RAS 3183



June 29, 2001



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



Before the Atomic Safety and Licensing Board

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| In the Matter of | ) | |
| | ) | |
| PRIVATE FUEL STORAGE L.L.C. | ) | Docket No. 72-22 |
| | ) | |
| (Private Fuel Storage Facility) | ) | ASLBP No. 97-732-02-ISFSI |

**APPLICANT'S MOTION FOR SUMMARY DISPOSITION**
**OF UTAH CONTENTION O – HYDROLOGY**

Applicant Private Fuel Storage, L.L.C. ("Applicant" or "PFS") files this motion for summary disposition of Utah Contention O, "Hydrology" ("Utah O") pursuant to 10 C.F.R. § 2.749. Summary disposition is warranted on the grounds that there exists no genuine issue as to any material fact relevant to the contention and, under applicable Commission regulations, PFS is entitled to a decision as a matter of law. This motion is supported by a statement of material facts, the declaration of Donald Wayne Lewis and H. C. "George" Liang, and transcripts from the depositions of the State of Utah's identified experts concerning the issues raised in this contention.

## I. STATEMENT OF THE ISSUES

As currently admitted by the Atomic Safety Licensing Board ("Licensing Board" or "Board"), Utah O – entitled "Hydrology" – asserts that:

> The Applicant has failed to adequately assess the health, safety and environmental effects from the construction, routine operation, and decommissioning of the ISFSI, as required by 10 C.F.R. §§ 72.24(d), 72.100(b) and 72.108, with respect to the following contaminant sources, pathways, and impacts:
>
> 1. Contaminant pathways from the applicant's sewer/wastewater system; routine facility operations; and construction activities.
> 2. Contaminant pathways from the applicant's retention pond in that:

Template = SECY-041

SECY-02

a. The [Environmental Report] ER fails to discuss potential for overflow and therefore fails to comply with 10 C.F.R. Part 51.

b. ER is deficient because it contains no information concerning effluent characteristics and environmental impacts associated with seepage from the pond in violation of 10 C.F.R. § 51.45(b) and § 72.126(c) & (d).

3. Potential for groundwater and surface water contamination.

4. The effects of applicant's water usage on other well users and on the aquifer.

5. Impact of potential groundwater contamination on downgradient hydrological resources.[1]

PFS moves for summary disposition on the grounds that there exists no genuine dispute concerning any facts material to the issues raised by the State in Utah O. As explained in the Declaration of H. C. "George" Liang and Donald Wayne Lewis,[2] the spent nuclear fuel will arrive at the PFSF sealed in stainless steel canisters that are welded shut at the shipping reactor site and will never be opened at the PFSF site. Id. ¶35. Further, procedures will be in place and surveys will be undertaken at the originating reactor to ensure – prior to shipment to the PFSF – that the shipping casks and canisters are not contaminated with radioactivity. Id. ¶¶ 34, 35. At the PFSF, further procedures will be in place and surveys will be undertaken to ensure that neither the casks nor the canisters were previously contaminated. Id. ¶¶ 35, 36.[3] Should an off-normal event occur and radioactive contamination is identified, the PFSF design features and operating procedures will ensure that the radioactivity will be contained and remedied. Id. ¶¶ 36-40. This "Start Clean – Stay Clean" philosophy will govern both the PFSF design and operation to

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[1] Private Fuel Storage, L.L.C. (Independent Fuel Storage Installation), LBP-99-39, 50 NRC 232 (1999). This current version of the contention reflects several modifications from the text originally submitted by Utah and former intervenor Castle Rock. The Board initially removed consideration of the impacts of transportation on groundwater. Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 192-193 (1998). Upon the withdrawal of Castle Rock, the Board deleted the contention's reference to firefighting activities. Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-6, 49 NRC 114, 121 (1999). After dismissing Contention Utah B, the Board removed references to the Intermodal Transfer Point. LBP-99-39, 50 NRC at 240.

[2] Declaration of H. C. "George" Liang and Donald Wayne Lewis (June 28, 2001) ("Lewis/Liang Decl.")

[3] As NRC licensees, procedures at the shipping reactors and at the PFSF are subject to NRC inspection.

ensure that no radioactive contamination is released into the environment. Id. ¶ 33.

Similarly, non-radiological contaminants will pose no hazard to the environment. Potential sources of non-radiological contaminants at the PFSF will be limited to sources common to the construction and operation of an industrial facility of its size. During construction, PFS will implement recognized best management practices designed to protect the environment from damage. Id. ¶ 32. During operation, the principal sources of potential non-radiological contamination will be diesel fuel or lubricants. Id. ¶ 42. Operating procedures will be in place at the PFSF, however, to ensure adherence to applicable rules and regulations governing the use of these and any other hazardous materials used and stored at the PFSF. Id. Further, any inadvertent contamination of the soil will be remedied in accordance with applicable regulatory requirements so as to preclude the spread of the contamination to hydrological resources. Id. ¶ 44.

In addition, the spread of contamination to hydrological resources will also be precluded by the natural characteristics of the soil and hydrology at the site. The combination of soil type, depth to groundwater, and small amounts of precipitation results in the lack of a hydrological link between the surface and groundwater at the site. Id. ¶ 21. Further, there are no perennial surface waters within five miles of the PFSF. Id. ¶ 18.

Finally, PFS has conservatively shown that the amount of water it proposes to withdraw from well(s) to be drilled on site is insignificant compared to the amount of available groundwater, which is confirmed by the State's own analysis. Id. ¶ 66. Thus, PFS's water usage will have no adverse impact on the aquifer or on nearby users.

The deposition testimony of the State's proposed experts demonstrates that no genuine issues of material facts remain to be litigated with respect to the above matters.[4] Therefore, Applicant is entitled to summary disposition of Utah O.

[4] See Deposition of Don A. Ostler (April 19, 2001) ("Ostler Dep.") and the Deposition of John Richard Mann (April 17, 2001) ("Mann Dep."), both attached to this motion. Mr. Ostler stated that he would be testifying only to water quality issues (Bases 1, 2, 3, and 5 of Utah O). Ostler Dep. at 11 – 13. Mr. Mann stated that he would be testifying only to water quantity issues (Basis 4 of Utah O). Mann Dep. at 12 - 13.

## II. LEGAL BACKGROUND

### A. Summary Disposition

The standards for motions for summary disposition have been set forth previously.[5] The legal requirements concerning expert opinions in support of a contention are particularly relevant here.[6] These requirements include 1) demonstration that the affiant is an expert, and 2) an explanation of facts and reasons in the affidavit supporting the affiant's expert's opinion.[7] An affidavit made on "information and belief" is insufficient,[8] as are mere unsupported conclusions.[9] As the Supreme Court has held, reliable expert opinion must be based on "more than subjective belief or unsupported speculation."[10]

### B. National Environmental Policy Act

The State's claims in Utah O are based in part on the National Environmental Policy Act ("NEPA"). NEPA requires that federal agencies prepare an Environmental Impact Statement ("EIS") that describes the potential environmental impacts of a proposed major federal action significantly affecting the environment. An EIS should provide "sufficient discussion of the relevant issues and opposing viewpoints to enable the decisionmaker to take a 'hard look' at environmental factors and make a reasoned decision."[11] An EIS is prepared under a "rule of reason" standard.[12] Thus, NEPA requires an analysis "appropriate for the proposal and not the maximum possible environmental

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[5] See Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-23, 49 NRC 485, 491 (1999); Applicant's Motion For Summary Disposition of Utah Contention C – Failure to Demonstrate Compliance With NRC Dose Limits," dated April 21, 1999, at 4-16.

[6] Id. at 10-15.

[7] See Mid-State Fertilizer Co. v. Exchange Nat'l Bank, 877 F.2d 1333, 1339 (7th Cir. 1989); Carolina Power & Light Co. (Shearon Harris Nuclear Plant, Units 1 and 2), LBP-84-7, 19 NRC 432, 447 (1984).

[8] Columbia Pictures Industries, Inc. v. Professional Real Estate Investors, Inc., 944 F.2d 1525, 1529 (9th Cir. 1991), aff'd on other grounds, 508 U.S. 49 (1993).

[9] Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), LBP-83-32A, 17 NRC 1170, 1177 (1983); Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-35, 50 NRC 180, 194 (1999).

[10] Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 590 (1993).

[11] Louisiana Energy Services (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 88 (1998).

[12] Id. at 97.

analysis for every proposal."[13] Further, it is well settled that NEPA does not require evaluation of environmental impacts that are "remote and speculative" possibilities.[14] Instead, NEPA requires that an EIS discuss impacts "in proportion to their significance."[15]

## III. PFS IS ENTITLED TO SUMMARY DISPOSITION OF UTAH O

As demonstrated below, there are no genuine issues of material fact regarding either (A) radiological health and safety impacts or (B) non-radiological environmental impacts to ground or surface water associated with the construction, operation or decommissioning of the PFSF.[16] Hence, PFS is entitled to summary disposition of Utah O.

### A. No Genuine Dispute Concerning Radiological Health and Safety Hazards

The State has failed to support its broad claims in Utah O regarding the health and safety impacts of supposed radiological contamination to ground and surface waters related to the PFSF. Neither the contention itself nor subsequent discovery sets forth any genuine issue of material fact that the State has raised concerning the possibility of radiological contamination, let alone any health and safety impacts associated with it. Rather, the State's expert provides only subjective belief and unsupported speculation to support the State's claims, insufficient to withstand a motion for summary disposition.

For activities at the PFSF site to present a radiological health and safety hazard, some radiological contamination must first escape into the environment. As discussed above, however, PFS has committed to operate the facility under a "Start Clean – Stay Clean" policy. Lewis/Liang Decl. ¶ 33. Both the PFSF design and procedures that will implement this policy will strictly limit actions that could lead to radiological contamination and, in the highly unlikely event contamination were identified, provide for rapid re-

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[13] Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 542 (1977).

[14] Limerick Ecology Action v. NRC, 869 F.2d 719, 739 (3rd Cir. 1989).

[15] See 10 C.F.R. §§ 51.29(a)(2) and (3), 51.45(b)(1).

[16] Although the environmental aspects of Utah O were filed against the ER, it is appropriate for the Board to consider the environmental issues raised in Utah O as challenges to the DEIS. See Applicant's Motion for Summary Disposition of Utah Contention Z—No Action Alternative (Feb. 14, 2001) at 3, 6-7.

sponse to ensure that the contamination does not escape to the environment. Id. ¶¶ 33-40.

First and foremost, while at the PFSF the spent nuclear fuel will remain sealed at all times in stainless steel canisters that are welded shut at the originating reactor prior to shipment to the PFSF. Id. ¶¶ 34-35.[17] Further, the canisters will be loaded at the originating reactors utilizing strict procedures that prevent them from becoming externally radioactively contaminated. Id. ¶ 34. Once the canisters arrive at the PFSF, they will again be checked for the presence of contamination. Id. ¶¶ 35-36. If for some unforeseen reason a canister is found to be contaminated, the PFSF Technical Specifications require that, if the canister cannot be decontaminated, it is to be returned to the originating reactor within a sealed shipping cask. Id. ¶ 36.[18] The shipping casks will also be checked for radiological contamination. Id. ¶ 34.[19] Finally, the loaded storage cask will be surveyed externally for radioactivity before being transferred to the storage pads. Id. ¶ 35.

Since the canisters are welded shut prior to shipment and not opened at the PFSF, there is no possibility of generating contamination after arrival. Thus, if the surveys at the time of receipt confirm that the casks and canisters have arrived at the PFSF free of radiological contamination, subsequent radiological contamination will also be precluded.

Further, in the highly unlikely event radioactive contamination is identified, design features and operating procedures will be in place to contain and remediate the contamination. First, the contamination would be removed from the casks (or canisters to the extent they would be decontaminated at the PFSF and not returned to the originating reactor) using decontamination methods that result in the generation of only dry, solid

[17] The Commission has determined in various generic rulemakings that seal welded canisters do not require monitoring, adequately confine all fission products, will not degrade over their design life, and do not require opening to inspect the contents. See, e.g., NUREG-1536, Standard Review Plan for Dry Cask Storage Systems, at 7-3, 7-5 (January 1997); 51 Fed. Reg. 19,106, 19,108 (1986) (citing NUREG-1092); 58 Fed. Reg. 17,948, 17,954 (1993); 59 Fed. Reg. 65,898, 65, 901 – 02 (1994).

[18] The sealed transportation cask is designed to contain contamination in accordance with the requirements of 10 C.F.R. Part 71.

[19] Also, sumps in the CTB will act as closed catch basins for water dripping from the transportation vehicle or from the external surface of the shipping cask itself that will be checked for contamination. Id. ¶ 38.

wastes. Id. ¶ 36.[20] These wastes will then be packaged in suitable low level waste ("LLW") containers and stored in the LLW holding cell of the Canister Transfer Building ("CTB") until shipped off-site to a LLW depository. Id. ¶ 37. This process will be governed by radiation protection procedures to ensure that the casks or canisters are properly decontaminated, that the wastes are properly packaged and stored, and that personnel performing these operations are free of contamination upon their completion. Id. ¶ 37.

Further, other design features and procedures will also serve to contain any radioactivity that may be identified. The sumps in the CTB (designed to catch any precipitation that drips off the shipping cask) will have no drain and will not be connected to the sewage system. Id. ¶ 38. Further, the detention basin will detain runoff from the cask storage area that will be surveyed for radiological contamination and provide the necessary time for remediation in the highly unlikely event that contamination should occur. Id. ¶¶ 17, 56. Operating procedures will include the extensive testing for the presence of contamination and will ensure that persons using sinks and toilets in the CTB and the Security and Health Physics Building are free of contamination. Id. ¶¶ 39-40.

Moreover, even postulating the escape of radioactive contamination, there is no credible means by which it could spread to any hydrological resources. Id. ¶ 57. The proposed PFSF site is in an arid location, with no perennial or intermittent surface waters anywhere within the proposed boundaries. Id. ¶ 18. The State has identified the closest perennial water to be a spring located about 5 miles from the site. Id. With the arid climate and no other water near the site, it is not credible that any contamination would reach the spring. Id. Groundwater depth at the site is in the range of approximately 125 feet, and the soil between the surface and the groundwater effectively prohibits surface water from percolating to groundwater depth before it is evaporated. Id. ¶¶ 19, 21. Thus, even if contamination occurred at the site, it would not reach groundwater. Id. ¶ 57.

[20] Similarly, any water collected in the sumps identified to contain radioactivity will be solidified. Id. ¶ 38.

Without the potential for radiological contamination, there can be no under-analyzed radiological health and safety impacts, as claimed by the State.[21]

In his deposition, the State's identified expert identified no material facts that would challenge the above conclusions. Rather, he could provide only unsupported speculation. With respect to external cask or canister contamination, he merely speculated that there is some possibility that a chain of improbable events could all occur and result in radiological contamination and thus present a threat to public health and safety – i.e., that someone at the originating reactor might "goof" and not follow procedures, that such an event might result in contamination of the cask or canister, that personnel at the PFSF might also "goof" and not properly follow established procedures upon receipt to identify, contain, and remediate such contamination, and that the contamination might therefore escape to the environment and might eventually reach the ground or surface water. Ostler Dep. at 50-51, 56-64. Mere speculation of "potential radiologic[al] contamination" (id. at 45) resulting from such a chain of speculative events does not raise a issue of material fact to defeat summary disposition.[22]

Similarly, regarding the potential for radioactivity to escape from the canisters once on the storage pads, the State's expert could offer only speculation. He acknowledged that he had no knowledge of the "capabilities" of the canisters to contain radioactive material. Id. at 63-64. He could only state, without further explanation, that it was his "understanding from what I've read that you have submitted that there are circumstances which could occur which could cause a problem with the [canister's] contain-

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[21] The Staff's analysis in the DEIS supports this conclusion. The DEIS states that the potential for radiological contamination occurring from operation of the PFSF is "small" or "minor." See, e.g., DEIS §§ 4.2.1.1, 4.2.1.2, 4.2.1.3, 4.2.2.1, 4.2.2.2, 4.2.2.4.

[22] See, e.g., LBP-99-35, 50 NRC at 194 (Expert must provide "something more than suspicions or bald assertions as the basis for any purported material factual disputes."); Georgia Institute of Technology (Georgia Tech Research Reactor, Atlanta, Georgia), LBP-95-6, 41 NRC 281, 306 (1995) (Contention rejected because it "represent[s] only [the intervenor's] unsupported opinion...of what the applicable regulations should require."), vacated in part and remanded on other grounds, CLI-95-10, 42 NRC 1, aff'd in part, CLI-95-12, 42 NRC 111 (1995).

ment," and that "[b]ased upon what I've read, that is a fear." Id. at 63. To the contrary, PFS has shown that there will be no "problem with the containment" of radioactive material at the PFSF,[23] and Mr. Ostler's "fear" of such does not defeat summary disposition.[24]

Throughout discovery, the State has provided no information to show that public health and safety would in anyway be adversely affected by the PFSF. Rather, the State's position has been that the burden is on PFS to provide additional detail concerning the adequacy of its design and procedures and to justify the lack of design features that the State believes are appropriate (such as liners for the retention pond and cask storage area).[25] However, the State's claimed need for more detail does not equate to a public health and safety threat and is contrary to well established NRC precedent.[26] Similarly, the State's stated desire for additional design features – given the admitted lack of knowledge of the sufficiency of the current design to contain radioactivity (Ostler Dep. at 63-64) – provides no factual support for the State's health and safety claims in Utah O. Since the State has provided no facts to support a genuine dispute, PFS is entitled to summary disposition on the parts of Utah O related to alleged health and safety impacts.

**B. No Genuine Factual Dispute Concerning Non-Radiological Contaminants**

As in the case of asserted radiological contamination, the State's expert offers only speculation that there may be "potential contamination from diesel fuel or gasoline stored on site, potential contamination from other types of chemicals used in the operation for maintenance of equipment, such as solvents, cleaners, and materials such as that." Ostler Dep. at 45. Again such speculation is insufficient to establish genuine is-

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[23] SAR § 6.5; ER § 5.1.1.

[24] See note 22, supra.

[25] See, e.g., State of Utah's Objections and Response to Applicant's Second Set of Discovery Requests with Respect to Groups II and III Contentions (June 28, 1999) at 78-82.

[26] See e.g., Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1107 (1983) (Commission "did not want licensing hearings to become bogged down with litigation about such details" as implementing procedures).

sues of material fact and PFS is entitled to summary disposition.

### 1. Contaminant Pathways from Construction Activities, Routine Facility Operations, and the Sewer/Wastewater System

The State asserts that PFS has failed to adequately assess environmental impacts with respect to contaminant pathways from construction activities, routine facility operations and the sewer/wastewater system. Utah O, Basis 1. To the contrary, PFS has analyzed these pathways and potential impacts, and determined that the potential for contamination is so small that it can be considered insignificant and any environmental impact to surrounding hydrological resources is not credible. Lewis/Liang Decl. ¶¶ 31-49.

Construction activities at the PFSF will consist of site preparation, earth-moving, construction of an access road, four buildings, and the concrete pads for the storage casks. Id. ¶ 32. These activities are very similar to activities that might be conducted at any industrial site under construction and PFS will implement recognized best management practices designed to protect the environment from damage with respect to such activities. Id. The DEIS analysis determined that the potential impacts to both groundwater and surface water during construction will be "small." DEIS at 4-7.

Similarly, potential sources of non-radiological contaminants present at the PFSF during operation will be limited to sources common to any industrial facility of its size. Lewis/Liang Decl. ¶ 42. The only specific hazardous materials (as defined under applicable federal environmental law) identified to date that will be used or stored at the PFSF are lubricating oil and diesel fuel.[27] Id. Small amounts of other hazardous substances common to industrial facilities, such as cleaning solvents, painting products, pesticides and herbicides, may also be on site. Id. All such hazardous substances will be stored in

[27] Lubricant oils will either be contained in facility equipment gearbox compartments or kept for spare use in limited quantities in sealed metal drums in designated operating and maintenance building storage areas. Id. Diesel fuel will either be contained in facility vehicle tanks or aboveground storage tanks in the fuel dispensing stations. Id. Tanks storing diesel fuel will be enclosed in a secondary tank, in accordance with National Fire Protection Association requirements, to contain any possible leaks. Id. ¶ 44.

designated areas within sealed and properly labeled containers. Id. Proper procedures will be developed and implemented to ensure that all applicable rules and regulations regarding the handling and storage of hazardous substances are followed and to further ensure that if inadvertent contamination should occur, rapid and effective remediation in accordance with applicable regulatory requirements is accomplished. Id.

The PFSF sewer/wastewater system will consist of two independent septic systems each having its own septic tank and leach field. Id. ¶¶ 11-15.[28] There will be no access to these systems except through the sinks, toilets, or showers, and the design of and the access to the systems and PFSF operating procedures will preclude the introduction of contamination to either of these systems. Id. ¶¶ 45-49. Further, both systems will be designed and installed according to the Uniform Plumbing Code, a widely used and accepted standard for material selection, design, construction, and installation of sanitary drainage systems. Id. ¶ 15, 48.[29] Compliance with this code will ensure that the systems are adequate to accommodate anticipated usage and located in acceptable soils. Id. ¶ 15.

Further, there is no hydrological link between the surface and groundwater beneath the site. Id. ¶ 21. This was confirmed by the DEIS, which determined that soils at the proposed PFSF site have a "relatively low infiltration capacity" and that wastewater "may never reach the groundwater table at depth beneath the site." DEIS pp. 4-12. Thus, even if contaminants were to enter the septic system, they would not contaminate hydrological resources. Id.

Again, the State's expert does not set forth any material facts undermining the

[28] One system will service the CTB and Security and Health Physics Building (both located in the restricted area) and the other system will service the Administration and Operating and Maintenance Buildings (both located some distance from the restricted area). The distance between these areas made the use of a single sanitary drainage/leach field impractical. Id. ¶ 15.

[29] The State's expert acknowledged that the Uniform Plumbing Code is a "document that contains good information for the management of wastewater through subsurface disposal systems," although he further stated that there were aspects with which the State would have "some disagreements." When pressed for specific aspects of the Uniform Plumbing Code that are applicable to PFS with which the State disagrees, he was unable to provide any. Ostler Dep. at 38-39.

above conclusions but merely speculates about potential environmental contamination absent any showing that such contamination would likely occur or would be significant. For example, the State's expert states, without factual basis, that "any of the potential chemicals that are used in the laboratory in my opinion could likely find their way into the groundwater via the sewer line and the septic tank and the drain field and its infiltration into the ground and ultimately into the groundwater."[30] Similarly, he "assume[s]," without factual basis, that pathways would likewise exist for diesel fuel and lubricants used at the PFSF.[31] Such mere speculation and belief devoid of factual support does not defeat summary disposition. See Section III.A supra. Accordingly, PFS is entitled to summary disposition on this aspect of Contention O.

### 2. Contaminant Pathways From the Detention Pond

The contention asserts two impacts related to contamination from the detention pond: 1) contamination associated with pond overflow, and 2) impacts on downgradient hydrological resources and groundwater from any contamination that is collected in the detention pond. Utah O, Basis 2. Neither of these concerns is warranted.

The detention pond will be located at the northern end of the restricted area to detain runoff from severe storms and prevent soil erosion resulting from the loss of natural soil absorption in the restricted area. Lewis/Liang Decl. ¶ 17. The pond will be sized to hold the waters from a single 100-year storm event, and will serve as a collection point for runoff, allowing the water to collect and then slowly dissipate through evaporation and percolation into the subsoils. Id. For reasons discussed above, there are no credible scenarios for contamination being introduced into the detention pond. Nevertheless, PFS

[30] Ostler Dep. at 47; see also id. at 71.

[31] Id. at 51. The only support provided by the State's expert is that, contrary to applicable rules and procedures, personnel would "intentionally" get rid of such fluids by draining them on the ground. Id. However, it is well established Commission precedent that an intervenor cannot support its claims based on an assumed violation of applicable requirements. See, e.g., GPU Nuclear, Inc., et al. (Oyster Creek Nuclear Generating Station) CLI-00-6, 51 NRC 193, 207 (2000).

will obtain and analyze a grab sample of water from the pond following a significant rainstorm to verify that the storm-water runoff is free of contamination. Id. ¶¶ 52-53, 55.

The State's expert claims that contamination from the detention pond is of concern because the collection of water there will create a hydrological "head" that will increase the transmission of water into the ground. Ostler Dep. at 52. However, in order for the water in the pond to present an environmental concern, it is first necessary for the water flowing into the pond to be contaminated. As previously discussed, the State has offered no means by which contaminants could be introduced other than unsupported speculation and belief. Rather, operating procedures, the general lack of activity that would generate or facilitate contamination, and the absence of significant sources of contamination on site preclude such contamination from occurring.[32] The DEIS concurs, stating, "[s]ince no contamination is expected in the detention basin and relatively little water is expected to be present in the basin, then there would be no impact on groundwater quality." DEIS p. 4-12. The State offers only unsupported speculation and belief to the contrary. Hence, PFS is entitled to summary disposition of this aspect of Utah O.

### 3. Potential Contamination of Groundwater and Surface Water

The State next asserts that the potential for contamination of groundwater and surface water surrounding the proposed PFSF has not been adequately analyzed. Utah O, Basis 3. To the contrary, as discussed above, both the potential for contamination to occur as well as the potential for such contamination to reach the groundwater or surface water, in the highly unlikely event it were to occur, have been considered. As discussed with respect to the latter, the arid climate, lack of surface water, depth to groundwater, and characteristics of the soil between the surface and the groundwater effectively prohibit water at the site from percolating to groundwater depth or reaching surface water

[32] Lewis/Liang Decl. ¶¶ 52. Further, the sampling of standing water in the pond would identify any contamination, however unlikely, that might occur and allow appropriate remedial action to be taken. Id.

miles away before it is evaporated. See Sections I, III.A and III.B, supra. Therefore, even if contamination occurred at the site, it would not reach ground or surface water.

Both State experts expressed agreement with PFS's general characterization of the general hydrology of the site.[33] Nevertheless, Mr. Ostler insisted that, absent formal transport modeling, it must be assumed that any contamination that might occur at the site would reach ground and surface waters. Ostler Dep. at 77-78. But again he provided no factual support for his assumption. Id. Hence, PFS is entitled to summary disposition on this aspect of Utah O even assuming contamination were to occur at the site.

#### 4. Impacts of PFSF Water Usage on Other Users and the Aquifer

The State also asserts that PFS has not considered the impacts of its withdrawal of groundwater necessary for construction and operation of the facility on surrounding water users or the aquifer. Utah O, Basis 4. Again to the contrary, both PFS and the DEIS have determined that such adverse impact is unlikely, and in fact, the State itself has completed studies on water availability in the area that reached a similar conclusion.

Using the most conservative assumptions, analysis conducted by PFS shows that the planned rate of water withdrawal from wells developed on the PFSF site would not adversely impact nearby well users or the aquifer. Lewis/Liang Decl. ¶¶ 62-65. In a completely independent analysis, the State itself, in a proposal developed in 1988 for the Superconducting Super Collider, determined that up to 4,000 acre-feet of water could be removed annually from the Skull Valley aquifer without impacting other users in the area. Id. ¶ 66. In contrast, PFS proposes to draw from the aquifer, on average, 2.3 acre-feet per year over the life of the facility. Id.[34] Given this lack of any material issue of fact, PFS is entitled to summary disposition of this portion of Utah O.

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[33] Ostler Dep. at 40-41, Mann Dep. at 27-29, 34-35.

[34] Further, when asked to comment on the correctness of PFS's analysis, the State's expert on Basis 4 declined on the grounds that he was not the appropriate person to opine on this issue. Mann Dep. at 31-32.

### 5. Impacts of PFSF on Downgradient Hydrological Resources

Finally, the State asserts that there has been an inadequate consideration of the "[i]mpact of potential groundwater contamination" of the PFSF "on downgradient hydrological resources." Utah O, Basis 5. The State and its experts have raised no additional information with respect to Basis 5 beyond that raised with respect to Basis 1-3. Thus, as demonstrated above, the State has raised no material issues of fact with respect to Basis 1-3 (i.e., the State has not shown that any significant contamination of ground or surface water would result from the construction, operation or decommissioning of the PFSF), no material issue of fact remains with respect to Basis 5. Accordingly, PFS is entitled to summary disposition of Utah O, Basis 5.

In sum, the State has offered no evidence of tangible hydrological impacts associated with the construction, operation, or decommissioning of the PFSF. The depositions of the State's experts demonstrate that instances of claimed possible impacts are not based on facts, analyses, calculations, or reasoned scientific or technical judgement, but rather on mere subjective belief or unsupported speculation.

## IV. CONCLUSION

For the above reasons, the Board should grant summary disposition of Utah O.

Respectfully submitted,

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Dated: June 29, 2001

Document #: 1133790 v.1

**UNITED STATES OF AMERICA**
**NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

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| PRIVATE FUEL STORAGE L.L.C. | ) | Docket No. 72-22 |
| | ) | |
| (Private Fuel Storage Facility) | ) | ASLBP No. 97-732-02-ISFSI |

## CERTIFICATE OF SERVICE

I hereby certify that copies of the Applicant's Motion For Summary Disposition Of Utah Contention O – Hydrology and supporting documents were served on the persons listed below (unless otherwise noted) by electronic mail with conforming copies by U.S. mail, first class postage prepaid, this 29th day of June 2001.

G. Paul Bollwerk III, Esq., Chairman Administrative Judge
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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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|---|---|---|
| In the Matter of | ) | |
| | ) | |
| PRIVATE FUEL STORAGE L.L.C. | ) | Docket No. 72-22 |
| | ) | |
| (Private Fuel Storage Facility) | ) | ASLBP No. 97-732-02-ISFSI |

**ATTACHMENTS FOR**
**APPLICANT'S MOTION FOR SUMMARY**
**DISPOSITION OF UTAH CONTENTION O**

| Tab No. | Subject |
|---|---|
| A | Declaration of Donald Wayne Lewis & George H.C. Liang |
| B | Deposition of Don A. Ostler |
| C | Deposition of John Richard Mann |

**UNITED STATES OF AMERICA**
**NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

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| | ) | |
| PRIVATE FUEL STORAGE L.L.C. | ) | Docket No. 72-22 |
| | ) | |
| (Private Fuel Storage Facility) | ) | |

**DECLARATION OF H. C. "GEORGE" LIANG AND DONALD WAYNE LEWIS**

H. C. "George" Liang and Donald Wayne Lewis state as follows under penalties of perjury:

## I. WITNESSES

### A. H. C. "George" Liang

1. I am currently employed by Stone & Webster, Inc., a Shaw Group Company, as Senior Principal Environmental Engineer. I am providing this declaration in support of a motion for summary disposition of Contention Utah O (Utah O) in the above captioned proceeding to show 1) that the Draft Environmental Impact Statement (DEIS) for the Private Fuel Storage Facility (PFSF)[1] is adequate with respect to its description of the environmental impacts on surface water and groundwater that will result from the construction, operation, and decommissioning of the PFSF and 2) that the construction, operation, and decommissioning of the PFSF will have no health and safety impacts on surface water and groundwater. My specific role in this declaration is to provide the scientific basis for Private Fuel Storage LLC (PFS)'s position regarding potential impacts to local hydrological resources from the construction, operation and

[1] NUREG-1714, "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 on Tooele County, Utah" (June 2000).

decommissioning of the PFSF and the potential impact of PFSF water usage on the aquifer and other nearby water users.

2. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 1 to this declaration. I have extensive experience in the analysis of hydrologic processes, including over 15 years experience in the calculation and evaluation of groundwater dispersion. Through my involvement in various groundwater evaluations of nuclear facilities performed by Stone & Webster during this period, I am intimately familiar with the NRC requirements and standard industry practice for evaluating groundwater dispersion. I have reviewed the proposed project site area. I am knowledgeable of the location of the PFSF, the hydrologic and meteorological conditions of that area, and the area's topography.

3. I have been working on the proposed PFSF project since January 1999 in hydrology and groundwater related areas. Analyses that I either participated in or supervised are the basis of the hydrology sections in the PFSF Safety Analysis Report[2] (SAR) and Environmental Report[3] (ER).

**B. Donald Wayne Lewis**

4. I am currently employed by Stone & Webster, Inc., a Shaw Group Company, as the Lead Mechanical Engineer for the PFSF project. I have held this position since 1996. I am providing this declaration in support of a motion for summary disposition of Utah O to show 1) that the DEIS for the PFSF is adequate with respect to its description of the environmental impacts on surface water and groundwater that will result from the construction, operation, and decommissioning of the PFSF, and 2) that the construction, operation, and decommissioning of the PFSF will have no health and safety impacts related to surface water and groundwater. My role in this declaration is to describe the specific design features of the PFSF relative to water usage and describe anticipated water usage during the construction, operation and decommissioning phases.

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[2] PFS, "Private Fuel Storage Facility Safety Analysis Report," Rev. 22 (2001).

[3] PFS, "Environmental Report for the Private Fuel Storage Facility" (1997).

I will describe the potential contaminants that will be present during each phase and discuss the likelihood of contamination occurring. I will also describe the procedures that will be in place to preclude contamination and the underlying operating philosophy that will be incorporated into the PFS culture.

5. My professional and educational experience is summarized in the curriculum vitae attached as Exhibit 2 to this testimony. I received my undergraduate engineering degree from the Montana State University, where I majored in Civil/Structural Engineering. I have 19 years of experience in the nuclear power industry, including 10 years of experience with the design, licensing, construction, and operation of independent spent fuel storage installations (ISFSIs). I am currently a registered professional engineer in the states of New York, Colorado, and Maine. My technical contribution focuses on the mechanical aspects of ISFSI work, including cask handling and transportation equipment and operations, building services (HVAC, plumbing, etc.), and fire protection. For the PFS project, I am also responsible for the preparation of the principal design criteria, design installation, and operating systems portions of the PFSF Safety Analysis Report. I have previously testified in this license application proceeding on the subject of fire protection.

6. As Lead Mechanical Engineer, it is my responsibility to establish the design basis and review all design activities of the mechanical systems at the PFSF, including the sanitary waste system. Specifically, I prepared the sanitary waste system flow diagrams, determined the approximate location of the two drain fields, determined which buildings would drain to each drain field, and determined what would be allowed into the sanitary waste system. The flow diagrams, system physical arrangement drawings, and construction specifications were prepared under my direction, which I reviewed for completeness and accuracy. In addition, during licensing of the PFSF, I established many of the detention pond design criteria. Specifically, I helped determine some of the detention pond design features, the sampling of water from the pond, and calculated the duration of evaporation and percolation of the standing water following a 100-year storm. My knowledge of dry cask storage system operation was used to

evaluate if any possible radiological contamination could reach the pond. As part of my responsibilities, I am also familiar with spent fuel canister loading and handling procedures to be employed with respect to the PFSF.

## II. CONTENTION UTAH O

7. Contention Utah O, as admitted[4], asserts that:

> The Applicant has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI, as required by 10 C.F.R. §§ 72.24(d), 72.100(b) and 72.108, with respect to the following contaminant sources, pathways, and impacts:
>
> 1. Contaminant pathways from the Applicant's sewer/wastewater system; routine facility operations; and construction activities.
> 2. Contaminant pathways from the Applicant's retention pond in that:
>    a) The ER fails to discuss potential for overflow and therefore fails to comply with 10 C.F.R. Part 51.
>    b) ER is deficient because it contains no information concerning effluent characteristics and environmental impacts associated with seepage from the pond in violation of 10 C.F.R. § 51.45(b) and 72.126(c) & (d).
> 3. Potential for groundwater and surface contamination.
> 4. The effects of Applicant's water usage on other well users and on the aquifer.
> 5. Impact of potential groundwater contamination on downgradient hydrological resources.

[4] Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-39, 50 NRC 232, 240 (1999).

## III. INTRODUCTION AND BACKGROUND

### A. The Private Fuel Storage Facility

#### 1. General Description

8. (Lewis) The proposed PFSF is an independent spent fuel storage facility to be located in Skull Valley, Utah. When completed, the Owner-Controlled Area will cover 820 acres. The Restricted Area, where the spent fuel will be stored, will occupy 99 acres within the Owner-Controlled Area. The spent nuclear fuel will be stored inside welded, stainless steel canisters contained in cylindrical storage casks approximately 11 feet in diameter and 19 feet tall. The casks will be stored on concrete storage pads arranged in a rectilinear grid pattern within the Restricted Area. Each storage pad will be 30 feet wide and 67 feet long and be able to accommodate up to eight casks. At full capacity the facility will be able to store 4,000 casks. The general layout of this area is illustrated in Figure 2.1–2 (sheet 1 of 2) of the Environmental Report, attached as Exhibit 3 to this declaration. The spent fuel canisters will arrive welded shut and will never be opened at the site. The facility will be operated utilizing a "Start Clean – Stay Clean" philosophy, which means that each of the canisters will be tested for radiological contamination before being accepted for storage on site and no activity will be conducted on site that has a potential for causing radiological contamination to occur.

9. (Lewis) The area around the storage pads will be surfaced with compacted crushed rock with a gentle slope toward the north to facilitate runoff of surface water from the Restricted Area to the detention pond. Construction of the proposed facility is to be accomplished in phases, with operation of the facility commencing in the latter stages of Phase 1. Water will be required during construction of the PFSF for compacting soils, making soil cement and concrete, controlling dust, and worker use. During operation, water will be required for worker use. Water is anticipated to be required for dust control and worker use during decommissioning.

### 2. Site Buildings

10. (Lewis) In addition to the storage pads, four structures will be constructed as part of the PFSF. These include the Administration Building, the Operations and Maintenance Building, the Security and Health Physics Building, and the Canister Transfer Building. Exhibit 3 to this declaration, Figure 2.1–2 from the Environmental Report, shows the layout of these buildings in relation to other site features.

11. (Lewis) The Administration Building is located outside of the Restricted Area at the entrance to the 820-acre Owner-Controlled Area. It is a single-story steel-frame building, approximately 80 feet wide, 150 feet long, and 22 feet tall, that will house the full-time administrative, engineering/licensing, and Quality Assurance personnel. It will be located approximately 1,850 feet from the Restricted Area. A break or lunch room, men's and women's restrooms, and janitor's closet will have sinks and/or toilets that drain into the sanitary waste system.

12. (Lewis) The Operations and Maintenance Building is located close to the Administration Building, approximately 1100 feet from the Restricted Area. This building is a single-story steel-frame building, approximately 80 feet wide, 200 feet long, and 36 feet tall, that will house maintenance shops and spare parts and equipment storage areas to service the vehicles and equipment used at the facility. A lunch room, men's and women's restrooms and locker rooms, and a janitor's closet will have sinks, toilets, and/or showers that drain into the same sanitary waste system that services the Administration Building. Because of their distance from the other two buildings on site, the Administration and Operations and Maintenance Buildings will have a common sanitary waste system independent from a second system servicing the other two buildings.

13. (Lewis) The Security and Health Physics Building is located at the entrance to the Restricted Area and is a single-story concrete-masonry building, approximately 80 feet wide, 120 feet long and 23 feet tall. The building will control access to the Restricted Area and will house the health physics and security personnel. A staff day room, men's and women's restrooms and locker rooms, and a janitor's closet will

have sinks, toilets, and/or showers that drain into a second sanitary waste system that will service the Security and Health Physics and the Canister Transfer Buildings.

14. (Lewis) The Canister Transfer Building is located within the Restricted Area and is a reinforced-concrete high-bay structure approximately 205 feet wide, 270 feet long, and 92 feet tall. The building will house personnel temporarily during canister receipt and transfer to storage cask activities. Sinks and toilets in the men's and women's restrooms are the only fixtures in the building that will drain to the same sanitary waste system that also services the Security and Health Physics Building.

### 3. The PFSF Wastewater System

15. (Lewis) During the construction of the PFSF, all sewer and wastewater will be handled using portable sanitary systems and subsequently trucked offsite. During operation, sewer and wastewater requirements at the operating PFS facility will be handled by two separate sanitary drainage systems. As discussed above, one of these sanitary drainage systems will service the Administration and Operations and Maintenance Buildings and a second system will service the Canister Transfer and Security and Health Physics Buildings. The distance between these two areas made the use of a single sanitary drainage/leach field impractical. Both systems will be designed and installed according to the Uniform Plumbing Code. The Uniform Plumbing Code is a widely used and accepted standard for material selection, design, construction, and installation of sanitary drainage systems. Compliance with this code will ensure that the systems are adequate to accommodate anticipated usage and located in acceptable soils.

16. (Lewis) Based on expected usage and soil types encountered onsite, each sanitary drainage system has been sized to consist of one 3,500-gallon sanitary drainage tank with a leach field of 1,400 square feet (SWEC Calculation 0599601-P-002, Rev. 4). The drainage lines for each sanitary drainage system will be installed underground and sloped to facilitate drainage. Based on the projected number of personnel located in the various buildings during operations, the maximum daily flow rate of sewage is estimated to be 650 gallons per day for the Canister Transfer and Security and Health Physics

Buildings' sanitary drainage system and 400 gallons per day for the Administration and Operation and Maintenance Buildings' sanitary drainage system.

### 4. The PFSF Detention Pond

17. (Lewis) A storm-water detention basin will be constructed at the northern end of the Restricted Area to detain precipitation runoff from severe storms and prevent soil erosion resulting from the loss of natural soil absorption in the Restricted Area. The location of the detention pond is shown in Figure 2.1–2 (Exhibit 3). The detention pond will be sized to hold the waters from a single 100-year storm event. The pond serves as a collection point for runoff, allowing the water to collect and then slowly dissipate through evaporation and percolation into the subsoils. The detention pond is designed with a concrete inlet from the cask storage area that precludes erosion of the area surrounding the cask storage area. ER § 4.2.4. A spillway is located on the northern side of the detention pond. The spillway is designed to handle any overflow that may occur from precipitation associated with any events larger than the 100-year storm event or a precipitation event that occurs before the water from a previous precipitation event has dissipated. The spillway is designed so that if such unlikely overflow occurs there will be no damage to the detention pond or the spillway and no erosion of the soil around the PFSF.

### B. Surface Water and Groundwater Near the PFSF Site

18. (Liang) The location proposed for the PFSF is an area of western Utah with a semi-arid climate, receiving average annual precipitation of 7 to 12 inches.[5] There are no perennial watercourses within 5 miles of the PFSF, including lakes, ponds, drinking water storage areas and streams. ER § 2.5.1. Topographic maps of the area indicate that no intermittent or perennial streams cross any portion of the site boundary. No identifiable stream channels exist at any point on the site. The nearest channel identifiable as an intermittent stream is located approximately 1,500 feet northeast of the

[5] Hood, J. W. and Waddell, K. M., "Hydrologic Reconnaissance of Skull Valley, Tooele County, UT: Technical Publication No. 18" (1968).

site. ER § 2.5.1. According to information provided by the State of Utah, the nearest perennial stream is the Lower South Lost Creek Spring, located approximately 5 miles northeast of the proposed storage site.[6] The nearest perennial surface water body, the Great Salt Lake, is located about 28 miles north of the proposed site boundary.

19. (Liang) The groundwater table in the proposed vicinity of the Canister Transfer Building (elevation 4,350) was encountered in the monitoring well designated as CTB-5 (OW) at a depth of 124.5 feet. ER § 4.5.6. There are 9 water wells in use within 5 miles of the site. ER Figure 2.5-2 Rev. 13. The depth from the ground surface to groundwater in these wells ranges from 78 feet to 520 feet; however, the deeper wells are located at much higher elevations than the PFSF site (Elev. ~4,470 feet MSL). The total depth of these wells ranges from 209 feet to 651 feet. Well data were obtained from the State of Utah, Division of Water Rights, and Hood and Waddell, 1968. Based on CTB-5 (OW), the depth to groundwater at the PFS site is approximately 125 feet in the vicinity of the Canister Transfer Building. ER § 2.5, p. 2.5-11. Based on variations in surface elevations across the proposed PFSF site, depth to groundwater would vary somewhat, but not to a great extent, across the site.

20. (Liang) In general, groundwater in Skull Valley in the vicinity of the PFSF site is suitable for irrigation or stock watering without treatment. The main dissolved ions are sodium and chloride (Hood and Waddell, 1968). Total dissolved solids range from 1,600 to 7,900 mg/l at the northern end of the valley. In comparison, total dissolved solids in potable water are normally less than 500 mg/l. Most sources of water in the valley are high in calcium and would be classified as very hard. Aquifer transmissivities (horizontal groundwater flow) range from 500 to 30,000 square feet/day, with an average for Skull Valley estimated at 5,000 square feet/day.[7] ER § 2.5.5.

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[6] State of Utah Contentions on the Construction and Operating License Application by Private Fuel Storage, LLC for an Independent Spent Fuel Storage Facility, 11/23/97, Exhibit 14

[7] Dames & Moore, The Ralph M. Parsons Company and Roger Foott Associates, Inc., "Superconducting Super Collider, Cedar Mountain Siting Proposal," Proposal Appendix F, "Geohydrology, Superconducting Super Collider, Cedar Mountains and Ripple Valley Sites, Utah". (September, 1987).

21. (Liang) Hydrological connection between the surface and groundwater depends on permeability of the soils at the surface, the depth to groundwater, and the amount of precipitation. The characteristics of the Skull Valley soils, groundwater, and precipitation result in the source of groundwater at the PFSF site being precipitation that falls at the higher elevations of the Stansbury and Cedar Mountains on the east and west sides of Skull Valley, respectively. Soils at higher elevations around the Stansbury and Cedar Mountains tend to be highly permeable. Conversely, soils in the Skull Valley floor, mostly silts, have relatively low permeability. ER § 2.5.5. The valley typically receives 7 to 12 inches of precipitation per year, while the surrounding mountains generally receive more. ER § 2.5.1. Because of the semi-arid climate and geologic conditions in and around the mountains, most of the runoff from the mountains either evaporates or infiltrates into alluvial materials near the margins of Skull Valley. DEIS page 3-9. Based on borings and laboratory test data, the upper layers of soil at the PFSF site, extending to depths of between 25 and 35 feet below existing grade, mainly are comprised of interlayered silt, silty clay, and clayey silt. ER, § 2.6.5. Soil interpretations prepared by USDA[8] indicate that the permeability of a silty soil in Skull Valley ranges from 0.2 to 0.6 inches/hr. ER, § 2.5.5. The combination of these conditions at the PFS site results in the small amount of precipitation that does fall in the valley being held near the surface by the low permeability of the soils on the valley floor. Subsequently, this water is discharged either by evaporation or plant uptake and subsequent transpiration.[9] Consequently, recharge of the Skull Valley aquifer occurs almost exclusively from runoff at the higher elevations. Percolation into the groundwater from the surface near the PFS site is nonexistent or so insignificant that it can be stated that there is no direct hydrological link between the surface and groundwater in this vicinity.

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[8] U.S. Department of Agriculture, undated, Soil survey of Tooele County, Utah, unpublished maps and data, Natural Resource Conservation Service, Tooele, UT.

[9] Dames & Moore, The Ralph M. Parsons Company and Roger Foott Associates, Inc., "Superconducting Super Collider, Cedar Mountain Siting Proposal," Proposal Appendix A, Geotechnical Report, Volume 2, Prepared for the State of Utah, page 8 of "Geohydrology". (September, 1987).

### C. PFS Water Usage

22. (Lewis) PFS will use water during the construction, operation, and decommissioning of the PFSF. Water will be required for construction purposes before and during operation, since the construction of the PFSF is not planned for completion until well after initiation of facility operation. Therefore, this discussion reflects estimated water requirements for different purposes (construction, operation, or decommissioning), but these requirements (construction and operation) could apply at the same time. All estimates for water requirements are taken from SWEC Calculation 05996.01-P-002, Rev. 5.

23. (Lewis) During the construction phase, the majority of water will be required for the control of dust during the construction process. The remainder will be used for soil compaction, soil cement and concrete production, and worker use. Water requirements will vary according to the type of activity that is required at a given phase of construction and the degree to which the activity is conducted. A complete estimate of the timing of water requirements is contained in the Environmental Report. ER § 4.5.4.

24. (Lewis) During the construction of the PFSF, soil compaction is estimated to require a maximum of 17,300 gallons per day. Soil cement is estimated to require a maximum of 2,700 to 102,600 gallons per day at various times in the construction process. Dust control is estimated to require a maximum of 15,100 gallons per day. These requirements are expected to be met using offsite private water sources located within 15 miles of Timpie and Low, Utah. ER § 4.5.4.

25. (Lewis) Water for concrete production and worker use during construction will be obtained from onsite wells. Concrete production is estimated to require a maximum of 1,700 to 6,700 gallons per day, depending on the phase of construction. Water requirements for worker use are estimated to vary from a maximum of 1,800 to 3,300 gallons per day. In the event that onsite water production is unable to meet the demand, additional water will be obtained directly from the Reservation's existing supply or through the development of additional wells east of the site, where the quantity and quality of groundwater are likely to be more satisfactory. ER § 4.5.5.

26. (Lewis) Potable water needs for operation of the PFSF are estimated at a maximum of approximately 1,800 gallons per day, similar to a light industrial facility with a 24-hours-a-day contingent of security personnel.

27. (Lewis) Surface storage tanks will be erected for potable water, emergency fire water, and for the batch plant, since it is unlikely that water wells drilled into the main valley aquifer will yield adequate quantities of water on demand for these purposes. Several wells on the site may be required to meet demand. In the event that onsite water quality or quantity are inadequate to meet potable water requirements, an additional well or wells may be drilled in a different geographical location of the Goshute Reservation, or potable water will be obtained directly from the Reservation's existing supply or purchased from an offsite source. ER § 4.2.4.

28. (Lewis) Water requirements during decommissioning have not yet been estimated, but would be necessary for worker use and most likely for dust control. These requirements, however, would be significantly less than those required either during construction activities or during operation.

29. (Liang) Over a 42-year period, which includes construction and 40 years of operation, the average withdrawal rate from the proposed PFSF water well(s) will be approximately 2,040 gallons per day, or 2.3 acre-feet per year. Each of six existing wells within five miles of the site has an allowed diversion ranging from approximately 11 to 1,600 acre-feet per year, with a total allowed diversion of 3,035 acre-feet per year. ER §. 4.5.5. Hood and Waddell estimate that in 1965, total water discharge via wells in the Skull Valley was approximately 5,000 acre-feet per year. In 1981, Schlotthauer[10] estimated well discharge over the period 1970-1979 to be 4,400 acre-feet per year. Current well discharge can reasonably be assumed to be fairly consistent with these two estimates, given that there has been no major change in the population or land usage of

[10] Dames & Moore, The Ralph M. Parsons Company and Roger Foott Associates, Inc., "Superconducting Super Collider, Cedar Mountain Siting Proposal," Proposal Appendix A, Geotechnical Report, Volume 2, Prepared for the State of Utah, page 11 of "Geohydrology". (September, 1987).

Skull Valley during this period. Therefore, the proposed withdrawal of 2.3 acre-feet per year for the PFSF is insignificant.

## IV. RESPONSE TO CONTENTION

30. In Utah Contention O, the State asserts that various aspects of the hydrological effects of the proposed PFSF have not been addressed in the evaluation of the health, safety and environmental impacts of the facility. Specifically, the State asserts that PFS and the DEIS do not address potential contamination from the sewer/wastewater system, routine facility operations, construction activities, and the detention pond, as well as potential impacts of water use by the PFSF on the aquifer and other water users in the area. We discuss below each of the State's five bases in the contention and document that these areas have been addressed to the extent required.

### A. Potential for Contamination from Sewer/Wastewater System, Routine Facility Operations, and Construction Activities

31. Basis 1 of the contention asserts that health and safety and environmental effects associated with contaminant sources and pathways from the sewer/wastewater system, routine facility operations, and construction activities have not been adequately assessed. As we discuss below, the potential for contamination from (1) construction of the PFSF, (2) routine facility operations, and (3) the sewer/wastewater system has been addressed and no significant health and safety or environmental concerns exist.

#### 1. Construction

32. (Lewis) Construction activities at the PFSF will consist of site preparation, earth-moving associated with construction of facility features such as the detention pond and flood berm, construction of an access road, four buildings and the concrete pads on which the storage casks will be placed. While the lack of jurisdictional waters of the United States at the PFSF site will preclude the necessity of a National Pollutant Discharge Elimination System permit for construction activities, PFS has committed to the preparation and implementation of an Erosion Control Plan that will rely on common engineering/best management practices to minimize any potential for precipitation-

related erosion. Measures will include erosion and sediment controls, soil stabilization practices, structural controls, and other controls as needed to effectively manage construction-related storm water runoff. The Erosion Control Plan will also outline maintenance, inspection, and other best management practices for the effective management of storm water runoff from the concrete batch plant. ER § 9.1.3. A spill response procedure, in accordance with implemented best management practices, will be followed to appropriately respond to an inadvertent spill of oil or fuel from construction machinery. These procedures, in combination with the lack of surface water at the PFSF site, great depth (~125 feet) to groundwater beneath the site, low permeability of the soils above the groundwater aquifer, and typically low precipitation, will ensure that construction activities will not lead to contamination of the groundwater beneath the site.

### 2. Routine Facility Operations

#### a. Radiological Contamination

33. (Lewis) The sole source of possible radiological contamination during routine operation of the facility will be the spent fuel canisters themselves. Because of the "Start Clean – Stay Clean" operating philosophy of PFS and the procedures by which this philosophy will be implemented, it is not credible that radiological contamination will enter the environment from the PFSF.

34. (Lewis) Prior to loading the canisters at the originating reactors, the canister will be placed inside a transfer cask. The annulus between the canister and the transfer cask will be filled with demineralized water, and then a seal will be placed between the two, preventing the demineralized water from mixing with water in the reactor's spent fuel pool. The canister/transfer cask will then be lowered into the pool and loaded. After loading, the canister/transfer cask will then be removed from the pool and the exterior surface of the transfer cask will be cleaned. The seal will then be removed and the demineralized water partially drained. A "swipe test" will then be performed on the canister upper exterior to ensure that there is no contamination present. The outer lid of the canister will then be seal-welded in place. By following this procedure, the outer surface of the canister will never come into contact with radioactive

material or spent fuel pool water, thereby preventing contamination of the outer surface of the canister. Once the canister leaves the pool and the lid is seal-welded to the canister, there is no credible way for the surface of the canister to become contaminated.

35. (Lewis) After the shipping cask has been loaded with a canister at the reactor site, a final swipe test is done before the cask leaves the facility. These canisters will arrive at the PFSF seal-welded, inside shipping casks designed and constructed in accordance with 10 C.F.R. Part 71. The canisters will not be opened once they are at the PFSF site. After a shipping cask arrives at the PFSF, the shipping manifest will be checked and contamination surveys of the outer surfaces of the loaded shipping cask will be performed in accordance with the manifest and U.S. Department of Transportation (DOT) regulations (49 C.F.R. 173.443). Radiological contamination surveys will also be performed on the canister prior to its being unloaded from the shipping cask, using swipes taken on the accessible portions near the top of the canister. In addition, the storage cask will be surveyed for external radiological contamination after the canister has been transferred from the shipping cask to the storage cask. PFSF Technical Specification 5.5.3 provides that casks will be placed in the Restricted Area for storage only if the removable contamination levels are below the NRC's criteria for acceptable surface contamination levels for release of equipment for unrestricted use in Table 1 of NRC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," issued June 1974.

36. The external surveys for removable contamination will be performed using swipes. After the swipes are counted in the Security and Health Physics building, they will be properly disposed of in accordance with Radiation Protection procedures. Should an off-normal event occur that results in either a shipping cask or storage cask becoming contaminated, the contaminants will be removed using decontamination methods that result in the generation of only dry solid wastes. SAR § 6.4 states:

> Any necessary decontamination of these casks will be performed using dry methods. If such decontamination is necessary, a small quantity of solid LLW may be generated, consisting of smears, disposable clothing, tape, blotter paper, rags, and related health physics material. This material will be collected, identified, packaged in suitable LLW containers (such as

> standard 55-gallon steel drums that comply with transportation and disposal requirements), marked in accordance with 10 CFR 20 requirements, and temporarily stored in the LLW holding cell of the Canister Transfer Building while awaiting removal to a LLW disposal facility. The LLW holding cell is regularly surveyed and inventoried, including inspection of the materials stored, to evaluate the status of materials and controls (e.g., physical condition of containers, access control, posting).

PFSF Technical Specification 3.2.1 requires that if the accessible external surfaces of a canister are found to be contaminated at levels above those specified, and the canister can not be decontaminated, PFS will return the canister within a sealed shipping cask to the originating nuclear power plant for decontamination.

37. Thus, the small amount of dry active waste that may be generated will consist of anti-contamination garments, smear rags, and associated health physics material. This solid waste will be packaged and temporarily stored in the low-level radioactive waste (LLW) holding cell of the Canister Transfer Building until shipped offsite to a low-level radioactive waste disposal facility. SAR § 6.1. SAR § 6.4 states that "State-of-the art solid radwaste handling equipment and procedures will be used in handling any solid waste generated at the PFSF." This section provides a detailed explanation as to how dry active waste will be packaged in polyethylene bags and inserted into 55-gallon drums for temporary storage in the LLW holding cell. This process will be governed by Radiation Protection procedures.

38. (Lewis) There will be sumps in the cask load/unload bay of the Canister Transfer Building that will act as closed catch basins to collect any water originating from the transportation vehicle or that may drip off of the exterior surface of the shipping cask itself. These sumps will have no drain and will not be connected to the sewage system. There will be no other floor drains in the Canister Transfer Building. Any liquid collected in the sumps will be sampled to ensure that it is not contaminated prior to removal and disposal. Should any contamination be identified, the liquid will be collected in a suitable container, solidified by the addition of an agent such as cement to

produce a solid waste, and disposed of in a low-level radioactive waste disposal facility. SAR § 6.3. SAR § 7.5.2 states in greater detail:

> In accordance with the PFSLLC's policy of preventing generation of liquid radioactive waste, any necessary decontamination of equipment and personnel will be conducted using methods that produce only solid radioactive waste. Decontamination methods would typically include wiping the contaminated item with rags or paper wipes. Drain sumps are provided in the cask load/unload bay of the Canister Transfer Building which catch and collect water that drips from shipping casks (e.g. from melting snow) onto the floor. Water collected in the cask load/unload bay drain sumps will be sampled and analyzed to verify it is not contaminated prior to its release. In the event contaminated water is detected, it will be collected in a suitable container, solidified by the addition of an agent such as cement or "Aquaset" so that it qualifies as solid waste, staged in the LLW holding cell while awaiting shipment offsite, and transported to a LLW disposal facility, in accordance with Radiation Protection procedures.

Any necessary decontamination of related equipment and personnel will likewise be conducted using methods that produce only solid wastes. SAR §§ 4.4.1, 6.4. Appropriate Radiation Protection procedures will be implemented prior to facility operations. SAR § 7.1.

39. (Lewis) Drains of sinks and toilets in the Canister Transfer and Safety and Health Physics Buildings are routed by sewage system piping to the sanitary drainage tank located northeast of the Security and Health Physics Building. Operating procedures implemented at the PFSF will ensure that personnel using the sinks and toilets in these buildings are not radioactively contaminated, and radioactivity will not enter the sewage system. Strict canister handling techniques, personnel training, and health physics oversight will be implemented to minimize the likelihood of any worker contamination. SAR § 7.5. Further, there will be step-off pads and frisking stations at the exit from each canister transfer cell to assure personnel leaving these areas are free of radioactive contamination. SAR § 6.4. Facility procedures will not permit a contaminated person to enter the rest rooms in the Canister Transfer Building. Similarly, facility procedures will not permit a contaminated person to enter the restrooms in the Security and Health Physics Building, nor wash in the sinks in this building.

40. (Lewis) Laboratory operations at the PFSF will not lead to water contamination. The laboratory in the Security and Health Physics Building will have the ability to handle liquid as well as dry samples. However, sinks will not be located in the laboratory, preventing the possibility of a technician mistakenly pouring a contaminated or potentially contaminated liquid sample down a drain. An example of a liquid sample that could be brought into the laboratory for analysis is water from a sump in the cask load/unload bay of the Canister Transfer Building. If analysis determines that a liquid sample has radioactive contamination, the contaminated liquid will not be disposed of in a sink or toilet that drains to the sanitary drainage system. The liquid will be solidified and disposed of at an offsite low level radioactive waste disposal facility. Facility procedures will not permit disposal of contaminated or potentially contaminated liquids down drains into the sanitary drainage system, and laboratory personnel will be trained and qualified on these procedures.

41. (Lewis) Given these protections, there is no need to monitor or survey the sink and toilet drains of the Canister Transfer and Security and Health Physics Buildings. Nor is there a need to monitor or survey the drains in the Operations and Maintenance Building or the Administration Building, which are outside of the restricted area where the radioactive material at the PFSF will be located and have a separate sewer system that is routed to a separate sanitary drainage system.

**b. Non-radiological Contamination**

42. (Lewis) All substances that would be hazardous to the environment at the PFSF will be marked and stored in designated locations in sealed containers and controlled in accordance with facility procedures as required by regulations to prevent non-radiological contamination. The only substances clearly identified to date that will be used or stored at the PFSF that are listed as hazardous materials under 40 CFR 355 Appendix A (EPA), 49 CFR 172 Subpart B (DOT), or 29 CFR 1910 Subpart H (OSHA) are lubricating oil and diesel fuel. Lubricant oils will either be contained in facility equipment gearbox compartments or kept for spare use in limited quantities in sealed metal drums in designated operating and maintenance building storage areas. Diesel fuel

will either be contained in facility vehicle tanks or in double-containment, aboveground storage tanks in the fuel dispensing stations. Other possible hazardous substances, which could include substances such as cleaning solvents, painting products, pesticides and herbicides, and other chemicals common to any industrial facility of this size will be present only in limited quantities. Each will be confined in designated and labeled containers. Procedures will be in place to ensure that all rules and regulations concerning use and storage of hazardous substances are properly implemented and adhered to. PFSF will also use common janitorial cleaners, which are not classified as hazardous materials. These cleaners will be stored in marked, sealed containers in designated janitor closets in quantities typical of a facility of this size.

43. (Lewis) The Operation and Maintenance Building will be used to perform routine maintenance on equipment used at the facility. The sanitary waste system in this building will be used to dispose of sewage generated in the sinks, toilets, or showers located in the lunch room, men's and women's restrooms and locker rooms, and janitor's closet. There are no floor drains in the Operation and Maintenance Building that would route hazardous liquids, such as diesel fuel spilled onto the floor of the building, to the sanitary waste system.

44. (Lewis) There will be no buried tanks at the PFSF. All liquids stored on site (e.g., fuel and water) will be stored in aboveground tanks. Tanks storing diesel fuel will be enclosed in a secondary tank, in accordance with National Fire Protection Association requirements, to contain any possible leaks. The tanks are designed with a monitoring device to detect any leakage into the secondary tank. Should a leak occur, the tank will be drained of diesel fuel, and the diesel fuel will be removed from the site. The secondary tank will prevent any diesel fuel from leaking onto the surrounding soil. During fueling operations, absorbent materials will be placed under the refueling nozzle and hose to minimize contamination of the soil from a spill of diesel fuel. In accordance with applicable requirements, soil contaminated with diesel fuel or other hazardous substances will be removed and hauled to an appropriate commercial facility for treatment or disposal.

### 3. Sewage System

45. (Lewis) As discussed above, the sewage systems at the PFSF will consist of two independent sanitary waste systems for the sinks, toilets, and showers onsite. Each sanitary waste system will drain sewage to a septic tank and leach field. One system will service the Canister Transfer and Security and Health Physics Buildings and the second will service the Administration and Operating and Maintenance Buildings. There will be no access to these systems except through the sinks, toilets, or showers in these buildings.

#### a. Radiological Contamination

46. (Lewis) No radiological contamination will result from the operation of the PFSF sanitary waste system. As discussed, strict procedures will prevent worker contamination from occurring. Workers will only be exposed to possible contamination while in a canister transfer cell. All workers are required to wear protective anti-contamination ("anti-C") outer clothing when working in a transfer cell that is conducting canister transfer operations, where radiation protection personnel determine the potential for worker contamination exists. Protective anti-C clothing must be removed upon exiting a transfer cell at the step-off pad. In the unlikely event that a worker's clothing becomes contaminated beneath the anti-C protective outer clothing, the contaminated clothing will be removed and any contamination will not be spread beyond the transfer cell step-off pad. After removing the anti-C protective outer clothing, personnel are required to check themselves for contamination with a personnel frisker located at the step-off pad. Should a worker become contaminated, the personnel frisker will alarm and health physics workers will assist the worker in the removal of contamination prior to exiting the area, again preventing the spread of contamination beyond the transfer cell. There is no access to the sanitary sewer system in the transfer cell area. These measures will prevent a contaminated worker from using the sinks or toilets and possibly introducing contamination into the sanitary waste system.

47. (Lewis) As discussed above, strict facility procedures will also prevent the introduction of any radiologically contaminated material into the sanitary waste systems

in the unlikely event that such material is produced. Any material determined to be radioactively contaminated will be solidified, if necessary, appropriately packaged and disposed of at an offsite low-level radioactive waste disposal facility. Thus, the physical separation of the areas, the necessity of removing protective clothing, and facility procedures are all designed to preclude the possibility of inadvertent introduction of a contaminated or potentially contaminated liquid sample down a drain.

**b. Non-radiological Contamination**

48. Normal janitorial cleaners, common to any industrial facility of this size, will be used at the PFSF. Such cleaning compounds will typically be biodegradable and are not classified as materials hazardous to the environment. They will be introduced into the sanitary waste systems as a part of normal cleaning of sinks and toilets, where they will be decomposed by natural mechanisms. The septic tanks and leach fields will be designed in accordance with the Uniform Plumbing Code to utilize natural filtering processes to purify disposed sewage, including janitorial cleaning compounds.

49. As discussed above, the only significant substances that will be used at the PFSF that are identified by applicable federal regulation as hazardous to the environment will be lubricating oils and diesel fuel. Small amounts of other hazardous substances such as cleaning solvents, painting products, pesticides and herbicides may also be on site. All such hazardous substances will be stored or contained within sealed and properly labeled containers and will be located in designated areas where the potential to enter the sanitary waste system is unlikely, away from restrooms, lunch rooms, etc. Proper procedures will be developed and implemented to ensure that all applicable rules and regulations regarding the handling and storage of hazardous substances are complied with. The combination of the small quantities of substances on site and procedures in place for the proper storage and handling of these substances will essentially eliminate all sources of non-radiological contamination. Procedures will also be implemented to ensure that if inadvertent contamination should occur, rapid and effective remediation in accordance with applicable regulatory requirements is accomplished.

## B. Detention Pond

50. Basis 2 of the Contention asserts that the health, safety and environmental impacts of the detention pond have not been adequately considered in two specific respects. First, the State claims that the potential for overflow from the detention pond has not been addressed. Second, the State asserts that potential contamination is not addressed because there is no information on either the characteristics of any overflow or seepage from the detention pond.

51. (Lewis) The detention pond is not expected to have freestanding water, except possibly following a severe precipitation event. Most of the relatively small volume of water impacting the cask storage area during a typical rainstorm will be adsorbed into the 8-inch thick compacted gravel surface surrounding the storage pads and will not drain to the detention pond. Only during a substantial rain event is water expected to drain from the cask storage area to the detention pond. The detention pond is sized to hold the amount of water that would be generated within the cask storage area following a 100-year storm event. The water contained in the detention basin following such an event would be approximately 4.8 feet deep. S&W Calculation No. 05996.01-SY-2. Water that may collect there will dissipate by evaporation and percolation into the subsoils. In the unlikely event of a 100-year storm event, the time for the water that has collected in the pond to be removed via evaporation and ground percolation is conservatively estimated to be approximately 140 days, assuming an evaporation rate of 0.32 inches/day[11] and a percolation rate of 0.09 inches/day.[12] Nevertheless, any time significant standing water occurs in the detention pond, temporary pumps will be used to drain the detention pond via the spillway and eliminate long-term freestanding water to preclude the growth of significant vegetation or the attraction of wildlife.

52. (Lewis) As discussed below, the potential does not exist for the release of radioactive material associated with the spent fuel from inside the canister or the washing

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[11] David D. Houghton, Handbook of Applied Meteorology (Wiley 1985).

[12] William T.Lamb & Robert V. Whitman, Soil Mechanics (Wiley 1969).

off of contaminated material from the surface of the canister to the ground. Thus, radioactive material will not get into the detention pond and, hence, such material will not contaminate surface waters or groundwater. The absence of large quantities of chemicals precludes chemical contamination of the detention pond. Procedures to deal with accidental spills of petroleum products or other potential contaminants will preclude their introduction into the pond as well. Therefore, since there are no credible scenarios for any type of contamination being introduced into the detention pond, PFS will have no effluent monitoring system. As a prudency measure, however, PFS has committed to sample the water from the pond following a significant rainstorm and analyze the sample to verify that the water is free of both radiological and hazardous chemical contamination.

**1. Potential for Overflow**

53. (Lewis) As discussed above, the detention pond is sized to contain the runoff of the storage site from a 100-year storm event. An emergency spillway is located on the north side of the pond to allow overflow due to a storm event more severe than the 100-year event, or if a sizable storm adds water to an already filled or nearly filled pond. Though it is unlikely that this would occur, the emergency spillway provides relief protection of the detention pond walls. It would take some time for the storm water to fill the pond to the spillway height, which would allow heath physics personnel ample time to procure and test samples prior to overflow to verify that radiological or hazardous chemical contamination is not being transmitted beyond the detention pond.

**2. Potential for Contamination from Overflow and Seepage**

54. (Lewis) Storm water that drains into the detention pond is not expected to be radiologically contaminated because (a) the canisters are sealed by welding that precludes leakage of the canisters, (b) measures are applied at the originating nuclear power plants when fuel is loaded into the canisters to prevent contamination of the canister outer surfaces, (c) the canisters are not permitted to be transported to the PFSF unless surveys at the originating nuclear power plant determine that they are free of

surface contamination, (d) a contamination survey of the canister is again performed after the canister is received at the PFSF to ensure that the canister is not contaminated, and (e) following the loading of canisters into storage casks at the PFSF, contamination surveys are performed on the surfaces of the storage casks to verify they are free of contamination. ER Section 4.2.4. Thus, no credible pathway exists for radiological contamination to be introduced into the detention pond. In addition, there are engineered containment features (e.g., the drainage ditches that run along the north and south sides of the railroad tracks at the PFSF) that will contain other potential non-radiological contaminates, such as diesel fuel that could be spilled from a transportation vehicle (an unlikely scenario). While these drainage ditches eventually drain into the detention pond, the drainage system design includes weirs that can be shut in the event of a spill of diesel fuel, which would isolate the fuel in the ditch until it can be cleaned-up. Since the detention pond will contain all discharged waters from the site and there is no possibility of discharging this water to the waters of the United States, current National Pollutant Discharge Elimination System storm water regulations do not apply to the PFSF. ER § 4.2.4.

55. (Lewis) The potential for contaminant seepage out of the detention pond is insignificant. Only during a substantial rain event would water be expected to drain from the cask storage area to the detention pond. PFS will obtain a grab sample of water from the detention pond following a significant rainstorm and analyze the sample to verify that the storm-water runoff is free of contamination. ER, § 4.2.4. The procedure for the sampling and testing will be developed and incorporated in the plant operation manual and implemented through plant personnel training.

56. (Liang) Based on borings and laboratory test data, the upper layers of soil, extending to depths of between 25 and 35 feet below existing grade, mainly are comprised of interlayered silt, silty clay, and clayey silt. ER, § 2.6.5. Soil interpretations prepared by the U. S. Department of Agriculture (USDA, undated, Soil Survey of Tooele County, Utah; unpublished maps and data, Natural Resource Conservation Service, Tooele, UT) indicate that the permeability of silty soil in Skull Valley ranges from 0.2 to

0.6 inches/hr. ER, § 2.5.5. With this type of soil acting as a natural barrier in the bottom of the pond, water seepage would be very slow, allowing for appropriate actions to be taken before any water reached the groundwater table if contamination is detected. Borings and cone penetration tests (locations shown in SAR Figure 2.6-2 and 2.6-19) were not performed within the location proposed for the detention pond; therefore, there are no potential pathways for water in the pond to drain through to underlying soils. (Furthermore, all borings down to groundwater depth were properly sealed so as to not create a link to groundwater at the site.)

57. (Liang) The source of groundwater flow at the PFSF is mainly derived from precipitation that falls at the higher elevations of the Stansbury and Cedar Mountains. As a result of the low permeability deposits, depth to groundwater, and high evapotranspiration at the PFSF, rainfall at the PFSF site is very unlikely to contribute to groundwater flow. The lack of direct hydrological link between the surface and groundwater at the site results in surface water from precipitation at the site migrating horizontally northward and eventually dissipating from evapotranspiration and capillary action. ER, § 2.5.5. Therefore, even if radiological or hazardous chemical contaminants were deposited on the surface at the PFSF, the lack of a direct hydrological link would effectively prevent them from ever reaching the groundwater below.

### C. The Potential for Surface and Groundwater Contamination

58. Basis 3 of the contention asserts that the health, safety and environmental impact discussion is incomplete because the discussion of the potential for groundwater and surface contamination is inadequate. As the above discussion illustrates, however, PFS has shown clearly that there is no credible pathway for either surface water or groundwater contamination of any kind to occur from construction or routine operations of the PFSF. Radiological contamination is precluded by the design of the canisters and cask storage system and the implementation of operating procedures under the "Start Clean – Stay Clean" philosophy. The low permeability of the near-surface soils and the general lack of precipitation in this semi-arid environment also ensure that there is no opportunity for any inadvertent contamination to spread. Non-radiological contamination

is precluded by the absence of any significant contaminant sources and the use of best management practices that minimize the potential for contaminant releases to occur and quickly contain and clean up any contaminant releases that might occur. The lack of contaminant sources and pathways and absence of nearby surface water preclude the possibility of surface water contamination from the PFSF.

59. (Liang) Operation of the detention pond will have a very local, sporadic effect on the subsurface hydrology. This water will slowly migrate northward and will most likely be transpired by vegetation at the ground surface or will be brought to the surface by capillary action and evaporated. As discussed above, the water from the detention pond will not affect the groundwater, as there is no direct hydrological link between surface water and the groundwater at the proposed PFSF site.

**D. PFSF Water Usage Impact on Other Well Users and the Aquifer**

60. Basis 4 of the contention asserts that the assessment of the health, safety, and environmental effects of PFSF water usage on other well users and on the aquifer is inadequate. As shown below, PFS has performed conservative analyses to demonstrate that there will be no such impact.

61. (Liang) The locations of all wells within 5 miles of the PFSF are identified in Figure 2.5-2 from the Environmental Report, attached to this declaration as Exhibit 4. As shown in the figure, there are 9 existing wells in use within a 5-mile radius of the PFSF. The yield of these wells ranges from 12 gallons per minute to 60 gallons per minute. The depth from the surface to groundwater ranges from 78 feet to 520 feet. The uses of the well water are irrigation, stock, domestic and industrial consumption.

62. (Liang) PFSF water usage will have no significant impact on nearby well users and the Skull Valley aquifer. PFS has calculated the potential for impacting nearby well users using a "confined aquifer" model, which assumes that there is no groundwater recharge, and this conservative analysis demonstrates that there will be no impact.

63. (Liang) "Radius of influence," *R*, is the horizontal distance from the center of a well to the limit of the cone of depression. *R* is a calculated parameter for an

aquifer that estimates the horizontal distance from the center of a given well that is impacted by the removal of water from the well. In an ideal aquifer, without recharge, *R* is a function of the transmissivity, the storage coefficient, and the duration of pumping. Powers, J. P., Construction Dewatering, New Methods and Applications, 2nd Ed., 1992. *R* is larger for cones of depression in confined aquifers than for those in unconfined aquifers. Driscoll, F. G., Groundwater and Wells, 2nd Ed., 1995. The radius of influence can be calculated for the wells from which PFSF will draw water to show that PFSF's water usage will not affect other nearby wells. Calculation of *R* is made using transmissivity of the soil, pumping time of the well, and a dimensionless "storage coefficient," applicable to the specific aquifer being analyzed. The equation used to calculate *R* (Equation 4.5 of Powers, 1992) is intended for a confined aquifer, but the results obtained for a water table aquifer are reasonable, provided the drawdown is not a large percentage of the original saturated thickness. The proposed PFSF water well will be installed in deposits that are expected to exhibit hydraulic characteristics that are more representative of a water table aquifer than a confined aquifer.

64. (Liang) Using values appropriate for the PFSF site, the radius of influence from the operation of one or more onsite wells has been conservatively estimated between 1,300 and 7,000 feet, depending on the assumption used regarding the storage coefficient of the soil beneath the PFSF. (S&W Calculation No. 0599602-G(B)-15, Rev. 2). This estimate is conservative since it does not account for recharge of the aquifer that would occur throughout the life of the project. Recharge would occur as a result of precipitation that falls at the higher elevations of the Stansbury and Cedar Mountains, which would replenish the aquifer and thus further reduce the radius of influence. The nearest well is approximately 9,500 feet away from the site. Therefore, localized drawdown of the aquifer caused by the site water wells is not expected to have an effect on adjacent water well users.

65. (Liang) Nor will PFSF water usage have a significant impact on the Skull Valley aquifer. Groundwater levels at the site appear to closely correlate with levels in the main valley aquifer. At this time it is believed an adequate quantity of suitable

quality water can be developed within the site area for PFSF needs. Past measurements of water levels in wells in Skull Valley indicate that the withdrawal of water from wells, which has been much greater than the projected withdrawal for PFSF, has not appreciably altered the natural balance. Limited well records indicate that water levels fluctuated no more than five feet from an average mean over the period 1955 - 1965. Only in the immediate vicinity of the Town of Dugway (16 miles from the PFSF), where water has been pumped for public supply, have water levels declined appreciably in response to pumping, indicating changes in aquifer storage (Hood and Waddell, 1968).

66. (Liang) Water demands at the site during construction and operation are relatively modest, currently projected to be 2.3 acre-feet per year on average as discussed above in paragraph 29. There are no groundwater users besides PFSF within or immediately adjacent to the site, and there will be no impacts at the nearest offsite well location caused by groundwater withdrawal at the site. ER, § 4.5.7. Analyses completed by the State of Utah for a proposal to become the Host State for the Superconducting Super Collider Project in this area of Utah determined that almost 4,000 acre-feet per year could be drawn from the aquifer in the Skull Valley without creating significant drawdowns of the Skull Valley water table.[13] Therefore, PFSF water usage will have a negligible impact on the Skull Valley aquifer.

**E. Impact of PFSF on Downgradient Hydrological Resources**

67. Basis 5 of the contention asserts that the assessment of the health, safety, and environmental effects of the potential impact of groundwater contamination on downgradient hydrological resources has not been addressed. As discussed above, however, the PFSF will not have a significant impact on the water resources on or near the site. Therefore, it will have no significant impact on downgradient hydrological resources.

[13] Dames & Moore, The Ralph M. Parsons Company and Roger Foott Associates, Inc., "Site Proposal for the Superconducting Super Collider," Proposal Appendix A, Geotechnical Report, Volume 1, Cedar Mountain Site, Prepared for the State of Utah, page A6-27. (September, 1987).

68. As indicated, there is no foreseeable mechanism for radiological contamination and no credible pathway for non-radiological contamination. In the event any contamination is ever discovered in the detention pond, a remediation team specializing in contamination cleanup will be dispatched to the PFSF to remove the contaminated water and soil and dispose of it in accordance with regulatory requirements. The concentration and quantities of chemicals onsite will be so low as to prevent an uncontrolled release. Contamination from vehicles used onsite will be precluded using normal industrial practices, and any unexpected contamination will be immediately removed from the site. There are no identified pathways, therefore, for any contamination from the site to reach any surface water or groundwater surrounding the area.

We declare under penalties of perjury that the foregoing is true and correct.

Executed on June 28, 2001.

H. C. George Liang

H. C. "George" Liang

Donald Wayne Lewis

68. As indicated, there is no foreseeable mechanism for radiological contamination and no credible pathway for non-radiological contamination. In the event any contamination is ever discovered in the detention pond, a remediation team specializing in contamination cleanup will be dispatched to the PFSF to remove the contaminated water and soil and dispose of it in accordance with regulatory requirements. The concentration and quantities of chemicals onsite will be so low as to prevent an uncontrolled release. Contamination from vehicles used onsite will be precluded using normal industrial practices, and any unexpected contamination will be immediately removed from the site. There are no identified pathways, therefore, for any contamination from the site to reach any surface water or groundwater surrounding the area.

We declare under penalties of perjury that the foregoing is true and correct.

Executed on June 28, 2001.

H. C. "George" Liang

Donald Wayne Lewis

# EXHIBIT 1

## Resume of George H.C. Liang

## Experience Summary

Dr. Liang is a Senior Principal Environmental Engineer in the Environmental Sciences & Engineering Department. He has over 26 years of experience in siting, environmental assessment, developing and managing environmental protection programs, and licensing of power plants and industrial facilities. He also has extensive experience in mathematical modeling, numerical analysis, and computer applications in environmental engineering/design related problems. He is currently a Program Manager and has previously been a Lead Environmental Engineer on major projects in nuclear/fossil power plants and industrial projects, which involved environmental impact studies, federal/state/local permitting applications, managing engineering/design, procurement and installation of water and wastewater treatment systems, conceptual design of the heat dissipation/chemical discharge system, studies of alternative cooling systems, groundwater dispersion, hydrological analysis of power plant sites and thermal/water quality impact analysis of power plant discharge.

As Supervisor of Water Quality and Hydrology, Dr. Liang has supervised many water quality and hydrology related tasks for power plant projects. He established the technical guideline for flood analysis at power plant sites. He managed the environmental impact assessment of a fluidized bed power plant site and prepared its permit application. He established the exclusion criteria for siting a Low-Level Radioactive Waste disposal facility in Maine, to assure compliance with federal and state requirements. He evaluated existing permit requirements to determine the potential environmental impacts of rerating a nuclear power plant. Dr. Liang completed the conceptual design of a surface run-off detention pond for a proposed NPR site in Idaho, a cooling pond for a proposed power plant site in Florida, a multiport diffuser for a cogen plant in New York and a combined cycle power plant in England, U.K. He has developed the water quality monitoring program and conducted the hydrothermal/water quality modeling for numerous power plant projects.

Dr. Liang has been a lead environmental engineer on major projects in nuclear, fossil, and industrial plants.

Dr. Liang has been an expert in mathematical modeling of surface water, groundwater, water quality, hydrological and hydrothermal analysis.

Dr. Liang has been intimately familiar with EPA's National Pollution Discharge Elimination System (NPDES) permit application regulations and the requirements of section 401 of the Water Quality Act (WQA), which amended Clear Water Act (CWA) section 402(1)(2). He has assisted many major utility clients as well as independent power producers in obtaining the NPDES permit.

Dr. Liang has participated in numerous siting studies for various type of power generation projects and Low Level Radioactive Waste disposal facilities. He has designed and supervised many environmental monitoring programs for siting studies, and prepared permit applications and supporting documentations.

As a member of ICE team, Dr. Liang has participated in evaluating DOE's Environmental Restoration and Waste Management Five-Year plan. He has assisted DOE in environmental cleanup activities at Handford site, and managed environmental studies for the U.S. AMTL research reactor decommissioning project.

Dr. Liang developed a comprehensive environmental protection program at a nuclear power plant construction site. He monitored project construction activities for regulatory compliance in air and water quality, noise, wetlands and wildlife refuge protection, and solid waste disposal. Dr. Liang integrated the environmental protection program with the quality assurance and safety/health programs to measure program performance. He provided the impetus to implement similar programs at other nuclear power plant sites.

Dr. Liang has performed a technical review of the existing environmental operating limit permits and supporting documentation (316a and 316b demonstrations) and assessed the impact of the power uprate on the plant's ultimate heat sink.

In 1994, Dr. Liang managed a consulting services project for improving the technical ability of 22 senior engineers from East China Electric Power Design Institute, dealing with the requirements for a Conventional Island design associated with a nuclear power plant.

Since 1995, Dr. Liang has been working as Lenders' engineer for several fossil power plant projects in China. Working as an Independent Technical Consultant (ITC), he has been responsible for the due diligence effort which includes technical review of engineering/design of the major plant systems, review and evaluation of fuel sources and cost, project performance parameters and guarantees, environmental parameters for compliance with PRC's regulations and World Bank guidelines; construction progress monitoring for funding drawdown certification, start-up/test procedure review, and witnessing the 72-hour and 24-hour test runs, and certification of completion of several fossil power plant projects in China.

Recently Dr. Liang has been in charge of developing EPC cost data base for fossil power plant in China.

## Education

Ph.D., Civil Engineering - University of Connecticut, Storrs, Connecticut - 1972
M.S., Civil Engineering - University of Connecticut, Storrs, Connecticut - 1967
National Taiwan University, Taipei, Taiwan, Republic of China

## Training

China Forum - since 1995, a lunch-time seminar series, meeting once every other month, covered the topics of information, challenges, strategies, recent development, and successful projects in marketing in China, sponsored by the Office of International Trade & Investment, the Commonwealth of Massachusetts, Foley, Hoag & Eliot LLP, and others.
The Princeton Course/Groundwater Pollution and Hydrology - 1993
Hazardous Materials Management, American Management Association - 1991
Site Selection and Design of Sediment and Detention Basins, Southern New England Environmental Regulation Course, Executive Enterprise, Inc. - 1987
MIT Video Course on Finite Element Methods, Massachusetts Institute of Technology - 1984
Water Resources Lecture Series - Rainfall/Run-off Modeling using HEC-1, Stone & Webster Engineering Corporation - 1982
Sediment Transport in Rivers and Estuaries, University of Southern California - 1974

## Licenses, Registrations, and Certifications

Professional Engineer - Connecticut, 09789 - 1975 Active

## Professional Affiliations

American Geophysical Union, Member
The Society of the Sigma Xi, Member

## Publications

Liang, G.H.C.. "New Technologies in Sulfur Removal in the Refining Process in a Refinery." National Conference for Environmental Managers of Petrochemical Plants, May 1995

Liang, G.H.C., "Use of Groundwater Analytical/Numerical Models for Evaluating Pollution Control Measures at Hazardous Waste Disposal Facilities." New England/Republic of China Technical Exchange Symposium, May 1990.

Liang, G.H.C.. "Summary of Hydrographic and Hydrothermal Studies at Millstone Nuclear Power Station, 1969-1985." Millstone Ecological Advisory Committee Meeting, Waterford, Connecticut. 1986.

Liang, G.H.C.; Lee, V.M.; and Torbin, R.; "A Data Acquisition and Analysis Technique for a Sediment Transport Field Study Program." COASTAL ZONE 78, San Francisco, California, 1978.

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Liang, G.H.C., "Wind-generated Waves With and Without Pressure Gradients." University of Connecticut, Storrs, Connecticut, 1972.

Liang, G.H.C. and Lin, J.D., "Laboratory Win-waves Generated With and Without Pressure Gradients." American Geophysical Union Fall Annual Meeting, San Francisco, California, 1972.

Liang, G.H.C., "Numerical Calculation of the Source Term for a Vertical Line Source Under Linearized Free Surface." University of Connecticut, Storrs, Connecticut, 1967.

# EXHIBIT 2

## Resume of Donald W. Lewis

**DONALD WAYNE LEWIS**

**LEAD ENGINEER**
**MECHANICAL DIVISION**

## EDUCATION

Montana State University - Bachelor of Science, Civil Engineering - 1980
Daniel International Corp. - Course in ASME Section III - 1982
Daniel International Corp. - Course in Welding - 1983

## REGISTRATIONS

Professional Engineer - New York (1988)
Colorado (1997)

## EXPERIENCE SUMMARY

Mr. Lewis has 17 years of engineering experience in the power generation industry, and has participated in all phases of power plant engineering from design through construction, pre-operational testing to on-line modifications.

Mr. Lewis has experience on several nuclear facilities. Assignments include the design of spent nuclear fuel storage facilities, plant systems design modifications, and on-site engineering of mechanical systems installation. Spent fuel storage facility design involved preparation of the design of mechanical aspects and related licensing of the facilities, including an on-site assignment as project engineer for the client for construction of one of the facilities. Plant systems modification assignments involved resolving system design problems, preparing design changes and supporting analyses, revising drawings and preparing specifications. On-site engineering of mechanical systems installation involved resolving pipe and equipment installation conflicts, reviewing and revising design drawings, ensuring code compliance, procuring system components, and developing start-up procedures.

Mr. Lewis has experience on four coal-fired boiler plants. Assignments included the design of mechanical systems on a flue gas scrubber project, development of system descriptions and operating instructions; and the evaluation of a coal to natural gas conversion design. Work involved design of piping systems, component selection and sizing, preparing calculations and specifications, reviewing proposal submittals, initiating process flow and layout drawings; writing plant operation instructions; and preparing cost analyses.

Mr. Lewis is currently assigned to several projects: the Indian Pt 2 spent fuel conceptual design project where he is Project Engineer, the Maine Yankee Atomic Plant spent fuel storage project where he is Lead Mechanical Engineer, the Private Fuel Storage Project where he is Lead Mechanical Engineer, and the Northern States Power Prairie Island Generating Plant where he is Project Engineer, responsible for overseeing the High Energy Line Break Upgrade Project and spent fuel storage issues.

DETAILED EXPERIENCE RECORD
LEWIS, DONALD WAYNE

**STONE & WEBSTER ENGINEERING CORPORATION, DENVER, COLORADO**
(Apr 1988 - Present)
Appointments:
Lead Engineer, Mechanical Division - Jan 1998
Senior Mechanical Engineer, Mechanical Division - Nov 1990
Mechanical Engineer, Mechanical Division - Jan 1989

Indian Point 2 Nuclear Plant, Buchanan, NY – Consolidated Edison
(January 1999 - Present)
PROJECT ENGINEER

Maine Yankee Atomic Plant, Wiscasset, ME – Maine Yankee Power Company
(November 1998 - Present)
LEAD MECHANICAL ENGINEER

Yucca Mountain Project, Las Vegas, NV - U.S. Department of Energy
(June 1998 - August 1998)
SYSTEMS ENGINEER

Rocky Flats Environ. Tech. Site, Golden, CO - Rocky Flats Engineers & Contractors, L.L.C.
(May 1998 - Sept 1998)
RADIOLOGICAL CONSULTANT

Prairie Island Generating Plant, Red Wing, MN - Northern States Power Company
(Oct 1997 - Present)
PROJECT ENGINEER

National Wind Technology Center, Golden, CO - National Renewable Energy Laboratory
(Oct 1997 - Apr 1998)
SENIOR MECHANICAL ENGINEER

Rocky Flats Environmental Technology Site, Golden, CO - BNFL
(July 1997 - Oct1997)
SENIOR MECHANICAL ENGINEER

Private Fuel Storage Facility, Goshute Indian Res., UT - Private Fuel Storage
(Oct 1996 - Present)
LEAD MECHANICAL ENGINEER

Goodhue County ISFSI, Frontenac, MN - Northern States Power Company
(Aug 1995 - Sept 1996)

PROJECT ENGINEER

<u>Navajo Generating Station, Page AZ - Salt River Project</u>
(Sept 1993 - Nov 1995)
SENIOR MECHANICAL ENGINEER

<u>Prairie Island Generating Plant, Red Wing, MN - Northern States Power Company</u>
(Jan 1992 - Aug 1993)
SENIOR MECHANICAL ENGINEER

<u>Neil Simpson Station, Gillette, WY - Black Hills Power Company</u>
(Sept 1991 - Dec 1991)
SENIOR MECHANICAL ENGINEER

<u>North Omaha Station, Omaha, NE - Omaha Public Power District</u>
(July 1991 - Aug 1991)
SENIOR MECHANICAL ENGINEER

<u>Fort Calhoun Power Station, Ft Calhoun, NE - Omaha Public Power District</u>
(Apr 1988 - June 1990) (Nov 1990 - Aug 1991)
SENIOR MECHANICAL ENGINEER

<u>Prairie Island Generating Plant-Unit 2, Red Wing, MN - Northern States Power Company</u>
(July 1990 - Oct 1990)
LEAD MECHANICAL ENGINEER

<u>EG&G Rocky Flats Inc., Golden, CO - U. S. Department of Energy</u>
(July 1990)
MECHANICAL ENGINEER

<u>U. S. Department of Energy, Hanford, WA</u>
(June 1990)
MECHANICAL ENGINEER

**<u>STONE & WEBSTER ENGINEERING CORP., CHERRY HILL, NEW JERSEY</u>**
(Sept 1983 - Mar 1988)
Appointments:
Engineer, Mechanical Division - Aug 1987
Construction Engineer - Oct 1985
Senior Field Engineer - Oct 1984
Field Engineer - Sept 1983

<u>Nine Mile Point Nuclear Station, Unit 2, Lycoming, NY - Niagara Mohawk Power Corporation</u>
(Sept 1983 - Mar 1988)
ENGINEER, Mechanical Division (Aug 1987 - Mar 1988)

ENGINEER, Construction Division (Sept 1983 - July 1987)

Oswego Steam Station Units 5 & 6, Oswego, NY - Niagara Mohawk Power Corporation
(Dec 1986)
CONSTRUCTION ENGINEER

**DANIEL INTERNATIONAL CORPORATION, GREENVILLE, SOUTH CAROLINA**
(June 1982 - Aug 1983)

Wolf Creek Nuclear Plant, New Strawn, KS - Kansas Gas & Electric
CONSTRUCTION ENGINEER II

**J.A. JONES CONSTRUCTION COMPANY, CHARLOTTE, NORTH CAROLINA**
(Oct 1981 - Apr 1982)

Washington Nuclear Plant No. 1, Handford, WA - Washington Public Power Supply System
FIELD ENGINEER

**WRIGHT SCHUCHART HARBOR-BOECON-GERI, RICHLAND, WASHINGTON**
(Mar 1981 - Oct 1981)

Washington Nuclear Plant No. 2, Handford, WA - Washington Public Power Supply System
ASSOCIATE STRUCTURAL ENGINEER

**MONTANA STATE HIGHWAY DEPARTMENT, HELENA, MONTANA**
(July 1979 - Sept 1979, July 1980 - Mar 1981)
CIVIL ENGINEER I (Traffic Division, Jan 1981 - Mar 1981)
ENGINEER AIDE (July 1979 - Sept 1979)

# EXHIBIT 3

## ER Figure 2.1-2

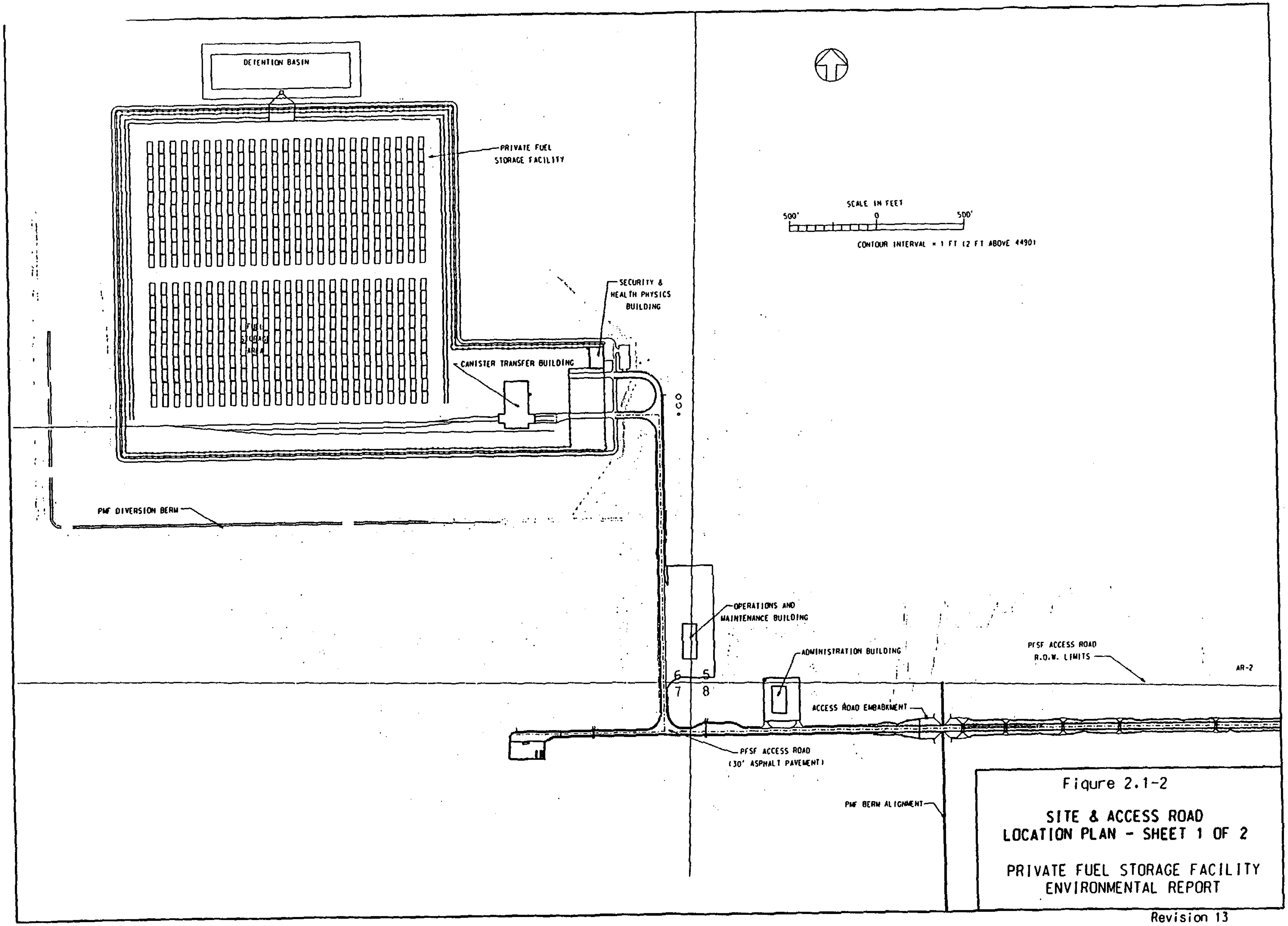


Figure 2.1-2

SITE & ACCESS ROAD LOCATION PLAN - SHEET 1 OF 2

PRIVATE FUEL STORAGE FACILITY ENVIRONMENTAL REPORT

Revision 13

# EXHIBIT 4

## ER Figure 2.5-2

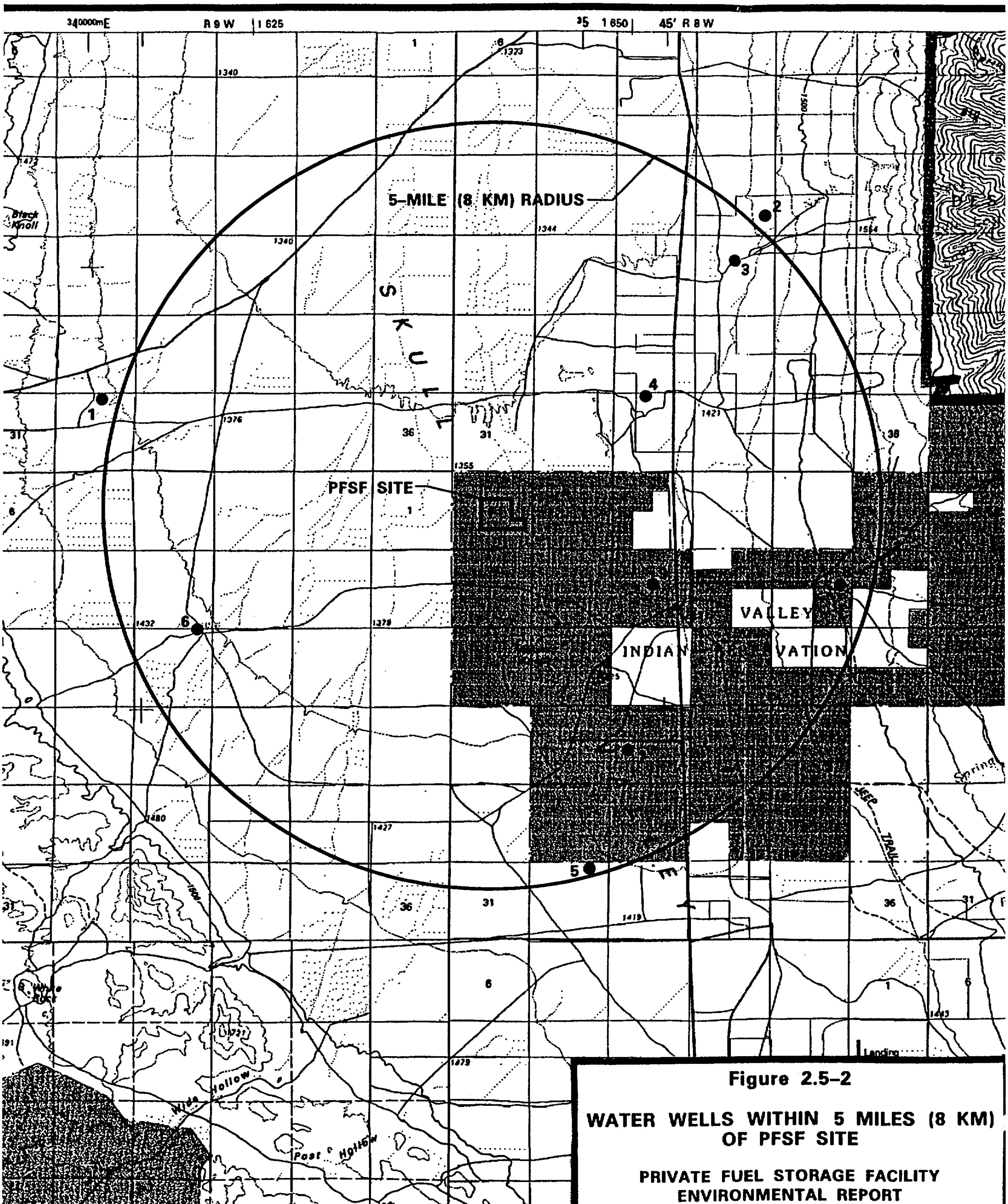


**Figure 2.5-2**

**WATER WELLS WITHIN 5 MILES (8 KM) OF PFSF SITE**

**PRIVATE FUEL STORAGE FACILITY ENVIRONMENTAL REPORT**

# CONDENSED TRANSCRIPT

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

| | |
|---|---|
| In the Matter of | ) Docket No. 72-22 |
| | ) ASLPB No. 97-732-02-ISFSI |
| PRIVATE FUEL STORAGE L.L.C. | ) |
| | ) DEPOSITION OF: |
| | ) |
| (Private Fuel Storage Facility) | ) **DON A. OSTLER** |
| | ) |
| | ) **(Utah Contention O)** |

**Thursday, April 19, 2001 - 9:08 a.m.**

Location: Parsons, Behle & Latimer

201 S. Main, #1800

Salt Lake City, Utah

Reporter: Vicky McDaniel

Notary Public in and for the State of Utah

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
Before the Atomic Safety and Licensing Board

In the Matter of ) Docket No. 72-22
) ASLPB No. 97-732-02-ISFSI
PRIVATE FUEL STORAGE )
L.L.C. ) DEPOSITION OF:
)
(Private Fuel Storage ) DON A. OSTLER
Facility) )
) (Utah Contention O)

Thursday, April 19, 2001 - 9:08 a.m.
Location: Parsons, Behle & Latimer
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Notary Public in and for the State of Utah



APPEARANCES

For the Intervenor: KURT E. SEEL, ESQ.
ASSISTANT ATTORNEY GENERAL
Office of the Attorney General
160 East 300 South, 5th Floor
Salt Lake City, UT 84114-0873

For the Applicant: ERNEST L. BLAKE, ESQ.
PAUL A. GAUKLER, ESQ.
SHAW PITTMAN
2300 N Street, NW
Washington, D.C. 20037-1128
(202) 663-8304

For the NRC: ROBERT M. WEISMAN, ESQ.
U.S. NUCLEAR REGULATORY COMMISSION
Washington, D.C. 20555

Also Present: Wayne Lewis

INDEX



EXHIBITS





PROCEEDINGS
DON A. OSTLER,
having first been duly sworn to tell the truth,
was examined and testified as follows:
EXAMINATION
BY MR. BLAKE:
Q. Mr. Ostler, my name is Ernie Blake and I represent PFS in this proceeding before the Nuclear Regulatory Commission. You've been offered today as a witness on Contention O, and I'll be asking you some questions. If you don't understand them -- you've been through this routine before, so you understand that if there's anything that's confusing to you or that you don't understand, simply ask.
A. Okay.
Q. And ask me to try to clarify it. If I can, I will. And if you don't understand and we can't get an answer, that's fine, too.
A. Agreed.
Q. Please state your name.
A. Don A. Ostler.
Q. And your current position and employer?
A. My position is the director of the Utah Division of Water Quality, employed by the State of Utah Department of Environmental Quality.



Q. Are you familiar generally with the PFS project?
A. Yes.
Q. You understand where it's located?
A. Yes.
Q. Can you just describe for us on this Exhibit 1 from Utah Contention O what your understanding is of its location?
A. Well, the location was -- this is a little bit more general map than I've seen before, but it's south of Rowley Junction, which I do not see located on here. It's east of Salt Lake City -- excuse me, west of Salt Lake City, south of the Great Salt Lake south arm, some miles west of Rowley Junction. I guess I don't see the level of detail on here to be sure from looking at this specific map. The location is identified in all of your other documents.
Q. Have you visited the site?
A. I have not visited the site.
Q. Do you know where it is with regard to Dugway or Dugway Proving Grounds?
A. With regards to Dugway, my understanding is that it is north of Dugway.
Q. And the Proving Grounds? North?
A. And the Proving Grounds, it would be north

Q. -- the responses? And what did you say to him?
A. Thank you.
Q. Short conversation?
A. I asked him to do an assignment, he did it, and we reported that in our response to PFS. So there's not much else to say about it.
Q. Whatever he reported to you was done in written form, and that's what you've provided to us?
A. Yes.
Q. So you didn't have any conversations with him?
A. Conversations to make sure that it was done thoroughly, conversations to give him instructions on what to do. All of those are reflected in the product. But that's the nature of our discussions.
Q. What did you do to prepare for today's depositions?
A. I've skimmed through the file again, because most of this has been a long time since I've personally looked at it. And I've got a lot of other things to do and I couldn't spend all my time on this one. But I did want to be somewhat prepared, so I tried to skim through a very large file.
Q. How large a file are you talking about?



A. About --
Q. You're indicating six inches?
A. -- three or four inches.
Q. Okay. And you did that here just in the last day or so?
A. Yes.
Q. And how long had it been prior to that since you'd had any involvement with PFS?
A. We can go back and look in the records, but it would have been essentially since the last written document that the state submitted with my declaration attached to it. I don't know the date of that, but it's been many months.
Q. To the best of your knowledge, the documents that you just reviewed in preparation for today have all been provided to PFS in the course of discovery?
A. Yes.
Q. If it turns out that there's something different, would you talk to counsel about that being provided?
A. Yes, definitely.
Q. Okay. You're aware that you've been named as an expert who may testify in the hearing on at least this Contention O in this proceeding?
A. Yes.



Q. Have you looked at Contention O recently --
A. Yes.
Q. -- in the course of these last day or so?
A. Yes.
Q. I'm going to show you, and kind of look over your shoulder, if I can. This is the form of the contention as it now exists. It's been the subject of several iterations as the lawyers bickered about what was in and what was out.
I'm showing you a copy of a contention which was an exhibit to the judge's in this case Memorandum and Order LBP 9939 in September of '99. And I believe this to be the current version of the contention. What I want to do is go through and identify, if I can with you, which of these areas you believe you've been provided information on or you're expected to testify on.
A. Okay.
Q. The opening paragraph is simply an introduction, really, to the five elements of the contention. And it in an introductory way says the state believes that we've failed to adequately take into account from a construction, operation, or decommissioning standpoint a number of potential problems.



The first one is contaminant pathways from our sewer wastewater system and routine facility operations and construction activities. Is that something that I need to explore with you? Is that something you might testify on?
A. Yes.
Q. The second one is contaminant pathways from our retention pond in that we don't discuss the potential for overflow. Is that one for you?
A. I did not do the review on the flood calculations or specific sizing of the pond. However, I did do the review on the potential relative to releases and if there were an overflow, since it's not designed to contain all storm water flows, as to the potential questions associated with that. So my involvement would be limited to those areas.
Q. So your involvement on that one would be what happens if it does overflow, but you're not prepared to discuss whether or not it might or it might not; that was somebody else's work. Is that fair?
A. I did not do a calculation on the sizing of the pond. Someone else did.
Q. Okay. The next portion of the retention pond aspect is the information concerning characteristics or environmental impacts associated with

A. This is a document prepared early in the process. If I'm to go through and compare that to any differences later, I would take more time than I've got here today. The comments in general that I see here are what I remember to be accurate.
Q. Which of the areas are you concerned about that you'd need to have additional time to review?
A. Well, you just asked a very specific question about something that is two years old with regards to additional work that's been going on for two years, and if I am to be 100 percent correct on that, I'd almost have to go back and make a double check and make sure. I don't -- nothing jumps out at me as specifically being a particular problem. If there were, I would say so.
Q. So when you described kind of the process or your involvement in the process, would that have been true as well of the contention, that is, that you or someone in your department would generate a more general subject or topical paper like the one that we just looked at, and then you'd provide it to counsel and then they would develop and put it in the right format using the input that you provided? Is that fair? So you wouldn't be called upon to generate the exact language that you saw in the contention, you'd be providing the



substantive input for it? If that's not a correct characterization, then tell me what it is.
A. I think that's basically correct.
Q. Okay. And you recall your involvement was in fact to this Contention O?
A. Yes.
Q. And was that the way it was done, that is, this isn't your particular language but you provided input like that two-page document to assist the lawyers?
A. Yes. I think that it's fair to say that the language would be a composite of work that I've done and work that others did. And of course you can see the responses from the state includes work from multiple individuals that had to be melded into those responses that are sent to you by the attorney general's office.
Q. You're talking about discovery responses now, the response to interrogatories?
A. Yeah.
MR. BLAKE: Let me have marked as our next exhibit, which I think would be 16, a copy of your resume.
(Exhibit O-16 marked.)
I've had marked as Contention O Exhibit 16 a document which includes -- maybe includes too many pages. Should be just a two-page document. At least



the stapled copy I have includes John Mann's resume as well, which may be of considerably less interest to you.
MR. SEEL: Is Mr. Mann's resume going to be part of this exhibit?
MR. BLAKE: No, it does not need to be part of this exhibit.
MR. SEEL: Why don't we take Mr. Mann's resume off.
MR. BLAKE: Yeah, take it off your copies and we'll let the court reporter -- Exhibit 16 should be just a two-page document which is Don A. Ostler, P.E.
Q. (BY MR. BLAKE) Do you recognize this document?
A. Yes.
Q. And is it an accurate, current rendition of your qualifications?
A. It was current at the time that it was submitted. It's been a while since it was submitted.
Q. Do you want to take a look at it quickly and see if there's anything you need to add to it?
A. The only thing that really would change is the times. When I state years and so forth, there's been more of them.
Q. It's true for all of us.
A. Unfortunately. That's the only thing I can



think of.
Q. But otherwise, there's nothing significant?
A. That's correct.
Q. How would you describe your current responsibilities?
A. Current responsibilities as director of the Division of Water Quality include administration of the state laws and rules pertaining to all aspects of surface water quality and groundwater quality. It includes being the signature authority for issuance of permits. It includes sections that focus on specialty areas and specialists, focus on specialty areas. And ultimately where there is controversy, I would be called upon to make final judgments, set direction, monitor progress, be responsible for the operations of the entire division.
Q. How many individuals in the division, about?
A. Right now, about 63.
Q. What did you testify on before Congress in '88 through '91, topic?
A. I testified on several things, but one in particular included the proposals for a mine waste regulatory program. Currently mining waste, which is high volume, low hazard waste, has an exemption under the federal RCRA laws and appeared to be unmanaged at

education. Do you have any specific training or education with regard to the radiologics in groundwater as you referred to?
A. The radiologics in groundwater are one of many pollutants that we regulate. And in regards to the training that I had relative to groundwater and establishment of standards, I have that training. Do not have training in radioactive emissions via air quality. But in terms of the evaluation of those contaminants in groundwater, that training is consistent with some of the other contaminants that my training would relate to.
Q. So you have training in a general matter in contaminants in groundwater, and you believe that's applicable to whether or not there are radiological contaminants or other types of contaminants?
A. There is application to radiologic contaminants.
Q. But you have no particular training in radioactivity or radioactive contaminants --
A. Correct.
Q. -- or in fact radiologic --
A. Correct.
Q. -- contaminants in groundwater?
A. Well, I don't -- you've gone just a little





bit too far in your last statement. But the standard training of people who deal with radioactive waste is different than mine. That includes lots of different health aspects in addition to its transport and movement in groundwater. My training overlaps into the transport and movement in groundwater portion relative to experience in the work that we have done and work in setting standards for radiologics in groundwater. So I think you have to limit it like that.
Q. When you talk about establishing standards for radiologics in groundwater, how does that come to be accomplished in your division? Do you do it yourself?
A. No. We have a section whose responsibility is to evaluate and work on those issues. We have a rule that governs the process for doing that. We look in Utah primarily to drinking water MCL's. Where they do not exist, we look for national health advisories. Where they do not exist, we look for other secondary work that has been done that may not yet have risen to the level of the standard.
So there's a process that pertains to all contaminants, many of which are not -- where there's no national standard.
Q. And you then, after people in your division comb through and determine what's out there in terms of





knowledge about this topic, then you wind up proving it? Is that your basic role?
A. That's correct.
Q. Do you consider yourself an expert in radiologics in groundwater? I ask you that before I go through a whole host of other questions to try to define that. But --
A. Well, I would consider myself to have expertise regarding groundwater pollution. To the extent that includes radiologics, there's a number of things that are transferrable and applicable with regards to that, some are not. Each contaminant is somewhat different. But there is a process that is similar in terms of evaluating those impacts.
Q. Let me ask you this. What level of radioactive contamination do you consider hazardous?
A. In what regard? To drink or for bodily exposure?
Q. All of the above.
A. Well, I'm not --
Q. Let's go with -- we'll go with limbs, then we'll go with body, then we'll go with flesh, then we'll go with water, and we'll go with absorption.
A. My expertise would be to direct you to our rule and our radiologic standards that we've





established. Those are the numbers. I don't pack them around. We have a long list, there's a lot of numbers, and it would be useless to remember the specific number on each one. If you want me to get the rule and refer that to you, that's what I would use. That would be a number that is based upon drinking water. Normally they're based upon a certain level of exposure over time and with safety factors, which is the standard process for developing rules.
That is the extent of my involvement relative to radiation and radioactive materials, would be in that area.
Q. What would be the units that you would use to describe these limits?
A. And again, I don't work with radiation on a daily basis. Can easily get those units. They're not coming to mind immediately as what our standard units are. We have a number of different units in our standards.
Q. Do you know what levels of radioactive contamination that the NRC considers to be of concern or dangerous?
A. Again, the question is so broad that it would be inappropriate for me to answer. Dangerous in groundwater for drinking?

Q. Do you have any feel for how the facility will be constructed or what kinds of materials will be used or what it will look like once it is constructed?
A. Yeah, I have some feel for that, yes.
Q. Can you give me that understanding?
A. Well, I'll give you a general paraphrasing just from memory, that the facility will occupy a goodly number of acres. I think it's near a hundred acres. That it will include several buildings, including administration, operations and maintenance, laboratory types of buildings. There is canister transportation issues and receiving and unloading and testing areas. There is canister storage areas on slabs scattered throughout the area. And with basically a septic system serving the buildings, there's a wastewater drainage system with basically a gravel cover over natural materials around the pads, and a storm water retention pond constructed with native materials.
That will be a general description.
Q. And do you understand what the day-by-day operations will be that will be performed there?
A. I'm sure I don't know the day-to-day activities. I have some understanding of the information described in the reports from my memory.
Q. And can you give me that, please?





A. Well, that -- you know, when you say day by day, I've somewhat given you that to some extent. There is the periodic receipt of these materials, transportation and potential transport to different modes of transportation. There is the receiving process of identifying whether there is any contamination on the containers that they receive. There is a process of testing liquids that may accumulate from the buildings to decide if there is contamination. There is supposed to be a process for getting rid of contaminated materials, whether they be solid or liquid. There is a process, I presume, for getting rid of materials that are defined by PFS as noncontaminated. There is a laboratory procedure process where materials may be tested, both solid and liquid materials. There is periodic testing of radiation emissions proposed at the boundaries. There have been periodic testing of accumulated storm water for contaminants proposed as activities.
Does that help?
Q. Sure. I appreciate it. All I really want is your input. I, like you, have been involved in this off and on for a long period of time, so I have my own knowledge; but my knowledge is worthless, doesn't count in this process. Yours does.





Do you know what processes involving any chemicals or solvents will be conducted at the site?
A. Well, I know that PFS has told us that there will be solvents and other chemicals stored and used at the site.
Q. Do you know at all anything further than that, how they will be used, or do you have a view on that?
A. Well, some of them are cleaning materials, some of them relate to maintenance activities, my understanding. Some of them are fuels. I guess you're talking about during the operation of the site.
Q. Yes, or construction as well, because that's of concern for the state in this contention.
A. Construction is a little different. You have more equipment along with the associated fuels and lubricants, maintenance activities that go along with that kind of equipment. You have temporary waste disposal along with any chemicals associated with that. You have concrete and asphalt production facilities and the associated chemicals and constituents that would accompany that process.
That's pretty much it.
Q. Do you know what the process is for the handling of any radioactive material at the site?





A. Well, I have a general understanding of what's been described in the reports that have been submitted by PFS.
Q. Okay.
A. And my understanding is that the material will arrive in canisters that are supposed to have been tested and decontaminated if necessary. They're tested for contamination. That when it arrives at the facility there will be additional tests made to detect any contamination on the surfaces. There's a process for cleaning up contamination that might be discovered on the surfaces. There's a process for unloading and draining of potential accumulated snow and rainwater that may come off the transportation vehicles and testing the accumulation of any of those fluids for contaminants. There's a process, if they are contaminated, for disposing of them as essentially hazardous materials.
There is a process for decommissioning the site and disposing of contaminated materials that have been identified in the event that contamination has occurred during operation.
I don't know the specific mechanics of moving the cask materials around. I don't know how -- whether that was all described in detail.

Q. Okay.
A. But if you want to characterize an isolated point, then this may or may not hold true on an isolated point.
Q. I'm going to show you a copy of Exhibit 12 on the same contention that's been previously -- this is the NRC's description of groundwater hydrology and quality, and it's out of their Draft Environmental Impact Statement. If you'd take a look at Section 3.2.2.
A. (Witness reviews document.) Okay.
Q. I have the same question about this NRC description as I did about the applicant's description.
A. I'm less certain on this one, but I think I probably have seen and read that one, too. There are a lot of documents submitted by a lot of people, but appears familiar to me.
Q. And with respect to whether or not you think there are inadequacies in it or there's general agreement or specific problems?
A. I'm not specifically aware of inadequacies with regards to the general statements that are attempting to be made there. It's a characterization of the existing aquifer and conditions.
Q. Let me shift to surface water. I'm going to





ask that this one-page documenting identified and marked as -- that would be No. 18.
(Exhibit O-18 marked.)
This, as the one-page document indicates, is a fancy Mapquest document that is a map of the general area of interest here. You see Skull Valley Road which goes down close to where the site would be located. The odd-shaped colored portion in the lower left quadrant of this map is in fact the Indian reservation. And in that Indian reservation is of course where the PFS facility is expected to be sited.
Can you indicate on the map, the copy that you have, where you believe there are surface waters?
A. No. That map has not got -- does not have sufficient detail. We have attempted to provide that list to you. I have to stand on the list that we've provided. It's a question that's been asked before, and we've provided a specific listing.
Q. Are you able to indicate the areas on the map where these specific surface waters currently exist?
A. I think this map isn't in enough detail to indicate anything of that nature.
Q. Can you tell me whether or not there are any that would appear on this map at all, in the area covered by this map?





A. I don't think there's sufficient information on the map to do that. We have provided maps to you that show the specific site and radii from the site as to the potential water sources that were identified based upon our work. I don't intend to duplicate that here from memory and with a map that is this general.
Q. Is it your view that PFS has failed to identify any surface waters, intermittent streams or springs of any kind in the materials that it has provided?
A. I think that -- I guess I would have to answer that from the standpoint of who's provided what. I think in the process of the questions that have been asked, primarily of the state, the potential surface waters have been identified. I don't know that PFS has identified them, but I think the state has identified all of the potential surface waters in our formal submissions to you. Those are specific questions that have been asked and responded to in writing.
Q. And are you the state's witness on this topic, as far as you know?
A. I guess that's a question for the attorneys. I don't know. They'll have to answer that question.
Q. And are you able --
A. I indicated that I have had staff do





research on potential surface water sources in the area. The information which we provided to you was done through a staff research project. And I've supervised the development of that, received it and submitted it to PFS. That's what I would stand by.
Q. And are you today able to identify by name or general location any of those surface waters?
A. I'll be happy to get the specific names and specific locations that we've provided to you in writing of those surface waters.
Q. But you're not able to right now?
A. No.
MR. BLAKE: Why don't we break.
(Recess from 10:24 to 10:38 a.m.)
Q. (BY MR. BLAKE) Back on the record. Maybe during the next break, rather than taking the time now, you can take a look in the same exhibit that I previously provided you from the environmental report, Exhibit 10, which had a description of groundwater. The initial part of that chapter describes surface water with PFS's description, and I don't think we have any differences on what we've described in there. If you would look at that during the next break, not take the time now.
A. Okay.

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transportation vehicles. They are such that they would have to be tested according to procedures prescribed by PFS to determine if they're contaminated or a hazardous nature. If they are contaminated, they would be disposed of, my recollection is by solidifying the material, disposing of it as a hazardous material. Therefore, the potential exists for the lack of detection because of an error or because of an omission. The opportunity is there for someone to not do it right.

Those liquids that are supposedly uncontaminated are disposed of somewhere. I don't know where. From the documents that were submitted, it was not described. If a determination of no contamination, it's very possible they may go into the drain field, or I don't know where they're going to go. Are they going to be dumped on the land? That's another potential concern. And if there was a wrong judgment made that it was clean and it's not clean, then associated contaminants associated with that would go into the groundwater.

That's kind of a summary of the drain field pathway. There are other pathways that I'm aware of that cause me concern relative to the potential for something not going as planned and therefore causing a contamination. This pathway that I just mentioned is a

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pathway that is not monitored. There's no monitoring on the sewer pipes that go through the drain field. There's no groundwater monitoring that has been proposed that would be a performance measurement that everything is working according to plan. So PFS likely would not know that there were problems. And when you don't know that there are problems, they usually have to get large before you discover them accidentally.

The storage pad area is another area of concern. Again, the nature of the material that is being stored is a material that is of high concern, such high concern that you're doing all of these tests, you have these procedures, you have these canisters that you store them in, and yet they're basically out exposed to all of the elements.

The pads that they sit on will run off of precipitation and snow melt to the areas between the pads which are not lined and which will have some degree of permeability, will allow infiltration of water running off from the casks and off from the pads and off from the areas that are used for transportation and vehicles that can go into the ground at that point.

The concern is that there are detailed procedures, at least two specific procedures requiring the measurement of contamination potentially on the

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exterior of the cask, even if the casks are as tight as you say they're supposed to be, to detect potential contamination that can come off. And if somewhere along the line that's not done right, then I assume that that's a pathway of those same materials to be able to get into the ground and ultimately into the groundwater, as well as any other materials spilled in an industrial application, which could include motor fuels, oils, antifreeze, that types of materials.

I use the word "spilled" in a very general way. It's very common to see folks who utilize these types of vehicles intentionally get rid of those types of fluids rather than disposing of them properly. It's not unusual to see antifreeze drained on the ground. It's not unusual to see oil drained on the ground, especially with large equipment. And in spite of company procedures or state rules, we find that happening with contamination in similar situations.

Again, there is no liner provided, so that those kinds of events, whatever potential they may occur, so that they would be prevented from going into the ground, there is no monitoring of the groundwater at the storage site that would detect that the performance of the facility is not according to plan relative to the groundwater.

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This is a contradiction to me in that the company proposes to monitor your perimeter boundary radiation, but you do not monitor for radioactive materials or other contaminants in the groundwater at the periphery of the property. Seems like a good performance measurement.

The other area of concern is the storm water retention pond. It receives drainage from the pad storage area and perhaps other parts of the facility that we've talked about in the buildings. Again, this is a facility that will receive rainwater, it's a facility that will build up some degree of head. The intention is for that water to infiltrate into the ground and evaporate. Presence of building up a head increases the amount of water that goes into the ground, increases the transmission of water into the ground. The potential exists, in my opinion, for that to enter groundwater over long term.

The drainage for the storm water pond includes all of the areas and all of the contaminants that I've mentioned. If you have a plug in your septic system and it surfaces and runs out over the ground, I presume the drainage for the site, it would route the storm water there. Any of the chemicals that I mentioned have a potential of showing up there.

Q. That is, it wouldn't escape at all, it already would have been there on the external surface when it arrived?
A. I don't know that your report really talked a lot about how it got there, but that that was an occurrence that has to be monitored and decontamination has to occur.
Q. Uh-huh. Do you know what is proposed to be done in terms of monitoring at external surfaces?
A. I think there is a general, very brief statement in the reports you've provided that describe that process.
Q. And did you understand this to occur out on the pads after the casks have been placed there for storage, or at the time that the casks and canisters inside initially arrive at the facility?
A. My understanding would be that's done at arrival.
Q. And do you understand how -- what steps are taken before the casks and canisters are ever shipped to the facility to avoid that prospect?
A. My understanding is that you say in your report it's supposed to be checked before it's shipped. My concern is that that may not be done over the life of the facility and that those procedures may not be



followed in every case or someone may make a mistake. The nature of the material is of greater concern than many other contaminants.
Q. And when this cask or canister arrives which, because somebody hasn't done their job, is contaminated, you then understand that at the PFS facility it will be checked again?
A. I understand that's the proposed procedure.
Q. And is your problem that that might not be done or it might not be done appropriately?
A. That's one of the concerns, yes.
Q. And if it's not done or not done appropriately, it's your understanding that that pollutant could then run where, or how would it get out?
A. If it's not detected and not decontaminated, then I assume the casks will be placed on the storage pad, exposed to the elements, and would be carried off by water.
Q. Do you understand that the cask that arrived at the facility in which the canister was contained is not the same cask that is used for storage on the pads?
A. No.
Q. Would that alleviate your concerns at all if I were to represent to you that's the case?
A. I don't know. I don't know -- I don't think



we have detailed handling procedures that have been described to us about the minute that cask comes in the door. There are a lot of questions and a lot of issues relative with temporary storage and how it's processed, the processing, details of handling of any decontamination. None of those are real fully described, in my opinion, and all of them have the potential of being done wrong or not done. So I don't know that would alleviate my concern entirely.
Q. If these materials were to be washed off or somehow run onto the floor in the facility after a cask arrived, is it your understanding that they would go into the sewer system, or not?
A. No. It's my understanding they go into a sump. It again requires someone to go through a procedure and make a right call that it's okay or not okay. And if it's not okay, my understanding is there's a procedure for disposal that again would have to be carried out and followed properly without mistakes; and if it is okay, then it has not been defined, in my mind, where that material goes. Hasn't been stated that it won't go in the drain field, in my opinion, but I don't know where it's going.
Q. If it's okay, is it of particular concern to you what happens to it?



A. Even the procedures for deciding if it's okay haven't been described.
Q. So is the potential problem for what you're describing would require at the point where this cask and internal canister were shipped, a goof or an oversight or some error there and then an error upon the arrival of the canister and cask in terms of people not monitoring, or if they're monitoring, not paying attention, and then an error in assuming that they don't find it and just the discharge of the materials, or if they do find it, then just ignoring that and discharging them anyway?
MR. SEEL: I object on the -- that was like numerous different questions. Could you break that out into a less complex question?
Q. (BY MR. BLAKE) I can if it requires breaking down, but I think that was what you described.
A. I lost the tail end of yours as well. I started thinking about the answer and you weren't through with your question, so please give it again.
Q. Okay. In order to have a potential source of contamination from a contaminated cask that arrives at the facility, is it true in your mind that that would require a goof or some inadequate procedure occurring at the time the cask leaves whatever site it is coming

Q. Are there any kinds of additional physical barriers that you would propose here, assume that they are going to be brought here?
A. Well, I have indicated that it was an inadequacy, in my opinion, that the site is not specifically lined with engineered materials that you install yourself so that you have complete knowledge of the homogeneous nature of those materials that would tend to prevent migration of materials into the ground or groundwater, and that the performance of the site be monitored from a groundwater standpoint, which is the ultimate test as to how everything is working.
Q. And do other facilities that you're aware of in the state of Utah all have liners around all of their facilities?
A. That's broad: other facilities. I mean, dentists have radioactive materials and they don't have liners, for example. But the normal industrial operations and commercial waste disposal operations, there is a significant attempt to install engineered systems to prevent leakage of contaminants throughout their operation. And normally there would be a means of monitoring the groundwater to determine that there is in fact functioning properly performance monitoring.
Q. You referred to engineered systems or





engineered materials. What do you mean by those?
A. I mean that that would be a material placed specifically for the prevention or elimination of infiltration of water and contaminants.
Q. What's an example?
A. A liner.
Q. A liner, which would be some plastic material?
A. It could be a number of different things.
Q. Would plastic be adequate?
A. If it was the right kind of plastic, perhaps, and in the right configurations, the right construction.
Q. What's another example of a liner material?
A. Well, when you say plastic, that covers a lot of area. So I think the right kind of material, whether it be synthetic flexible membrane liners in combination with the appropriately tested and installed natural materials has been common types of liners. Like clay, for example, is what I'm saying. I'm not trying to be evasive.
Q. You've referred to other kinds of potential contaminants as well: fuels, any diesel fuel or gasoline that was going to be intended to be stored on site, other chemicals that were used to maintain equipment,





such as solvents and cleaners, other things an employee might carry on the site himself for his own use, domestic wastewater, laundry, labs, etc. Are these the kinds of potential pollutants which exist in any industrial site?
A. They would be common in a lot of industrial sites, yes.
Q. And in those sites have you required liners and the kinds of things you're talking about here?
A. Depends on the nature of the site. And simply to say that a facility that uses petroleum products and solvents in its operation wouldn't necessarily mean there was a requirement for a liner. It depends to some degree on the magnitude of the operation and the overall nature of the operation. Every mechanic's garage doesn't have a liner. They do have requirements for containment.
But if you get into industrial waste disposal operations, yes, liners, detection systems, groundwater monitoring wells would be normal.
Q. Do you understand whether or not we'll be doing any maintenance of any vehicles or anything of that sort at the PFS facility?
A. It isn't totally clear to me. I know you have a maintenance and operations building, and I don't





know the nature of the activities that will be in that building. That word is used in your documents.
Q. If it was not intended to do maintenance on vehicles at that facility, would that make a difference to you?
A. Well, I'd have to ask, again, what is the purpose of the building and materials that we're talking about. It could, relative to that one aspect.
Q. The third area you talked about was the potential for groundwater pollution from the retention pond. Is this a problem in all the kinds of pollutants that you talked about, potentially?
A. Again, the descriptions of the operation are not specific enough for me to be able to make all of those determinations. But if the grading plan allows drainage from the entire operation to flow to that retention pond, then theoretically anything that is on site could get there.
Q. In facilities where the need for chemicals or cleaners or solvents is solely to maintain a standard of cleanliness and upkeep for the facility, do you require liners around the facility or concrete pads associated with the facility, and do you require monitoring of groundwater around that facility?
A. I think I answered that before relative to

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A. That's one way.
Q. Why don't you stop there just for a second. And that would occur, in your view, if there were a flood which exceeded the 100-year flood?
A. Well, it's my understanding the design of the storm water pond is based upon 100-year flooding.
Q. And if it were even greater than that, do you have some particular flood that you believe is likely to occur and we should be designing for?
A. We have not made a specific suggestion as to that flood. I think there's been a review of your flood routing system where that's been discussed at length, and I'm not the expert person to address that. But I think it's been covered by others.
Q. What particular surface waters would you be concerned about having contaminated by that process?
A. Well, I think we have provided you a written response to the surface waters in that area. It would be limited to those I think that we've identified. Some may be associated with the transportation route, others are associated with just the location with respect to the site. But I'd have to refer to those written submissions on that specific question.
Q. You're not able today to identify --
A. No.

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Q. -- either by name or location?
A. No. But I think we did provide by name and by location the surface waters that exist.
Q. What standard does the state require for retention ponds constructed by other kinds of facilities from the state? Something greater than the 100-year flood?
A. It varies depending upon the nature of the facility, nature of the pond. If you're talking about runoff from a barnyard, you're going to be looking at a 25-year storm. If you're talking about other facilities where you may consider there is higher risk for some way, you may look at a much higher storm event. In some areas facilities have been designed for storms in the nature of a hundred years.
I guess the point is that -- I've seen years when a 100-year storm has occurred two times in five years. And that can happen very easily. So it's not an occurrence that we think won't ever happen. It's not an occurrence that we think is necessarily real unlikely to happen. And that merely is a possible way to convey pollutants that might be in the storm water out of your facility and downgrading it to any surface waters via surface water flow.
And that's really the extent of my

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statement.
Q. Are there other facilities in the state that have been required to design retention ponds for greater than the 100-year flood?
A. Other facilities, there may be some that are designed for the probable maximum flood.
Q. You're just not sure?
A. I think I would have to go back and check. But certainly they would be limited, but I wouldn't exclude the possibility that we have some that are in a location where that's been the design.
For facilities that just can't be allowed to discharge, great precautions are taken. It's not okay to have a discharge from a contaminated impoundment that could happen at that frequency in certain locations.
So I think there have been instances where there has been designs for the probable maximum flood.
Q. And by --
A. It may not be common.
Q. And by your qualification of these facilities where there simply cannot be discharges, you would include our facility in that?
A. Well, my concern with this facility is, it is a much higher nature of concern relative to the nature of materials stored. And the permanent storage

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sites, they seem to be looking at sites that don't have to deal with that. They're not looking at, well, once in a hundred years we're going to have our water run away. So it's in that context that I look at it and think about it.
Q. And by nature of the materials stored, you're talking about the radioactive materials?
A. Yes.
Q. And in fact that's what causes your concern about these other potential contaminants as well, chemicals, the solvents, whatever, because we're dealing with radioactive?
A. Again, we haven't been provided the quantity of the other chemicals. It's certainly one of the factors that causes our concern. But absent the quality of the other chemicals, I can't tell you whether we would have concern absent the radiologic part.
Q. Is there anything that you have read or are aware of which would lead you to believe we have any more solvents, chemicals, cleaning materials, etc., on site for that facility than would exist at any other industrial facility of its size?
A. I just don't know how to compare the first two. I have no idea of the -- there's not another benchmark for this one so that I can compare that to

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flow.
Q. Okay.
A. Knowing that the contaminants that we have talked about that are present on site could stay present in the groundwater for hundreds of years. Second would be a downgradient for all contaminants in the surface water and ultimate infiltration into the ground or continued carriage by surface water.
Those are the two normal pathways.
Q. The latter, surface water is the overflow, again, of the retention pond?
A. At least would include that, yes.
Q. I didn't hear any others before.
A. I just don't know the drainage plan specifically of your site as to whether there are any other areas that would not be contained by the storm water pond but it would be through runoff from the site. If the runoff all goes through the storm water pond and overflowed, that would be a mechanism for seepage.
Q. What are the kinds of facilities where the state requires the kinds of studies you're looking and would hope that we would perform here?
A. Facilities with the potential to contaminate groundwater, the potential to release pollutants that could go to the groundwater by nature of the placement.

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Q. And are there a number of those where you've required that kind of transport study?
A. Yes, there are. There are a number of types of facilities where that has been done to answer various questions.
Q. Here in the state?
A. Yes.
Q. Have you review viewed in any detail our sewer septic system?
A. I would like to. Haven't -- we've asked for the detailed plans and the design of the system, and to my knowledge, that's not been submitted. There's not any of that detail in the report.
Q. Based on any of the materials that we have provided or that you have available to you, are you aware of any inadequacies?
A. There is no design information that I recall in the report other than a general estimate of the total flow. There's just not anything there for us to review.
Q. What modeling codes, if any, would you suggest that we use if we were to do a transport study?
A. If you were to do that, I would want to consult with our modeling experts and make sure that we were using the best. There's a number of codes that are developed, and we have some that we like. I think we

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would want to discuss that as the modeling were done, so we picked one that was amenable to both of us and was likely to be best for the pollutants and the site conditions that we're dealing with.
Q. Are there any that you would name today that you think would do the trick?
A. Well, I don't see the value -- I mean, today I'd just be naming modeling codes. What I think you would like is which ones would you like -- which one would we like you to use.
Q. Right.
A. And that one I think requires more consideration than off the top of my head and consultation with some of our expert folks on modeling. I wouldn't want you to go off and do it based upon this. It's worth more than that.
Q. The questions that I might have about recharge, etc., those we agreed are probably in 4, and therefore not -- those are quantity more than quality?
A. Uh-huh.
Q. What about our understanding of other users of water in the valley and the surrounding area wells, etc.? That again, quantity more than quality? Or do you have input on that subject area? I talked with Mr. Mann about this yesterday, yesterday or the day

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before. They're running together for me. The day before, maybe.
A. If I'm understanding the question correctly, my understanding of whether users -- I assume that means which ones exist and where are they?
Q. Uh-huh.
A. I think that is appropriately the domain of the water quantity person. It's something that is of concern to us, though, with regards to risk considerations.
Q. The risk considerations being in the event we have --
A. Well, I guess there's two elements of risk that I would suggest. One is the location of users, the type of use that they're making, the connection of the aquifer to what's under the site. Those are existing. But then concerns go beyond that to potential uses which aren't so much tied to those sites, they're tied to what might happen in the next hundred years and who might want to make use of the water. And I think if we factor in both of those.
Q. Let's explore, then, both of those. First with respect to existing. Which existing uses are of concern to you?
A. All of them.

above ground or under ground. And I'm not the person that implements underground storage tank programs, so I don't have the recall as to the sizes. There are -- I know there are plenty of exceptions to the underground storage tank rule, and that rule does not apply to above ground tanks, which I understand maybe all these are. I don't know. But the discussion is that a lot of these tanks are doubled lined. Oftentimes storage tanks provide sufficient retention to contain the volume of the tank should it rupture. Those are the kind of things I was alluding to.

Q. For an above ground tank, is there some kind of minimum volume before a liner would be required?

A. I suspect there is, yeah.

Q. Do you know what that is?

A. No, I don't.

MR. WEISMAN: Okay. That's really -- that's all I have.

MR. SEEL: One follow-up question.

EXAMINATION

BY MR. SEEL:

Q. Why does the state have an underground storage tank program? You mentioned a program of some type. Do you know why they have that program?

A. Well, it's a national program. It is based





around correcting problems with underground storage tanks of fuel that have been leaking, and it is a program to remedy a problem that has developed due to improper storage. And Utah is delegated to administer that program as a state.

MR. SEEL: No further questions.

(Deposition was concluded at 12:07 p.m.)

* * *





C E R T I F I C A T E

State of Utah )
ss.
County of Utah )

I, Vicky McDaniel, a Registered Merit Reporter and Notary Public in and for the State of Utah, do hereby certify:

That the deposition of DON A. OSTLER, the witness in the foregoing deposition named, was taken on April 19, 2001, and that said witness was by me, before examination, duly sworn to testify the truth, the whole truth, and nothing but the truth in said cause;

That the testimony of said witness was reported by me in stenotype and thereafter transcribed into typewriting and that a full, true, and correct transcription of said testimony so taken and transcribed is set forth in the preceding pages.

I further certify that I am not of kin or otherwise associated with any of the parties of said cause of action and that I am not interested in the event thereof.

WITNESS MY HAND and OFFICIAL SEAL at Saratoga Springs, Utah, this 23rd day of April, 2001.

Vicky McDaniel, RMR
Utah License No. 87-108580





Case: In the Matter of Private Fuel Storage
Case No.: ASLPB No. 97-732-02-ISFSI
Reporter: Vicky McDaniel
Date taken: April 19,2001

WITNESS CERTIFICATE

I, DON A. OSTLER, HEREBY DECLARE:

That I am the witness referred to in the foregoing testimony; that I have read the transcript and know the contents thereof; that with these corrections I have noted, this transcript truly and accurately reflects my testimony.

PAGE-LINE CHANGE/CORRECTION REASON

____ No corrections were made.

DON A. OSTLER

SUBSCRIBED and SWORN to at , , this day of , 2001.

Notary Public

# CONDENSED TRANSCRIPT

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

| | |
|---|---|
| In the Matter of | ) Docket No. 72-22<br>) ASLPB No. 97-732-02-ISFSI |
| PRIVATE FUEL STORAGE L.L.C. | ) DEPOSITION OF: |
| (Private Fuel Storage Facility) | ) **JOHN RICHARD MANN** |
| | ) **(Utah Contention O)** |

**Tuesday, April 17, 2001 - 1:25 p.m.**

Location: Heber Wells Building

160 East 300 South

Salt Lake City, Utah

Reporter: Vicky McDaniel

Notary Public in and for the State of Utah

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
Before the Atomic Safety and Licensing Board

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) ASLPB No. 97-732-02-ISFSI
PRIVATE FUEL STORAGE )
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)
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Also Present: George H. C. Liang

I N D E X



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E X H I B I T S



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P R O C E E D I N G S

JOHN RICHARD MANN,
having first been duly sworn to tell the truth,
was examined and testified as follows:

EXAMINATION

BY MR. BLAKE:

Q. My name is Ernie Blake and I represent PFS, and you've been sworn as a witness here. Have you been deposed before?

A. I have.

Q. And also appeared as a witness in other proceedings?

A. Once, yes.

Q. Could I have your name?

A. It's John -- do you want my full name?

Q. Whatever you're comfortable with.

A. John Richard Mann, M-a-n-n.

Q. And you understand that if it's not clear to you, anything I'm asking, that you have an opportunity to say, I don't understand, can you restate that, or try again?

A. Sure.

Q. Do you know the gentleman who has previously addressed this proceeding, Mr. Olds? Do you know Jerry Olds?

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confirm. David Cole?
A. No, I haven't spoken with Dave.
Q. The governor?
A. No, I haven't.
Q. Any legislators?
A. No, I have not.
Q. Mr. Ostler?
A. No.
Q. Mr. Gabert? It's G-a-b-e-r-t. And I pronounced it "Ga-BARE," but maybe it's "GA-bert" or something. How do you pronounce it? Do you know?
A. I don't know. You did a good job there. I trust you.
MR. SEEL: Gabert.
A. I haven't spoken with him, no.
Q. Do you know Mr. Ostler or Mr. Gabert?
A. I don't know Mr. Gabert, but I am acquainted with Don Ostler, yes.
Q. Do you know what your relative responsibilities are in the case with respect to Mr. Ostler's and/or Mr. Gabert's?
A. As I would understand them, they would be somewhat separate. They would not overlap an awful lot, because he's focusing more on what are quality related issues and I'm trying to relate mostly water quantity

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kinds of things.
Q. What did you do to prepare for today's deposition?
A. Not a heck of a lot. I've read Tech Pub 18 and just reviewed the other information which I believe is part of the application which is being presented by PFS.
Q. Do you have with you today the information that you've reviewed for today's deposition?
A. All here, yeah.
Q. Maybe I can take a minute at the next break and take a look through it and just see what you have.
A. Sure. I also did one other thing, too. I did go through and take off of our data base kind of a printout of some of the water rights in the area.
Q. Okay. Presumably that's information from your data base that already would have been provided to us in the course of discovery?
A. I would assume so. It's public information, so it's there and available.
Q. Have you played a role in helping the state respond to our discovery request?
A. A limited role, I believe, yes.
Q. And what was that role?
A. Is it okay if I say I can't remember?

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Q. Sure. Yeah, that's a fine answer.
A. Well, anyway --
Q. Do you remember when it was?
A. -- it was a very limited role, just in relation to those water quantity issues as they might relate to the application.
Q. Are you familiar with the contention that we're talking about, Contention O?
A. A copy's been provided to me, so --
Q. That's great if you have a copy in front of you. Just for your counsel's information, I was going to look at the copy which was attached to LBP 9939. This has had several iterations, Contention O. I believe it to be the ultimate version.
Do you have a copy in front of you?
A. I believe so, yes.
Q. Let's see what you're looking at. What you're looking at is the interrogatory that relates to O. But let me -- there's one official version, and I'll share it with you. And I'm going to look over your shoulder if I can and just ask you a couple of questions. This is actually the issue which has been admitted by the judges in the proceeding, and this is the format of it as it comes in. Have you seen this before?

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A. I'm not sure that I've seen this edition of it, but I've seen something similar. Is that okay?
Q. Sure. All I'm going to use it for is to try to determine which of the areas you mean to testify on and which ones you --
A. Okay.
Q. This is just a lead-in, which you're welcome to read. Basically it's the state's allegation that we've failed to adequately assess effects of construction operation, decommissioning with respect to the following. And then it goes 1, 2, 3, 4, 5. So I want to ask you about 1, 2, 3, 4, and 5.
With respect to the first one, "contaminant pathways from the applicants, sewer/waste water system, routine facility operations, and construction activities."
A. I don't believe that I have any input on that.
Q. Okay. The second is "contaminant pathways from the applicant's retention pond in that," and then there are two A's and B's, ways in which the state alleges that the environmental report is deficient or failed.
A. No, that's not me.
Q. Okay. No. 3 is the potential for

Q. Can you go to Exhibit -- what I'd ask be marked as Exhibit 5.
(Exhibit O-5 marked.)
This is a two-page document entitled Potential Threats to Groundwater from Storage of High Level Nuclear Waste at the Skull Valley Goshute Indian Reservation. It's an undated document, but it's identified in the bottom right-hand corner on the two pages as UT-19236 and 19237, Bates stamps. Have you seen this document before?
A. No, I haven't.
Q. Take a second and read through it, if you would, please.
A. Okay.
Q. I'll represent to you that this was provided to us by the State of Utah in the course of discovery. It was one of the early documents that we got. I've been unable to find its author, although I've tried.
A. Keep trying.
Q. Yup. I may.
A. Sorry.
Q. Mr. Ostler thought that he recognized it, and it may have been developed somewhere in his group. But I haven't found its author yet.
But since you're quantity and not quality,





let me focus on just that portion of the second paragraph where recharge is discussed. Basically this paper describes a fairly simplistic recharge model in the Skull Valley --
A. Right.
Q. -- where the water comes down from the slopes of the mountains on either side and recharges the Skull Valley aquifer.
A. Uh-huh.
Q. Is that about your understanding of it?
A. Yes.
Q. This one you ought to recognize as well. I'm going to ask your resume be identified as No. 6. It's a one-page resume, John R. Mann.
(Exhibit O-6 marked.)
This was provided to us as your resume. Do you recognize it?
A. Yes.
Q. Accurate, as far as you know?
A. Yes.
Q. Anything that needs to be added to it?
A. I can't think of anything.
Q. It fairly represents what your current duties are and what the scope of your responsibilities are?





A. Well, it's pretty limited. I mean, it's not an exhaustive representation of what we do in the division or what I do in my current position, but it's an overview.
Q. Why don't you take a second and just expand on it, if you would, just so we really do understand.
A. Okay. The state engineer in Utah is charged with administrative functions relative to water rights, water right law. And as such I manage this particular office as necessary for those administrative functions with individuals who file water rights, processing of water rights, actions by the state engineer on the water rights. We from time to time undertake studies to determine water budget kinds of issues like supply, demand, those kinds of things. We also do sort of quasi I guess legal functions. I don't know if that would be the right term or not. But anyway, adjudication efforts to identify water rights and to quantify them. And then we're responsible also for areas such as stream alterations and dam safety. That's about it.
Q. Okay. Do you have any education, training, or experience related to radioactivity or radioactive contamination?
A. The only training that I did have was in a previous job. We dealt with some radioactive materials.





So I did receive some limited training there. But none of it has been made applicable to the PFS project.
Q. Okay. And you don't expect --
A. No, I don't.
Q. Okay. So I can eliminate the need to question you or find out what your expertise is in this area?
A. I think you probably can.
Q. Thanks. I want to mark for identification a document which is entitled Figure 2.5-2, Water Wells within 5 Miles (8 KM) of PFSF Site. It's Revision 13.
(Exhibit O-7 marked.)
Mr. Mann, have you seen this document before?
A. Yes, I have.
Q. And have you spent enough time with it to be generally familiar with it and what it purports to represent?
A. I believe so.
Q. And are there any inaccuracies in it that you're aware of or anything you take issue with?
A. I haven't double checked the data to make sure that it's accurate. Our data base does not reflect any of the wells that are located on the Skull Valley Indian Reservation. Filings have not been made with the

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shortly?
MR. SEEL: That material right over there, is that --
THE WITNESS: Yes.
Q. Now I'm going to ask that another document here be marked as Contention O Exhibit 10.
(Exhibit O-10 marked.)
This document is six double-sided pages and is an excerpt from the Private Fuel Storage Facility Environmental Report. It's revision zero. And the pages that are of interest here, Mr. Mann, are pages 2.5-8, 2.5-9, 10, 11, and 12. Notice on those pages that they may have different revision numbers ranging from 2 up to 10, I believe, and that's the groundwater section. Have you seen this document before?
**A. I don't recall. I haven't seen it, no.**
Q. I'll ask to take another break, but before I do, I'm going to introduce the next document as well and then ask you to take a look at these and see if you have any differences of opinion or find inaccuracies in them.
The next document that I want to put in -- the next document that I'd like to get marked as Exhibit 11 --
(Exhibit O-11 marked.)
-- is an excerpt from the NRC's Draft

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Environmental Impact Statement, NUREG 1714. And this excerpt is after 4, but what I want you to focus on, Mr. Mann, is Section 4.2.1.3, which is groundwater. Appears on -- starts on page 4-7.
If we could just take a short break and you would look at one -- PFS's description of groundwater from the environmental report and the excerpt I provided, and then the NRC's staff's description of groundwater, ground water impacts. And then we'll talk about what, if any, problems or difficulties or inadequacies you believe might exist in those descriptions.
**A. Okay.**
**(Recess from 2:28 to 2:41 p.m.)**
Q. (BY MR. BLAKE) Let me start by just marking -- we've finished the break and Mr. Mann's had an opportunity to review both Exhibits 10 and 11, as well as a third document that I'm now going to ask be identified marked as Contention O Exhibit 12.
(Exhibit O-12 marked.)
Exhibit 12 is pages 3-11 and 3-12 out of NUREG 1714, the staff's draft EIS, this section on groundwater hydrology and quality.
What I'm going to do, Mr. Mann, is go through each of these and ask you to just tell me what,

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if any, differences you have with them or if they're inadequate or inaccurate in your mind.
First of all, as a general matter, is there a major difference or are we fairly close overall in what it is they talk about in terms of groundwater descriptions?
**A. I think they would be pretty close, yeah.**
Q. We can take them in any order you want to, then. If you want to go through and talk about any specifics or if you think that's a sufficient explanation, that's fine with me, too. If there's some inaccuracies or inadequacies that you think exist that you want to point out, we'll go through them in whatever order you want.
**A. I don't have anything specific.**
MR. BLAKE: Okay. I goofed on making copies, and so I haven't provided you all with a copy of these two pages. Are you all right with that, Kurt? Do you have a copy of this?
MR. SEEL: That's fine.
MR. BLAKE: I apologize. And you have one as well, Bob?
MR. WEISMAN: Yeah.
Q. (BY MR. BLAKE) From the various documents that I've shown you and that you have general agreement

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with, I take it we have agreement that recharge occurs in the Skull Valley from the runoffs basically at the east and west sides of the valley from the mountains. Is that correct?
**A. Yes.**
Q. And that the aquifer under the PFS site is subject to that same recharge by transmissibility, or you may have a different term, but use whatever term you want. Is that a fair statement as well?
**A. Sure.**
Q. At what depth do you understand the groundwater to be found under the PFS site?
**A. I don't have personal knowledge of that, but again, I could, you know, examine our well logs and things that we have there in our office and come up with some information for you on that. I think it would vary, too, according to where you're at within the Skull Valley. But at the PFS site I would guess it would be somewhere around a couple hundred feet, maybe.**
Q. Do you have any reason to quarrel with the depths at which PFS has located an aquifer?
**A. I don't suppose I do, no.**
Q. Would you expect that groundwater depth to change throughout the year or over any other periodicity?

anticipated withdrawal rate for the proposed PFS water well will be approximately 10,000 gallons per day, then in parentheses it has 11.2 acre feet per year, during first nine months and will decrease thereafter. So...

Q. I see where you're reading, but what is the point?

A. Well, it was indicated earlier that the withdrawal rate would be 2.9 acre feet per year, so I see that that's an average over a 42-year period.

Q. Right.

A. Right?

Q. Uh-huh. So we're okay?

A. I suppose.

Q. I mean, one's an average and one's the initial maximum?

A. Just wanted to make sure and point that out.

Q. Fair enough. Okay, as the final exhibit -- it's a good term, by the way. Did you hear that? "As the final exhibit."

(Exhibit O-15 marked.)

No. 15, I want to put in front of you a document that you're already familiar with, which is the Hood and Waddell 1968 study.

A. I've got one.

Q. And I want to ask with respect to this



document which you have seen and spent some time with, at least, are there problems with this document that you're aware of now based on information that you've become aware of since 1968 or otherwise? Any specific problems that you have with this USGS document or the techniques they've used?

A. I don't believe so.

Q. Mr. Mann, are you aware of any future potential changes on use of water in Skull Valley that would alter the current scheme of water, that is, recharge, usage, draw down, any of those characteristics in a significant way?

A. Well, I would suppose that in order for recharge, or I can't remember exactly how you phrased the question, but for recharge to be affected it would have to be something that a private individual would have to propose as a project or a governmental entity. Like I've tried to indicate, the Division of Water Rights is an administrative agency, so we don't have any of those kinds of projects that we do.

Q. Well, I'm asking because we're not aware of any, that is, PFS, and I thought potentially, you know, with your knowledge of that geographic area and the need for people to come to you to use water or get permission to use water that you might be aware of something we



weren't and ought to be taking into account.

A. I'm not aware of anything at this point in time. There have been some recent applications for agricultural purposes, but that's not unusual for the area. Pretty typical for what past land use practices would be in water use. But I might point out that five or ten years ago I'm not sure that the Goshute Indians were anticipating PFS coming along. So you never can tell what the next five or ten years will bring about. But at this point in time I'm not aware of any particular projects, no.

MR. BLAKE: Okay, I don't have any more questions. I do appreciate your taking the time to take a look at the documents which you've never seen before and responding to questions. Thank you.

THE WITNESS: You're welcome.

MR. WEISMAN: I don't have any questions.

MR. SEEL: Just a minute. Can we just take a break?

(Recess from 2:59 to 3:05 p.m.)

EXAMINATION

BY MR. SEEL:

Q. I have a follow-up question. We're back on the record.

Do you believe that the data and conclusions



in the 1968 Hood and Waddell report, Exhibit No. 15, are still accurate today?

A. I have no reason to discount the conclusions that they arrived at. Obviously since 1968 there have been other uses of water that have been established and so forth. So some of the numbers would be different. But the basic conclusions of the report, I don't have any reason to come up with something different.

Q. Are you saying you don't have any data that would cause you to change -- to come to a different conclusion?

A. Well, the report is what it is. I mean, it's just trying to represent the water resources of the Skull Valley area and what falls in the area in the way of precipitation, how much recharge there would be, the water uses that were occurring as of 1968. This is 2001, so there may be more, may be a little bit less as far as water uses. But the basic information that's in the report, I don't have any reason to disbelieve them or to discount those conclusions, I guess.

MR. SEEL: Okay. I don't have any further questions.

MR. BLAKE: None.

(Deposition was concluded at 3:07 p.m.)

* * *

**UNITED STATES OF AMERICA**

**NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| PRIVATE FUEL STORAGE L.L.C. | ) | Docket No. 72-22 |
| | ) | |
| (Private Fuel Storage Facility) | ) | |

**STATEMENT OF MATERIAL FACTS ON WHICH NO GENUINE DISPUTE EXISTS**

The Applicant submits, in support of its motion for summary disposition of Utah Contention O, this statement of material facts as to which the Applicant contends that there is no genuine issue to be heard.

**A. General**

1. Utah Contention O, as admitted, states

> The Applicant has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI, as required by 10 C.F.R. §§ 72.24(d), 72.100(b) and 72.108, with respect to the following contaminant sources, pathways, and impacts:
>
> 1. Contaminant pathways from the Applicant's sewer/wastewater system; routine facility operations; and construction activities.
> 2. Contaminant pathways from the Applicant's retention pond in that:
>    a. The ER fails to discuss potential for overflow and therefore fails to comply with 10 C.F.R. Part 51.
>    b. ER is deficient because it contains no information concerning effluent characteristics and environmental impacts associated with seepage from the pond in violation of 10 C.F.R. § 51.45(b) and 72.126(c) & (d).
> 3. Potential for groundwater and surface contamination.
> 4. The effects of Applicant's water usage on other well users and on the aquifer.

5. Impact of potential groundwater contamination on downgradient hydrological resources.

Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-99-39, 50 NRC 232, 240 (1999).

2. In June 2000, the NRC Staff issued NUREG-1714, "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 on Tooele County, Utah" ("DEIS").

3. The characteristics of the Skull Valley soils, groundwater, and precipitation result in the source of groundwater recharge at the PFSF site being almost exclusively precipitation that falls at the higher elevations of the Stansbury and Cedar Mountains on the east and west sides of Skull Valley, respectively. Percolation into the groundwater from the surface near the PFS site is nonexistent or so insignificant that it can be stated that there is no direct hydrological link between the surface and groundwater in this vicinity. Declaration of H. C. "George" Liang and Donald Wayne Lewis ("Decl."), ¶ 21, Private Fuel Storage Facility Environmental Report ("ER"), § 2.5.5, DEIS § 3.2.2, Deposition of John Richard Mann (Utah Contention O), April 17, 2001 ("Mann Dep."), pp. 18, 28, 36.

**B. Basis 1 – Potential Impacts from Construction, Operation, and Sewer/Wastewater System**

4. Basis 1 of Utah O asserts that Private Fuel Storage LLC ("PFS") has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI with respect to contaminant pathways from the sewer/wastewater system; routine facility operations; and construction activities.

**1. Potential Impacts From Construction**

5. Construction activities at the Private Fuel Storage Facility ("PFSF") will consist of site preparation, earth-moving associated with construction of facility features,

such as the detention pond and flood berm, construction of an access road, four buildings and the concrete pads on which the storage casks will be placed. Decl. ¶ 32.

6. PFS will prepare and implement an Erosion Control Plan that will rely on common engineering/best management practices to minimize any potential for precipitation-related erosion during construction. Measures will include erosion and sediment controls, soil stabilization practices, structural controls, and other controls necessary to effectively manage construction-related storm water runoff. Decl. ¶ 32.

7. The Erosion Control Plan will outline maintenance, inspection and other best management practices for the effective management of storm water runoff from the concrete batch plant. Id.

8. A spill response procedure, in accordance with recognized best management practices, will be followed to appropriately respond to an inadvertent spill of oil or fuel from construction machinery. Id.

9. There are no perennial watercourses within 5 miles of the PFSF, including lakes, ponds, drinking water storage areas and streams. The nearest intermittent stream channel is 1,500 feet northeast of the PFSF site. Decl. ¶ 18, ER § 2.5.1, DEIS § 3.2.1.1, Ostler Dep. pp 43-44.

10. The proposed PFSF location receives an annual average of 7 to 12 inches rainfall. Decl. ¶ 18, ER § 2.4.2.1, DEIS § 3.2.1.1, Mann Dep. p. 36.

11. Soil at the proposed location of the PFSF has relatively low permeability, and the depth to groundwater at the site is approximately 125 feet. Decl. ¶ 19. DEIS § 3.2.2, ER § 2.5.5, Mann Dep. p. 28

12. The erosion control plan and best management practices that will be implemented during construction, in combination with the lack of surface water, typically low precipitation, and lack of hydrological link between the surface and groundwater

at the PFS site will ensure that construction activities will not lead to contamination of surface or groundwater. Decl., ¶ 32.

### 2. Potential Radiological Impacts from Routine Operation

13. The sole source of possible radiological contamination during routine operation at the facility will be the spent fuel canisters themselves. Decl. ¶ 33.

14. Canisters will be loaded at the originating reactors utilizing procedures specifically designed to preclude contamination of the outer surface of the canister. After loading and confirmation that no contamination is present, the lid to the canister will be seal-welded in place. Once this lid is welded in place, there is no mechanism whereby contamination of the outer surface of the canister can occur. Decl. ¶ 34.

15. Upon arrival at the PFSF, contamination surveys will be performed on the outer surface of the shipping cask and accessible portions of the canister. If contamination levels are found to be above acceptable levels and the canister cannot be decontaminated, PFS will return the canister to the originating nuclear power plant for decontamination. The storage cask will also be surveyed externally after the canister is transferred. PFSF Technical Specification 5.5.3 provides that the casks will be transferred to the Restricted Area for storage only if the removable contamination levels are below the NRC's criteria for acceptable surface contamination levels for release of equipment for unrestricted use. Id. ¶¶ 35, 36.

16. Canisters will never be opened at the PFSF. Id. ¶ 35.

17. In the highly unlikely event that decontamination procedures must be conducted at the PFSF, only procedures that result in the generation of dry radioactive wastes will be allowed. Such waste will be appropriately packaged, temporarily stored onsite, and transferred to a low-level radioactive waste disposal facility. Id. ¶ 36.

18. Strict canister handling techniques, personnel training, and health physics oversight will be implemented to minimize the likelihood of any worker contamination. Further, there will be step-off pads and frisking stations at the exit from each canister transfer cell to assure personnel leaving these areas are free of radioactive contamination. Facility procedures will not allow a contaminated person to enter restrooms or utilize sinks. Id. ¶ 39.

19. Sump drains will be located in the load/unload bay of the Canister Transfer Building to catch any liquid that may drip off the transportation vehicles or exterior surface of the shipping casks. These will be closed catch basins with no connection to any other sewage disposal system. No other floor drains will be located in this building. Any collected liquid will be sampled to ensure that no contamination is present prior to removal and disposal. Id. ¶ 38.

20. In the highly unlikely event that contamination is present in the liquid, the liquid will be collected in a suitable container, solidified, and disposed of in a low-level radioactive waste disposal facility. Id.

21. All of these protective measures, which will be implemented as part of PFSF's "Start Clean – Stay Clean" operating philosophy, will preclude radiological contamination from occurring at the PFSF site. Id. ¶ 33.

### 3. Potential Non-Radiological Contamination from Routine Operation

22. Lubricating oils and diesel fuel are the only substances identified to date that will be used or stored at the PFSF and are listed as hazardous materials under 40 C.F.R. 355 Appendix A (EPA), 49 C.F.R. 172 Subpart B (DOT), or 29 C.F.R. 1910 Subpart H (OSHA). Other possible hazardous substances, such as cleaning solvents, painting products, pesticides and herbicides will be present only in limited quantities. Decl. ¶ 42.

23. Diesel fuel will be stored in aboveground tanks enclosed in secondary tanks to preclude the possibility of leakage. Absorbent materials will be placed under

nozzles during refueling to minimize accidental spilling of diesel fuel onto the ground. In the event that a spill occurs, contaminated soil will be removed and hauled to an appropriate facility for disposal in accordance with all applicable requirements. Id. ¶ 44.

24. Lubricant oils will either be contained in facility equipment gearbox compartments or kept for spare use in limited quantities in sealed metal drums in designated operating and maintenance building storage areas. Id. ¶ 42

25. Procedures will be in place to ensure that all rules and regulations concerning use and storage of hazardous substances are properly implemented and adhered to. Id.

26. Common janitorial cleaners, which are not classified as hazardous materials, will be used and stored on site in quantities typical of a facility this size. These cleaners will be marked and stored in janitorial closets in the various buildings. Id.

27. The potential for non-radiological contamination is essentially non-existent due to the absence of any significant source and the procedures that will be in place to ensure compliance with applicable rules and regulations. For the one source that will be present in significant quantities, diesel fuel, appropriate precautions will be taken to ensure that accidental contamination is avoided, and, if contamination does occur, to ensure rapid and effective remediation of the affected environment. Id. ¶¶ 42-43, 48-49.

#### 4. Sewer/Wastewater System

28. Two independent sanitary drainage systems will be installed and utilized at the PFSF, and will be designed under the Uniform Plumbing Code. Compliance with this code will ensure that the systems are adequate to accommodate anticipated usage and are located in acceptable soils. Id. ¶ 15.

29. Access to the sanitary drainage systems will be limited to the sinks, toilets or showers in the buildings on site. Id. ¶ 45.

### 5. Potential Radiological Contamination from the Sewer/Wastewater System

30. As discussed in paragraphs 13 through 21, above, the only source of radiological contamination is the canisters themselves, and contamination from this source will be precluded by extensive radiological surveys, monitoring, and precautionary procedures.

31. There will be no floor drains in the Canister Transfer Building. Any liquid that is inadvertently introduced into the building will be collected in sumps located in the floor. Any liquid collected in the sumps will be analyzed prior to disposal to ensure that it does not contain radiological contamination. Should such contamination be identified, the liquid will be collected, solidified, and disposed of in a low-level radioactive waste disposal facility. Decl. ¶ 38.

32. It will not be possible to introduce radioactive contamination into the sewer/wastewater system via the laboratory. No sinks will be located in the laboratory. Facility procedures will not permit disposal of contaminated or potentially contaminated liquid down drains into the sanitary drainage system, and laboratory personnel will be trained and qualified on these procedures. Id. ¶ 40.

33. Strict canister handling techniques, personnel training and health physics oversight will be implemented to minimize the likelihood of worker contamination. Extensive monitoring will be conducted to detect contamination in the unlikely event that it should occur. Id. ¶ 46.

34. Protective clothing will be required for workers in a canister transfer cell. This clothing must be removed upon exiting the transfer cell, and the worker will be checked for contamination. If contamination is detected, decontamination will be accomplished prior to exiting the transfer cell. There is no access to the sanitary sewer system in the transfer cell area. Id.

35. Physical separation of the areas where contamination could occur, the requirement for the use of protective clothing, and facility procedures will preclude the

possibility that radiological contamination will be introduced into the sewer/wastewater system, in the unlikely event such contamination should occur. Id. ¶ 47.

### 6. Potential Non-Radioactive Contamination from the Sewer/Wastewater System

36. As discussed in paragraph 22, above, the only potential non-radioactive hazardous contaminants at the PFSF site that have been identified to date are lubricating oil and diesel fuel. Other possible hazardous substances, such as cleaning solvents, painting products, pesticides and herbicides may be present in limited quantities.

37. The PFSF will also have on site common janitorial cleaners in quantities typical for a facility this size. The septic tanks and leach fields will be designed in accordance with the Uniform Plumbing Code to utilize natural filtering processes to purify disposed sewage, including janitorial cleaning compounds. Decl. ¶ 48.

38. All hazardous substances will be stored or contained within sealed and properly labeled containers and will be located in designated areas where the potential to enter the sanitary waste system is unlikely, i.e., away from restrooms, lunch rooms, etc. Proper procedures will be developed and implemented to ensure that personnel comply with all applicable rules and regulations regarding the handling and storage of hazardous substances. The combination of the small quantities of substances on site and procedures in place for the proper storage and handling of these substances will essentially eliminate all sources non-radiological contamination. Procedures will also be implemented to ensure that if inadvertent contamination should occur, rapid and effective remediation in accordance with applicable regulatory requirements is accomplished. Id. ¶ 49.

## C. Basis 2 – Detention Pond

39. Basis 2 of Utah O asserts that PFS has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decom-

missioning of the ISFSI with respect to contaminant pathways from the detention pond by failing to discuss the potential for overflow and providing no information concerning effluent characteristics and environmental impacts associated with seepage from the pond.

40. The purpose of the detention pond will be to detain precipitation runoff from severe storms and prevent soil erosion resulting from the loss of natural soil absorption in the Restricted Area. It will be constructed at the northern end of the Restricted Area, and will have a concrete inlet from the cask storage area. An overflow spillway will be located on the opposite end, and will be designed so as to prevent damage to the detention pond or cause soil erosion if overflow should occur. Decl. ¶ 17.

41. PFS will obtain a grab sample of water from the detention pond following a significant rainstorm and analyze the sample to verify that the storm-water runoff is free of contamination.. Id. ¶ 55.

**1. Potential for Overflow**

42. The detention pond has been designed to contain the waters from a 100-year precipitation event. Id. ¶ 17.

43. Overflow can only occur due to a greater than 100-year precipitation event or a precipitation event that occurs before the water from a previous precipitation event has dissipated. Id.

44. While such an event is unlikely, the detention pond has nonetheless been designed to allow for overflow without damaging the pond or causing undue erosion. Id.

**2. Potential for Radiological Contamination from Detention Pond Effluent**

45. No credible pathway exists for radiological contamination of water in the detention pond because:

(a) the canisters are sealed by welding that precludes leakage of the canisters,

(b) measures are applied at the originating nuclear power plants when fuel is loaded into the canisters to prevent contamination of the canister outer surfaces,

(c) the canisters are not permitted to be transported to the PFSF unless surveys determine that they are free of surface contamination,

(d) a contamination survey of the canister is again performed after the canister is received at the PFSF to ensure that the canister is not contaminated, and

(e) following the loading of canisters into storage casks at the PFSF, contamination surveys are performed on the surfaces of the storage casks to verify they are free of contamination. Id. ¶ 54.

### 3. Potential for Non-Radiological Contamination from Detention Pond Effluent

46. The potential for non-radiological contamination of the water in the detention pond is limited and effectively precluded by:

(a) The absence of any significant sources of non-radiological contamination (Id. ¶¶ 42, 49),

(b) The implementation of procedures to ensure compliance with all regulations related to handling and storage of hazardous materials (Id. ¶ 42), and

(c) Engineered containment features (e.g., the drainage ditches that run alongside the north and south sides of the railroad tracks) that will contain other potential non-radiological contaminates such as diesel fuel. These drainage ditches will include weirs to prevent any accidental spills of diesel fuel from running into the detention pond. Id. ¶ 54.

### 4. Potential for Contaminant Seepage from the Detention Pond

47. Water is expected to collect in the detention pond very rarely, only after a severe precipitation event. Most water that collects from precipitation events is expected

to be adsorbed into the 8-inch thick gravel surrounding the storage pad and not collect in the detention pond. Id. ¶ 51.

48. The natural characteristics of the soil in the detention pond will result in a very slow seepage rate for any water standing in the pond. If contamination is detected, ample time will be available for remediation of the contamination well before it has the opportunity to reach groundwater depth. Id. ¶ 56.

49. For contamination to be carried to the groundwater, it must first be present. As discussed in paragraphs 13 through 21 and 22 through 26, above, there is no credible source for either radiological or non-radiological contamination.

50. The lack of a hydrological connection between the surface and groundwater at the PFSF site precludes surface contamination from reaching the groundwater. Decl. ¶ 59.

**D. Basis 3 – Potential Contamination of Surface and Groundwater**

51. Basis 3 of Utah O asserts that PFS has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI with respect to the potential contamination of surface and groundwater.

**1. Surface Water**

52. As stated in paragraph 9, above, there are no perennial surface water sources within 5 miles of the PFS site, including lakes, ponds, drinking water storage areas, and streams. The nearest intermittent stream is 1,500 feet northeast of the site. As stated in paragraph 10, above, average annual precipitation in the vicinity of the PFSF site is 7 – 12 inches.

53. As discussed in paragraphs 12, 13 through 21, 22 through 27, 32 through 35, 38, 46, 47 and 51, above, there are no credible sources or pathways of radiological or non-radiological contamination at the PFSF.

54. The lack of contaminant sources and pathways, low annual precipitation, and absence of nearby surface water preclude the possibility of surface water contamination from the PFSF. Decl. ¶ 58.

**2. Groundwater**

55. As discussed in paragraph 3, above, there is no direct hydrological link between the surface and groundwater at the PFS site.

56. As discussed in paragraphs 12, 13 through 21, 22 through 27, 32 through 35, 38, 46, 47 and 51, above, there are no credible sources or pathways of radiological or non-radiological contamination at the PFSF.

57. There is no credible mechanism whereby contamination will be generated at the PFSF and subsequently migrate to groundwater at the site. Decl. ¶¶ 57, 59.

**E. Basis 4 – Potential Impact on Other Well Users and Aquifer**

58. Basis 4 of Utah O asserts that PFS has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI with respect to potential impacts of PFSF water usage on other well users and the aquifer.

59. The closest well to the PFSF site is approximately 9,500 feet away. Decl. ¶ 64.

60. Even assuming a confined aquifer, and thus no recharge, the radius of influence for the proposed amount of water to be withdrawn from the aquifer for PFS use is, at most, 7,000 feet. Thus, PFSF water use will not affect any nearby wells. Id.

61. Analyses completed by the State of Utah for a proposal to become the Host State for the Superconducting Super Collider Project in this area of Utah determined that almost 4,000 acre-feet per year could be drawn from the Skull Valley aquifer without causing significant drawdowns of the water table. Id. ¶ 66.

62. PFS estimates that water requirements over the 42-year construction/operation period to average 2.3 acre-feet per year. Id. ¶ 29.

63. PFSF water usage will have negligible impact on the local aquifer. Id. ¶¶ 29, 66.

**F. Basis 5 – Impact on Downgradient Water Users**

64. Basis 5 of Utah O asserts that PFS has failed to adequately assess the health, safety, and environmental effects from the construction, operation, and decommissioning of the ISFSI with respect to the impact of potential groundwater contamination on downgradient hydrological resources.

65. As discussed in paragraphs 12, 13 through 21, 22 through 27, 32 through 35, 38, 46, 47 and 51, above, there are no credible sources or pathways of radiological or non-radiological contamination at the PFSF.

66. The lack of any credible sources of groundwater contamination and pathways for such contamination to reach downgradient users precludes any impact of potential contamination from the PFSF on downgradient users. Decl. ¶ 67-68.

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