russia will follow through?	19
What other technologies are being looked at by Russia other than MOX?	20

operating license amendments, and would be reimbursable to the utilities by DOE under the terms of the RFP. Irrespective of the combination of actions implemented, costs to the taxpayer would be associated with the disposition of surplus U.S. plutonium. A separate report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), analyzes the site-specific cost estimates for each alternative. 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.

IDFALS–19 **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.

IDFALS–20 **Nonproliferation**

Like the United States, Russia is pursuing studies to address both the immobilization and MOX approaches to surplus plutonium disposition. A feasibility study, in parallel with small-scale testing, is currently under way in Russia to determine the technology to be used to convert Russian plutonium to a form suitable for disposition and international inspection. The Russian pilot-scale study would demonstrate the capability to convert plutonium metal to an oxide form, suitable for either disposition approach (i.e., immobilization or MOX).

Was the United States asked by Russia to assist in funding a safe, secure facility? | 21

I have heard of low-enriched uranium or highly enriched plutonium being redirected or lost. There's no indication that the material was ever used. There may be leakage of nuclear materials at the universities in Russia. | 22

Don't invest huge sums in the United States until the confidence level in Russia's commitment to do down the MOX path is higher. | 23

IDFALS–21 **Nonproliferation**

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.

IDFALS–22 **Nonproliferation**

DOE acknowledges the commentor's concern regarding the safety and security of nuclear materials in Russia. While the quantities and condition of Russian nuclear materials are beyond the scope of this SPD EIS, safeguards and security issues are being addressed in negotiations between the United States and Russia. 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. One of the principles of this agreement states acceptable methods and technology for transparency measures, including appropriate international verification measures and stringent standards of physical protection, control, and accounting for the management of plutonium would be developed.

IDFALS–23 **DOE Policy**

DOE acknowledges the commentor's concern regarding investment of U.S. dollars without evidence of Russia's commitment to a MOX approach. The United States and Russia recently made progress in the management and disposition of plutonium. In late July 1998, Vice President Gore and

To what extent will the United States fund pit conversion. Clarify the bounds of the European program. Why does it keep them from handling U.S. fuel?	24

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. However, in order to avoid putting the United States at a strategic disadvantage in future negotiations with Russia as well as to avoid the large-scale expenditure of funds until necessary, the Administration has made it clear that it will not construct new facilities for disposing of U.S. surplus plutonium unless there is significant progress on plans for plutonium disposition in Russia.

IDFALS–24 **DOE Policy**

The pit disassembly and conversion process recovers plutonium from pits and clean metal and converts the plutonium to an unclassified form. It is a necessary first step for accomplishing plutonium disposition. Funding for the surplus plutonium disposition program is appropriated annually by the U.S. Congress.

The U.S. Government held discussions with the European governments and the European MOX industry concerning this issue. The Europeans are not interested in processing U.S. weapons-usable plutonium in their MOX facilities because their program has reached a balance between the cycle times of the reactors served and the fuel processing and fabrication schedules. The introduction of U.S. surplus plutonium into that balance would disrupt the equilibrium of their fuel cycle, increase plutonium inventories and storage requirements, and increase cost for the European MOX industry. In addition, administrative barriers, including the need to negotiate multiple agreements with other governments, transportation concerns, and working through permit requirements would result in schedule delays in the U.S. surplus plutonium disposition program. This in turn would make it more difficult to reach a surplus plutonium disposition agreement with the Russian government in a timely manner.

Russia lacks the money to go after "Fort Knox" in Russia. There are limited funds for the Russian space program. Russia lacks the money to do anything. I do not think that Russia is going to invest in a multibillion dollar MOX program. 25

When Senator Dominici was visiting in Russia, did he hear that Russia would accept the immobilization process? 26

Both Russia and the United States agree about the benefits of working together and building a relationship between the countries. The United States has good reason to maintain a strong relationship with Russia. 27

IDFALS–25 **Nonproliferation**

The Russian economy is a concern, and 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.

IDFALS–26 **Nonproliferation**

The *Joint Statement of Principles* signed by Presidents Clinton and Yeltsin in September 1998 provide general guidance for achieving the objectives of a future bilateral agreement to disposition surplus plutonium in the United States and Russia. The principles include the acceptance of either the immobilization of plutonium in glass or ceramic form or the consumption of plutonium in MOX fuel in reactors.

IDFALS–27 **DOE Policy**

DOE agrees that close cooperation between the two countries is required to achieve the objectives of nonproliferation and arms reduction, and to ensure secure management of nuclear weapons materials. Toward that end, 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.

Why is DOE planning for new construction adjacent to APSF when it already owns a state-of-the-art facility (FMEF) designed for MOX fuel production? 28

FMEF has design flaws that would be difficult and costly to correct in order to meet the MOX mission. It's much cheaper for the Department to dismantle a "cold" (clean) facility than it is to dismantle a "hot" (contaminated) facility. 29

INEEL has a basic advantage for manufacturing MOX fuel. Why is the Secretary so eager to reach a preferred alternative in siting the facility in the south? 30

INEEL has never been a weapons site or laboratory. In keeping with the "swords to plowshares" intent of the plutonium disposition concept, wouldn't the mission fit better at a nonweapons site, such as INEEL? 31

IDFALS–28 **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.

IDFALS–29 **Alternatives**

DOE acknowledges the commentor's opposition to 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.

IDFALS–30 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at INEEL. 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. Decisions on the surplus plutonium disposition program at INEEL 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.

IDFALS–31 **Alternatives**

DOE acknowledges the commentor's support for siting the proposed surplus plutonium disposition facilities at INEEL. Decisions on the surplus plutonium disposition program at INEEL will be based on environmental analyses, technical and cost reports, national policy and nonproliferation

If all spent fuel rods slated to be moved to Nevada are stored at INEEL on a temporary basis, doesn't it make sense to site the MOX mission at INEEL? 32

The Advanced Mixed-Waste Facility at INEEL is used for TRU waste. DOE is proposing to build a new facility that will ultimately become alpha-contaminated. The facility will be used to contain a small amount of easily contained plutonium. The plutonium disposition program is going to generate more TRU waste. It doesn't make sense. 33

considerations, and public input. DOE will announce its decisions regarding facility siting and approach to surplus plutonium disposition in the SPD EIS ROD.

IDFALS–32 **Alternatives**

DOE acknowledges the commentor's support for siting the MOX facility at INEEL. Only 10 lead assemblies would be made and fewer than that number irradiated. Only a small number of rods from those assemblies would be sent for postirradiation examination. This small number of fuel rods that could be stored at INEEL, should the rods be sent to ANL–W for postirradiation examination, does not, on its own, support siting the MOX facility at INEEL.

As discussed in the revised Section 1.6, DOE prefers ORNL for postirradiation examination activities because the site has existing facilities and staff expertise needed to perform postirradiation examination as a matter of its routine activities; no major modifications to facilities or processing capabilities would be required. In addition, ORNL is about 500 km (300 mi) from the reactor site that would irradiate the fuel. Decisions on the surplus plutonium disposition program at INEEL 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.

IDFALS–33 **Waste Management**

Although waste generation would be minimized to the extent possible, alternatives for the disposition of surplus plutonium would generate some additional TRU waste. As shown in Section 4.14.2.2, and Appendix H.2.2.3, if both the pit conversion and MOX facilities were located at INEEL, 64 m^3/yr (83 yd^3/yr) of TRU waste would be generated. This is approximately 1 percent of the 6,500-m^3/yr (8,500-yd^3/yr) planned capacity of the Advanced Mixed Waste Treatment Project. In addition, the 640 m^3 (837 yd^3/yr) of TRU waste generated over the 10-year operating period of the surplus plutonium disposition facilities would be less than 1 percent of the 39,300 m^3 (51,400 yd^3) of TRU waste in storage at INEEL.

The SPD EIS is yet another EIS that doesn't answer questions on high-efficiency particulate air filters and their ability to contain exhausts in processing facilities. Air quality questions are not answered regarding particulate filtration. I am concerned about public health and safety if an accident occurs. The general public does not want to be downwind if an accident occurs. Accident analyses need to be put back into air quality permitting.

34

IDFALS–34 **Human Health Risk**

The chemical and radiological emissions associated with each of the proposed surplus plutonium disposition facilities would be processed through HEPA filters prior to their release to the atmosphere. The post HEPA filter emission rates for chemical releases are given in Appendix G, those for radiological releases in Appendix J. These rates represent the source terms analyzed by the computer codes (described in Appendixes F and J) to determine the air concentrations of chemical releases at the site boundary and to determine doses to the public from radiological releases. For chemical releases, the increases in air pollutant concentrations represent small fractions of the Federal and State ambient air quality standards and would be expected to have an insignificant effect on human health. In addition, analyses of the hazardous chemical releases to the atmosphere indicate that no cancers or other adverse health effects to the public or onsite workers would be expected from operations of any of the proposed facilities. For radiological releases, the resulting doses would be well within regulatory limits and would not cause any cancer fatalities. Chapter 4 of Volume I presents these impacts in detail.

If an accident involving chemical releases were to occur, temporary exceedances of ambient air quality standards could occur. The State regulatory agencies would be kept informed of developments, and appropriate actions would be taken in accordance with existing procedures to minimize adverse impacts on the public and workers. No fatal cancers are predicted for any accident having the potential to release radioactive material to the environment.

In response to the commentor’s concerns, contacts have been made with the Idaho Division of Environmental Quality and with the contractor responsible for air quality permits for INEEL. There have been no State requirements to perform an accident analysis as part of the air-permitting process regardless of the type of pollutant that could be emitted (criteria pollutants, toxic pollutants, or radionuclides). Only routine operations are considered in the air-permitting process.

Low-level waste disposal is always an ongoing concern.	35
The material would have to be processed through a classification facility (Mixed Waste Facility) before going to WIPP. TRU waste may be processed elsewhere. DOE is committing some facility to being contaminated with TRU waste.	36
I disagree with fatality data from MOX for INEEL. There would be the same impacts from burning [*MOX fuel*] as other reactor fuel.	37

IDFALS–35 **Waste Management**

DOE acknowledges the commentor's concerns regarding LLW disposal. Analyses presented in the Waste Management sections of Chapter 4 of Volume I and Appendix H indicate that there would likely be no major impacts to the LLW disposal infrastructure at the sites. The impacts of LLW disposal are evaluated in detail in 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 in other NEPA documents prepared for the DOE sites.

IDFALS–36 **Waste Management**

As shown in Section 4.14.2.2 and Appendix H.2.2.3, INEEL already has 39,300 m^3 (51,400 yd^3) of TRU waste that will require certification and packaging before shipment to WIPP. The 640 m^3 (837 yd^3) of TRU waste generated over the 10-year operating period of the pit conversion and MOX facilities would be a small addition to the existing waste load at the site and would not be expected to appreciably change the levels of contamination in the TRU waste processing facilities.

IDFALS–37 **Human Health Risk**

DOE acknowledges the commentor's concern about the MOX approach. The commentor raises two separate issues: the fabrication of MOX fuel at INEEL, and the use of MOX fuel in a domestic, commercial reactor at another location.

Human health risks associated with MOX fuel fabrication at INEEL are addressed in Section 4.14. The risk assessments were performed using models accepted within the scientific community: the GENII computer code for the evaluation of normal operations; the MACCS2 code for the accident analysis; and best estimation of input parameters (e.g., radioactive source terms, meteorological conditions, population distributions, and agricultural data).

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. These impacts have also been

Why wasn't a meeting held in Washington, D.C., for the SPD EIS? Considering the magnitude of the facility, it would seem that given the interest of nationally based groups, that a meeting would be warranted. 38

Will the [*commercial fuel*] plant need to be relicensed? Does the licensing process need to be completed before a commitment is made? 39

Will facility construction begin at the same time as the licensing process? Will MOX fuel fabrication begin before the licensing process is complete? 40

calculated using state-of-the-art computer models. The impacts associated with the use of MOX fuel are similar to those associated with the use of LEU fuel, the typical fuel used in U.S. commercial reactors.

IDFALS–38 General SPD EIS and NEPA Process

DOE held public hearings near the potentially affected DOE sites and Washington, D.C. Approximately 1,700 copies of the SPD Draft EIS were mailed, and an NOA letter was mailed to an additional 5,500 members of the public. Approximately 1,300 copies of the *Supplement to the SPD Draft EIS* were mailed, and an NOA postcard was mailed to an additional 5,800 members of the public. Several means were available for providing comments: mail, a toll-free telephone and fax line, and the MD Web site. All comments, regardless of how they were submitted, were given equal consideration.

IDFALS–39 NRC Licensing

The MOX facility would be licensed by NRC under 10 CFR 70. This would be a new license, not an amendment to an existing license, because the MOX facility would be a new facility, even if it were located in FMEF at Hanford. If the commentor is referring to a commitment to make MOX fuel, that decision would be made prior to completing, or even commencing, the licensing process. In fact, decisions regarding making MOX fuel, or immobilizing all the surplus plutonium will be made in the ROD for this SPD EIS. Theoretically, a facility could be completely constructed prior to issuance of a Part 70 license, but it would not be practical or prudent to do so. NRC must approve the safety and environmental reports, and the plant features relating to criticality and nuclear safety. Therefore, it would be in the best interest of the facility owners and operators to work closely with NRC during the design and construction process to ensure that NRC approves of the way its requirements are being met. However, MOX fuel fabrication will not begin before a license is issued for the MOX facility because special nuclear materials cannot be brought into the facility before the license is issued.

IDFALS–40 NRC Licensing

Fabrication of MOX fuel would not begin until a license was issued for the MOX facility under 10 CFR 70, because special nuclear materials may not be brought into an unlicensed facility. Theoretically, a facility could be completely

If DOE goes down the MOX path, and commercial reactors never burn MOX fuel, what then? Where will the MOX fuel be stored? Where besides Yucca Mountain? I am concerned about going down the path of investing and manufacturing MOX fuel and then not burning the fuel if communities resist. WIPP is a long ways off. DOE needs contingency planning for these issues.

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constructed prior to issuance of a 10 CFR 70 license, but that would not be practical. NRC must approve the safety and environmental reports, as well as the plant features relating to criticality and nuclear safety. Therefore, it would be in the best interests of the facility owners and operators to work closely with NRC during the design and construction process to ensure that NRC approved of the way its requirements were being met.

IDFALS–41 **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. It is highly unlikely that fresh fuel would be fabricated for a reactor and then not irradiated by that reactor. Such a condition would be a contractual default by DCS, and would have to be remedied at DCS expense. Speculation as to the DCS response to this highly unlikely scenario would center on two courses of action: it could return the fuel to the fabricator for reuse in the fabrication of fuel for sister DCS reactors, or more likely, it could ship the MOX assemblies directly to sister reactors for use there (the reactor fuels would probably be interchangeable). Whatever its ultimate disposition, of course, the fresh fuel would at all times be subject to stringent security controls.

The resulting spent nuclear fuel would be placed in a potential geologic repository pursuant to the NWPA, as amended. 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. 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.

TRU and mixed waste would be certified on the site to current WIPP waste acceptance criteria prior to shipment to WIPP for disposal. DOE alternatives

I agree that DOE is supposed to take back the spent fuel (in a repository). A lawsuit is out on behalf of commercial reactors because Yucca Mountain is not open. Is it a possibility that the Consortium could tell DOE to take the MOX fuel back? 42

WIPP is not open, and may not have the capacity if it does open. I do not know if WIPP is expandable. WIPP is not large enough to handle the current TRU waste inventory. 43

for TRU waste management are evaluated in 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). WIPP began receiving shipments of TRU waste for permanent disposal on March 26, 1999. DOE does not envision fresh fuel going directly to WIPP nor MOX spent nuclear fuel going anywhere but to Yucca Mountain. Section 4.28 was revised to discuss the potential environmental impacts of the reactors that would use the MOX fuel, and Section 1.8.2 describes the environmental documents associated with Yucca Mountain and WIPP.

IDFALS–42 **DOE Policy**

Operating criteria for the MOX facility stipulates that fabrication of the fuel shall meet the reactor demand schedules. However, to avoid excessive inventory at the fuel fabrication facility and the reactors, fuel would not be fabricated more than 18 months in advance of shipment to the reactor, and the fresh fuel would not be stored at the reactor site longer than the current and next scheduled reload. 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. 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. 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.

IDFALS–43 **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 *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste*

What is the status with triple play [*refers to tritium production*]? | 44

I am open-minded as to the future of the nuclear industry. | 45

We need State rights to veto projects. | 46

Senators are bought by nuclear advocates. | 47

(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. Expected TRU waste generated by the proposed facilities is included in the *WIPP Disposal Phase Final Supplemental EIS* cumulative impacts estimates, as well as in *The National TRU Waste Management Plan* (DOE/NTP-96-1204, December 1997).

IDFALS–44 **DOE Policy**

The "triple play," where MOX fuel fabricated from surplus plutonium would be used in a reactor to make tritium and generate electricity was analyzed in the *Final Programmatic Environmental Impact Statement for Tritium Supply and Recycling* (DOE/EIS-0161, October 1995). In May 1999, the Secretary of Energy decided that TVA's Watts Bar and Sequoyah reactors would produce a future supply of tritium (64 FR 26369). Therefore, the triple play option is no longer under consideration.

IDFALS–45 **Other**

DOE acknowledges the commentor's position regarding the future of the nuclear industry.

IDFALS–46 **Other**

DOE acknowledges the commentor's view that States should have the right to veto decisions made on the surplus plutonium disposition program. DOE has been charged by the U.S. Congress with determining how surplus plutonium will be dispositioned. Public input is a crucial component of this decisionmaking process. 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.

IDFALS–47 **Other**

DOE acknowledges the commentor's concern.

The United States should not be so dependent on fossil fuel. With more knowledge, people wouldn't be so afraid of nuclear power.	48
Is MOX utilization based on pure economics?	49
Was an economic analysis between highly enriched uranium and MOX performed? With a smaller quantity of fuel, is it cost effective to do?	50

IDFALS–48 **Other**

DOE acknowledges the commentor's support for nuclear power. However, the purpose of the surplus plutonium disposition program is not to generate energy. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner.

IDFALS–49 **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.

IDFALS–50 **Cost**

No economic comparison of MOX and HEU fuels was conducted in conjunction with this SPD EIS. HEU is dedicated to defense purposes only. Because cost issues are beyond the scope of this 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.

The current Administration is strictly antinuclear. The Russians consider plutonium a national treasure, and the United States should as well. 51

The United States should be using spent fuel for power. The nuclear industry is the safest source of power. We need to turn trend around and revitalize industry. 52

IDFALS–51 **DOE Policy**

DOE acknowledges the commentor's concern regarding the value of surplus plutonium. 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. However, not all of the surplus plutonium would be made into MOX fuel because some of it is not suitable for fabrication due to complexity, timing, and cost that would be involved in purifying the material. Furthermore, 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 national policy and nonproliferation considerations, environmental analyses, technical and cost reports, and public input.

IDFALS–52 **DOE Policy**

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. Therefore, the United States will not build an inventory of plutonium that has been separated from commercial irradiated fuel.

DOE should plan to save plutonium in spent fuel and should use this fuel for environmental and economic reasons.	53
How did you arrive at the figure for TRU waste?	54
We need some means for recovering fuel. We need interim storage, not permanent storage.	55
The RFPs are due in September and will be awarded in November. Isn't this inconsistent with the overall timescale?	56

IDFALS–53 **DOE Policy**

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. U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel.

IDFALS–54 **Waste Management**

The waste generation data used in this SPD EIS were obtained from data reports prepared by the DOE national laboratories. The TRU waste volumes in these reports were estimated from process knowledge, or obtained by extrapolation of information on TRU waste generation at similar existing facilities. Supporting reports are available in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

IDFALS–55 **DOE Policy**

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. Section 122 of the NWPA requires DOE to maintain the ability to retrieve emplaced materials. Therefore, DOE would maintain the ability to retrieve spent nuclear fuel and HLW for at least 100 years, and possibly as long as 300 years.

IDFALS–56 **MOX RFP**

Fabrication of MOX fuel would not begin until a license was issued for the MOX facility under 10 CFR 70, because special nuclear materials may not be

brought into an unlicensed facility. Theoretically, a facility could be completely constructed prior to issuance of a 10 CFR 70 license, but that would not be practical. NRC must approve the safety and environmental reports, as well as the plant features relating to criticality and nuclear safety. Therefore, it would be in the best interests of the facility owners and operators to work closely with NRC during the design and construction process to ensure that NRC approved of the way its requirements were being met.