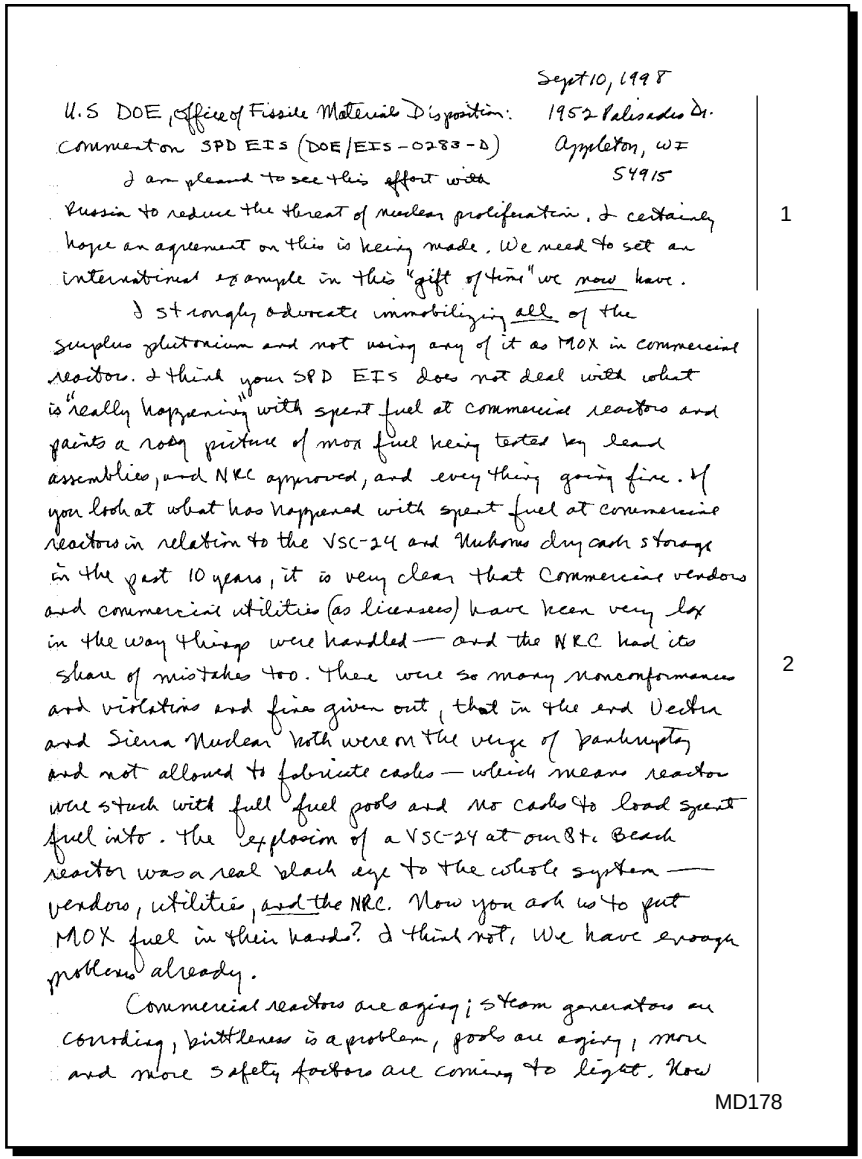


Sept 10, 1998

U.S DOE, Office of Fissile Materials Disposition:
Comment on SPD EIS (DOE/EIS-0283-D)

1952 Palisades Dr.
Appleton, WI
54915

I am pleased to see this effort with Russia to reduce the threat of nuclear proliferation. I certainly hope an agreement on this is being made. We need to set an international example in this "gift of time" we now have. 1

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 Nuhoms 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 were stuck with full fuel pools and no casks to load spent fuel into. The explosion of a VSC-24 at our St. Lucie Beach 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. 2

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

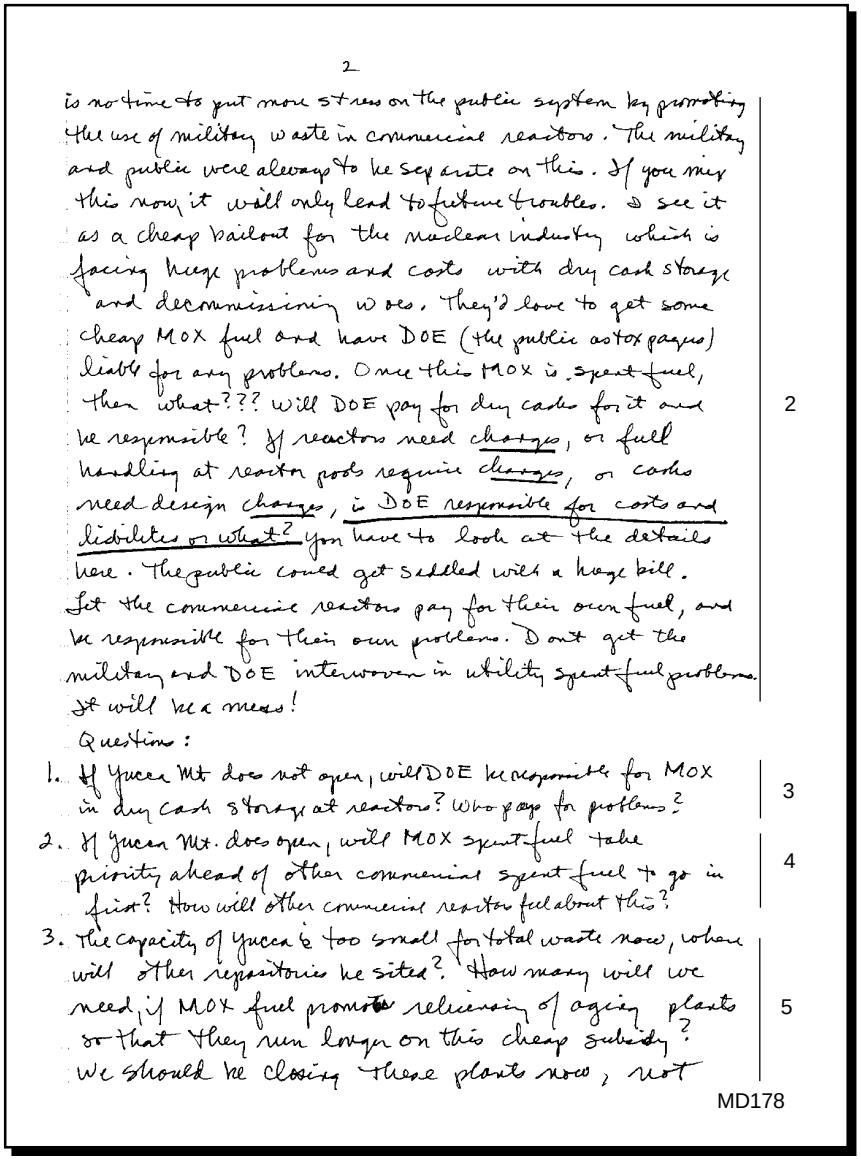
MD178

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.



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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!

Questions:

1. If Yucca Mt does not open, will DOE be responsible for MOX in dry cash storage at reactors? Who pays for problems?
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?
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

MD178

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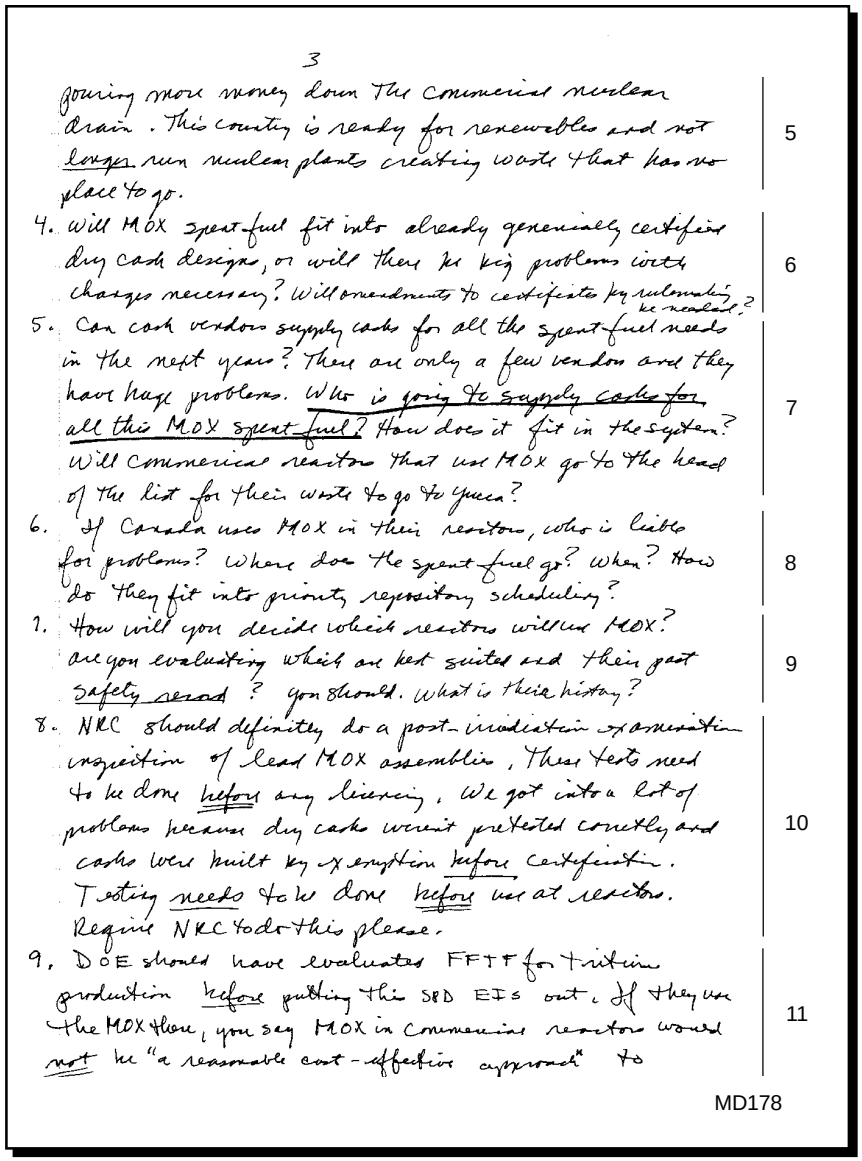
Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to 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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pouring 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 certificates by rulemaking 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.

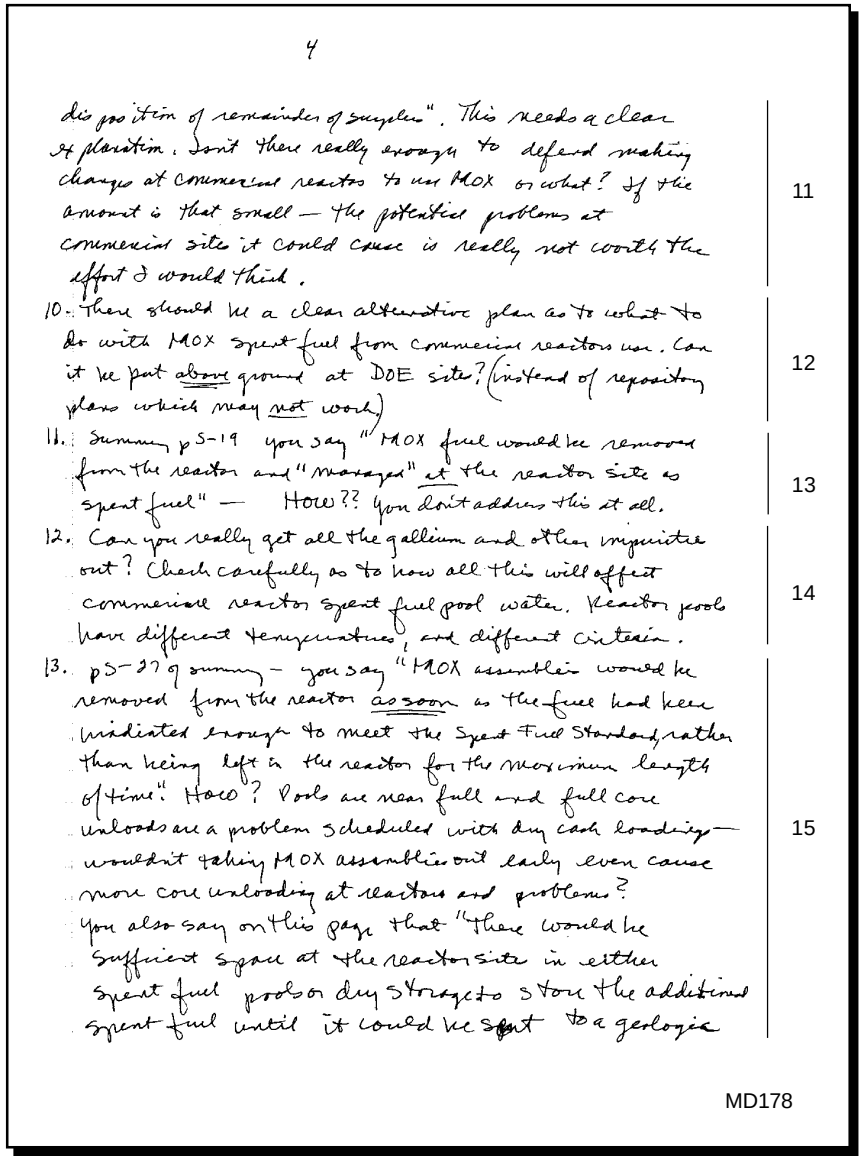
An NRC reactor operating license amendment will be required for each individual reactor before it can irradiate the MOX fuel. The regulatory process will be the same as for any 10 CFR 50 operating license amendment request in accordance with 10 CFR 50.90. The reactor licensee will initiate the process 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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dis pos it ion of remainder of surplus". 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 sites 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 sites? (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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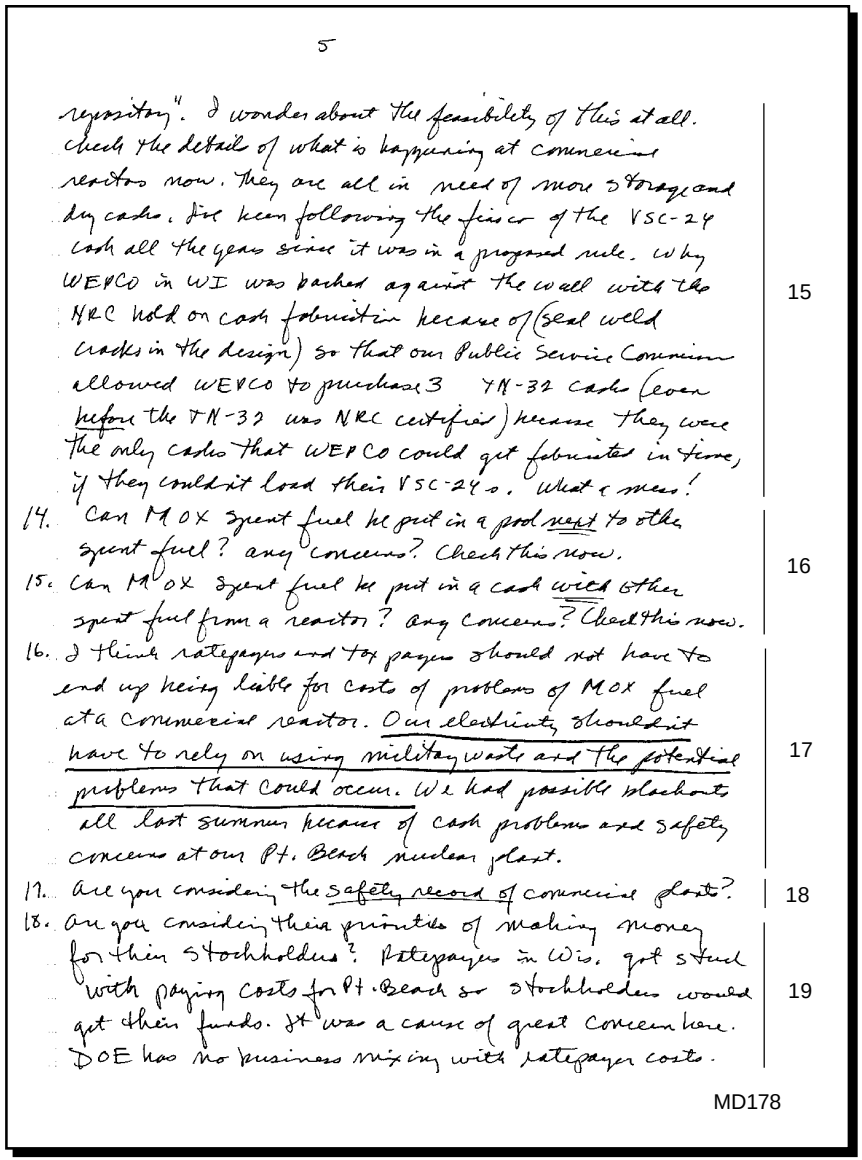

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repository". I wonder about the feasibility of this at all. Check the details of what is happening at commercial reactors now. They are all in need of more storage and dry casks. I've been following the fiasco of the VSC-24 cask all the years since 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 VN-32 casks (even before the VN-32 was NRC certified) because they were the only casks that WEPCO could get fabricated in time, if they could it load their VSC-24's. What a mess! 15

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
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 cask problems and safety concerns at our Pt. Beach nuclear plant. 17
17. Are you considering the safety record of commercial plants? 18
18. Are you considering their principles 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. 19

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.

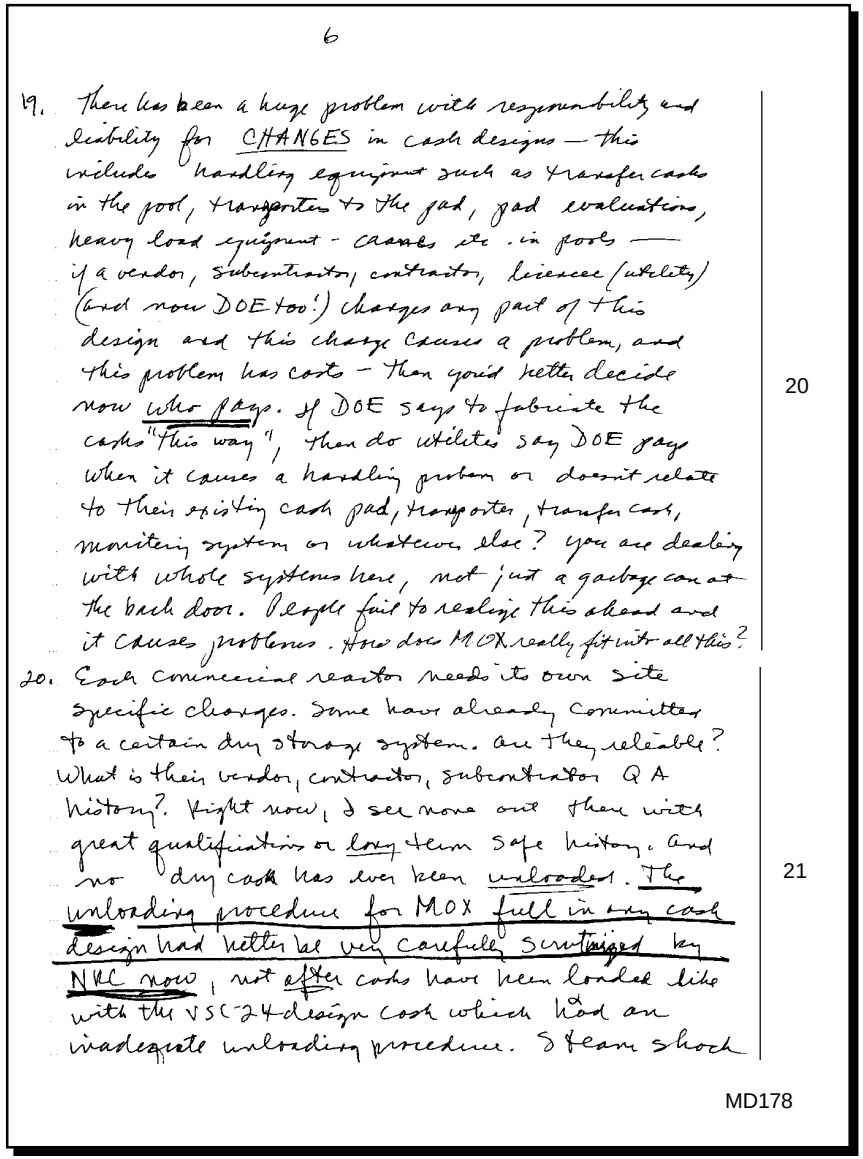
MD178–18 **MOX RFP**

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

20. Each commercial 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 21

MD178

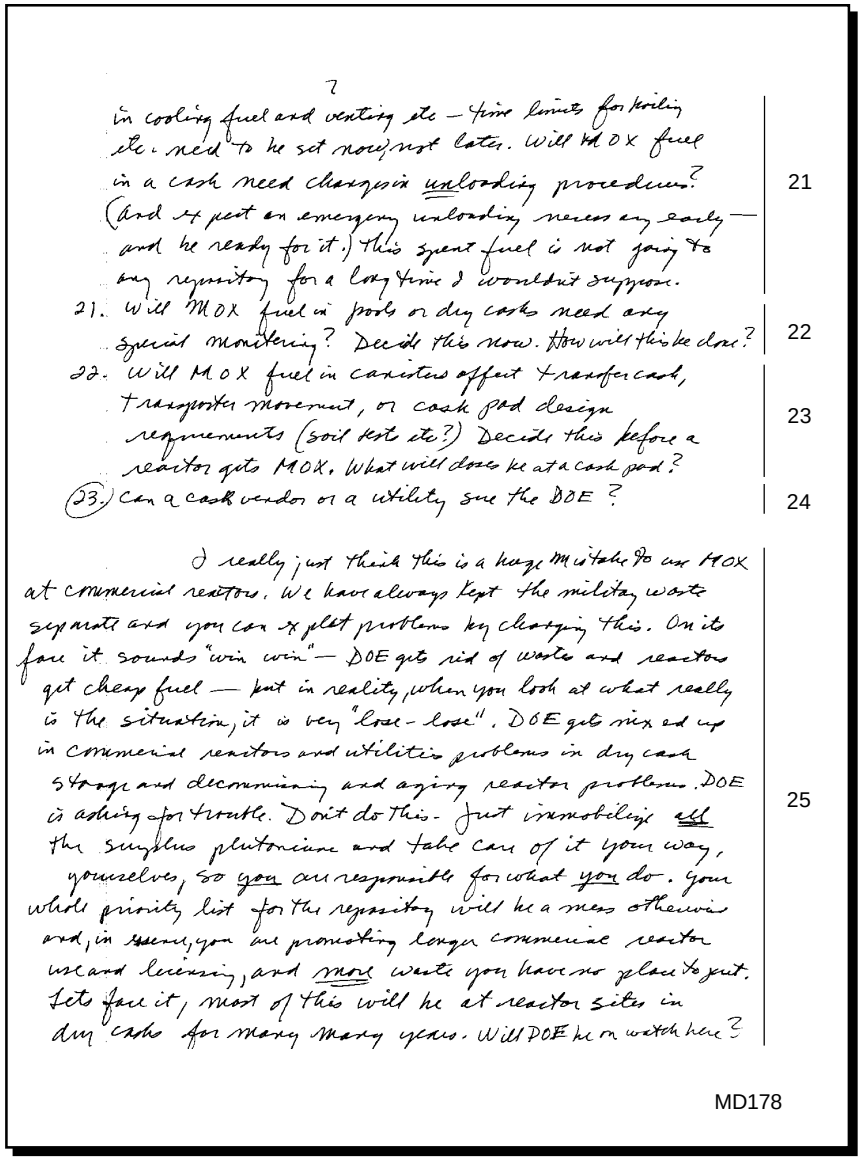
MD178–20 **Waste Management**

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.

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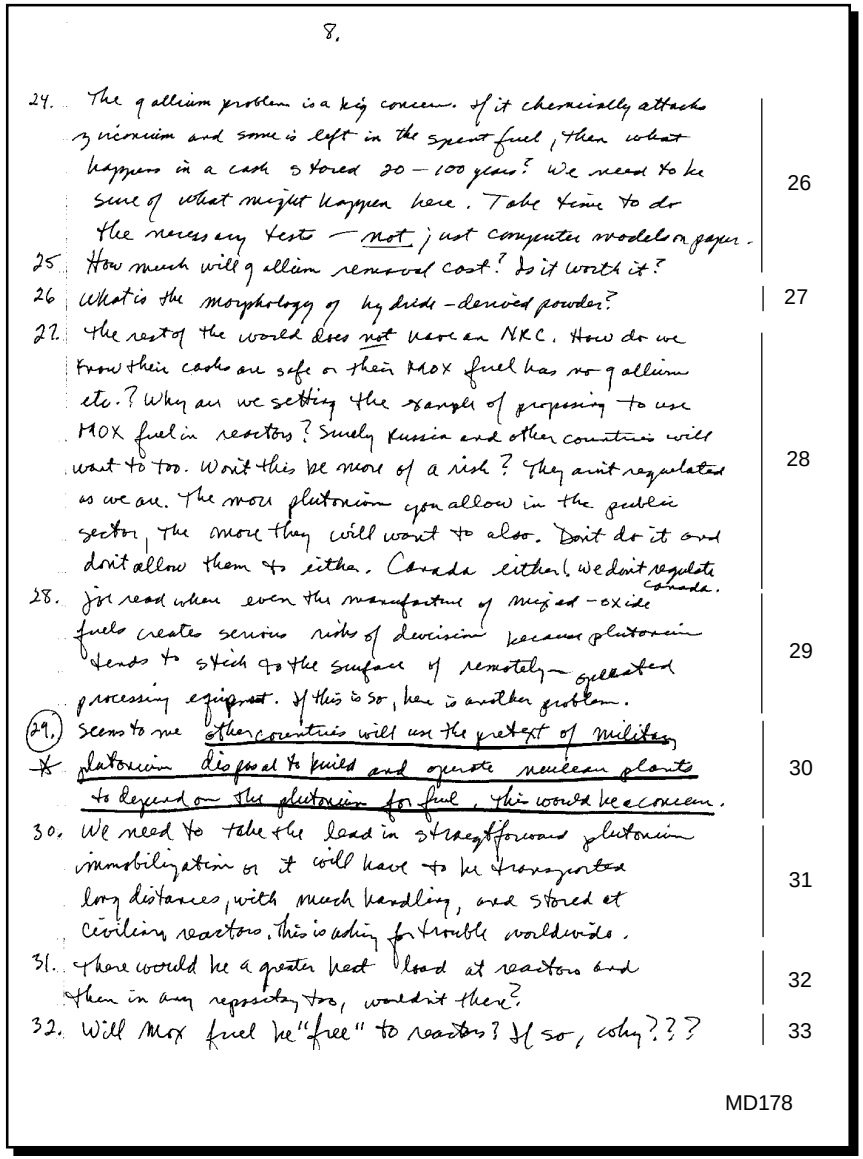

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24. The gallium problem is a big concern. If it chemically attacks zirconium and some is left in the spent fuel, then what happens in a cask stored 20 – 100 years? We need to be sure of what might happen here. Take time to do the necessary tests — 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
27. 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. Jim read where even the manufacture of mixed-oxide fuels creates serious risks of devitrification 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 new civilian 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**

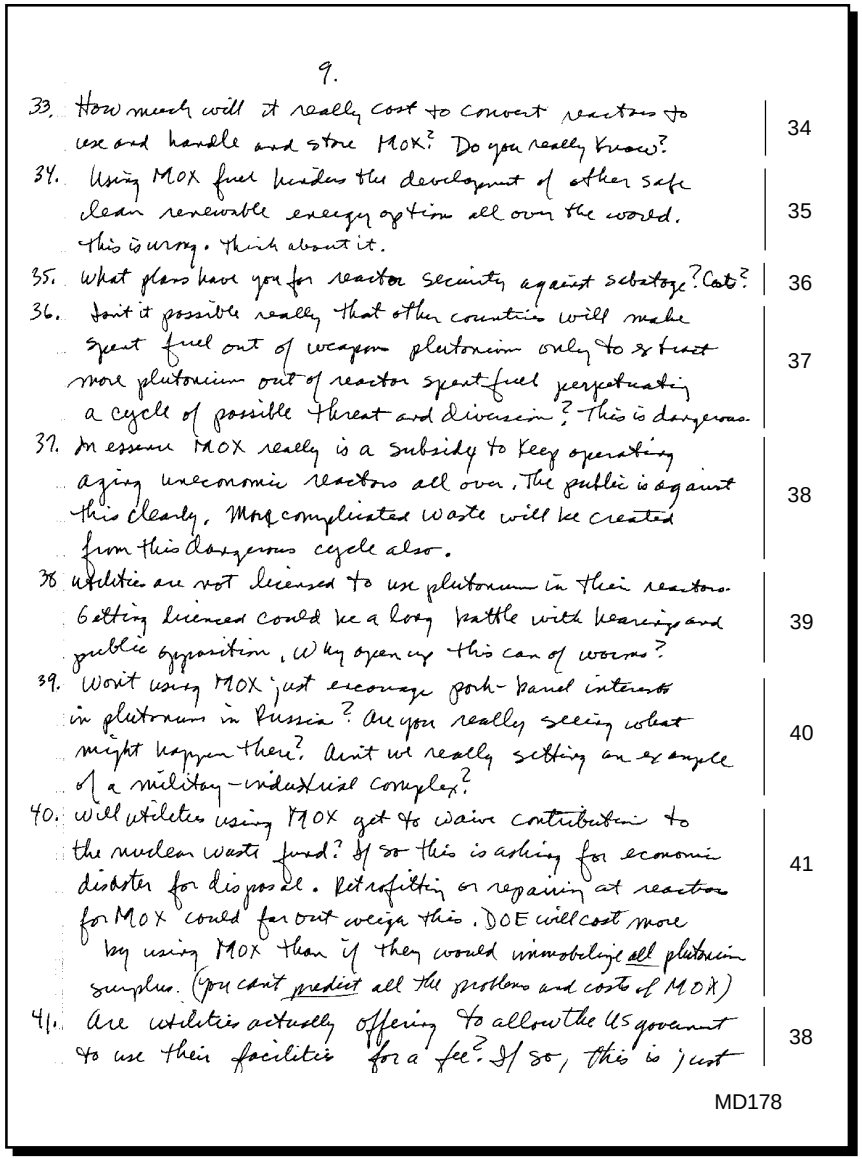
As indicated in Appendix L, several of the hybrid alternatives would require less transportation of special nuclear materials than some of the 50-t (55-ton) immobilization alternatives. However, the risks from transportation for all of the alternatives would likely be minor.

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 weapons 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 licensed 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 outweigh 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

MD178

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.

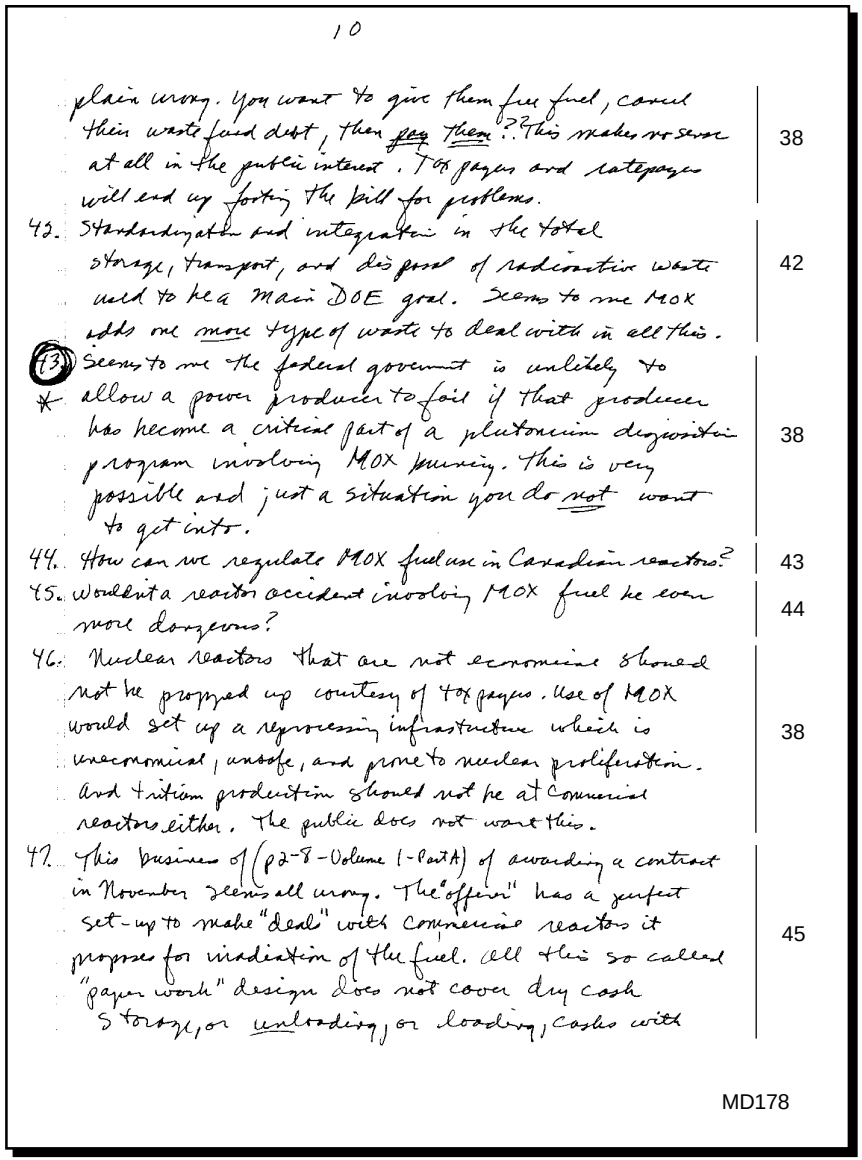
The remainder of this comment is addressed in response MD178–25.

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 fuel debt, then pay them ?? This makes no sense at all in the public interest. Tax payers 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 govemnt 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 tax payers. 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 business 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

MD178

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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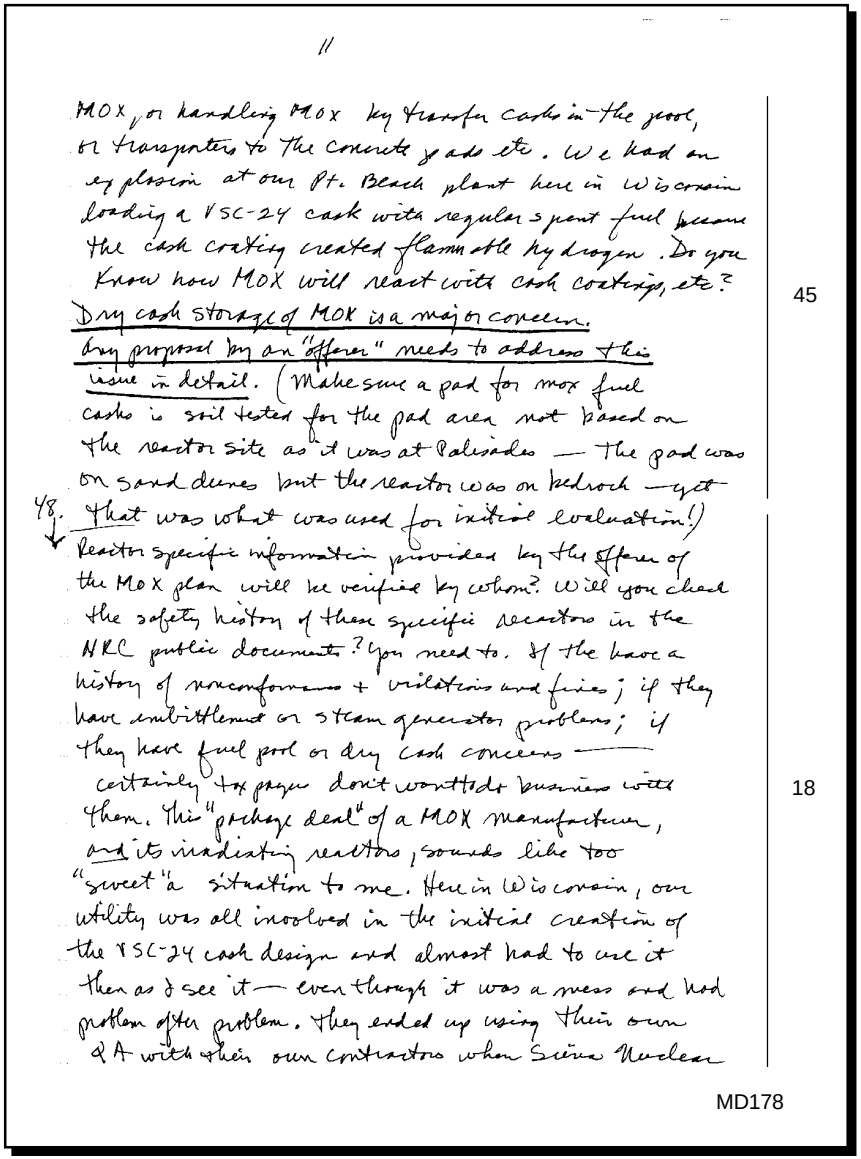

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MOX, or handling MOX by transfer casks in the pool, or transporters to the concrete pads etc. We had an explosion at our Pt. Beach plant here in Wisconsin loading a VSC-24 cask with regular spent fuel because the cask coating created flammable hydrogen. Do you know how MOX will react with cask coatings, etc?

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 — got 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 payer 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

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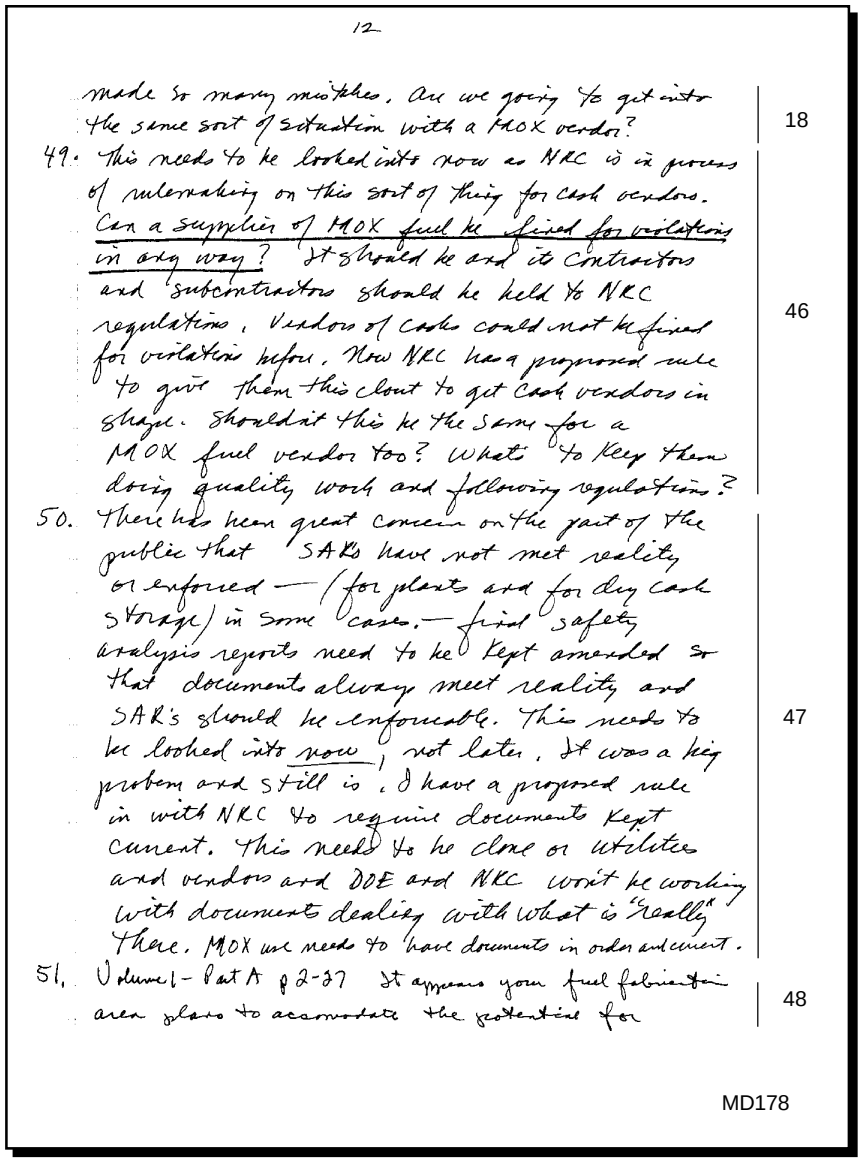
MD178

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 SAR's 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 big problem and still is. I have a proposed rule in with NRC to require documents kept current. This needs to be done or 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 1 - Part A p 2-37 It appears your fuel fabrication area plans to accomodate the potential for 48

MD178

MD178–46 **NRC Licensing**

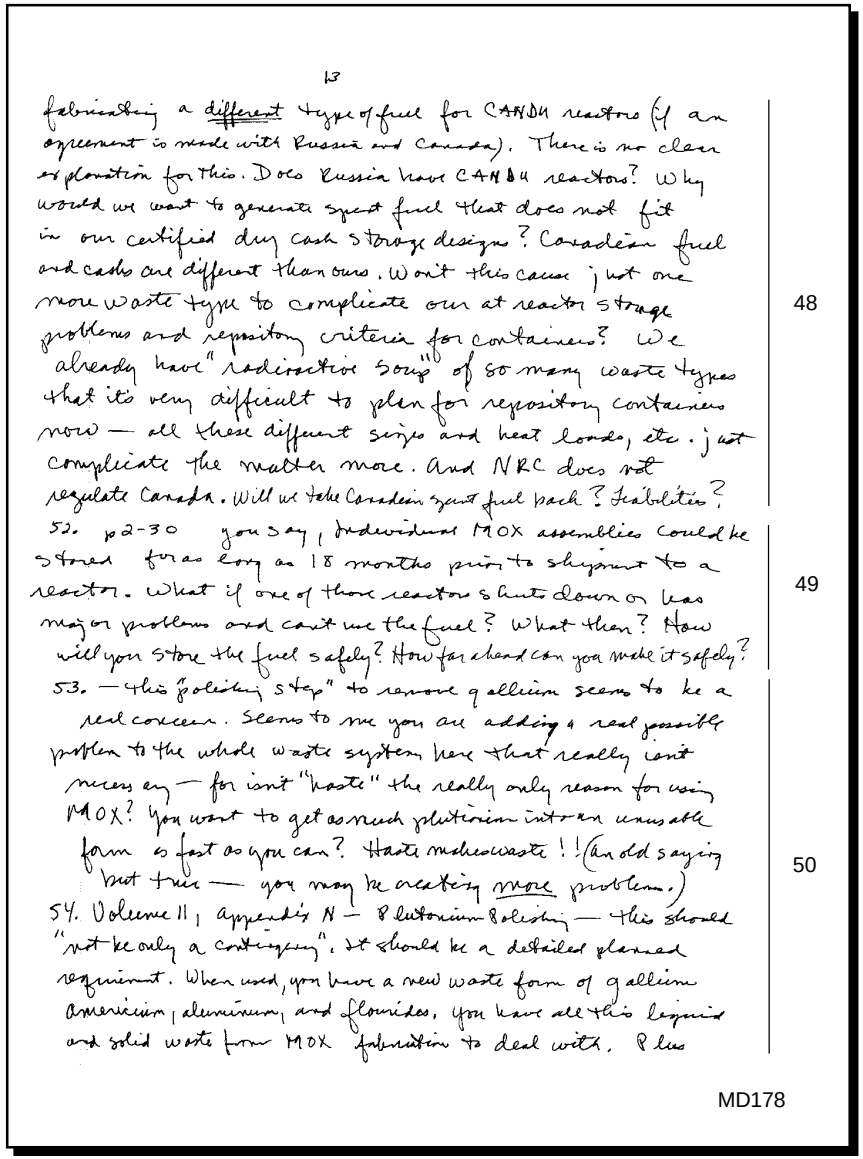
The MOX fuel fabricator would be an NRC licensee under 10 CFR 70, *Domestic Licensing of Special Nuclear Materials*, and as such, would be subject to fines and penalties for violations of NRC regulations, up to and including license revocation.

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? Liabilities? 48

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? 49

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!! (an old saying but true — you may be creating more problems.) 50

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

MD178

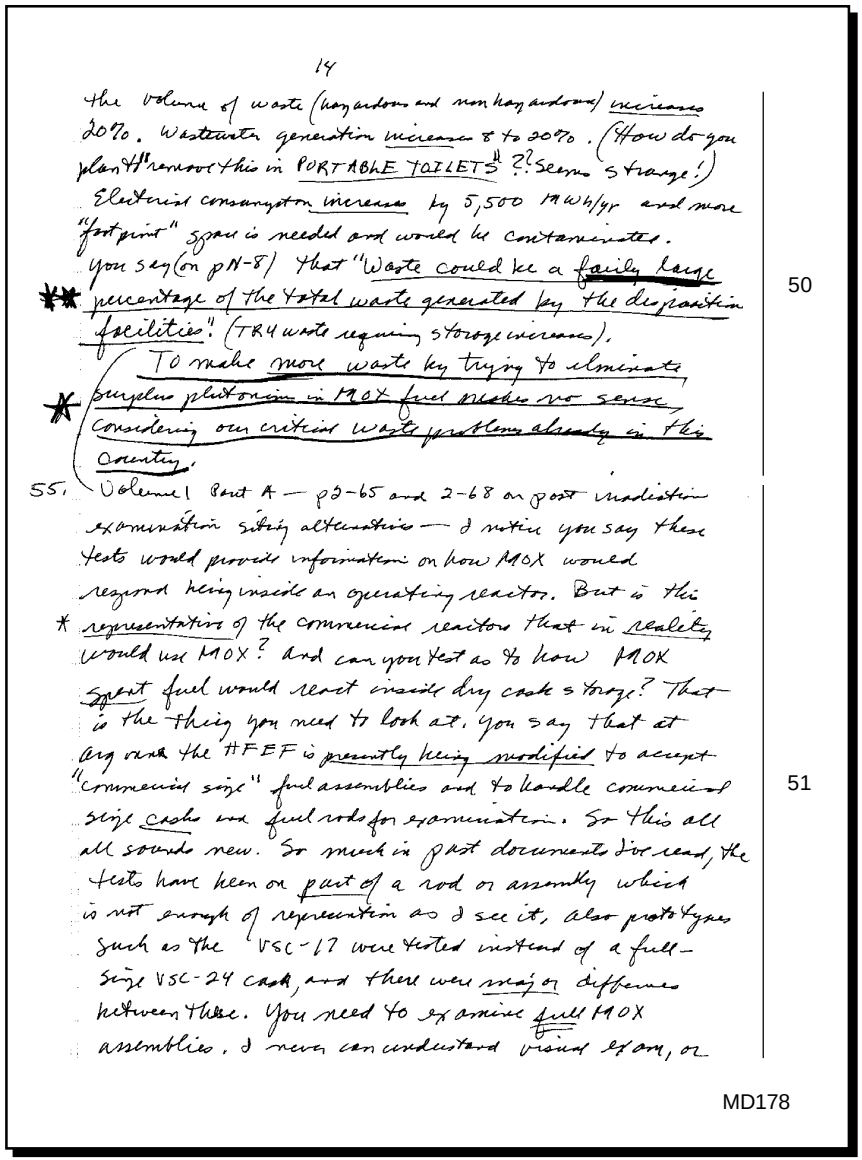
MD178–49 **MOX Approach**

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 "foot print" 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 disposition 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 Arg area 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 for 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 exam, or

MD178

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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.

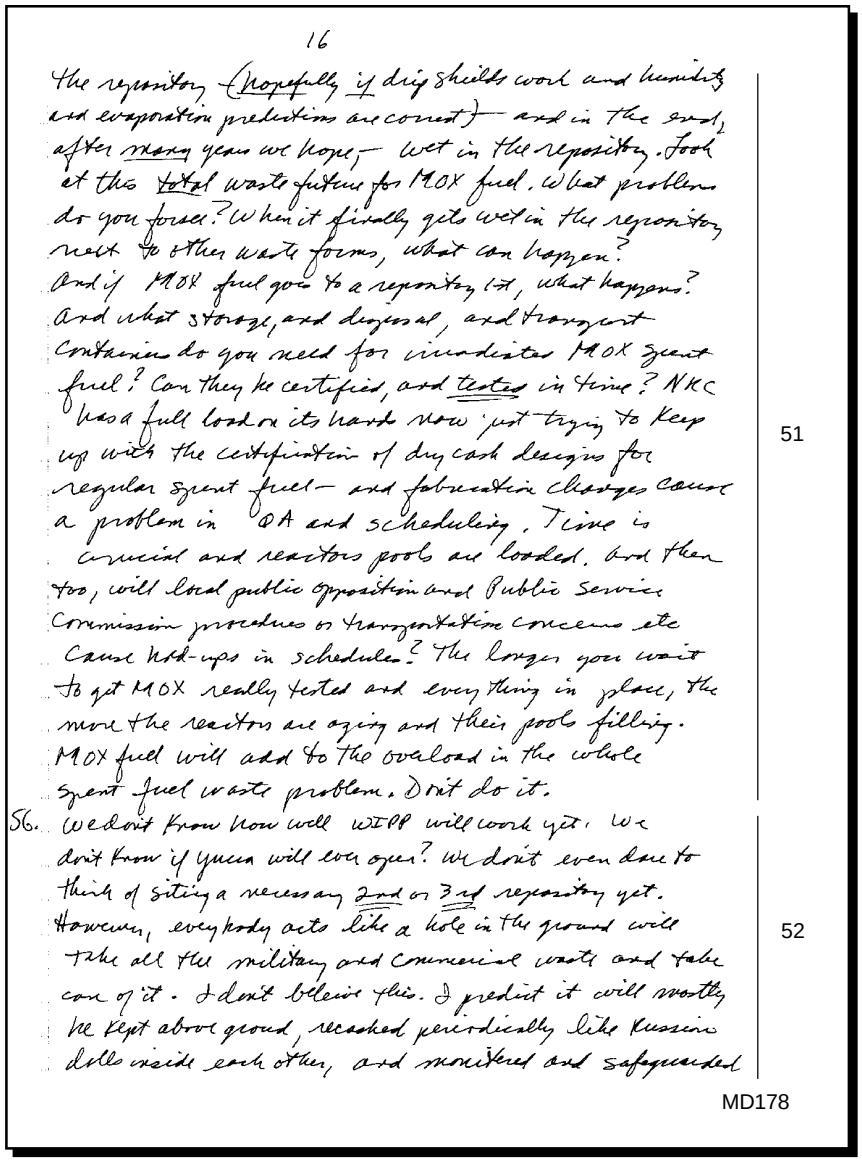
The remainder of this comment is addressed in responses MD178–3, MD178–6, MD178–7, and MD178–10.

over UT, 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 irradiated? 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" can't 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 immobility strain the same for all of it without risking MOX problems.

51

Can you really predict how MOX spent fuel will react when put in the pool with regular spent fuel? Over time? 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 1st (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 this 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 (if, 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 cash 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 whole 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

52

MD178

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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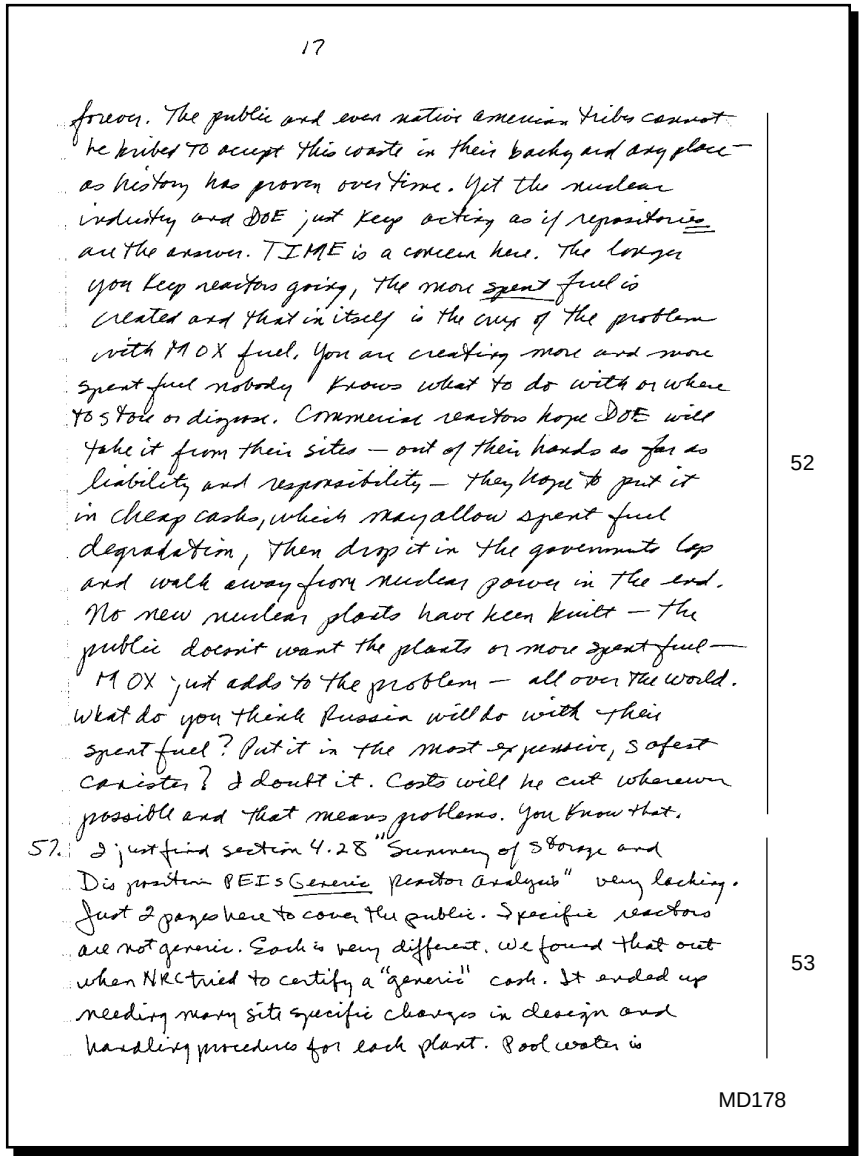

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forever. The public and even native american tribes cannot be bribed to accept this waste in their backy and any place — as history has proven over time. Yet the nuclear industry and DOE just keep acting as if repositories are the answer. TIME is a 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 drop 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 canisters? I doubt it. Costs will be cut wherever possible and that means problems. You know that.

52

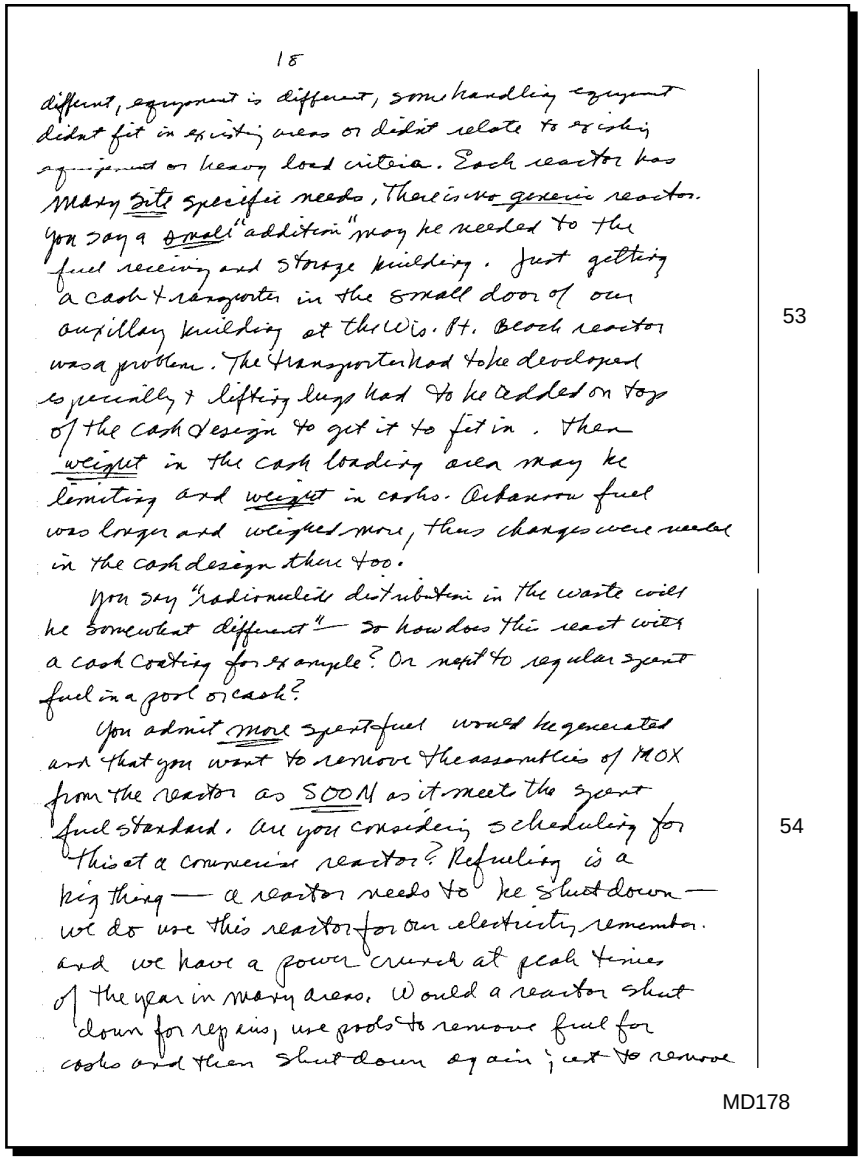
57. I just find section 4.28 "Summary of Storage and Disposition PEIs Generic Reactor Analysis" very lacking. Just 2 pages here to cover the public. Specific reactors are not generic. Each is very different. We found that out when NRC tried to certify a "generic" cask. It ended up needing many site specific changes in design and handling procedures for each plant. Pool water is

53

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.



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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. Pt. Beach 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. Arkansas fuel was longer and weighed more, thus changes were needed 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 input 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 meet 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, remember. and we have a power crunch at peak times of the year in many areas. Would a reactor shut down for repairs, use rods to remove fuel for cooks and then shut down again just to remove

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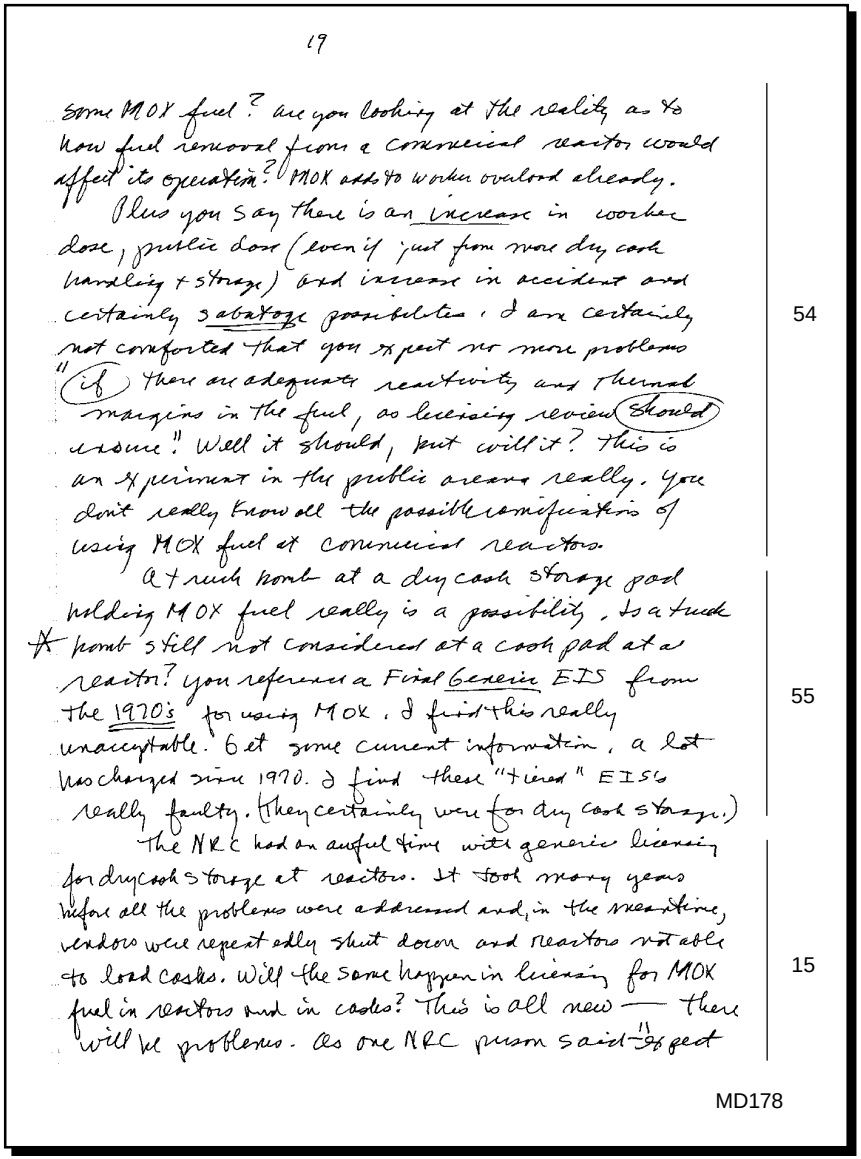
MD178–54 **MOX Approach**

This comment is addressed in responses MD178–3, MD178–9, MD178–15, MD178–18, and MD178–36.



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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 overload 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 assure." 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 "tiered" EISs 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 15

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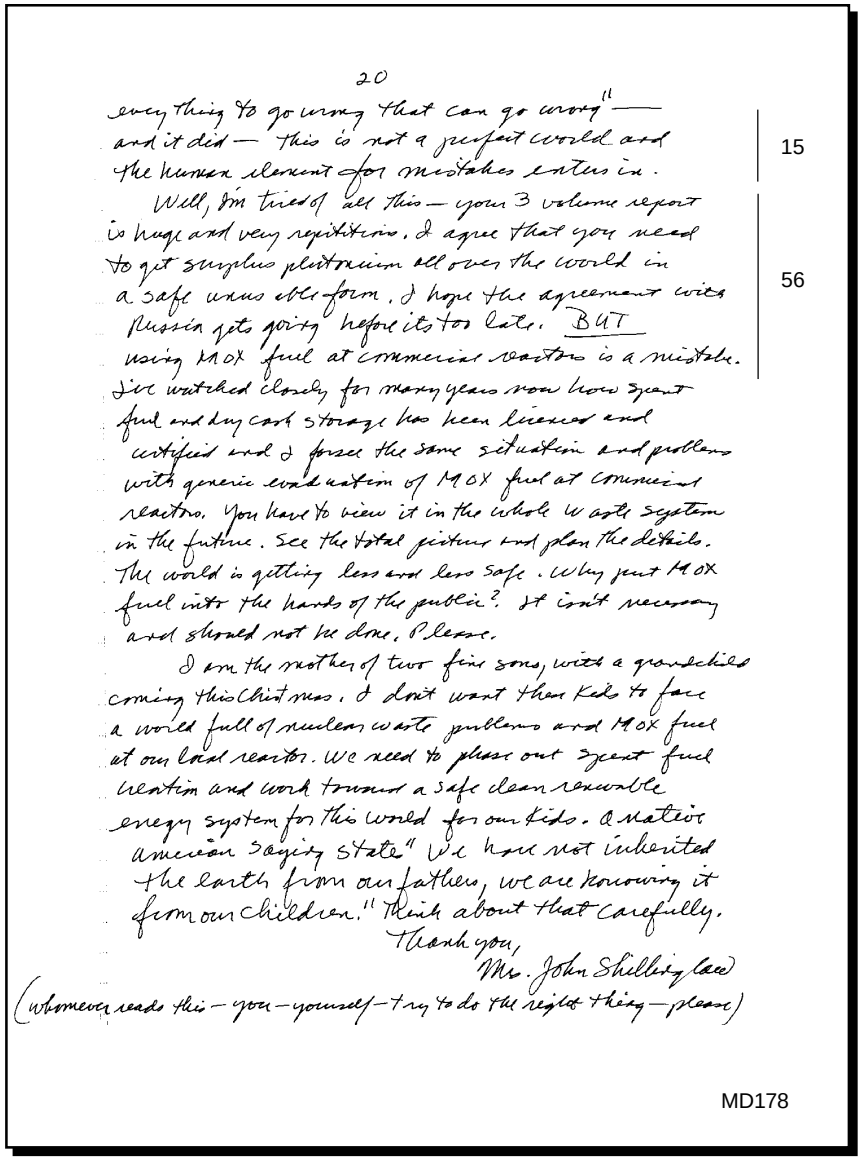
MD178–55 **Facility Accidents**

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.



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every thing 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 unuse able 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 evaluation 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 reactor. We need to phase out spent fuel
creation 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)

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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.