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NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD '01 MAR 13 A11 :28

In the Matter of:	Docket No. 72-22-ISFSI	OFFICE OF SECRETARY RULEMAKINGS AND ADJUDICATIONS STAFF
PRIVATE FUEL STORAGE, LLC (Independent Spent Fuel Storage Installation)	ASLBP No. 97-732-02-ISFSI	
	March 6, 2001	

STATE OF UTAH'S RESPONSE TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION ON UTAH CONTENTION Z

Pursuant to the Board's Order of April 23, 1999 and 10 CFR § 2.749(a), the State files this Response to the Applicant's February 14, 2001, Motion for Summary Disposition of Utah Contention Z -- No Action Alternative ("Motion"). The State opposes the Applicant's Motion on the grounds that there are genuine disputes regarding material facts and, therefore, pursuant to 10 CFR § 2.749, the Applicant is not entitled to summary disposition as a matter of law. The State's opposition is supported by a Statement of Disputed and Relevant Material Facts ("Utah Facts"), and by the attached Declaration of Dr. Marvin Resnikoff (March 6, 2001).

FACTUAL BACKGROUND

The nation's inventory of spent nuclear power plant fuel is now being stored at reactor sites, in anticipation that it may be shipped to a permanent repository at some time in the future. PFS seeks NRC permission to create a large interim storage facility in Utah for storage of about half the projected inventory of spent nuclear fuel ("SNF"). PFS would store up to 4,000 casks containing 40,000 metric tons of uranium of spent nuclear power plant fuel at an independent spent fuel storage installation ("ISFSI"). Operation of the

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facility would require the shipment of spent nuclear fuel across the United States by rail and truck.

The shipment of fuel to the PFS facility would involve occupational and public radiation exposures during normal operation, and would pose accident risks. The State is concerned that these factors constitute significant environmental impacts, which may be avoided by maintaining the status quo, *i.e.*, pursuing the "no action" alternative. Thus, Utah Z raises valid concerns under NEPA that the environmental analysis for the PFS facility does not contain an adequate discussion of alternatives, including the no action alternative; and that the EIS does not make a fair and objective comparison between the proposed alternative and the no action alternative.

PROCEDURAL BACKGROUND

At the time PFS filed its license application in 1997, the only environmental document supporting the PFS license application was the Applicant's Environmental Report ("ER"). The State challenged the adequacy of the ER's discussion of the no action alternative under the National Environmental Policy Act in Utah Z, which was admitted in its entirety by the Board in LBP-98-7, 47 NRC 142, 203, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998). As admitted, the contention asserts: "[t]he Environmental Report does not comply with NEPA because it does not adequately discuss the "no action" alternative." *See* LBP-98-7, 47 NRC at 203; *see also* State's Contentions on the Construction and Operating License Application by Private Fuel Storage, LLC for an Independent Spent Fuel Storage Facility (November 23, 1997) at 169-170 ("Utah Z"). The Board subsequently clarified that the scope of Contention Z does not include sabotage-related impacts or economic impacts.

See LBP-98-10, 47 NRC 288, 296 (1998); Memorandum and Order (Ruling on Contention Utah Z Discovery Production Requests) (November 9, 2000).

In June 2000, the NRC Staff issued the Draft Environmental Impact Statement ("DEIS") for the PFS facility. Although the DEIS contains more information on the no action alternative than did the ER, the State still considers it to be deficient.

STANDARD OF REVIEW

Pursuant to 10 CFR § 2.749(d), a party is entitled to summary disposition if "there is no genuine issue as to any material fact" and the party "is entitled to a decision as a matter of law." The burden of proving entitlement to summary disposition is on the movant.[1] Because the burden of proof is on the proponent, "the evidence submitted must be construed in favor of the party in opposition thereto, who receives the benefit of any favorable inferences that can be drawn."[2] Furthermore, if there is any possibility that a litigable issue of fact exists or any doubt as to whether the parties should be permitted or required to proceed further, the motion must be denied.[3] Summary judgment may also be denied or continued if the opposing party demonstrates in its affidavits that it cannot present

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[1] Advanced Medical Systems, Inc. (One Factory Row, Geneva, Ohio 44041), CLI-93-22, 38 NRC 98, 102 (1993).

[2] Sequoyah Fuels Corp. and General Atomics Corp. (Gore, Oklahoma Site Decontamination and Decommissioning Funding), LBP-94-17, 39 NRC 359, 361, *aff'd* CLI-94-11, 40 NRC 55 (1994).

[3] General Electric Co. (GE Morris Operation Spent Fuel Storage Facility), LBP-82-14, 15 NRC 530, 532 (1982).

facts essential to justify its opposition.[4]

ARGUMENT

I. PFS IS NOT ENTITLED TO SUMMARY DISPOSITION OF UTAH Z BECAUSE THERE EXIST GENUINE AND MATERIAL DISPUTED ISSUES OF FACT.

According to PFS, the State's complaints about the adequacy of the ER's discussion of the no action alternative have been resolved with the publication of the DEIS. PFS Motion at 7. In support of this argument, PFS makes several claims regarding the general and specific discussions in the DEIS of the no action alternative. As discussed below, none of these claims has merit. There remain genuine and material disputes of fact between PFS and the State regarding the adequacy of the DEIS to discuss the no action alternative.

A. The DEIS Does Not Resolve the Concerns Raised by Utah Z, Merely By Mentioning Some Advantages of the No Action Alternative.

The Applicant begins by arguing that because the DEIS contains some mention of the advantages of the no-action alternative, then the dispute raised by Utah Z is satisfied:

> In Utah Z, the State claimed that a meaningful discussion of the "no build" alternative is not possible, because the analysis "focuses solely on the perceived disadvantages of the no build alternative." Utah Contentions at 169 (emphasis in original). Whether this was ever the case with the ER, it certainly is not the case with respect to the DEIS. To the contrary, the DEIS discusses both the environmental advantages as well as the disadvantages of not licensing the PFSF. Indeed, it

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[4] 10 C.F.R. § 27.49(c); Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), CLI-86-11, 23 NRC 577 (1986). *See also* Cleveland Electric Illuminating Co (Perry Nuclear Power Plant, Units 1 and 2) ALAB-443, 6 NRC 741, 755 (1977): "[S]ummary disposition is a harsh remedy. It deprives the opposing litigant of the right to cross-examine the witness, which is perhaps at the very essence of an adjudicatory hearing. In such circumstances -- even in administrative proceedings where the rules of evidence may be relaxed -- it is important that a movant for summary disposition be required to hew strictly to the line set out by our Rules of Practice."

> conservatively minimizes the potential environmental consequences of the no-action alternative.

Applicant's Motion at 8 (*emphasis in original*). The Motion then goes on to list the various sections of the DEIS in which the no action alternative is discussed. Id. at 8-10. According to the Applicant, the State is precluded from challenging the adequacy of this discussion, because the language of the contention challenges only the failure to discuss the no action alternative at all, and not the quality of any discussion that may exist. Id. at 11 and note 10.

This argument disregards the plain language of Utah Z. The contention itself does not assert that the ER is completely devoid of any discussion of the no action alternative. Rather, it charges that the ER does not comply with NEPA "because it does not adequately discuss the 'no action' alternative." *See* Utah Z at 169 (*emphasis added*). In the basis of the contention, the State charges that the ER "focuses" only on disadvantages and does not "properly consider" the no build alternative; fails to provide a "balanced comparison of environmental consequences among alternatives"; shows "tunnel vision," is "inadequate," "one-sided," and does not adequately address "all sides" of the no action alternative. Id. at 169-170. These are qualitative criticisms of the adequacy of the ER, not assertions that the ER is completely devoid of information. Thus, merely by including some information about the no action alternative, PFS has not resolved the material factual dispute between the parties regarding the quality of the discussion.

B. The DEIS's Discussion of the No Action Alternative Is Incomplete, Inadequate, and One-sided.

According to PFS, "the DEIS discusses both the environmental advantages as well as the disadvantages of not licensing the PFS facility. Indeed, it conservatively minimizes the

potential environmental consequences of the no-action alternative." PFS Motion at 8 (*emphasis* added). While the DEIS may contain a more detailed discussion than the ER of the no action alternative compared to the ER, it is far from complete or adequate. Utah Facts ¶ 4. PFS implies that it is acceptable to rely on the discussion of impacts if that discussion is the "flip side" of the no action impacts. PFS Motion at 5. PFS's attempt to rescue the ER and DEIS by resorting to its "flip side" argument should be rejected because, as PFS recognized in its Motion, it is "not necessary for a 'no action' discussion to repeat lengthy assessment of adverse impacts contained elsewhere." Id. There is no lengthy assessment of adverse impacts elsewhere in the ER or DEIS. Moreover, the DEIS presents the no-action alternative in a biased manner, by claiming and emphasizing disadvantages without justifying them. The entire thrust of the DEIS is that the no action alternative is unrealistic and unworthy of consideration. Therefore, the advantages of the no action alternative are not given any detailed or serious consideration.[5]

The bias of the DEIS can first be seen in Section 6.7, entitled "Potential Impacts of the No-Action Alternative." This section starts by repeating, in bullet form, three "consequences" that PFS's ER asserts could be caused by the no action alternative. To summarize, these alleged consequences are (1) increased probability of shutdown of

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[5]The State may now appropriately challenge the DEIS. *See* Louisiana Energy Services (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77 (1998): "CANT [intervenor] filed most of its environmental contentions on the basis of LES's ER. But by the time the various NEPA issues came before the Board on the merits, the NRC staff had issued its FEIS. In [two board decisions], therefore, the Board appropriately deemed all of CANT's environmental contentions to be challenges to the FEIS." Claiborne, 47 NRC at 84 (*emphasis added*).

operating reactors due to lack of spent nuclear fuel storage capacity and consequent loss of power generation; (2) delays in reactor decommissioning activities due to inability to remove spent nuclear fuel from sites in a timely manner, resulting in continued expenses for storage of spent nuclear fuel at permanently shut down reactors; and (3) the need to construct additional at-reactor SNF storage sites. DEIS at 6-43. The DEIS does not state whether NRC Staff agrees with these assertions, nor does the DEIS provide any support for them. Utah Facts ¶ 6. By merely re-stating the PFS assertions uncritically, the DEIS gives the message that the consequences of the no-action alternative are so unacceptable (and so likely) that they are not worth considering.

One looks in vain elsewhere in the DEIS for any confirmation of the realism of the three consequences cited in the beginning of Section 6.7. There is no discussion of the relevance of specific reactor storage situations to the PFS proposal. The DEIS does not address whether nuclear utilities would in fact use the PFS facility if available. Utah Facts ¶¶ 7, 31. In fact, the purported disadvantage of at-reactor storage may occur regardless of whether the PFS facility is built. Id. ¶¶ 12, 13, 42; *see also* Resnikoff Dec. ¶¶ 20-23. Thus, environmental consequences are compounded by the PFS facility, not avoided as purported by the DEIS and the ER.

The most severe of the three consequences is the first one: loss of spent nuclear fuel storage space leading to loss of power generation. This assertion is repeated in Section 9.4.1.5, where the DEIS presents its conclusions regarding the impacts of the no-action alternative ("[s]ome power reactor licensees . . . because of physical constraints (e.g., insufficient land) may have to terminate operations prior to the expiration of their reactor

license if their available spent fuel storage capacity is filled"). DEIS at 9-8. Nowhere in the DEIS is there any analysis of the probability or scope of premature shutdown due to lack of adequate spent nuclear fuel storage space. Utah Facts ¶ 14. An analysis of this factor would require a discussion of acreage available at each site, the suitability of the sites for dry storage ISFSIs, available storage options (e.g., re-racking) at each site, the estimated additional storage capacity required to prevent premature shutdown at each site, the time frame in which additional storage capacity is required to prevent premature shutdown at each site, the energy generation lost at each site due to premature shutdown, and the available unused energy generation capacity at other reactors. Id. However, no information is provided. Id. ¶¶ 14-20.

In fact, it is a matter of pure common sense that a reactor site of several hundred to several thousand acres would have an area of a half-acre to an acre suitable for an ISFSI. Id. ¶ 21. As the DOE recognizes in the Yucca Mountain EIS's discussion of the no-action alternative of long-term onsite storage, "[t]he land required for a storage facility typically would be a few acres, a small percentage of the land available at current sites" and operation of an ISFSI would require no more land than the reactor site currently occupied. DOE/EIS-0250D, 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, Vol. 1 at 7-22 (July 1999) ("Yucca Mt. DEIS"). In addition, at the time it issued the PFS DEIS, the NRC Staff recognized in the DEIS, it has issued fifteen licenses for at-reactor ISFSIs and an additional fifteen to twenty were anticipated. PFS DEIS at 1-7. The fact that the Staff considered it necessary to prepare only an

Environmental Assessment for the eight site specific licenses demonstrates that these ISFSIs posed no significant environmental difficulties.[6] Moreover, the NRC does not identify any case in which an ISFSI license has been denied because of siting or other practical considerations. Additionally, all Part 50 licensees, who would presumably be affected by premature shutdown, "have a general license for at-reactor dry cask storage at an on-site ISFSI." DEIS at 1-7. Hence, premature shutdown could be avoided by building at-reactor storage. *See also* Resnikoff Dec. ¶¶ 16-19.

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[6] It should also be noted that in its Waste Confidence Decision, the Commission found that spent nuclear fuel generated at any reactor can be safely stored without significant environmental impacts for at least 30 years beyond the licensed life for operation of that reactor at onsite ISFSIs. *See* 10 C.F.R. § 51.23, 49 Fed. Reg. 34688 (August 31, 1984); *see also*, 55 Fed. Reg. 29190 (July 18, 1990), and 64 Fed. Reg. 68005 (December 6, 1999). Furthermore, the Commission has concluded that allowing storage of spent nuclear fuel in storage casks at reactor sites "will not have a significant incremental effect on the quality of the human environment." *See* DEIS at 6-44. NRC also found no significant environmental impacts in its assessment of at-reactor storage of SNF in NRC's *Storage of Spent Nuclear Fuel in NRC-Approved Storage Casks at Nuclear Power Reactor Sites*, 55 Fed. Reg. 29190, July 18, 1990, and *Environmental Assessment for 10 CFR Part 72 Requirements for the Independent Storage of Spent Fuel and High-Level Radioactive Waste*, NUREG-1092, August 1984.

Moreover, NRC concludes in the DEIS that onsite ISFSIs would create small or no significant impacts to the geology, soils, or onsite minerals beyond the impacts already discussed in the existing NEPA documentation for each reactor; to surface water based on the previous and current use of surface water at the power reactor facility (*i.e.*, reactor cooling and wet pool storage requirements); to groundwater based on the previous and current use of groundwater at the power reactor facility (*i.e.*, reactor cooling and wet pool storage requirements); for potential existing plant or animal habitat disturbance at each site if the ISFSI was built within the owner-controlled area of the existing reactor site; and for the potential existing plant or animal habitat disturbance from building an ISFSI in the vicinity of the reactor site based on existing NEPA documentation for each reactor site. DEIS at 6-45. Also, NRC states that the additional, incremental radiation that would emanate into the environment from onsite ISFSIs must comply with NRC dose limits to minimize offsite impacts. Id. at 6-46. NRC also assumes that any onsite ISFSI impacts from noise, visual disturbances, or to recreation would be small. Id.

Nor does the DEIS provide support for the second asserted consequence in Section 6.7: delays in reactor decommissioning due to the inability to remove spent nuclear fuel from sites in a timely manner, thus lengthening the time that spent nuclear fuel must be stored onsite. This argument can be broken down into two claims: first, that delays in spent nuclear fuel removal from reactor sites will impede the release of reactor sites to a "green fields" condition; second, that it is disadvantageous or environmentally harmful for spent nuclear fuel to remain onsite for lengthy periods.

In making the first claim, the DEIS ignores the fact that the NRC views decommissioning of a reactor and continued spent nuclear fuel storage as two separate and independent operations. *See* NUREG-0586, *Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities* at 2-5 (NRC: August 1988). Issues relating to the storage of spent nuclear fuel are handled in separate licensing proceedings without any particular relationship to decommissioning of the reactor itself. *See* Yankee Atomic Electric Co. (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 79-80 (1996), *rev'd on other grounds*, CLI-96-7, 43 NRC 235 (1996). Moreover, as Dr. Resnikoff asserts in his declaration, there is no reason why the construction of an onsite ISFSI should prevent the decommissioning and release of the rest of the site. *See* Resnikoff Dec. ¶ 30.

In making the second claim that it is disadvantageous or harmful to retain spent nuclear fuel at reactor sites, the DEIS ignores two important facts: first, as the Commission pointed out in CLI-96-7, in the GEIS for decommissioning of nuclear facilities, the Commission avoided making a generic finding that the benefit of early release of reactor sites under the DECON decommissioning alternative always outweighs the benefit of the

dose savings achieved by the SAFSTOR alternative.[7] Second, the Commission views as inconsequential the fact that a very small portion of the site would be used for spent nuclear fuel storage following decommissioning of the reactor. In addition, the Commission pointed out, "[t]he fact that a very small portion of the 2000-acre site may not be releasable does not preclude the release of the *overwhelming remainder* of the site." Yankee Atomic Electric Co. (Yankee Nuclear Power Station), CLI-96-7, 43 NRC 235, 252 (1996) (*emphasis* added). The DEIS improperly fails to reflect the Commission's viewpoint on the relative unimportance of not releasing a very small fraction of a large reactor site.

The third asserted consequence in Section 6.7, need to construct additional at-reactor ISFSIs to handle the anticipated need for spent nuclear fuel, is totally unsupported. The DEIS fails to assess which specific reactor sites will forego construction of an at-reactor ISFSI in favor of the proposed PFS facility. Utah Facts ¶¶7, 12, 13, 31. Many utilities have already constructed or will construct dry storage ISFSIs regardless of whether the PFS facility is built. In fact, fifteen are currently operating and NRC anticipates an additional fifteen to twenty ISFSI applications in the near future. DEIS at 1-7. Other than PFS members, the DEIS does not identify any other utilities that would consider using the PFS site. Construction at the PFS site will not eliminate the purported construction impacts even at PFS member reactor sites. Utah Facts ¶7. For example, PFS members, Xcel Energy and Southern Nuclear Operating Company, already have constructed dry storage ISFSIs. Id.

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[7] Thus, in the Yankee decommissioning case, the Commission rejected an intervenor's contention which argued that the unavailability of spent nuclear fuel disposal facilities in the near future would "render illusory" the early site release advantage of the DECON alternative. Yankee, CLI-96-7, 43 NRC, 235, 251.

Additionally, another PFS member, Southern California Edison Company, has committed to constructing and operating a dry storage ISFSI. Id. Two other PFS members, Consolidated Edison Company of New York and GPU Nuclear Corporation have sold or committed to sell all their operating reactors. Id. The Genoa FuelTech, Inc. reactor and another Consolidated Edison Company of New York reactor are shutdown, and the advantages of decommissioning the shutdown reactors and releasing a substantial portion of the sites would compensate for construction impacts of a small ISFSI. Resnikoff Dec. at ¶ 22. Moreover, if the premise in the DEIS is that construction must be carried out -- either in Skull Valley or at the reactor site – any construction impacts that may be avoided at reactor sites because of the construction of the PFS facility must be weighed against the construction impacts at the Skull Valley site. Resnikoff Declaration ¶¶ 20-28. This the DEIS has failed to do.

Instead of supporting the likelihood or realism of the three PFS-asserted consequences, the DEIS merely repeats them and then invokes them ominously throughout the DEIS. For instance, the Staff asserts that "[w]hile the cooperating agencies recognize that many environmental impacts could result from shutting down nuclear power reactors, a full evaluation of these potential environmental impacts (such as generation of additional air pollution from replacement sources of electricity) is beyond the scope of this DEIS." DEIS at 6-43. Thus, the DEIS completely skips over the rather important question of how likely these shutdowns are, and instead raises vague specters about their terrible consequences.

In dismissing the no action alternative, the NRC Staff seems to be borrowing a page from the Yucca Mountain DEIS, in which the DOE identifies long-term onsite storage as

the no-action alternative, and then rejects it as not a "viable alternative." Yucca Mt. DEIS, Vol. 1 at 2-1, 2-59. In that case, the DOE provides an extensive discussion of why the no-action alternative is not a realistic option, chiefly because the agency was directed by Congress under the Nuclear Waste Policy Act to construct a repository instead of long-term storage. In the case of the PFS facility, there is no such congressional directive. The comparison between the no-action and proposed action alternatives is a comparison of identical technologies, with the difference that the PFS alternative involves shipment offsite to a centralized facility. To the objective observer, given the question of whether it is better to move something dangerous for temporary storage purposes or leave it where it is, the obvious answer is to leave it where it is unless there is some danger or infeasibility involved. In other words, the only reason the PFS facility could naturally be "preferred" is if the status quo alternative were not safe or feasible.

In the section comparing alternatives, the DEIS never makes any attempt to compare the two alternatives in a meaningful way. There is no analysis of the alleged barriers to onsite storage. There is no recognition of the fact that onsite storage involves fewer handling operations of the spent nuclear fuel than transportation to the PFS facility. There is no mention of the fact that occupational and public doses will be lowered if Cobalt-60 levels are allowed to decay over time during onsite storage. There is no attempt to qualify the significance of the alleged barriers to onsite storage, or the weight given to any of the limited factors that *were* considered in Section 9.4.3. Instead, Section 9.4.3 makes a simplistic and unsupported assertion that the Staff found the overall benefits of the proposed PFS facility to outweigh their disadvantages without any supporting documentation. The DEIS

does not contain the concise, descriptive, and accurate comparison of alternatives that is required by NEPA.[8] *See* Louisiana Energy Services, L.P. (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 98 (1998). Additionally, the DEIS is filled with obvious factual errors and inconsistencies related to the no action alternative that must be remedied. *See* Van Abbema v. Fornell, 807 F.2d 633, 642 (7th Cir. 1986).

C. The State Has Raised a Genuine and Material Issue of Fact Regarding the Adequacy of the DEIS's Discussion of the No Action Alternative, Including the Impacts of Transportation and Fuel Handling.

The Applicant argues that it is entitled to summary disposition because the DEIS addresses the advantages of not transporting spent fuel to the PFS facility, as well as the risks of accidents from cask handling and related activities. PFS Motion at 11-15. Contrary to the Applicant's assertion, there exists a genuine and material dispute regarding the adequacy of the DEIS's discussion with respect to these issues. Moreover, the DEIS is inadequate because it fails to discuss the foreseeable advantages of the no-action alternative with regard to vulnerability to military aircraft crashes.

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[8] The fact that the DEIS admits that storage of spent fuel near reactor sites will not have a significant incremental effect on the environment does not cure this substantial deficiency. *See* PFS Motion at 15-18. These assertions merely repeat existing Commission pronouncements that construction and operation of ISFSIs are essentially benign activities. These statements must be taken in the context of the dire predictions at the beginning of Section 6.7, that in these circumstances, pursuing the no action alternative will lead to premature reactor shutdowns, interfere with decommissioning activities, and result in construction that would not otherwise occur. Whether or not the NRC believes that construction and operation of any single ISFSI is a benign activity, in this case the NRC obviously has rejected the alternative for its perceived negative repercussions, without providing any analysis or support.

1. Transportation and Fuel Handling Impacts.

The DEIS's discussion of the avoided transportation and fuel handling impacts of the no-action alternative is inadequate in a number of respects.[9] These include the following:

First, the DEIS fails to discuss the fact that if shipment of spent nuclear fuel is postponed until a final repository is ready to receive the fuel, radioactivity levels in the fuel will have declined. Utah Facts at ¶ 57. For example, Cobalt-60 resides on the exterior of fuel assemblies and is a strong gamma emitter. Co-60 has a five-plus year half-life; therefore, in 20 half-lives, the Co-60 inventory will decline by a factor of one million. This greatly reduces radiation exposures in a potential accident, and also handling exposures by nuclear workers. Similarly, Cs-137, Ru-106 and other radionuclides would significantly decay during prolonged storage at reactors. This will significantly reduce occupational and public doses during transportation, under both normal and accident conditions. Id.; *see also*, Resnikoff Dec. ¶¶ 10-12.

Even if the DEIS acknowledged the advantages of allowing radioactivity levels to decay onsite, the estimated dose savings specified in the DEIS are underestimated because the DEIS understates (a) the number of handling operations that would be required, (b) the

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[9] PFS erroneously surmises that it would have been appropriate for the DEIS to exclude environmental impacts of cask handling because there are no environmental impacts from cask handling accidents. PFS Motion at 14, n. 13. There are avoided impacts of cask handling and transportation from allowing the spent nuclear fuel to further decay at the reactor site prior to transporting it offsite. As discussed *infra*, the DEIS has failed to adequately address these avoided impacts. This raises a disputed relevant material fact with respect to the environmental impacts of cask handling and transportation.

radiation dose to the public, and (c) the probability and severity of a transportation accident. Utah Facts ¶¶ 47-58, 60-61, 63. Allowing radioactivity levels to decay would significantly diminish environmental impacts in all three of these categories. Id. Thus, in order to provide an adequate discussion of the benefits of allowing radioactivity levels to decay, it would be necessary for the DEIS to provide a more accurate portrayal of the magnitude of these impacts.

Second, the DEIS does not acknowledge the fact that if fuel is stored onsite until a final repository is ready, the number of fuel handling operations required would be reduced by two or three, thus reducing occupational exposures under normal and accident conditions. If fuel is shipped directly to a repository, it will not need to be handled on arrival at the PFS intermodal transfer facility and the PFS facility, or handled on departure from the PFS facility to the repository. *See* Resnikoff Dec. ¶¶ 13-15.

Third, the DEIS fails to address the fact that if fuel is stored onsite until a final repository is ready, then only one shipment must be arranged in order to get a fuel assembly to the repository, rather than two shipments spaced apart in time. This will reduce the number of managerial actions required to ship spent nuclear fuel, and thereby reduce the potential for accidents and long delays caused by human error in coordinating shipments.

Fourth, the DEIS does not acknowledge the implementation of the no action alternative would involve continued storage of spent nuclear fuel at facilities already committed to that activity, and avoid construction of a new and enormous offsite storage facility. Utah Facts ¶¶ 12-13. Operating nuclear reactors will continue to store spent nuclear fuel onsite regardless of whether the PFS facility is constructed. If an existing site is

already committed to spent nuclear fuel storage, it is a better use of resources to maintain all of the fuel at the sites where it is now, rather than building a new facility to house just some of it. For instance, PFS member Xcel Energy (formerly Northern States Power) already has a large dry storage ISFSI at the Prairie Island nuclear plant. Id. ¶ 33. In addition, PFS member, Southern California Edison Company has already committed to constructing dry cask storage at its San Onofre plant. Id. ¶ 10. Another PFS member, Southern Nuclear Operating Company has already built a dry cask storage facility at the Hatch Plant. Id. ¶ 27. It would conserve resources to continue to use these facilities to their full capacity and eliminate environmental impacts from construction of a new facility. *See* Resnikoff Dec. ¶¶ 20-28.

2. Vulnerability to Military Aircraft Crashes.

The DEIS fails to recognize that onsite ISFSIs are also likely to be safer than the PFS facility with respect to their vulnerability to crashes of military aircraft and missiles. Utah Facts ¶ 62. Although some reactor sites may be in the paths of commercial aircraft, the State is aware of none that are located below airspace designated as a military operating area or adjacent to testing and bombing ranges as is the PFS facility. Analysis conducted by contractors for the U.S. Department of Energy for the Yucca Mountain DEIS details the methodology used in calculating air crash probability and consequences for at-reactor ISFSIs. P.R. Davis, L. Strenge, J. Mishima, *Final Accident Analysis for Continued Storage*, Jason Technologies Corp., Las Vegas, Nevada (Rev. 0, 1998) (244118). Their work shows that a commercial jet engine would not penetrate a storage cask, and therefore the radiological consequences are minimal. This is not the case for F-16 jets, MK-84 bombs, or cruise

missiles that would fly over and near the proposed facility in Skull Valley. Neither the probability nor consequences of jettisoned MK-84 bombs or jet engines on PFS storage casks is addressed in the DEIS. In fact, the NRC Staff is still in the process of evaluating the vulnerability of the PFS facility to impacts of military activity.

CONCLUSION

For the reasons stated above, there remain genuine and material disputed issues of fact between the State of Utah and PFS regarding the adequacy of the DEIS's discussion of the no action alternative. Accordingly, PFS is not entitled to summary disposition and the matter should be set for hearing.

DATED this March 6, 2001.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of STATE OF UTAH'S RESPONSE TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION ON UTAH CONTENTION Z was served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this March 6, 2001:

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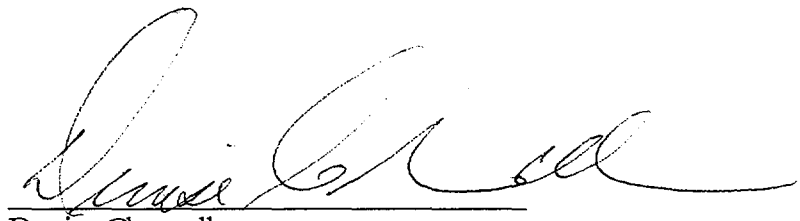

Denise Chancellor
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC (Independent Spent Fuel Storage Installation)	)	ASLBP No. 97-732-02-ISFSI
	)	March 6, 2001

STATE OF UTAH'S STATEMENT OF DISPUTED AND RELEVANT MATERIAL FACTS

In support of its Response to PFS's Motion for Summary Disposition of Utah Contention Z, the State submits this Statement of Disputed and Relevant Material Facts.

1. When Contention Z was filed, it challenged that the Environmental Report ("ER") did not adequately consider the no action alternative[1], but at this stage of the proceeding it is appropriate that Contention Z also challenge the Draft Environmental Impact Statement ("DEIS").

2. The State disputes PFS Material Fact 5, which, citing the State's bases for Contention Z, claims that "the State asserts that a meaningful discussion of the no build (i.e., no action) alternative is not possible. . ." In the Bases for Contention Z, the State asserts: "The Applicant's Environmental Report can not be used to meaningfully discuss the no build alternative, because the Applicant focuses solely on the perceived disadvantages of the no build alternative." Utah Z at 169 (*emphasis in original*).

3. It is possible to provide a meaningful discussion of the no build alternative, but the State disputes that it has been done in either the ER or the DEIS. The State disputes that the DEIS or ER has considered the environmental consequences of not undertaking the action at all or of continuing with the current plans and management regime. *See* Utah Z at 169.

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[1] State of Utah's Contentions on the Construction and Operating License Application by the Private Fuel Storage, L.L.C. for an Independent Spent Fuel Storage Facility, dated November 23, 1991 at 169 ("Utah Z").

4. The State disputes PFS Material Facts 6, 8, 10, 12 and 14. The analysis in the DEIS concerning the environmental advantages and disadvantages of the no action alternative is inadequate to allow a meaningful evaluation of the no action alternative under the National Environmental Policy Act. Resnikoff Dec., *passim.*

5. The State disputes PFS Material Fact 6. The DEIS's analysis of the environmental advantages and disadvantages of the no action/no build alternative in Chapters 4, 5, and 6, and 9 is incomplete, inadequate and biased. *See* Resnikoff Dec., *passim.*

6. The no action alternative disadvantages identified in the ER and the DEIS are summarized as: (1) increased probability of shutdown of operating reactors due to lack of spent nuclear fuel storage capacity and consequent loss of power generation; (2) delays in reactor decommissioning activities due to inability to remove spent nuclear fuel from sites in a timely manner resulting in continued expenses for storage of spent nuclear fuel at permanently shut down reactors; and (3) the need to construct additional at-reactor sites. DEIS at 6-43. These purported disadvantages are merely speculative and unsupported conclusory statements. Resnikoff Dec. ¶¶ 16-33.

7. Other than PFS member utilities, no potential PFS facility customers have been identified in the ER or DEIS. Id. ¶ 21.

8. The eight PFS members include: (1) Indiana-Michigan Power Company (American Electric Power Company), (2) Consolidated Edison Company of New York, (3) Florida Power and Light Company (formerly Illinois Power Company)[2], (4) GPU Nuclear Corporation, (5) Genoa FuelTech, (6) Southern California Edison Company, (7) Southern Nuclear Operating Company, and (8) Xcel Energy (formerly Northern State Power Company). DEIS at 1-1.

9. The DEIS states that GPU Nuclear Inc. owns the Oyster Creek and Three Mile Island operating reactors. DEIS Table 1.1 at 1-9; *see also* Fig. 1.3 at 1-4. GPU Nuclear Inc. completed the sale of the Oyster Creek and Three Mile Island Unit 1 reactors in 2000; thus, it no longer owns any operating nuclear

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[2] *See* PFS's John Parkyn's letter to NRC (June 2, 2000), advising that Florida Power and Light has secured the membership of Illinois Power in the PFS, LLC, attached to the Declaration of Dr. Marvin Resnikoff (March 6, 2001) as Exhibit 3

reactors. Resnikoff Dec. ¶ 22.

10. Southern California Edison Company plans to build and store its spent nuclear fuel from the San Onofre Units 1, 2, and 3 in onsite storage facilities. Id.

11. PFS members GPU Nuclear Inc. and Southern California Edison Company no longer have a need to store spent nuclear fuel at the proposed PFS facility. Id. ¶¶ 22, 25.

12. Nuclear utilities with operating reactors will continue to generate and store spent nuclear fuel at reactor sites regardless of whether the PFS facility is built and operated. Id. ¶¶ 16-20. Those reactors are already committed to onsite storage of spent nuclear fuel. Id.

13. Environmental impacts related to onsite storage of spent nuclear fuel at many sites will not be adverted if the PFS facility is built and operated. Id. ¶¶ 16, 22.

14. The DEIS and the ER do not contain an analysis of the probability or scope of premature shutdown due to lack of adequate spent nuclear fuel storage space. Id. ¶ 17. At a minimum, an analysis of the probability of premature shutdown would require a discussion of acreage available at each site, the suitability of the sites for dry storage ISFSIs, available storage options (*e.g.*, re-racking) at each site, the estimated additional storage capacity required to prevent premature shutdown at each site, the time frame in which additional storage capacity is required to prevent premature shutdown at each site, the energy generation lost at each site due to premature shutdown, and the available unused energy generation capacity at other reactors. Id.

15. The DEIS and the ER fail to evaluate the land available at each reactor site for on-site storage. Id. ¶¶ 17-18.

16. The DEIS and the ER fail to evaluate the available storage options (*e.g.*, re-racking) at each reactor site. Id. ¶¶ 17-19.

17. The DEIS and the ER fail to evaluate the estimated additional storage capacity required to prevent premature shutdown at each reactor site. Id. ¶ 17.

18. The DEIS and the ER fail to evaluate the date by when additional storage capacity is required to prevent premature shutdown at each reactor site. Id.

19. The DEIS and the ER fail to evaluate the estimated energy generation lost at each site due to premature shutdown. Id.

20. The DEIS and the ER fail to evaluate the available unused energy generation capacity at other reactors. Id.

21. Onsite dry ISFSIs would require a small percentage of the land encompassing a reactor site. Id. ¶ 18.

22. The onsite spent nuclear fuel storage capacity at operating nuclear reactors may be expand by re-racking the spent nuclear fuel pools or building additional onsite storage capacity. Id. ¶ 19. Additionally, the period in which operating nuclear reactors have adequate onsite spent nuclear fuel storage capacity to prevent premature shutdown may be extended by increasing the average burn up of the fuel assemblies used to reduce the rate of spent nuclear fuel generation without decreasing power output. Id. Any nuclear utilities in danger of shutting down because of a lack of options for expanded onsite spent nuclear fuel storage capacity have not been identified. Id.

23. Xcel Energy could physically extend its available onsite storage capacity at its Prairie Island facility by re-racking its spent nuclear fuel pool and by increasing the average burn up of its fuel assemblies. Id. ¶ 24.

24. The DEIS lists the Indian Point Unit 2 as Consolidated Edison of New York's only operating reactor. DEIS Table 1.1 at 1-9. Consolidated Edison of New York is currently under contract to sell Indian Point Unit 2. Resnikoff Dec. ¶ 27.

25. Genoa FuelTech, Inc. owns the shutdown LaCrosse reactor. DEIS at Table 1.1 at 1-9.

26. Consolidated Edison of New York will not and Genoa FuelTech, Inc. does not own any operating reactors that are in jeopardy of premature shutdown due to a shortage of available onsite spent nuclear fuel storage capacity. Resnikoff Dec. ¶ 27.

27. Southern Nuclear Operating Company is currently operating an onsite dry ISFSI at its Hatch facility. Id. ¶ 26. The onsite dry ISFSI will allow Southern Nuclear Operating Company to avoid premature shutdown of the Hatch reactors regardless of whether the PFS facility is built and operated. Id.

28. Xcel Energy owns the Monticello and Prairie Island 1 and 2 reactors. DEIS Table 1.1 at 1-9. Xcel Energy has sufficient onsite spent nuclear fuel storage

capacity at its Monticello reactor site to prevent premature shutdown prior to the end of its license period. Resnikoff Dec. ¶ 24.

29. A site specific ISFSI is located at Xcel Energy's Prairie Island facility. DEIS Fig. 1.5 at 1-10. The ISFSI capacity at Xcel Energy's Prairie Island facility has sufficient physical space available to store more fuel than the currently permitted seventeen casks. Resnikoff Dec. ¶ 24.

30. Currently, Xcel Energy has the physical onsite spent nuclear fuel storage capacity to avoid premature shutdown of all its reactors. Id. *See also* NUREG-1571, Information Handbook on Independent Spent Fuel Storage Installations, at 4-23.

31. The ER and the DEIS fail to identify which specific reactor sites will forego construction of an at-reactor ISFSI in favor of the proposed PFS facility. Id. ¶ 21.

32. At the time of issuance of the DEIS, fifteen ISFSIs were operating. DEIS at 1-7. NRC anticipates an additional fifteen to twenty ISFSI applications "for the near term." Id.

33. ISFSIs have already been constructed at fifteen sites, including Xcel Energy's Prairie Island facility. Resnikoff Dec. ¶¶ 22-23. Southern Nuclear Operating Company also constructed an ISFSI. Id. ¶ 22. Southern California Edison Company has committed to constructing and operating a dry storage ISFSI. Id. On-site dry storage facilities are not needed at Xcel Energy's Monticello facility, Consolidated Edison Company of New York's Indian Point Unit 2, or any GPU Nuclear Corporation facilities because the reactors have sufficient onsite storage or the reactors have been sold or will be sold. Id.

34. The State disputes the Applicant's characterization of the Basis of Utah Z (at 169-70) in PFS Material Fact 13. Utah Z quotes from the Applicant's ER as follows: "'The construction of additional onsite ISFSIs at plant sites will result in more sites disturbed and greater environmental impact than constructing one site in a remote, desert environment.' ER at 8.1-3." Utah Z at 169-170. The concern raised in Utah Z is that environmental disturbance from expansion of onsite storage capacity within the reactor basin is quantitatively less than the environmental disturbance that will occur at a site used primarily for grazing and one that is of cultural and historical significance to a number of groups, including Native Americans. Utah Z at 170.

35. The State disputes PFS Material Fact 14, which, in part, confuses NRC's legal

finding of "no significant impact" for environmental assessments of existing ISFSIs with the factual discussion in the DEIS. While inadequate, the DEIS has some discussion of the environmental impacts from future at-reactor ISFSIs; the DEIS does not conclude or surmise, as PFS claims in Material Fact 14, "that construction of ISFSI facilities at reactor sites will have no significant environmental impacts." *See* DEIS at 6-45 to -47.

36. The State disputes PFS Material Fact 14. Construction and operation of the proposed PFS site will not eliminate many of the construction impacts asserted in the ER and DEIS, including at (1) the fourteen currently licensed non-PFS member ISFSIs, (2) any of the fifteen to twenty projected onsite ISFSIs actually built, (3) the Oyster Creek and Three Mile Island 1 reactors (formerly owned by GPU Nuclear), (4) the Consolidated Edison Company of New York's Indian Point 2 reactor, (5) Southern California Edison Company's San Onofre Units 1, 2, and 3 reactors, (6) the Southern Nuclear Operating Company's Hatch 1 and 2 reactors, and (7) the Xcel Energy's Monticello and Prairie Island 1 and 2 reactors. Resnikoff Dec. ¶¶ 20, 22, 23.

37. Onsite construction impacts may be avoided by other alternatives available to various utilities to increase available storage. Id. ¶¶ 19, 20.

38. The ER and DEIS assert that the failure to build the PFS facility would result in delays in reactor decommissioning due to the inability to remove spent nuclear fuel from sites in a timely manner, and will impede the release of reactor sites to a "green fields" condition; and that it is disadvantageous or environmentally harmful for spent nuclear fuel to remain onsite for lengthy periods. Id. ¶ 29.

39. Dry ISFSIs could be constructed on a small portion of the utility owned property encompassing the shutdown reactor site. Id. ¶¶ 30-31.

40. Shutdown reactors could be fully decommissioned and released to a "green fields" condition if the spent nuclear fuel is transferred to an onsite ISFSI with a site specific license. Id. ¶ 30. The no action alternative in itself would not prevent the decommissioning of shutdown reactors. Id. ¶¶ 30, 32.

41. NRC evaluated decommissioning issues in its NUREG-0586, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, NRC, August 1988.

42. Until a permanent repository capable of accepting all spent nuclear fuel is available, the spent nuclear fuel must be stored regardless of the location. Resnikoff Dec. ¶ 20. Many risks associated with transporting the spent

nuclear fuel could be avoided by storing it onsite. Id. ¶¶ 10-15.

43. The State disputes that the ER or the DEIS has properly considered the no action alternative and provided a balanced comparison of environmental consequences. Utah Z at 169.

44. The State disputes PFS Material Facts 8 and 10. The DEIS underestimates key parameters in determining the avoided impacts under the no action alternative from transportation and handling doses to workers and the public, in that it understates (a) the number of handling operations that would be required, (b) the radiation dose to the public, and (c) the probability of a severe transportation accident. Resnikoff Dec. ¶ 10-15.

45. By underestimating the key parameters identified in ¶ 44 above, the DEIS biases the discussion of the alternatives in favor of the action alternative and against the no action alternative. Id. ¶ 7.

46. The State disputes PFS Material Fact 8. The ER and the DEIS fail to adequately identify the advantages of not shipping 4,000 spent fuel casks across country under the no action alternative. Resnikoff Dec. ¶¶ 10-15.

47. The ER and the DEIS fail to evaluate the actual rail routes using the specific rail accident rate for those routes. Id. ¶ 15(c)(ii). The DEIS and the ER only consider an average rail accident rate which does not reflect the actual accident rate for each route. Id.

48. The ER and the DEIS fail to adequately estimate the probability of a severe accident. Id. ¶ 15(c)(iii). According to the 1987 Modal Study, the probability of an accident of any severity occurs with a frequency 1.19×10^{-5} accidents/train mile. Fisher et al, "Shipping Container Response to Severe Highway and Railway Accident Conditions," NUREG/CR-4829, Lawrence Livermore National Laboratory, prepared for the U.S. Nuclear Regulatory Commission, 1987. An additional seven rail accidents beyond those suggested in the DEIS will occur transporting loaded casks from the PFS facility to the Nevada line. Resnifoff Dec. ¶ 15(c)(iii). Similarly, an estimated 32 accidents will occur moving empty HI-STAR overpacks from the proposed PFS facility. Id.

49. The most severe accident identified in the DEIS, a category 6 accident, has a conditional probability of 1.25×10^{-4}. Id. ¶ 15(c)(iv). The probability of a category 6 accident occurring during the PFS transportation campaign is 4 in 1,000 (or 4×10^{-3}) which is considerably greater than the one accident per 100,000 (or 1.0×10^{-5}) estimated in the DEIS. Id.

50. The ER and DEIS also fail to adequately estimate the likelihood of the occurrence of a Category 6 accident because it assumes that some of the accidents that will occur will be minor. Id. ¶ 15(c)(v). The DEIS discussion of injury and fatality rates is based on a 1994 study by Saricks and Kvitek of railcar accidents across the country between the year 1986 and 1988. DEIS at D-7. The Saricks and Kvitek study generally eliminates accidents that are minor, such as grade crossing accidents, since these will not lead to a release from a shipping cask. Resnikoff Dec. ¶ 15(c)(v). Thus, if the Saricks study of accident rates is used, then the accident severity distributions must reflect the fact that minor accidents have been removed, which would increase the probability of a Severity Category 6 accident. Id.

51. The ER and the DEIS fail to adequately estimate the radiological consequences of a Severity Category 6 accident, by failing to estimate or underestimating the release fraction for Chalk River Unidentified Deposits ("CRUD"). Id. ¶ 15(c)(vi). CRUD, which contains neutron-activated nuclides and may also contain fissile particles and fission products, must be considered in estimating overall radionuclide inventory which is, in turn, critical to evaluating the radiological consequences of a severe accident. Id.

52. The State disputes the DEIS's calculation of the release fraction for Cobalt-60. The State's calculations show that a person residing in an area contaminated by an accidental release for one week would incur a 10% greater dose than calculated using the CRUD release assumptions employed in the DEIS. Id. ¶ 15(c)(xi). If a person resided in a contaminated area for one year, the increased dose due to CRUD release would be 23.5%. Id.

53. The ER and the DEIS fail to sufficiently describe or analyze the environmental impacts of a maximum credible transportation accident. Id. ¶ 15(c)(xii). The health and environmental impacts of the six categories of accident severity in Appendix D (*see* page D-6) identified in the DEIS are not defined; thus, the advantages of the no action alternative eliminating those impacts cannot be evaluated. Id.

54. The State disputes PFS Material Fact 10. The ER and DEIS fail to adequately analyze the risks of cask handling under the no action alternative. Resnikoff Dec. ¶¶ 12-15(a).

55. If shipment of spent nuclear fuel is postponed until after the federal permanent geologic repository is opened, thus allowing radioactivity levels to decline, then radiation doses from incident-free transportation would be eliminated and the probability of accidents involving radiological releases

would be reduced. Id. ¶ 10.

56. If spent nuclear fuel is stored on-site until a final repository is available, then only one shipment must be arranged in order to get a fuel assembly to the repository, rather than two or more shipments which will reduce the potential for accidents and long delays. Id. ¶ 11.

57. The DEIS and the ER do not explicitly consider the decreased incident-free dose to cask handlers that would occur under a delayed transportation campaign from reactors to a geologic repository under the no action alternative. Id. ¶ 12. First, the DEIS does not explicitly address the significant dose savings for handlers that would be achieved if the fuel were allowed to cool before transport offsite. Id. Second, the DEIS does not acknowledge that radiation doses caused by accidental releases during handling and/or transportation would be lower if fuel is allowed to cool onsite before being shipped to a geologic repository sometime in the future and would pose less of a health risk to cask handlers. Id.

58. If fuel is stored onsite until a final repository is ready, the number of fuel handling operations required per cask would be reduced by two or more, thus reducing the potential for an accident. Id. ¶ 13.

59. If the spent nuclear fuel is allowed to cool onsite until the direct transportation to a final repository, the Cobalt-60 radiation released in a potential accident will be substantially smaller. Id. ¶ 14. Cs-137, Ru-106 and other radionuclides would significantly decay during prolonged storage at reactors. Id. The reduced radiation will significantly reduce occupational and public doses during transportation, under both incident free and accident conditions. Id.

60. The DEIS and the ER fail to acknowledge the number of intermodal transfers that will be required to move spent fuel from trucks to railheads near reactor sites. Id. ¶ 15(a)(i). The incident-free risks have been underestimated because heavy-haul truck transportation involves greater incident-free radiation exposures to workers and the general public than rail transportation. Id. Worker radiological impacts of cask loading and transfer operations from heavy haul trucks or barges to railcars near the reactor would be comparable to radiological impacts at the proposed PFS intermodal transfer facility. Id. ¶ 15(a)(ii). NRC estimates those impacts to be 11.9 person-rems per year. DEIS at 5-47.

61. Reactor personnel who load and seal the canisters, and who transfer the canisters to a transportation overpack would also receive doses that are not

included in the ER or DEIS. Resnikoff Dec. ¶ 15(a)(iii). Total exposure from these two operations would be 12.48 person-rems per year. Id. If radioactivity levels were allowed to decay by storing the spent nuclear fuel on-site under the no action alternative, these doses would be substantially reduced. Resnikoff Dec. ¶ 15(a)(iii).

62. The State disputes PFS Material Fact 12. The ER and the DEIS fail to address that onsite ISFSIs are also likely to be safer than the PFS facility with respect to their vulnerability to crashes of military aircraft and missiles. Resnikoff Dec. ¶ 9. The consequences of F-16 jets, MK-84 bombs, or cruise missiles flying over and near the proposed facility in Skull Valley are not addressed in the ER or DEIS. Id.

63. The DEIS and the ER underestimate radiation doses to the public due to intermodal transportation from reactor sites to railheads. Heavy-haul trucks travel at much slower speeds than trains, resulting in more prolonged exposure to the surrounding population. Id. ¶ 15(b)(i). Assuming a population density of 719 persons/km^2 along the heavy-haul routes, the increased annual population dose is 127.2 person-rems/year. Id. Public radiological doses and subsequent increases in latent cancer fatalities arising from heavy-haul transport from reactors to railheads would be reduced if radiation levels were permitted to decrease during onsite storage of spent fuel until availability of a permanent repository. Id.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC (Independent Spent Fuel Storage Installation)	)	ASLBP No. 97-732-02-ISFSI
	)	March 6, 2001

DECLARATION OF DR. MARVIN RESNIKOFF REGARDING MATERIAL FACTS IN DISPUTE WITH RESPECT TO CONTENTION UTAH Z

I, Dr. Marvin Resnikoff, hereby declare under penalty of perjury and pursuant to 28 USC § 1746, as follows:

1. I am a physicist with a Ph.D. in high-energy theoretical physics from the University of Michigan and also the Senior Associate of Radioactive Waste Management Associates (RWMA), a private technical consulting firm based in New York City. I have researched radioactive waste issues for the past 27 years and have extensive experience and training in the field of nuclear waste management, storage, and disposal. Our work at RWMA is about equally divided among three issues related to the matters covered in this deposition: (i) transportation and storage of irradiated fuel, (ii) personal injury law suits involving radiation in which we calculate radiation exposures, and (iii) remediation of radioactive landfills and contaminated sites. A copy of my resume has already been filed in this proceeding. *See*, Exhibit A attached to my declaration in support of the "State of Utah's Responses to Applicant's Motion for Summary Disposition of Utah Contention K/Confederated Tribes Contention B," dated January 30, 2001.

2. I have considerable expertise and experience in the field of nuclear waste storage and transportation, including reviewing and analyzing cask designs, and evaluating transportation risks. Since 1975 I have worked on spent fuel transportation issues, including cask safety, for the States of Utah, Nevada (including Clark and White Pine Counties), Idaho, New Mexico and Alaska. This work began with work for the New York Attorney General's office on the safety of transporting plutonium by plane out of John F. Kennedy International Airport. My role in the case was to determine whether the plutonium shipping container could be punctured and the amount of plutonium that could be released. I was an invited speaker at the 1976 Canadian meeting of the American Nuclear Society to discuss the risk of transporting plutonium by air. On behalf of the State of New York, I also reviewed and provided

comments on NUREG-170, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes." On behalf of the State of Nevada and Clark County, Nevada, I provided comments on the transportation cask safety studies and transportation risk assessments, such as the Modal Study and references, and more recently NUREG/CR-6672. I have conducted transportation risk assessments for the State of Nevada and has employed various computer codes and formulas to estimate the amount of radioactivity released in and the health and economic consequences of a severe accident, including the computer models RADTRAN, RISKIND, RESRAD, and HOTSPOT. In addition, in hearings before state commissions and in federal court, I investigated proposed dry storage facilities at the Point Beach (WI), Prairie Island (MN) and Palisades (MI) reactors. These are matters that are also addressed in this declaration. For the Council on Economic Priorities, I have written a book on the transportation and storage of irradiated fuel. In June 2000, I was appointed to a Blue Ribbon Panel on Alternatives to Incineration by DOE Secretary Bill Richardson.

3. I have considerable training and experience in the field of risk assessment involving nuclear and hazardous facilities, serving as an expert witness in numerous personal injury cases in which I estimated radiation doses and the likelihood these exposures caused cancer. These cases involved uranium mining and milling, oil pipe cleaning, X-rays, thorium contamination and other issues. This work involved the use of computer codes, such as MILDOS, to estimate radiation doses and spreadsheets employing dose conversion factors.

4. I am one of the State of Utah's expert witnesses on Utah Contention Z, which relates to the no action alternative to the proposed Private Fuel Storage facility. I participated in the drafting of the contention and the development of the State's position regarding the contention, including the preparation of discovery against the Applicant and the NRC Staff.

5. I am familiar with Private Fuel Storage, L.L.C.'s ("PFS's") license application ("LA"), Environmental Report ("ER") and Safety Analysis Report ("SAR") in this proceeding, as well as the applications for the storage and transportation casks (HI-STORM and HI-STAR) PFS plans to use. I am also familiar with NRC regulations, guidance documents, and environmental studies relating to the storage and transportation of spent nuclear power plant fuel, including NUREG-0800, 10 CFR Part 100, EPA's Protective Action Guide, and Federal Register Notice December 4, 1996 (61 Fed. Reg. 64257). I am also familiar with applicable PFS responses to NRC's Requests for Additional Information ("RAIs").

6. I have carefully reviewed the Applicant's Motion for Summary Disposition of Utah Contention Z – No Action Alternative, as well the Statement of Material Facts on Which No Genuine Dispute Exists, as well as other relevant PFS documents; the

NRC Staff's *Safety Evaluation Report* ("SER") dated September 29, 2000 and the *Draft Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Tooele County, Utah*, NUREG-1714 (DEIS) dated June 2000.

7. This declaration is written in support of the State's Statement of Disputed and Relevant Material Facts. I will discuss my view that both the ER and the DEIS fail to adequately address the impacts of the no action alternative. The ER and the DEIS ignore or understate the avoided impacts of the no-action alternative. They also make unreasonable and unsupported assertions about the negative impacts of the no-action alternative. As a result, the DEIS incorrectly portrays the no-action alternative as unworthy of any serious consideration. I believe that the no-action alternative has many advantages over the proposed alternative, and that these advantages have not been fairly or objectively portrayed in the DEIS.

Avoided Impacts Not Considered or Understated.

8. The DEIS ignores or understates a number of avoided impacts of the no-action alternative. These include ignoring dose reductions as a result of lower vulnerability to military aircraft crashes, Cobalt-60 decay, reduced number of handling operations, and lower vulnerability to military aircraft crashes; and understating the impacts of transportation accidents.

Radiological Impacts Avoided by Lower Vulnerability to Military Aircraft Crashes.

9. The ER and the DEIS fail to address that on-site ISFSIs are also likely to be safer than the PFS facility with respect to their vulnerability to crashes of military aircraft and missiles. Although some reactor sites may be in the paths of commercial aircraft, I can think of none that are located below airspace designated as a military operating area or adjacent to testing and bombing ranges as is the PFS facility. Analysis conducted by contractors for the U.S. Department of Energy for the Yucca Mountain DEIS details the methodology used in calculating air crash probability and consequences for at-reactor ISFSIs. P.R. Davis, L. Strenge, J. Mishima, *Final Accident Analysis for Continued Storage*, Jason Technologies Corp., Las Vegas, Nevada (Rev. 0, 1998) (244118). Their work shows that a commercial jet engine would not penetrate a storage cask, and therefore the radiological consequences are minimal. This is not the case for F-16 jets, MK-84 bombs, or cruise missiles that would fly over and near the proposed facility in Skull Valley. Neither the probability nor consequences of jettisoned MK-84 bombs or jet engines on PFS storage casks is addressed in the DEIS. In fact, the NRC Staff is still in the process of evaluating the vulnerability of the PFS facility to impacts of military activity.

Radiological Impacts Avoided by Cobalt-60 Decay.

10. If shipment of spent nuclear fuel ("SNF") is postponed until after the federal permanent geologic repository is opened, radioactivity levels in the fuel will have declined because the SNF would be allowed to further cool. By waiting to ship SNF until a final repository was ready, the number of transport miles and the number of intermodal transfers would be reduced. This would eliminate radiation doses from incident-free transportation and reduce the probability of accidents involving radiological releases.

11. Also, if SNF is stored on-site until a final repository is ready, then only one shipment must be arranged in order to get a fuel assembly to the repository, rather than two or more shipments spaced apart in time. This will reduce the number of managerial actions required to ship SNF, and thereby reduce the potential for accidents and long delays caused by human error in coordinating shipments.

12. The DEIS and the ER do not explicitly consider the decreased incident-free dose to cask handlers that would occur under a delayed transportation campaign from reactors to a geologic repository under the No-Action Alternative. Table 9-1 of the DEIS shows that the incident-free dose to workers will be smaller under the No-Action Alternative (at 9-33); however, the discussion is incomplete in two respects. First, the DEIS does not explicitly address the significant dose savings for handlers that would be achieved if the fuel were allowed to cool before transport off-site. Instead, the discussion is about handling the fuel immediately, on-site. Second, the DEIS does not acknowledge that radiation doses caused by accidental releases during handling and/or transportation would be lower if fuel is allowed to cool on-site before being shipped to a geologic repository sometime in the future and would pose less of a health risk to cask handlers. *See* ¶ 8 *supra.*

Radiological Impacts Avoided by Reduced Number of Handling Operations.

13. If fuel is stored on-site until a final repository is ready, the number of fuel handling operations required per cask would be reduced by two or more. This reduction in handling operation would subsequently reduce occupational exposures under both normal and accident conditions. For example, if SNF is shipped directly to a repository, it will not need to be handled on arrival at or departure from the proposed PFS facility. In addition, if PFS utilizes its intermodal transfer facility, the SNF would be handled both on its way to and from the PFS facility. Also, if a final repository is not available and the SNF is in fact removed from the PFS facility, as PFS claims, then the SNF would be handled at least two more times before it reaches a final repository.

14. If the SNF is allowed to cool on-site until the direct transportation to a final

repository, the Cobalt-60 radiation released in a potential accident will be substantially smaller. Cobalt-60 resides on the exterior of fuel assemblies and is a strong gamma emitter. Cobalt-60 has a five-plus year half-life. Therefore, in 8 half-lives or approximately 40 years, the Cobalt-60 inventory will decline by a factor of 250. This greatly reduces radiation exposures in a potential accident, and also handling exposures by nuclear workers. Similarly, Cs-137, Ru-106 and other radionuclides would significantly decay during prolonged storage at reactors. This will significantly reduce occupational and public doses during transportation, under both normal and accident conditions.

15. Even if the DEIS were changed to acknowledge the advantages of allowing radioactivity levels to decay, these dose savings would still be underestimated because the DEIS understates (a) the number of handling operations that would be required, (b) the radiation dose to the public, and (c) the probability of a severe transportation accident. I will discuss these factors below.

a. Number of handling operations.

(i) The DEIS and the ER fail to acknowledge the number of intermodal transfers that will be required to move spent fuel from trucks to railheads near reactor sites. Among the 22 reactors[1] claimed to be owned by PFS members, five have rail access and therefore would not require intermodal transfer to move SNF from truck to rail.[2] Seventeen reactors either have no rail access or are restricted by reactor bay or crane capacity. These reactors are shown in a table I prepared titled "Reactor Accessibility," attached hereto as Exhibit 1.

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[1] The Indian Point Unit 2 reactor listed in the DEIS as owned by a PFS member is currently awaiting NRC approval to transfer the ownership and license to a non-PFS member. *See* news article titled *Entergy to buy Con Ed's Indian Point plants*, dated November 9, 2000, attached hereto as Exhibit 2. Following completion of the sale of Indian Point Unit 2, PFS members will own 19 reactors.

[2] The DEIS incorrectly lists Illinois Power Company as a PFS member. Florida Power and Light Company replaced Illinois Power as a PFS member prior to the DEIS issuance. *See* letter from John Parkyn, PFS, dated June 2, 2000, to NRC, advising that Florida Power and Light has secured the membership of Illinois Power in the PFS, LLC, attached hereto as Exhibit 3. Florida Power and Light's three reactors do not have direct rail access. Additionally, the Oyster Creek and Three Mile Island Unit 1 reactors are no longer owned by PFS members. *See* news releases from GPU's internet site titled *GPU, Amergen Complete Sale of Oyster Creek Facility* (August 9, 2000) and *This Month's News GPU and AmerGen Close Sale of Three Mile Island Unit 1* (December 21, 1999), both attached hereto as Exhibit 4.

See additionally, Concept of Operations for the Multi-purpose Canister System (September 30 1993), U.S. Department of Energy ("DOE"), Table 1 (attached hereto as part of Exhibit 1); and *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* (July 1999), DOE, ("Yucca Mt. DEIS") Table J-12 at 4-5. For these reactors, as well as additional reactors owned by any non-PFS member customers, SNF will have to be transported by heavy-haul truck or barge to the nearest railhead. The incident-free risks have been underestimated because heavy-haul truck transportation involves greater incident-free radiation exposures to workers and the general public than does rail transportation.

(ii) For each reactor that requires intermodal transfer from the reactor to the railhead, the radiological impacts on workers as a result of cask loading and transfer operations would be comparable to radiological impacts at the proposed PFS intermodal transfer facility. NRC estimates those impacts to be 11.9 person-rems per year. DEIS at 5-47. If radioactivity levels were allowed to decay, these doses would be substantially reduced.

(iii) In addition, reactor personnel who load and seal the canisters, and who transfer the canisters to a transportation overpack would also receive doses that are not included in the ER or DEIS. According to the DEIS, the additional occupational dose to crew members resulting from this exposure at the PFS intermodal transfer facility is 0.60 person-rems per year. DEIS at 5-48. Total exposure from these two operations would be 12.48 person-rems per year. Again, if radioactivity levels were allowed to decay, these doses would be substantially reduced.

b. Radiation dose to public.

(i) The DEIS and the ER underestimate radiation doses to the public due to intermodal transportation from reactor sites to railheads. Heavy-haul trucks travel at much slower speeds than trains, resulting in more prolonged exposure to the surrounding population. The population dose attributed to heavy-haul transport from the PFS intermodal transfer facility was estimated in the DEIS as 0.23 person-rems per year. DEIS at 5-45 to 5-46. This number was calculated by the Staff assuming a low population density of 1.3 persons/km^2 along the heavy-haul route from the PFS transfer facility to the PFS facility. Near the reactors, the population density

is expected to be much greater, closer to suburban densities. Assuming a population density of 719 persons/km^2 along the heavy-haul routes, the default suburban population density in RADTRAN 4, the increased annual population dose is therefore expected to be 719/1.3 x 0.23 person-rems or 127.2 person-rems/year. Including the additional exposures arising from heavy-haul transport from reactors to railheads, the predicted increase in latent cancer fatalities from the 20-year operation would be greater than that given in the DEIS. DEIS at 5-37.[3] By underestimating public doses and increases in latent cancer fatalities, the DEIS masks the significance of the dose savings that would be achieved if radiation levels were permitted to decrease during extended on-site storage of spent fuel.

c. Probability of severe transportation accident.

(i) Even if the DEIS and the ER discussed the dose saving advantages of allowing spent fuel to decay onsite, these advantages would not be accurately portrayed because the DEIS fails to adequately evaluate transportation accidents and the resultant advantage of on-site storage. The most severe transportation accident considered in the DEIS is a "Severity Category 6" accident, involving "[s]evere impact damage plus fire severe enough to cause fuel oxidation with release of greater amounts of fuel particulates than category 5." DEIS at D-6, Table D.2. The DEIS estimates that the probability of an accident of this severity is 1 x 10^{-12} per mile for shipment by rail. DEIS at D-7.

(ii) The ER and the DEIS fail to evaluate the actual rail routes using the specific rail accident rate for those routes. The DEIS and the ER only consider an average rail accident rate which does not reflect the actual accident rate for each route. The DEIS employs the computer program Interline to specify the rail routes by minimizing the number of transfers between railroad companies. As a result the main line routes, which generally consist of passenger routes and have the lowest accident rates, will not necessarily be chosen, nor will the most

[3] The DEIS used the conversion factors of 0.0005 LCFs per person-rem for exposures to the general public, and 0.0004 LCFs per person-rem for exposures to crew members. To determine the expected increase in LCFs over the 20 year campaign, the expected annual population doses are obtained by adding the population doses given in the DEIS to the additional population dose due to intermodal transfer at reactor sites.

direct routes necessarily be chosen. For example, the rail route in New York State does not follow a direct route across the state, but dips down from Schenectady to Binghamton then back up to Buffalo. DEIS at 5-41. The DEIS accident rate analysis employs the average rail accident rate for the country. This rate includes better maintained high speed tracks, rather than using the accident rate for tracks actually taken. Similar to accident rates the NRC employs for different types of highways (Interstate rural, Interstate urban, rural, urban, and so on), the Staff must discuss the accident rates for different types (quality) of rail lines.

(iii) The ER and the DEIS also fail to adequately estimate the probability of a severe accident. According to the 1987 Modal Study, the probability of an accident of any severity occurs with a frequency 1.19×10^{-5} accidents/train mile.[4] This accident rate is based on the accident database of the Federal Railroad Administration ("FRA"). Assuming, as the DEIS does, that the average distance from a reactor to the proposed PFS facility is 2,120 rail miles (DEIS at 5-35) and that 50 shipments of four casks will occur each year for 20 years, an estimated 25 rail accidents will occur transporting loaded casks to the proposed PFS facility[5]. An additional seven rail accidents will occur transporting loaded casks from the PFS facility to the Nevada line[6]. Similarly, an estimated 32 accidents will occur moving empty HI-STAR overpacks from the proposed PFS facility. These will be accidents of varying severity, some severe and some minor.

(iv) To estimate the probability of a severe accident, the conditional probability that an accident will be severe is multiplied by the accident rate. The DEIS for the proposed PFS facility uses the conditional probabilities developed by the Modal Study in its

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[4] Fischer et al, 1987. "Shipping Container Response to Severe Highway and Railway Accident Conditions." (Frequently referred to as the Modal Study). NUREG/CR-4829. Lawrence Livermore National Laboratory. Prepared for U.S. Nuclear Regulatory Commission.

[5] 50 shipments/yr x 2120 mi/shipment x 1.19 x 10-5 accidents/mi x 20 yrs = 25 accidents to the PFS facility.

[6] 100 shipments/year x 10 years x 590 miles/shipment x 1.19×10^{-5} accidents/mile = 7 accidents going from PFS to the proposed repository at Yucca Mountain.

transportation risk assessment. The most severe accident, a category 6 accident, has a conditional probability of 1.25×10^{-4}. That is, approximately 1.25 in 10,000 accidents are classified as a category 6 accident. An estimated 4.36×10^{6} train-km will be traversed in the course of the PFS campaign. *See* DEIS at 5-35 (converting railcar-km to train-km). The probability of a category 6 accident occurring during the PFS transportation campaign is:

$$7.4 \times 10^{-6} \frac{\text{accidents}}{\text{train km}} * 1.25 \times 10^{-4} \frac{\text{category 6 accidents}}{\text{accident}} * 4.36 \times 10^{6} \text{ train km} = 4.03 \times 10^{-3} = \frac{4}{1000}$$

Thus, the probability of a category 6 accident occurring over the duration of the shipping campaign is 4 in 1,000 (or 4×10^{-3}), considerably greater than the one accident per 100,000 (or 1.0×10^{-5}) estimated in the DEIS.[7]

(v) The ER and DEIS also fail to adequately estimate the likelihood of the occurrence of a Category 6 accident because it assumes that some of the accidents that will occur will be minor. However, the database upon which the NRC relies in the DEIS to assign categories of accidents does not include specific minor accidents, such as grade-crossing or rail yard accidents. The DEIS discussion of injury and fatality rates is based on a 1994 study by Saricks and Kvitek of railcar accidents across the country between the year 1986 and 1988.[8] DEIS at D-7. The Saricks and Kvitek study carefully considers the DOT rail accident database but generally eliminates accidents that are minor, such as grade crossing accidents, since these will not lead to a release from a shipping cask. The DEIS relies on the Saricks study to calculate transportation risk, without accounting for the fact that the Saricks study has eliminated a number of accidents from consideration. As a result, the DEIS does not accurately reflect the frequency of a category 6 accident. Thus, if one employs the Saricks study of accident rates, then one must also change the accident severity distributions to reflect the fact that minor accidents have been removed. If not, the likelihood of a severe accident is then too

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[7] The DEIS states that one severe accident will occur in one trillion miles. For an estimated 10 million miles traveled, this corresponds to 1.0×10^{-5} accidents over the 40 year life of the proposed facility.

[8] ANL/ESD TM-68, Saricks, C. and Kvitek, T., "Longitudinal Review of State-Level Accident Statistics for Carriers of Interstate Freight" (March 1994), Argonne National Laboratory.

low. In calculating the risk of a Category 6 accident, the DEIS must either include all accidents and the accident severity fractions that appear in RADTRAN 4; or, if it chooses to remove minor accidents from consideration, alter the accident severity distributions accordingly.

(vi) The ER and the DEIS fail to adequately estimate the radiological consequences of a Severity Category 6 accident, by failing to estimate or underestimating the release fraction for Chalk River Unidentified Deposits ("CRUD"). CRUD is a corrosion product that is deposited on fuel cladding during reactor operation, and is observed to be loosely adhered on power reactor fuel. DEIS at D-6, note 8. CRUD contains neutron-activated nuclides and may also contain fissile particles and fission products[9]. CRUD must therefore be considered in estimating overall radionuclide inventory which is, in turn, critical to evaluating the radiological consequences of a severe accident.

(vii) As measured at Sandia National Laboratories, the amount of CRUD on a fuel assembly can be extremely variable. Generally BWR fuel assemblies have much higher surface concentrations. The Sandia report estimating CRUD contribution to radioactive inventory, SAND88-1358,[10] provides a range of CRUD surface activity densities for both PWR and BWR reactors. This surface activity density is multiplied by the total surface area inside a cask in order to obtain an estimate of the CRUD inventory for a cask.

(viii) CRUD may escape from a breached or leaking canister, even if the fuel is undamaged. Yuan 1995 (referenced in footnote 9). CRUD resides on the outer surface of fuel assemblies; thus, the cladding does not have to be broken to release CRUD to the interior of a shipping cask. Id. Further, all spalled CRUD will be released into the environment if there is a leakage path available, such as a failed seal or open vent.

(ix) The major radioactive component contained in CRUD is Cobalt-60.

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[9] ANL/EAD-1, Yuan, et al, RISKIND - A Computer Program for Calculating Radiological Consequences and Health Risks for Transportation of Spent Nuclear Fuel (November 1995), Argonne National Laboratory, Appendix D.

[10] SAND88-1358. Sandoval et al. "Estimate of Crud Contribution to Shipping Cask Containment Requirements." January 1991.

Therefore, although the DEIS does not specifically address the environmental impacts of a CRUD release, it is possible to determine whether the DEIS has considered those impacts by evaluating its treatment of Cobalt-60 releases. As shown in Table D.5, the DEIS considers Cobalt-60 to behave like a particulate in the event of an accident. Id. Eleven other radionuclides are also listed in Table D.5 as having the properties of particulates (other radionuclides are listed as volatiles or gases). Table D.4 of the DEIS provides release fractions for particulates, volatiles, and gases, in each of the six categories of accidents. No distinction is made in Table D.4 between the release fraction for Cobalt-60 and the release fraction for the eleven other radionuclides listed in Table D.5: the same release fraction is given for each category of accident. For instance, the release fraction in the event of the severe accident (category 6), is calculated at 2.0×10^{-5}.

(x) This calculation is not logical, and appears to significantly underestimate the release fraction for Cobalt-60. The release fraction for Cobalt-60 should be higher because it is found both inside *and* outside of the fuel. In the form of CRUD, Cobalt-60 can be released in a Category 3 accident that does no damage to the fuel. *See* Table D-2 at D-6. In a Category 6 accident, involving damage to fuel, Cobalt-60 that adheres to the outside of fuel assemblies *and* Cobalt-60 on the inside of fuel assemblies will be released. In contrast, the other particulates would be released only in the event of damage to the fuel.[11]

(xi) Moreover, the Staff's calculation of the release fraction for Cobalt-60 is also inconsistent with other studies. As discussed previously, SAND88-1358 assumed that 100% of CRUD would be spalled from fuel rods for all impact-related releases. Moreover, the DEIS for the Yucca Mountain repository is based on default assumptions contained in the RISKIND computer code, which include a 100% release of CRUD in the event of a severe accident.[12] As seen in the following table, the State's calculations show that including CRUD and employing the software program RISKIND, a person residing in an area contaminated by an accidental release for one week would

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[11] The listing of "physical/chemical group" and "dispersibility category" does not appear in the ER. These have been constructed by Staff contractors for the DEIS.

[12] Yuan (1995).

incur a 10% greater dose than calculated using the CRUD release assumptions employed in the DEIS. If a person resided in a contaminated area for one year, the increased dose due to CRUD release would be 23.5%.

CRUD contribution to Population Dose using RISKIND					
long-term exposure time	100% CRUD Release Fraction[1]		10^{-5} CRUD release Fraction[2]		% difference
	population-dose	LCF	population-dose	LCF	
1 week	6880	3.44	6190	3.095	10.0
1 year	24300	12.15	18600	9.3	23.5
50 years	194000	97	157000	78.5	19.1

1. Release Fraction Assumed in SAND88-1358 and ANL/EAD-1.

2. Release Fraction given in DEIS.

(xii) The ER and the DEIS fail to sufficiently describe or analyze the environmental impacts of a maximum credible transportation accident. The DEIS calculated the transportation "risk." This risk is expressed in terms of the fractional likelihood of latent cancer fatalities, calculated for various volumes of SNF shipped. *See*, for example, DEIS Table 5.7 at page 5-38, which calculates "[a]nnual expected latent cancer fatalities (LCFs) for potential accident risk to the public during SNF transport." Assuming 200 shipments per year, the DEIS estimates an accident risk of 2.2×10^{-3} for both rail and intermodal transport. Although the DEIS identifies six categories of accident severity in Appendix D (*see* page D-6), nowhere does the DEIS explain what the health or environmental consequences would be for an accident of any of those severity categories. Thus, the numerical abstraction has no factual content. There is no assessment of: how many people would die; how many people would get sick; what would be the effects on wildlife; how much land would be contaminated; how long the contamination would last; etc. By making this numerical abstraction, the DEIS masks the significance of the dose savings that would be achieved under accident conditions if the spent fuel were allowed to decay onsite before transporting it.

(xiii) Reliance on a numerical abstraction to describe risks is inconsistent with the approach taken by federal agencies in other cases. For

instance, DOE's Environmental Impact Statement prepared for the Yucca Mountain repository contains an extensive discussion of the consequences of severe transportation accidents. Yucca Mt. DEIS at App. H. A consequence analysis is also generally provided in EISs for nuclear power plants. *See, e.g., Final Environmental Statement related to the operation of Seabrook Station, Units 1 and 2*, NUREG-0895 at 5.34 through 58 (health consequences); 5-58 through 5-60 and 5-64 through 71 (economic consequences); and 5-65 through 71 (health risks).

Unsupported Assertions Regarding Negative Impacts of No-Action Alternative.

16. The DEIS lists three "consequences" that the ER asserts could be caused by the no-action alternative. DEIS at 6-43. These alleged consequences include: (1) increased probability of shutdown of operating reactors due to lack of SNF storage capacity and consequent loss of power generation; (2) delays in reactor decommissioning activities due to inability to remove SNF from sites in a timely manner, resulting in continued expenses for storage of spent nuclear fuel at permanently shut down reactors; and (3) the need to construct additional at-reactor sites. DEIS at 6-43. However, neither the ER or the DEIS provides support for these alleged consequences. Moreover, I believe the assertions are unreasonable. Implementation of the no-action alternative would involve continued storage of SNF at facilities already committed to that activity, and avoid construction of a new and enormous storage facility. Operating nuclear reactors will continue to store SNF on-site regardless of whether the PFS facility is constructed. Moreover, there is no indication that nuclear utilities are in danger of shutting down because of a lack of options for expanded spent fuel storage capacity.

17. A major consequence asserted in the ER and DEIS is that the loss of SNF storage space will lead to loss of power generation. The DEIS claims that the result of the no-action alternative would cause "[s]ome power reactor licensees . . . because of physical constraints (e.g., insufficient land) may have to terminate operations prior to the expiration of their reactor licenses if their available spent fuel storage capacity is filled." DEIS 9-8. However, neither the DEIS nor the ER contain any analysis of the probability or scope of premature shutdown due to lack of adequate spent nuclear fuel storage space. An analysis of this factor would require a discussion of acreage available at each site, the suitability of the sites for dry storage ISFSIs, available storage options (e.g., re-racking) at each site, the estimated additional storage capacity required to prevent premature shutdown at each site, the time frame in which additional storage capacity is required to prevent premature shutdown at each site, the energy generation lost at each site due to premature shutdown, and the available unused energy generation capacity at other reactors.

18. In fact, the land encompassing a reactor site is approximately hundreds to several thousand acres. Reactor sites would have an area of a half-acre to an acre suitable for an ISFSI. *See* Yucca Mt. DEIS at 7-22 (*stating* "[t]he land required for a storage facility typically would be a few acres, a small percentage of the land available at current sites" and operation of an ISFSI would require no more land than the reactor site currently occupied).

19. In addition to onsite dry cask storage facilities, nuclear utilities have other options for expanding the physical capacity of SNF pools. These include re-racking or increasing the average burn up of its fuel assemblies to reduce the rate of SNF generation. The ER or the DEIS do not sufficiently address options available to specific reactors.

20. The ER and the DEIS also assert that the need to construct additional onsite storage is an impact of the no-action alternative. But the DEIS does not show that this impact will be avoided if the PFS facility is built. The ER and the DEIS make no effort to address whether nuclear utilities would in fact use the PFS facility if available. *See also*, LA at 1-7. As discussed in paragraphs 23 to 26 below, it is likely that many on-site SNF storage facilities will be built, even if the PFS facility is also built. After all, if PFS is licensed to store 40,000 metric tons of uranium of SNF, almost half of the nation's projected commercial SNF, this means over half of the nation's SNF will be stored away from PFS, including at on-site storage facilities similar to the no action alternative. Thus, the purported disadvantage of at-reactor storage may occur regardless of whether the PFS facility is built. Thus, environmental consequences could be compounded by the construction and operation of the PFS facility.

21. The ER and the DEIS fail to assess which specific reactor sites will forego construction of an at-reactor ISFSI in favor of the proposed PFS facility. Many utilities have already or will construct dry storage ISFSIs regardless of whether the PFS facility is built. In fact, fifteen are currently operating and NRC anticipates an additional fifteen to twenty ISFSI applications in the near future. DEIS at 1-7. Other than PFS members, PFS (or the DEIS) does not identify any other utilities that would consider using the PFS site.

22. Construction at the PFS site will not eliminate the purported construction impacts even at PFS member reactor sites. As discussed below, PFS members, Xcel Energy and Southern Nuclear Operating Company already have constructed dry storage ISFSIs. The Monticello reactor owned by Xcel Energy has sufficient storage available through its license period. *See* DOE's evaluation of spent nuclear fuel storage alternatives, attached hereto as Exhibit 5. Additionally, another PFS member, Southern California Edison Company, has committed to constructing and

operating a dry storage ISFSI to store SNF from all three of its reactors. *See* NRC news release (February 15, 2000) describing the Southern California Edison's planned on-site ISFSI, attached hereto Exhibit 6. Two other PFS members, Consolidated Edison Company of New York and GPU Nuclear Corporation have sold or committed to sell all their operating reactors. *See* Exhibits 2 and 4 (articles describing the sale of reactors). Thus, regardless of whether the PFS facility is built, on-site ISFSI construction impacts will not be avoided in at least eight out of nineteen[13] PFS member reactors (Hatch Units 1 and 2, Monticello, Prairie Island Units 1 and 2, San Onofre Units 1, 2, and 3).

23. Many utilities concerned with the availability of adequate SNF storage will store SNF on-site. In fact, at the time it issued the PFS DEIS, the NRC Staff recognized in the DEIS, it has issued fifteen licenses for at-reactor ISFSIs and an additional fifteen to twenty were anticipated. PFS DEIS at 1-7.

24. PFS member Xcel Energy (formerly Northern States Power) may extend its available storage capacity by re-racking its SNF pool and by increasing the average burn up of its fuel assemblies. *See* Exhibit 5. Moreover, there is already a large dry storage ISFSI at the Prairie Island nuclear plant physically capable of storing more than the licensed seventeen casks. If Xcel Energy increased its permitted dry storage capacity, it would avoid any threat of shutdown and incur minimal additional environmental impacts. Xcel's Monticello plant does not need additional storage capacity to avoid shutdown. *See* Exhibit 5, and PFS Response to RAI, dated May 18, 1998, at 4, attached hereto as Exhibit 7.

25. PFS member, Southern California Edison Company has already committed to constructing dry cask storage for all three reactor units at its San Onofre plant. *See* Exhibit 6. PFS claims Southern California Edison would use the PFS facility to allow it to decommission Unit 1 and to ensure the continued operation of Units 2 and 3 if a federal repository is not available before 2008. *See* PFS Response to RAI at 2 (Exhibit 7). At-reactor storage would eliminate Southern California Edison's need for the PFS site and would not threaten pre-mature shutdown of its reactors. On-site storage will also allow the San Onofre Unit 1 to be decommissioned.

26. Another PFS member, Southern Nuclear Operating Company has already built a dry cask storage facility at the Hatch Plant. Thus, Southern Nuclear no longer has a need to store its SNF from the Hatch reactors to avoid premature shutdown as posited by PFS. *See* PFS Response to RAI at 4 (Exhibit 7).

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[13] For purposes of estimating avoided construction impacts, the total number of PFS member reactors is assumed to be nineteen, excluding the Indian Point Unit 2 reactor which is currently under contract to sell.

27. PFS member, Consolidated Edison Company of New York has committed to sell its Indian Point Unit 2 reactor. *See* Exhibit 2. Upon completion of the sale it will no longer own any operating reactors. PFS member, GPU Nuclear sold its Oyster Creek and Three Mile Island Unit 1 reactor and no longer owns any operating reactors. Genoa FuelTech, another PFS member, owns no operating reactors. Thus, Consolidated Edison, GPU, and Genoa FuelTech do not need the PFS facility to avoid premature shutdown as earlier stated. *See* PFS Response to RAI at 2-4 (Exhibit 7).

28. On-site construction impacts may be avoided by other alternatives available to various utilities to increase available storage. *See* ¶ 20 *supra*. Moreover, any at-reactor construction impacts that may actually be avoided by constructing the proposed PFS facility only alter the location of the construction impacts. Construction must be carried out in either case, whether it is in Skull Valley or at a nuclear reactor site.

29. The ER and the DEIS also assumes that failure to build the PFS facility would result in delays in reactor decommissioning due to the inability to remove SNF from sites in a timely manner, thus lengthening the time that SNF must be stored on-site. This argument can be broken down into two claims: first, that delays in spent nuclear fuel removal from reactor sites will impede the release of reactor sites to a "green fields" condition; second, it is disadvantageous or environmentally harmful for SNF to remain on-site for lengthy periods.

30. I do not believe the first argument has merit, because there is no reason why the construction of an onsite ISFSI should prevent the decommissioning and release of the rest of the site. Moreover, the size of the ISFSI is quite small in comparison with the size of the entire property on which a reactor was sited. Thus, the vast majority of a reactor site could be released after decommissioning of a reactor.

31. For instance, the Genoa FuelTech, Inc. reactor and the Consolidated Edison of New York, Indian Point Unit 1 reactor are both shutdown. The advantages of decommissioning the shutdown reactor and releasing a substantial portion of the site would likely compensate for construction impacts of very small ISFSIs.

32. I also believe the second argument lacks merit. The spent fuel must be stored somewhere -- the question is whether it should be stored in place or moved. I see no greater disadvantage to storing spent fuel onsite than to moving it to the PFS facility. To the contrary, I believe there are many risks associated with moving the fuel that should be avoided by leaving it onsite.

33. Finally, I believe the entire discussion of relative costs and benefits of the no-action alternative is distorted by the extremely unrealistic assumption that storage of SNF, at either the PFS facility or the reactor sites, will be "temporary." I am closely familiar with the technical problems that have arisen in the investigation of the Yucca Mountain site for suitability as a long-term SNF repository. Given the recently discovered proximity of the repository site to groundwater sources, it does not appear that the integrity of the repository can be maintained for the period required for indefinite disposal. I believe it is extremely unlikely that Yucca Mountain or any other repository will be licensed in the next 100 years, and possibly much longer. Although the NRC has tried to legislate public confidence in the imminent availability of a repository, I do not believe there is any rational basis for such confidence. In my opinion, the discussion of the no-action alternative is seriously distorted by the assumption that a repository will be available in 2010. I believe that the DEIS should assume that waste will remain in temporary storage indefinitely, and include a discussion of the relative merits of indefinite storage at PFS and reactor sites. This discussion should include consideration of where the SNF will receive the best long-term care, and the equities of requiring the different affected communities to be long-term stewards. For instance, if the residents of the State of Utah received no benefit from the generation of energy as a result of burning nuclear power plant fuel, should they be burdened with the long-term environmental impacts of hosting the indefinite storage of the material? In short who receives the benefit and who bears the risk. These issues should be addressed in the DEIS.

Executed this 6th day of March 2001,

By _____
Marvin Resnikoff, PhD

Reactor Accessibility

	DOE YM EIS[f] J-12 No Rail Access	DOE MPC study[g] No Large Casks
Indian Point 1, 2[a]	X	X
Oyster Creek[b]	X	X
Turkey Point 3, 4[b]	X	X
St. Lucie 1, 2[b]	X	X
Prairie Island 1, 2[c]		X
Monticello		X
Cook 1, 2[d]		X
LaCrosse		X
San Onofre 1, 2, 3		
Farley 1, 2[d]		X
Hatch 1, 2		
Vogtle 1, 2[e]		X

[a] Incorrectly omitted from Table by DOE.
[b] Barge transfer to railroad.
[c] Rail access, but reactor bay sizing a problem.
[d] Heavy haul transfer to railhead.
[e] Heavy haul transfer to railhead, but restricted by crane capacity.
[f] 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, Appendix J.
[g] Concept of Operations for the Multi-Purpose Canister System, prepared for US DOE by TRW Environmental Safety Systems, Inc., September 30, 1993 (DOC ID: A00000000-01717-6700-00001), Appendix A, Table 1 (attached to this exhibit).

DOC ID: A00000000-01717-6700-00001 REV 00
WBS: 9.2.1
QA: N/A

Civilian Radioactive Waste Management System
Management and Operating Contractor

CONCEPT OF OPERATIONS FOR THE MULTI-PURPOSE CANISTER SYSTEM

Revision 0

September 30, 1993

Prepared for:

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
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Under Contract Number
DE-AC01-91RW00134

Table 1. Modal Capability for Each Facility

Pool	Fuel Type	Reference Scenario	MPC System
Arkansas Nuclear 1	P	R100	R125,Transfer
Arkansas Nuclear 2	P	R100	R125,Transfer
Beaver Valley 1	P	R100	R125
Beaver Valley 2	P	R100	R125
Big Rock Point	B	Truck	Truck
Braidwood 1	P	R100	R125
Braidwood 2	P	R100	R125
Browns Ferry 1	B	R100,Barge	R125,Transfer,Barge
Browns Ferry 2	B	R100,Barge	R125,Transfer,Barge
Browns Ferry 3	B	R100,Barge	R125,Transfer,Barge
Brunswick 1	B	R75	R75
Brunswick 2	B	R75	R75
Byron 1	P	R100	R125
Byron 2	P	R100	R125
Callaway	P	R100,HH	R125,HH
Calvert Cliffs 1	P	R100,Barge	R125,Barge
Calvert Cliffs 2	P	R100,Barge	R125,Barge
Catawba 1	P	R100,HH	R125,HH
Catawba 2	P	R100,HH	R125,HH
Clinton	B	R100,HH	R125,Transfer,HH
Comanche Peak 1	P	R100,HH	R125,HH
Comanche Peak 2	P	R100,HH	R125,HH
Cooper	B	R75	R75
Crystal River	P	Truck	Truck
D.C. Cook 1	P	R100,HH	R125,Transfer,HH
D.C. Cook 2	P	R100,HH	R125,Transfer,HH
Davis Besse	P	R100	R125
Diablo Canyon 1	P	R100,Barge	R125,Transfer,Barge
Diablo Canyon 2	P	R100,Barge	R125,Transfer,Barge
Dresden 1	B	R75 (Transfer To 2&3)	R75 (Transfer To 2&3)
Dresden 2	B	R75	R75
Dresden 3	B	R75	R75
Duane Arnold	B	R100	R125,Transfer
Farley 1	P	R100,HH	R125,HH
Farley 2	P	R100,HH	R125,HH
Fermi 2	B	R100,Barge	R125,Transfer,Barge
Fitzpatrick	B	Truck	Truck
Ft. Calhoun	P	Truck	Truck
Ginna	P	Truck	Truck
Grand Gulf	B	R100,Barge	R125,Barge
H.B. Robinson	P	R75	R75
Haddam Neck	P	Truck	Truck
Harris	B/P	R100	R125
Hatch 1	B	R100	R125
Hatch 2	B	R100	R125
Hope Creek	B	R100,Barge	R125,Barge
Humboldt Bay	B	Truck	Truck

Pool	Fuel Type	Reference Scenario	MPC System
Indian Point 1	P	Truck	Truck
Indian Point 2	P	Truck	Truck
Indian Point 3	P	Truck	Truck
Kewaunee	P	R100.HH	R125.Transfer.HH
LaCrosse	B	Truck	Truck
LaSalle 1	B	R100	R125
LaSalle 2	B	R100	R125
Limerick 1	B	R100.HH	R125.Transfer.HH
Limerick 2	B	R100.HH	R125.Transfer.HH
Maine Yankee	P	R100	R125
McGuire 1	P	R100	R125.Transfer
McGuire 2	P	R100	R125.Transfer
Millstone 1	B	R75.HH	R75.HH
Millstone 2	P	R75.HH	R75.HH
Millstone 3	P	R100.HH	R125.Transfer.HH
Monticello	B	Truck	Truck
Morris	P/B	R100	R125
Nine Mile 1	B	R100	R125.Transfer
Nine Mile 2	B	R100.HH	R125.Transfer.HH
North Anna 1	P	R100	R125
North Anna 2	P	R100	R125
Oconee 1	P	R100.HH	R125.Transfer.HH
Oconee 2	P	R100.HH	R125.Transfer.HH
Oconee 3	P	R100.HH	R125.Transfer.HH
Oyster Creek	B	R100.Barge	R125.Transfer.Barge
Palisades	P	Truck	Truck
Palo Verde 1	P	R100	R125
Palo Verde 2	P	R100	R125
Palo Verde 3	P	R100	R125
Peach Bottom 2	B	Truck	Truck
Peach Bottom 3	B	Truck	Truck
Perry 1	B	R100	R125
Pilgrim	B	Truck	Truck
Prairie Island 1	P	R100	R125.Transfer
Prairie Island 2	P	R100	R125.Transfer
Pt. Beach 1	P	R100.HH	R125.HH
Pt. Beach 2	P	R100.HH	R125.HH
Quad Cities 1	B	R75	R75
Quad Cities 2	B	R75	R75
Rancho Seco	P	R100	R125
River Bend	B	R100.HH	R125.HH
Salem 1	P	R100.Barge	R125.Transfer.Barge
Salem 2	P	R100.Barge	R125.Transfer.Barge
San Onofre 1	P	R100 (Transfer To 2&3)	R125 (Transfer to 2&3)
San Onofre 2	P	R100	R125
San Onofre 3	P	R100	R125
Seabrook	P	R100.HH	R125.HH
Sequoyah 1	P	R100	R125
Sequoyah 2	P	R100	R125

Pool	Fuel Type	Reference Scenario	MPC System
Shoreham	B	R100.HH	R125.HH
South Texas 1	P	R100.HH	R125.HH
South Texas 2	P	R100.HH	R125.HH
St. Lucie 1	P	Truck	Truck
St. Lucie 2	P	R100.Barge	R125.Barge
Surry 1	P	R100.Barge	R125.Barge
Surry 2	P	R100.Barge	R125.Barge
Susquehanna 1	P	R100	R125
Susquehanna 2	P	R100	R125
Three Mile Island	P	R75	R75
Trojan	P	R100.HH	R125.HH
Turkey Pt. 3	P	R100.Barge	R125.Transfer.Barge
Turkey Pt. 4	P	R100.Barge	R125.Transfer.Barge
V.C. Summer	P	R100	R125
Vermont Yankee	BP	Truck	Truck
Vogtle 1	P	R75.HH	R75.HH
Vogtle 2	B	R75.HH	R75.HH
Washington Nuclear 2	P	R100.HH	R125.HH
Waterford 3	P	R100	R125
Watts Bar 1	P	R100	R125
Watts Bar 2	P	R100	R125
Wolf Creek	P	R100	R125
Yankee Rowe	P	Truck	Truck
Zion 1	P	R100	R125.Transfer
Zion 2	P	R100	R125.Transfer

Entergy News

Date: 11/9/00
For Release: Immediate

Contact: Nancy Morovich (Investor Relations)
Entergy
(504) 576-5506
(888) 925-8406 (pager)
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Carl Crawford (Media)
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ccrawfo@entergy.com

Entergy Nuclear adds Indian Point nuclear plants to its Northeast Fleet

NEW YORK, NY – Consolidated Edison (NYSE: ED) and Entergy Corporation (NYSE: ETR) have agreed to the purchase by Entergy of Con Edison's Indian Point 1 and 2 nuclear power plants in Westchester County, N.Y. Indian Point unit 1 has been shut down and in safe storage since the early 1970s. The sale will place all three units at the Indian Point site under a single owner for the first time in their 25-year operating history.

Entergy previously agreed to buy Indian Point unit 3 along with the James A. FitzPatrick plant in Oswego County, N.Y., from the New York Power Authority and is preparing to close that transaction.

The agreement calls for Entergy to pay Con Edison $502 million for the two nuclear units, three natural gas-fired turbines, and other assets. Entergy also agreed to pay book value for nuclear fuel, which is estimated to be about $100 million at the time of closing. The companies also entered into a power purchase agreement to sell the full output of Indian Point 2 to Con Edison through the end of 2004.

"The key point is both Indian Point operating units will be managed by a single organization with more than 25 years of proven operating experience – and that will benefit New York's consumers and economy," said J. Wayne Leonard, chief executive officer of Entergy.

"With this purchase, Entergy's growth strategy in the Northeast is coming together. Pilgrim, our first purchase last year, is making a strong contribution to our 2000 earnings, significantly exceeding our forecast. These clean-air nuclear units also demonstrate our commitment to environmental leadership."

The addition of Indian Point 2 will give Entergy four operating nuclear units in the Northeast. The company purchased the Pilgrim Station in Plymouth, Mass., in 1999. Entergy is also managing decommissioning activities at the Maine Yankee plant in Wiscasset, Maine, and at the Millstone Unit 1 plant in Waterford, Conn.

Entergy's fleet of nuclear plants in the Northeast "will be a stabilizing force in the competitive power market of New York and the Northeast," Jerry Yelverton, chief executive officer of Entergy Nuclear, said.

"With four plants in the Northeast, we expect to create savings through sharing resources in best safety practices, performance management, purchasing, training, licensing and environmental areas – all of which should make these plants more productive and competitive. Our commitment to New York is to provide a safe, low cost power supply and a brighter future of new career opportunities for Con Edison's nuclear employees," the Entergy Nuclear CEO said.

The 680 nuclear employees of Con Edison will be transferred to Entergy Nuclear at their present salaries with comparable benefits.

Con Edison is currently replacing the steam generators of Indian Point 2 and expects to return the unit to service by the end of the year.

Under the sale agreement, Con Edison must complete the steam generator replacement, refueling work and bring unit 2 to full power before the sale transaction is closed.

To provide Con Edison customers with a power supply at a stable price, Entergy has agreed to sell Indian Point 2's energy output back to Con Edison through the end of 2004.

Con Edison will also transfer to Entergy both units' decommissioning trust funds, which meet the amount required by the U.S. Nuclear Regulatory Commission.

Entergy was selected as the successful bidder in an auction process managed for Con Edison by Morgan Stanley Dean Witter. The proposed sale must be approved by the NRC, the Federal Energy Regulatory Commission, the New York Public Service Commission and other regulatory authorities. The companies said they expected to close the transaction in mid-2001.

The nuclear businesses of Entergy Corporation are headquartered in Jackson, Miss. Entergy, a global energy company based in New Orleans, is one of the largest power generators in the nation with more than 30,000 megawatts of generating capacity, about $11 billion in annual revenue and over 2.5 million customers. Entergy's nuclear businesses encompass five power reactors at four locations in Arkansas, Mississippi and Louisiana under regulatory jurisdictions, and the Corporation is expanding into the competitive power market nationally by purchasing additional nuclear plants.

Indian Point 1 and 2 purchase will be Entergy's third purchase in the Northeast. The company's purchase of Pilgrim was the first nuclear plant sale in a competitive bidding process. Entergy Nuclear Northeast is headquartered in White Plains, NY.

Con Edison is a subsidiary of Consolidated Edison, Inc., one of the nation's largest investor-owned energy companies, with more than $8 billion in annual revenues and $16 billion in assets. The utility provides electric, gas and steam service to more than three million customers in New York City and Westchester County, New York. For additional financial, operations and customer service information, visit Con Edison's web site at www.coned.com.

Entergy's on-line address is: www.entergy.com.

The following constitutes a "Safe Harbor" statement under the Private Securities Litigation Reform Act of 1995: Investors are cautioned that forward-looking statements contained in the foregoing release with respect to the revenues, earnings, performance, strategies, prospects and other aspects of the business of Entergy Corporation may involve risks and uncertainties. Actual events and results may, for a variety of reasons, prove to be materially different from those indicated in these forward-looking statements, estimates and projections. Factors that could influence actual future outcomes include regulatory decisions, the effects of changes in law, the evolution of markets and competition, changes in accounting, weather, the performance of generating units, fuel prices and availability, financial markets, risks associated with businesses conducted in foreign countries, changes in business plan, the presence of competitors with greater financial resources and the impact of competitive products and pricing; the effect of the Entergy Corporation's policies, including the amount and rate of growth of Entergy Corporation's expenses; the continued availability to Entergy Corporation of adequate funding sources and changes in interest rates; delays or difficulties in the production, delivery or installation of products and the provision of services; and various legal, regulatory and litigation risks. Entergy Corporation undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. For a more detailed discussion of some of the foregoing risks and uncertainties, see Entergy Corporation's filings with the Securities and Exchange Commission.


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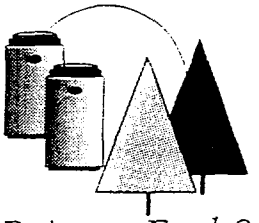

Private Fuel Storage, LLC

P.O. Box C4010, La Crosse, WI 54602-4010
John D. Parkyn, Chairman of the Board

June 2, 2000

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

NEW PFSLLC MEMBER
DOCKET NO. 72-22/TAC NO. L22462
PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE L.L.C.

The purpose of this letter is to advise you that Florida Power and Light has the secured the membership of Illinois Power in the Private Fuel Storage L.L.C.

If you have any questions regarding this matter, please contact me at 608-787-1236 or Mr. J. L. Donnell, Project Director, at 303-741-7009.

Sincerely,

John D. Parkyn, Chairman
Private Fuel Storage L.L.C.

Copy to:
Mark Delligatti
John Donnell
Jay Silberg
Sherwin Turk
Asadul Chowdhury
Greg Zimmerman
Scott Northard
Denise Chancellor
Richard E. Condit
John Paul Kennedy
Joro Walker

News

Media Contacts

Latest Release

GPU, Amergen Complete Sale of Oyster Creek Facility

Posted 2000-08-09 08:35:14

CONTACT:

GPU, Ned Raynolds, (973) 455-8294
PECO Energy, Bill Jones, (215) 841-4129, Ralph DeSantis (610) 765-5530
British Energy, Doug McRoberts, (011) 131-44-527-2020

Morristown, NJ – August 8, 2000 -- GPU, Inc. and AmerGen Energy Company today announced they have completed the sale of GPU's Oyster Creek nuclear generating facility in Lacey Township, NJ, to AmerGen for $10 million.

The sale includes the 619-megawatt, single unit boiling water reactor and adjacent former farm property.

AmerGen, a joint venture between PECO Energy Company, of Philadelphia, and British Energy, of Edinburgh, Scotland, now holds the license for Oyster Creek's operation and has full responsibility and authority over the nuclear station.

An agreement on the sale was reached in September, 1999. The U.S. Nuclear Regulatory Commission approved transfer of the operating license to AmerGen on June 6, 2000. The New Jersey Board of Public Utilities approved the sale on July 20, 2000.

"The sale of Oyster Creek is the final significant step in GPU's exiting the merchant generation business," said Fred D. Hafer, chairman, president and chief executive officer of GPU. "We are now sharply focused on the transmission and distribution of electricity, as well as new, non-regulated businesses, which we believe hold the key to our future growth."

The sale will provide the Oyster Creek employees with an opportunity to join an organization that is becoming a major operator and owner of nuclear generating facilities.

The purchase of Oyster Creek marks another acquisition in AmerGen's business plan to become one of the nation's leading nuclear power generators. In 1999, the company purchased the Clinton Power Station in Illinois and Three Mile Island Unit 1 in Pennsylvania. It also has signed an asset purchase agreement for the Vermont Yankee Nuclear Power Station in Vermont.

Jerry Rainey, AmerGen CEO, said, "We are pleased to be acquiring another quality

nuclear plant, and at the same time maintaining electric reliability, jobs and economic benefits for New Jersey. Oyster Creek is a good fit for our growing generation portfolio."

Dr. Robin Jeffrey, British Energy's executive director North America and president of AmerGen, said, "The Oyster Creek acquisition demonstrates AmerGen's ongoing commitment to developing a premier fleet of US nuclear plants. This transaction will help to secure the future of the facility and will provide staff with an opportunity to be part of a Company which has nuclear power generation as a central part of its strategy."

With the transfer of ownership, Ron DeGregorio, a veteran of PECO Nuclear operations who led the AmerGen Oyster Creek Transition Team, became the plant's site vice president. "This is an exciting day," he said. "We have a good plant, fine operating staff and the potential to be an excellent nuclear generator for the next decade. Safety and reliable power production are the foundation of AmerGen's operating principles."

The ownership transfer places Oyster Creek in a Mid-Atlantic Regional Operating Group (ROG) consisting of PECO Energy's Limerick and Peach Bottom nuclear stations, TMI Unit 1 and Oyster Creek, under the supervision of Joe Hagan, PECO Energy's senior vice president for Nuclear Operations.

The sale provides for AmerGen to assume full responsibility for the ultimate decommissioning of Oyster Creek. At the closing of the sale, GPU provided funding for the decommissioning trust of $440 million. The transaction will reduce by more than $150 million the costs GPU customers would bear for decommissioning and for other plant-related transitional costs if the plant were shut down rather than sold to AmerGen.

GPU will purchase the electricity generated by Oyster Creek at a fixed price through March, 2003. Also, GPU will fund outage costs, including the cost of re-load fuel, for a refueling outage scheduled for October, 2000. AmerGen will repay these costs to GPU in nine equal annual installments beginning in August, 2001.

GPU, Inc. (NYSE: GPU), headquartered in Morristown, NJ, is a registered public utility holding company providing utility and utility-related services to customers throughout the world. GPU serves 4.6 million customers directly through its electric companies -- GPU Energy in the US, GPU Power in the UK, and Emdersa in Argentina. It serves an additional 1.4 million customers indirectly through GasNet, its gas transmission subsidiary in Australia. The company's independent power project business units own interests in and/or operate 14 projects in 5 countries including the US. GPU's 1999 revenues were $4.8 billion and its total assets were $21.7 billion. GPU's other subsidiaries include MYR Group, Inc., GPU Advanced Resources, Inc., GPU International, Inc., GPU Service, Inc. and GPU Telcom Services, Inc.

PECO Energy (NYSE:PE) is an electric and gas utility serving 1.5 million electric customers in the five-county Philadelphia area and 425,000 natural gas customers in four suburban counties. It is one of the nation's largest nuclear utilities, producing more than 36 billion kilowatt-hours of electricity in 1999 at its Limerick and Peach Bottom generating stations.

PECO Energy has set new nuclear performance standards in safety, availability and capacity factors, efficient refueling outages and low operating and maintenance costs. The company also owns and operates coal, natural gas, oil, landfill gas and hydro power plants, and its Power Team operates a 24-hour energy trading floor with transactions in 47 states and Canada.

British Energy provides more than 20 per cent of Britain's electricity and it the U.K's largest generator. It owns and operates 15 nuclear power reactors in the United Kingdom, with 9,600 megawatts of generation, including seven advanced gas-cooled nuclear stations and one pressurized water reactor station.

British Energy has also acquired the Eggborough coal-fired power station in Northern England. This is part of its long-term strategy of achieving vertical integration and purchasing more flexible generating plant in the UK.

In July 1996, British Energy was successfully privatized through a public offering of stock. The company has distinguished itself on nuclear operations through its outstanding safety record and by reducing costs and increasing output and profit following privatization. Headquartered in Edinburgh, Scotland, it has market capitalization of around œ2bn and has 5,300 employees.

News GPU

This Month's News GPU and AmerGen Close Sale of Three Mile Island Unit 1

Contact: Ned Raynolds 973-455-8294

Morristown, NJ – GPU, Inc. (NYSE: GPU) announced today that it has completed the sale of its Three Mile Island (TMI) Unit 1 nuclear generating facility near Harrisburg, Pa., to AmerGen Energy Company for $100 million.

AmerGen is a joint venture of PECO Energy Company, of Philadelphia, Pa., and British Energy Company, of Edinburgh, Scotland, founded in 1997 to purchase and operate nuclear generation plants in the United States.

"This transaction is one of the final steps in our planned exiting of the domestic merchant generation business, which will enable us to focus on our strategy of transmitting and distributing electricity and providing utility services," said Fred D. Hafer, chairman, president and chief executive officer of GPU.

"The purchase of TMI Unit 1 marks another major acquisition in AmerGen's business plan to become the nation's leading power generator," said Jerry Rainey, PECO Nuclear president and chief nuclear officer, and chief executive officer of AmerGen. "TMI-1 has an excellent operating and safety record and a fine, experienced staff. It has the potential to remain as one of the nation's top nuclear plants for many years to come. We are pleased to add it to our growing portfolio of nuclear assets."

In addition to acquiring Clinton and TMI Unit 1, AmerGen has agreements to purchase three other nuclear stations in 2000, including GPU's Oyster Creek nuclear generating plant.

Under the purchase agreement and subject to certain adjustments, AmerGen paid $23 million for TMI-1's reactor and will pay $77 million over five years for the plant's nuclear fuel. The ownership of TMI Unit 2 will remain with GPU. AmerGen will assume full responsibility for the decommissioning of TMI Unit 1, which has been prefunded by GPU for an amount of $320 million. GPU has agreed to purchase the energy and capacity from TMI Unit 1 from January 1, 2000 through December 31, 2002 at fixed prices.

GPU, Inc. (NYSE: GPU), headquartered in Morristown, NJ, is a registered public utility holding company providing utility and utility related services to customers throughout the world. GPU serves 4.6 million customers directly through its electric distribution subsidiaries -- GPU Energy in the United States, Midlands Electricity plc. in the United Kingdom and GPU Emdersa in Argentina. It serves another 1.4 million customers indirectly through its electric and gas transmission subsidiaries, GPU GasNet and GPU PowerNet in Australia. GPU's revenues were $4.3 billion and its total assets were $16.3 billion in 1998. Other GPU subsidiaries include GPU Advanced Resources, Inc., GPU International, Inc., GPU Nuclear, Inc., GPU Service, Inc. and GPU Telcom Services, Inc. (http://www.gpu.com)

PECO Energy is an electric and gas utility serving 1.5 million electric customers in the five-county Philadelphia area and more than 400,000 natural gas customers in four suburban counties. It is one of the nation's largest nuclear utilities, producing more than 33 billion kilowatt-hours of electricity in 1998 at its Limerick and Peach Bottom generating stations. PECO Energy has set new nuclear performance standards

in safety, availability and capacity factors, efficient refueling outages, and low operating and maintenance costs.

British Energy provides more than 20 percent of Britain's electricity and is the U.K.'s largest generator. It owns and operates 15 nuclear power reactors in the United Kingdom, with 9,600 megawatts of generation, including seven advanced gas-cooled nuclear stations and one pressurized water reactor station. In July 1996, British Energy was successfully privatized through a public offering of stock. The company has distinguished itself in nuclear operations through its outstanding safety record and by reducing costs and increasing output and profit following privatization.

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Department of Energy
Washington, DC 20585

January 19, 2001

The Honorable Robert C. Byrd
Chairman
Committee on Appropriations
United States House of Representatives
Washington, D.C. 20510

Dear Senator Byrd:

Enclosed is the Department of Energy's report entitled, "Spent Fuel Management Alternatives Available to Northern States Power Company Inc. and the Federal Government for the Prairie Island Nuclear Plant, Units 1 & 2." This report was developed as directed by the conference report accompanying the FY2001 Energy and Water Development Appropriations Bill.

If you have any questions regardng this Plan, please contact Nick Chumbris, Director of the Office of Congressional Liaison, at 202-586-2777.

Sincerely,

Ivan Itkin, Director
Office of Civilian Radioactive
Waste Management

Enclosure

cc:
The Honorable Ted Stevens

Department of Energy
Washington, DC 20585

January 19, 2001

The Honorable C.W. Bill Young
Chairman
House Appropriations Committee
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed is the Department of Energy's report entitled, "Spent Fuel Management Alternatives Available to Northern States Power Company Inc. and the Federal Government for the Prairie Island Nuclear Plant, Units 1 & 2." This report was developed as directed by the conference report accompanying the FY2001 Energy and Water Development Appropriations Bill.

If you have any questions regarding this Report, please contact Nick Chumbris, Director of the Office of Congressional Liaison, at 202-586-2777.

Sincerely,

Ivan Itkin, Director
Office of Civilian Radioactive
Waste Management

Enclosure

cc:
The Honorable David R. Obey

Identical letters were sent to the ranking minority member of the committees.

U.S. DEPARTMENT OF ENERGY

OFFICE OF CIVILIAN RADIOACTIVE
WASTE MANAGEMENT

REPORT TO THE COMMITTEES ON APPROPRIATIONS

SPENT FUEL MANAGEMENT ALTERNATIVES AVAILABLE TO NORTHERN STATES POWER COMPANY INC. AND THE FEDERAL GOVERNMENT FOR THE PRAIRIE ISLAND NUCLEAR PLANT, UNITS 1 & 2

JANUARY 2001

Table of Contents

1. Introduction

This report summarizes to the best of our knowledge, the alternatives that may be available to Northern States Power Company (NSP) and the Federal Government to allow NSP to continue operations at Prairie Island Units 1 and 2. Prairie Island Units 1 and 2 are currently licensed by the Nuclear Regulatory Commission to operate through 2013 and 2014 respectively.[1]

This report has been prepared by the Office of Civilian Radioactive Waste Management (OCRWM) on behalf of the Secretary of Energy in response to congressional direction contained in the conference report accompanying the FY 2001 Energy and Water Development Appropriations Bill.

The conference report directs that

> ". . . not later than 90 days after enactment of the fiscal year 2001 Energy and Water Development Appropriations Act, the Secretary of Energy shall submit to Congress a report containing a description of all alternatives that are available to Northern States Power Company and the Federal government to allow the company to continue to operate the Prairie Island nuclear generating plant until the end of the term of the license issued to the company by the Nuclear Regulatory Commission, in view of a law of the State of Minnesota that limits the quantity of spent nuclear fuel that may be stored at the plant, assuming that the existing Federal and State laws remain unchanged."

In this regard, the Department of Energy (DOE) has identified various Spent Nuclear Fuel (SNF) management strategy alternatives that may be available to NSP and the Federal Government to address the SNF storage requirements at the Prairie Island Units 1 and 2 such that operations may continue through the full period of the current operating licenses.

In identifying the potential alternatives available to NSP for addressing Prairie Island spent fuel management, the Department has not attempted to interpret any laws enacted by the State of Minnesota that may govern decisions regarding implementation of any alternative. Furthermore, the Department takes no position on the degree to which any of these alternatives may be or have been applied at Prairie Island, nor the degree to which they may be effective, alone or in combination, in extending the duration of operation of the Prairie Island Units 1 and 2.

2. NSP's plant background and current SNF storage at the Prairie Island Units 1 and 2

The following background and current status summary is based on publicly available information extracted from Form 10-K405 for NSP filed on March 29, 2000.

---

[1] United States Nuclear Regulatory Commission Information Digest, NUREG-1350, Volume II, 1999 Edition, Appendix A

NSP operates three nuclear generating plants at two sites in Minnesota: the Monticello plant site and the Prairie Island Units 1 and 2 site. The Monticello plant, located approximately 28 miles southeast of Minneapolis, is a Boiling Water Reactor that began operation in 1971 and is licensed to operate until 2010. Prairie Island Units 1 and 2 located approximately 30 miles northwest of Minneapolis are Pressurized Water Reactors, that began operation in 1973 and 1974 and are licensed to operate until 2013 and 2014, respectively.

NSP, with regulatory and legislative approval, has been providing on-site storage of SNF at the Monticello site and Prairie Island Units 1 and 2. In 1979, NSP began expanding the SNF storage facilities at its Monticello plant by replacement of the racks in the storage pool. In 1987, NSP completed the shipment of 1,058 SNF assemblies from the Monticello plant to a General Electric storage facility in Morris, Illinois. The Monticello plant is expected to have sufficient pool storage capacity to the end of its current operating license in 2010.

The SNF storage pool for Prairie Island Units 1 and 2 has undergone two storage rack replacements. The storage pool was nearly filled before a scheduled refueling in June 1995, and adequate space for a subsequent refueling was no longer available. In 1989, NSP proposed construction of a temporary, on-site dry cask storage facility for the SNF at Prairie Island Units 1 and 2. In May 1994, the Governor of Minnesota signed into law a bill authorizing NSP to install spent fuel storage casks at Prairie Island. However, the statute limits additional on-site storage expansion to a total of 17 casks equivalent storage capacity.[2]

NSP has determined that the 17 casks will permit Prairie Island Unit 1 and 2 operation until 2007. As of December 31, 1999, nine storage casks were loaded and stored on the Prairie Island site. Plans call for the loading of two additional casks each year until 2003.

Based on publicly available data from the Energy Information Administrations' 1998 RW-859, Nuclear Fuel Data Forms DOE has determined that with current pool capacity, NSP would have to operate Prairie Island Units 1 and 2 without full core discharge capability in order to operate through 2007 without exceeding the 17 casks authorized.[3] Nuclear utilities generally reserve sufficient pool storage space to accommodate discharge of the entire core should plant operations require such an action.

NSP is participating in a consortium of several other utilities to establish a private facility for interim storage of SNF. On June 20, 1997, PFS, L.L.C. submitted an application to the NRC for a license to operate a temporary storage facility for SNF on the Reservation of the Skull Valley Band of Goshute Indians located near Tooele County, Utah, approximately 50 miles southwest of Salt Lake City, Utah. The site for this facility will cover 820 acres of the reservation's 18,000 acres.[4] The spent fuel storage casks will be stored on about 100 of these 820 acres. The dry cask storage system that PFS proposes to use at the PFS facility is

[2] Minnesota Law, Chapter 641-S.F. No. 1706, Sec. 2., (d)
[3] as of December 31, 1998
[4] NRC Docket 72-22, Section 1.1.2 General Description of the Private Fuel Storage Facility. Reference, http://www.nrc.gov/NRC/NMSS/SFPO/SER/PFS/index.html

Holtec International's HI-STORM 100 Cask System. The cask system is a canister-based storage system that stores spent fuel in a vertical orientation. The PFS is designed to store up to 40,000 metric tons of uranium in the form of SNF from commercial nuclear power plants in sealed metal canisters. The SNF assemblies are placed in sealed canisters, which are then placed inside a steel and concrete storage cask. The PFS will consist of approximately 4,000 storage casks.

The PFS LLC will undertake the development, licensing, construction and operation of the storage facility. Early in October 2000, the NRC staff issued its safety evaluation report (SER) on PFS's application to build a SNF storage facility on the Reservation.[5] The NRC's review found that the facility and the casks that would store the spent fuel would be safe and would meet regulatory requirements. In addition, in July 2000, a Draft Environmental Impact Statement was released by the NRC which found that there would be no significant adverse impacts to the environment from construction of the facility and a new rail line connecting the site to the existing Union Pacific railroad.

The PFS plans to be operational and able to accept the first shipment of SNF by 2003. However, the project still faces significant political opposition in Utah and, possibly, the States along the transportation corridors.

3. SNF Management Options Available to NSP

Spent fuel management options available to NSP that could contribute to the maintenance of operational capabilities at the Prairie Island Generating Station through the term of its Nuclear Regulatory Commission (NRC) license fall into two general categories. These include: (A) plant operational or fuel cycle changes and/or (B) shipment to off-site, temporary non-federal storage facilities.

A. Plant modifications and/or operational, or fuel cycle changes

- *Additional spent fuel pool re-racking*

  Pool re-racking is the process of replacing existing SNF storage racks in the pool with racks that provide increased storage density. Increased rack density is achieved by providing more closely spaced fuel storage locations. It may also be possible to provide additional SNF storage racks in spent fuel pool areas normally reserved for plant maintenance or cask loading operations.

- *Utilizing pool space reserved for maintenance of a full core discharge*

  As noted above, nuclear utilities generally reserve sufficient pool storage space to accommodate discharge of the entire core. For Prairie Island Units 1 and 2, which share a common pool, this would provide space for approximately 121

[5] SER, NRC Docket 72-22

assemblies.[6] Should NSP choose to use this space for SNF storage, it could provide sufficient additional storage to accommodate approximately three fuel cycle discharges based upon discharge projections provided by NSP on the RW-859 Forms.

- *Reducing spent fuel discharges*

  The amount of SNF discharged by the Prairie Island plant can be decreased by reducing the amount of electricity generated by the plant, by effectively throttling the plant-operating level downward. Normal nuclear industry practice is to operate plants at full capacity as base-load generation. Limiting generation might allow either an increase in fuel cycle length, (and prolonged time between required refueling), or decrease the amount of SNF generated at each refueling. This alternative could adversely affect the cost of producing power at the Prairie Island Units.

- *Increasing the average fuel burn-up*

  Nuclear fuel must be removed from the reactor when it no longer contains sufficient remaining energy for the efficient production of power. The term used to describe the overall thermal energy produced by a nuclear fuel assembly is burn-up. Assemblies with higher allowable burn-up can remain in the reactor longer, and can thus produce more electrical power, than those with lower allowable burn-up. Increasing the average burn-up of the assemblies used at Prairie Island would result in the generation of less spent fuel while maintaining the level of power generation.

- *Rod consolidation*

  A SNF assembly contains many individual fuel rods. The individual rods are mounted in a structural frame, typically referred to as a skeleton. This frame maintains the spacing between each rod to allow for optimal operation in the reactor. SNF assembly rod consolidation is the process of removing the fuel rods from assemblies and placing them in a canister that allows for the storage of the rods with minimal spacing. In this manner, it is possible to store the rods from more than one assembly in a canister that has the same size as one fuel assembly and would therefore take up one storage rack location. The resulting fuel skeletons, from which the rods were removed, would then be compacted into a debris canister that is generally stored in the pool. The possible benefit of successful rod consolidation is an increase in the number of SNF assemblies that can be stored in any given spent fuel pool storage rack.

  In the 1980's, DOE, the utility industry, and several nuclear equipment vendors developed consolidation processes and equipment; and several utilities undertook demonstration projects to test the processes and equipment. NSP demonstrated

[6] DOE/RW-0431-Rev 1 Spent Fuel Storage Requirements 1994 – 2042, dated June 1995. For reactors that share a common SNF storage pool, the industry operating practice is to maintain only a single full core discharge capability.

the consolidation of 36 assemblies at Prairie Island in late 1987. These demonstrations encountered numerous and varied difficulties, which were not easily resolvable. To date, no utility has pursued rod consolidation as a means of expanding onsite storage capacity for SNF.[7]

B. Shipment to off-site, temporary non-federal storage facilities

- *Shipment to a licensed commercial facility*

  Transport of the SNF to licensed off-site storage facilities has been successfully done in the United States for many years. This includes transhipment of SNF to other reactor sites owned by the utility. Shipments could also be made to a licensed facility owned by another company, such as another utility site, the proposed Private Fuel Storage (PFS) facility which is currently undergoing licensing review by the NRC, or the Owl Creek Project planned for Wyoming by the NEW Company.[8] Current plans call for the PFS facility to begin accepting SNF in 2003.[9]

  Suitable NRC licensed transportation casks are commercially available to support transport under this option.

- *Out-of–country shipment to storage facilities regulated by the respective national competent authority*

  The acceptability of this option and its consistency with United States non-proliferation policy would depend on the long-term plans for the SNF. The Department has previously reviewed a request for overseas storage of SNF from another utility. In the review, the Department determined that, if the contractual agreement between utility and the overseas facility operator precludes chemical reprocessing, and it provides for return to the United States of the SNF once a Federal repository is available, that such storage would likely be viewed as consistent with United States non-proliferation policy.[10]

  Whenever the SNF is stored while outside the country, U.S. policy and law require that effective International Atomic Energy Agency safeguards, adequate physical protection, and a peaceful uses agreement for cooperation pursuant to Section 123 of the Atomic Energy Act of 1954 are in place. Subsequent transfers between facilities, if any, and the return of the SNF to the United States must meet the requirements of pertinent peaceful uses agreement.

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[7] Report entitled "Considerations for the Consolidation of BWR Fuel", EPRI NP-6783, Dated March 1990.
[8] Reference NRC Docket Number 72-22. On June 20, 1997, Private Fuel Storage Limited Liability Company submitted an application to the NRC for a 10 CFR Part 72 license to receive, possess, store, and transfer power reactor spent fuel, and other radioactive materials associated with spent fuel storage, at an independent spent fuel storage installation.
[9] See Section 2 for a description of NSP's efforts on the PFS.
[10] DOE letter to Yankee Atomic Electric Company, dated February 4, 1998

The Department would not support a request to ship the SNF overseas for chemical reprocessing.

4. Federal Government Alternatives

- *DOE waste acceptance under the provisions of the Atomic Energy Act of 1954 as amended*

  Prior to the enactment of the Nuclear Waste Policy Act of 1982 (NWPA), DOE had authority, and continues to have authority, to accept SNF in certain circumstances pursuant to the Atomic Energy Act of 1954. 42 U.S.C. § 2075. However, those authorities must be interpreted in light of the provisions of the NWPA.

  The NWPA provides that in return for payment of fees by utilities, DOE will dispose of commercial spent nuclear fuel. 42 U.S.C. § 10222. The restrictions of the NWPA circumscribe DOE's authority to begin those disposal services. These restrictions require that certain milestones be met before the Department can dispose of commercial spent nuclear fuel at either an interim storage site or permanent disposal facility.

- *Implementation of the Secretary's "Take Title" approach*

  In remarks made before the Committee on Commerce's Subcommittee on Energy and Power, in March 1999, the Secretary of Energy proposed a "Take Title" approach whereby the Department could offer to take title to SNF consistent with acceptance schedules provided under its contracts with utilities. By taking title to the SNF the Department could either assume financial responsibility for the utility's continued management of the SNF or possibly assume possession and responsibility for management of the SNF. As part of the agreement to take title, the Department could agree either to reimburse the utility for the incremental cost of storing that SNF or to take a more direct role in the management of the SNF and storage facilities.

  If NSP or another utility expressed interest in this option, the Department would seek the necessary legal and contractual determinations regarding specific details for implementation. However, it is undetermined whether this remedy would be effective in mitigating NSP's situation under Minnesota law.

NRC NEWS

UNITED STATES NUCLEAR REGULATORY COMMISSION OFFICE OF PUBLIC AFFAIRS, REGION IV
611 Ryan Plaza Drive, Suite 400, Arlington TX 76011

No. IV-01-004 February 15, 2000

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NRC TO MEET WITH PUBLIC TO DISCUSS STORAGE OF SPENT NUCLEAR FUEL AT SAN ONOFRE

The U.S. Nuclear Regulatory Commission will meet with the public on Thursday, February 22, to discuss the licensing and regulatory program that will govern plans to change storage of spent nuclear fuel at the San Onofre Nuclear Generating Station, Unit 1, from a spent fuel pool to a dry cask storage facility. Unit 1 was shutdown permanently in 1992, and is being dismantled and decontaminated at this time.

The meeting will be at the San Clemente Community Center, 100 N. Calle Seville, San Clemente, beginning at 7 p.m. The session will start in the Ole Hanson room, where NRC officials will greet the public informally. At about 8 p.m., the meeting will move to the auditorium for presentations covering the NRC's role in licensing and regulating the proposed dry cask spent fuel storage system. There will be ample opportunity for questions from the public following the presentation.

NRC officials will be available for press interviews from 7-8 p.m., or after the meeting, which is expected to conclude no later than 11 p.m.

Spent nuclear fuel is the waste left when the fissionable uranium atoms in nuclear fuel have split to generate the intense heat that makes nuclear reactors possible. The waste is in the form of small ceramic pellets stacked inside long, cylindrical metal tubes called fuel rods. The rods are assembled in bundles containing as many as 196 rods each.

Spent fuel from SONGS, Unit 1, is currently kept in a spent fuel pool. However, since the plant is being dismantled, plant managers are seeking permission to move the spent fuel into an independent, dry spent fuel storage facility consisting of large steel and concrete containers. Dry cask storage is intended to be a temporary storage solution pending construction of a permanent repository that is the responsibility of the Department of Energy. DOE is investigating the suitability of a site at Yucca Mountain, Nevada, for construction of the permanent repository.

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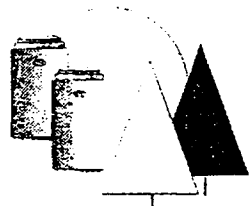

COPY

Private Fuel Storage, LLC

P.O. Box C4010, La Crosse, WI 54602-4010
John D. Parkyn, Chairman of the Board

May 18, 1998

Director
Office of Nuclear Material Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

PRIVATE FUEL STORAGE LLC
APPLICATION FOR 10 CFR PART 72 LICENSE
DOCKET NO. 72-22
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
TAC NO. L22462

REFERENCE: (1) NRC Letter Haughney to Parkyn, dated March 11, 1998
Information Requested to Ensure Appropriate Scheduling Prioritization of the Private Fuel Storage LLC Application Review (TAC No. L22462)

The March 11, 1998 letter (Reference 1) requested the following information:

1. "A list of the operational requirements of its member utilities for dry cask storage and the projected dates of loss of full core reserve off load capabilities."
2. A description of contingency plans for storage by member utilities (e.g. transshipment of spent fuel) which would allow for continued operations in the event that the PFS ISFSI licensing process has not been completed in time to meet the projected dates."

Prior to the date of Reference 1, we orally provided to your staff information responsive to Item 1. This letter confirms that information as well as providing information responsive to Item 2.

The eight member utilities of Private Fuel Storage (PFS) own or operate 20 licensed reactors with spent fuel stored on site. Each of these reactors will be discussed and the corresponding questions answered.

The projected dates of loss of full core reserve off load capabilities are outlined in Table 1. In your additional request for information a "description of contingency plans for storage by member utilities (e.g. transshipment of spent fuel) which would allow for continued operations in the event that the PFS ISFSI licensing process has not been completed in time to meet the projected dates."

Consolidated Edison - Consolidated Edison's Indian Point Unit #1 station is in shut-down for decommissioning. The continuing maintenance of fuel on-site will remain a cost until such time as it can be shipped. Consolidated Edison estimates that it has additional on-site capacity for Unit #2 until 2005 for interim storage of its spent nuclear fuel. Absent regulatory or technological developments by 2005, Consolidated Edison expects to require additional on-site or other spent nuclear fuel storage facilities. Such additional facilities would require regulatory approvals. In the event that Consolidated Edison is unable to make appropriate arrangements for the storage of its spent nuclear fuel, Consolidated Edison would be required to curtail the operation of Indian Point Unit #2. Consolidated Edison has participated in the PFS project since April 1994 and seeks the facility to permit continued operation of Indian Point Unit #2.

Southern California Edison - Southern California Edison has three units at its San Onofre site. San Onofre Unit #1 was permanently shut down in 1992. The Unit #1 spent fuel pool is full. Additional Unit #1 assemblies are being stored on an interim basis in the Unit #2 and Unit #3 spent fuel pools and in space leased at the General Electric Morris Facility through 2002.

San Onofre Unit #2 and Unit #3 can maintain full core reserve through 2006. Removal of Unit #1 fuel from the Unit #2 and Unit #3 spent fuel pools would extend this date to 2008. There are no contingency plans at this time to add on-site dry cask storage to allow continued operation of these units.

The PFS facility is needed to provide longer term storage for the Unit #1 spent fuel being stored on an interim basis in the Unit #2 and Unit #3 spent fuel pools and at the General Electric Morris Facility. It is also required to support Unit #2 and Unit #3 operation in the event that the Department of Energy does not begin acceptance of spent fuel at a rate needed for the continued operation of those units beyond the dates indicated above.

Southern California Edison intends to commence decommissioning of San Onofre Unit #1 in the near future. This will require the availability of dry cask storage facilities for its fuel not later than 2005. Southern California Edison is participating in the PFS project in order to provide such a facility.

Genoa FuelTech - Genoa FuelTech is a subsidiary of Dairyland Power Cooperative. The La Crosse Boiling Water Reactor is a second round demonstration plant built by the U.S. Atomic Energy Commission and subsequently sold to Dairyland Power Cooperative of La Crosse, Wisconsin. The unit was operated from 1967 through to 1987. The date of loss of full core reserve off load capability is not applicable as the entire core has been off loaded into the spent fuel storage pool. Contingency plans for future operation do not apply to this unit. It is necessary that the fuel be shipped as soon as possible due to the significant cost impact on the utility in operating a stand-alone fuel storage facility. Any possible alternate use of the site is precluded pending completion of decontamination and dismantlement which cannot aggressively be pursued until fuel is removed from wet storage.

American Electric Power - The Cook Nuclear Plant is projected to lose its full core off load capacity in the spent nuclear fuel pool in about 2010.

If the PFS independent fuel storage installation is not granted an NRC license by that time, their contingency plans could include spent fuel consolidation, on-site dry cask storage, or spent fuel reprocessing.

Illinois Power - Illinois Power Company plans to ship spent fuel to the PFS facility in 2005. However, Illinois Power's requirements are that PFS would begin receiving spent fuel in 2002 from non-Illinois power reactor sites in order to meet the more urgent needs of other members of the PFS. Delays in their shipments will result in unacceptable delays in shipment from Clinton Power Station. The projected loss of full core reserve off load capability at Clinton is 2005.

With adequate implementation time, spent fuel capacity can be increased at Clinton Power Station either by licensing construction of additional wet spent fuel storage rack capacity or by the construction of on-site dry cask storage. No detailed plans for either contingency are in progress at this time.

GPU Nuclear - Oyster Creek full core off load capability was lost in 1996. GPU Nuclear plans to reconfigure the spent fuel storage pool in 1999 to provide full core off load reserve through the year 2000.

GPU is currently evaluating a number of options for the future of Oyster Creek. They include continued operation of the plant until the end life in 2009, potential sale of Oyster Creek, or early retirement in the year 2000. Should Oyster Creek elect to continue operation, which includes the sale option, the plant would be required to transfer fuel to a dry storage facility commencing 2001 in order to maintain full core off load reserve. If GPU Nuclear elects to retire Oyster Creek in the year 2000, the current plan is to proceed with immediate dismantlement. This option would require transfer of spent fuel to a dry fuel storage facility commencing in the year 2003.

GPU Nuclear (continued) - Three Mile Island 1 full core off load capability will be lost in the year 2009. GPU Nuclear is currently planning to install the remaining new storage racks in the spent fuel pool in 2002. This will provide full core off load reserve through the current end-of-life date of 2014. Dry fuel storage for Three Mile Island 1 is not being considered at this time.

Northern States Power - Northern States Power is anticipating the availability of centralized interim storage of spent fuel at the PFS facility in Utah prior to exhausting on-site storage capability at Prairie Island in 2007. In the event this storage option is not available by 2007, Northern States Power would be forced to consider other options, which could include the premature shut-down of the Prairie Island units once the existing storage pools and dry casks are filled. Under current Minnesota law, Northern States Power is limited to the use of 17 TN-40 casks, or its equivalent, for continued on-site storage. This would preclude using new racking technologies or other means of increasing on-site storage options.

Northern States Power Monticello Plant has adequate storage capacity until approximately 2010, which coincides with the expiration of its operating license.

Southern Nuclear - The Southern Nuclear facilities spent fuel storage capabilities vary depending upon the site. Likewise, the current plans for addressing the storage needs vary depending upon the need date. Projected loss of full core reserve and fuel pool filled dates at each facility are shown in the following table. These dates are based upon no action by Southern Nuclear to mitigate the current storage situation.

	Loss of Full Core Reserve	Fuel Pool Filled
Farley Unit #1	2006	2010
Farley Unit #2	2010	2013
Hatch Plant*	2000	2003
Vogtle Plant*	2007	2008

* Two unit plant with capability to share spent fuel pool storage spaces.

The contingency plan for lack of timely review and licensing of the PFS site would be to provide for additional on-site spent fuel storage capacity until an alternative off-site location could be found. This position applies to each of the above facilities. Planning for additional on-site spent fuel storage capacity at Plant Farley is anticipated to begin this year.

Southern Nuclear (continued) - Since the PFS facility will clearly not be available to support the Hatch Plant need date, plans are currently underway to accommodate the extra storage capacity on site. Southern Nuclear is involved in a contractual relationship with Holtec International to supply dry cask storage systems licensed for storage and transportation. This storage technology is under contract through the 2002 period. Should the PFS facility be unavailable at that time, additional on-site storage will be contracted. In addition, engineering analysis is beginning that may lead to a request for the addition of a small amount of additional wet storage.

Southern Nuclear has already submitted an application for additional wet storage within the Plant Vogtle spent fuel pool. Should this application be approved, the increase in spent fuel storage capacity would add approximately 8-10 years to the Plant Vogtle dates stated above.

Sincerely yours,

John D. Parkyn, Chairman
Private Fuel Storage, LLC

JDP:cls

Attachment

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TABLE 1
PRIVATE FUEL STORAGE LLC
Member Utilities Licensed Reactor Expended Fuel Status

No.	Unit	Utility	License Status	Loss of Full Core Reserve
1	D. C. Cook Unit 1	Indiana Michigan Power Co.	10CFR50	2010
2	D.C. Cook Unit 2	Indiana Michigan Power Co.	10CFR50	2010
3	Indian Point Unit 1	Consolidated Edison Co.	10CFR50 Possession only	Shutdown - fuel on-site
4	Indian Point Unit 2	Consolidated Edison Co.	10CFR50	2005
5	La Crosse Boiling Water Reactor	Dairyland Power Cooperative	10CFR50 Possession only	Shutdown - fuel on-site
6	Oyster Creek	GPU Nuclear, Inc.	10CFR50	1996
7	Three Mile Island 1	GPU Nuclear, Inc.	10CFR50	2009
8	Three Mile Island 2	GPU Nuclear, Inc.	10CFR50 Possession only	Shutdown - fuel shipped
9	Clinton	Illinois Power Co.	10CFR50	2005
10	Monticello	Northern States Power Co.	10CFR50	2006
11	Prairie Island Unit 1	Northern States Power Co.	10CFR50	2007
12	Prairie Island Unit 2	Northern States Power Co.	10CFR50	2007
13	Pathfinder	Northern States Power Co.	10CFR30	Shutdown - fuel shipped
14	San Onofre Unit 1	Southern California Edison Co.	10CFR50 Possession only	Shutdown - fuel on-site
15	San Onofre Unit 2	Southern California Edison Co.	10CFR50	2006
16	San Onofre Unit 3	Southern California Edison Co.	10CFR50	2006
17	Hatch Unit 1	Southern Nuclear Co.	10CFR50	2000 See note 1
18	Hatch Unit 2	Southern Nuclear Co.	10CFR50	2000 See note 1
19	Vogtle Unit 1	Southern Nuclear Co.	10CFR50	2007 See note 2
20	Vogtle Unit 2	Southern Nuclear Co.	10CFR50	2007 See note 2
21	Farley Unit 1	Southern Nuclear Co.	10CFR50	2006
22	Farley Unit 2	Southern Nuclear Co.	10CFR50	2010

Notes: **1. Hatch 1 & 2 share a pool. Full core off load for both reactors at the site is lost in 1998, for either reactor it is lost in 2000.**
2. Vogle 1 & 2 share a pool. Full core off load for both reactors at the site is lost in 2005, for either reactor it is lost in 2007.