RAS 3279

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC (Independent Spent Fuel Storage Installation)	)	ASLBP No. 97-732-02-ISFSI
	)	July 30, 2001

STATE OF UTAH'S REPLY TO NRC STAFF'S RESPONSE TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF UTAH CONTENTION O - HYDROLOGY

Pursuant to 10 CFR § 2.749, the State replies to NRC Staff's Response to Applicant's Motion For Summary Disposition of Utah Contention O - Hydrology ("Staff's Response"), dated July 19, 2001. For the reasons set forth below, the Board should deny PFS's Motion for Summary Disposition.

ARGUMENT

The Staff's Response provides no helpful guidance because it is devoid of any description of the legal tests under 10 CFR Part 72 and the National Environmental Policy Act of 1969 ("NEPA"), 42 U.S.C.A. § 4321, *et seq.* In the absence of a description of the appropriate legal tests in this matter, the Staff's Response does not apply the alleged facts (disputed or undisputed) to the legal tests and reach a supportable conclusion. In addition, the Staff's Response fails to address the key factual issues, including whether there is, or is not, sufficient information and data to reach a supportable conclusion on the disputes described in State of Utah's Response and Opposition to PFS's Motion for Summary Disposition of Contention Utah O - Hydrology ("Utah Response") (July 19, 2001) at 5-14.

TEMPLATE = SECY-041

SECY-02

Moreover, the Staff's Response relies entirely on unenforceable and unrealistic promises by PFS, such as PFS's claim of "Start Clean - Stay Clean," as a substitute for engineered environmental controls and monitoring. *See e.g,* Ketelle Aff. ¶¶ 7, 8, 9, 10, 11, 14, 16, 19. In addition, the Staff surmises, without any supportable data or documentation, that there is a weak hydrological link and a low likelihood of any release or environmental impact from the PFS facility. *See e.g,* Ketelle Aff. ¶¶ 12, 13, 15, 19.

A. Because the Staff's Response Fails to Describe Both the Legal Requirements of NEPA and Part 72, and Fails to Apply the Alleged Facts to Those Legal Requirements, the Staff's Response Provides No Useful Guidance.

To receive summary disposition, the Applicant must prove both 1) there are no genuine issues of material fact, and 2) the Applicant is entitled to judgment "as a matter of law," *i.e.*, Applicant must show it has satisfied all the legal requirements of NEPA and 10 CFR Part 72 (including NUREG 1567). 10 CFR § 2.749(d); Utah's Response at 2-5; *see also* Staff Response at 1, 8. The Staff's Response concludes that the Applicant is entitled to a decision in its favor "as a matter of law," yet the Staff's Response does not mention the legal tests under NEPA and Part 72.[1] Put another way, regardless of whether a factual dispute exists, the Staff's Response fails to describe the legal tests it believes the Applicant must satisfy, and fails to describe how the Applicant has attempted to satisfy those legal requirements.[2] Without a statement of the Staff's interpretation of the legal requirements of

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[1] Because defining the correct legal tests under Part 72 and NEPA is the first step in the legal analysis, ignoring it results in a defective legal analysis and an arbitrary and capricious conclusion.

[2] The Staff's Response is composed almost entirely of a description of the history of Utah O followed by a boiler plate description of the law surrounding summary disposition.

NEPA and Part 72, followed by an application of the facts (disputed or undisputed) to those laws and regulations in this particular licensing matter, the Staff's Response provides no useful guidance to either the Board or the parties. For this reason, the Staff's conclusion that summary disposition is warranted as a "matter of law" is totally unsupported by any legal analysis or reasoning, *i.e.*, it is arbitrary and capricious.

B. The Staff's Response Rests on Unsupported Conclusions.

NEPA regulations mandate that, if necessary data or information is unavailable, that fact must be disclosed in the EIS, and if the unavailable information cannot be acquired because the cost is "exorbitant," then the EIS must evaluate environmental impacts on a worst case scenario. 40 CFR § 1502.22(b). Full disclosure is, of course, part of the NEPA requirement that the public be fully informed regarding environmental impacts. Dubois v. United States Dept. of Agriculture, 102 F.3d, 1273, 1285 (1st Cir. 1996). In addition, sufficient data are necessary to reach a scientifically supportable conclusion on the issues raised in Contention Utah O.

In support of its summary conclusions that, subject to minor modifications, "the Applicant's Statement of Material Facts ... is correct," the Staff relies on the Affidavit of Richard H. Ketelle. Staff Response at 7. The Staff also relies on various sections of the Draft Environmental Impact Statement ("DEIS") (NUREG-1714) to find that the potential impacts from the PFS facility will be "small." Id. The Ketelle Affidavit and the DEIS both suffer from the same malady: they have insufficient or no data to support their conclusions.

For example, the Staff's Response, the Staff's expert and the DEIS all fail to address the absence of site soil permeability and aquifer data. In addition, they do not provide any

rational as to whether there are sufficient site-specific water quality and soil permeability data to reach a scientifically supportable conclusion on any hydrologic issue. In fact, some of the Staff's expert's publications indicate that site-specific water quality data were collected at the sites and facilities to support his published theories and conclusions.[3] As described in the State's Response, determining the site-specific permeability of the surface soils is the threshold factual issue to analyzing whether subsurface discharges to the septic systems, accidental spills and releases, and percolation into the subsurface from the detention pond, will cause an environmental impact (or pathway of migration to groundwater). Ostler Dec. ¶ 4. Until this soil data is collected and analyzed, one cannot begin the scientific process of characterizing the hydrologic connection, *i.e.*, the pathway, with the "aquifer." The aquifer at the PFS site remains undefined and unidentified, and until the other end of the hydrologic connection (*i.e.*, the aquifer) is identified as required by NUREG 1567 § 2.5.5, it is impossible to scientifically support any conclusion as to whether a hydrologic connection exists between the surface and the "aquifer."[4] Without collecting any site-specific water quality data, it is difficult to provide any supportable opinion whether surface waters are

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[3] *See e.g.*, Ketelle Aff., "Publications" list: Ketelle and G.J. Davies, *Hydrogeochemical Responses of Knox Group Springs to Precipitation at Oak Ridge, Tennessee*, GSA Abstracts With Programs, Vol. 31 no. 7 p. 331, October 1999 (Temperature data and fifteen months of electrical conductance data was collected from springs to support the author's conclusions), abstract attached hereto as Exhibit 1; and D.A. Wolf, M.F. Tardiff, R.H. Ketelle, *Characterizing Groundwater at Oak Ride [sic] National Laboratory Hazardous Waste Site*, in Proceedings of American Statistical Association on Statistics and the Environment (undated and no publication information provided).

[4] From a scientific perspective, until one identifies the end points, *i.e.*, the boundaries of any system, the ability to provide a scientific opinion on a connection between the two end points is very limited.

currently hydrologically connected with the groundwater table, and whether wastewater discharges, spills and releases, and percolation from the detention pond can reach the groundwater. Accordingly, the Staff's Response, the Ketelle Affidavit and the DIES offer no support for the conclusion that the Application's Material Facts are correct.

By not disputing any of the Applicant's material facts, the Staff's expert appears to be accepting the Applicant's conclusions regarding the surface soil permeability, hydrology, and water quality issues.[5] If the Staff's expert believes that no groundwater quality data of any kind need to be collected from the proposed site in order to reach a scientifically supportable conclusion as to the water quality at the site, his affidavit should clearly state why no data set is necessary to reach a scientifically supportable conclusion, and to differentiate the Skull Valley site from the other sites on which he apparently collected hydrochemical and water quality data to reach his opinions. *See* fn. 3 *supra.* If the Staff's expert believes that the Applicant's proposal to use as a confining layer surface soils which, according to the region-wide assumptions of the Applicant, are of the same permeability as the soils it intends to use as a groundwater source, his affidavit is devoid of any reasoning why soils with the same assumed permeability will act as both a barrier to migration, yet produce enough water to be a water source for the facility. *See e.g.,* Utah Facts ¶¶ 2, 3, 4, 5, 6, 7, 8. Thus, the Ketelle Affidavit does nothing to overcome the State's Statement of Disputed and Relevant Material Facts.

Although the Staff's expert does not directly address the question of approximately

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[5] All of these issues the State has disputed in its Response and Material Facts.

two dozen, unfilled and improperly backfilled, three-inch plus diameter boreholes drilled at the site, by failing to address this concern, he apparently believes these boreholes will not increase the permeability of, or create open conduits through, the alleged confining layer.[6] The Staff's expert also proposes that the Applicant's version of the soil permeability be deleted and replaced with the phrase "weak hydrologic link," but does not explain why, nor provide any scientific analysis to support his proposed change from that discussing soil permeability to that of a "hydrologic link." *See* Ketelle Aff. ¶¶ 7, 15, 19. The Staff's expert does not explain why his opinion regarding each of the above-described issues appears to differ significantly from EPA guidance, groundwater textbooks, NRC guidance, and the expert opinions of other hydrologists. *See* Utah Facts ¶¶ 9, 13, 14 (EPA guidance on borehole closure and confining layers), ¶¶ 7, 8 (*Groundwater*, by Freeze and Cherry), ¶¶ 30, 31, 32, 33, 34, 37, 39, 40, 41, 53, and Ostler Dec. ¶ 9 (citing to *Vadose Zone Hydrology*, by D. Stephens), and ¶¶ 16, 17, 18.

Finally, the Staff's expert, without any citation whatsoever, declares "an average withdrawal of approximately 4.4 acre-feet per year" for PFS's estimated water requirements. Ketelle Aff. ¶ 18. Mr. Ketelle adds: "Either number (i.e., [PFS's estimate of] 2.3 or 4.4 acre-feet) constitutes only a very small portion of water available in the aquifer. Id. ¶ 66." Ketelle Aff. ¶ 18. There is no evidence to support the Staff's conclusion. The citation to paragraph 66 of PFS's Material Facts, which the Staff has re-written, offers no support.

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[6] By contrast, EPA guidance clearly indicates that abandoned wells and boreholes can act as conduits for surface waters to reach groundwaters and should be backfilled with cement, bentonite grout, neat cement or concrete, especially if a confining layer is breached. *See* Utah Facts ¶¶ 12, 13, 14, 15.

Moreover, the Utah State Engineer, as a matter of law, is charged with determining the legal adequacy of withdrawal from groundwater – whether under the reservation or not. *See* Utah Code Ann. § 73-3-1, -2, -8.

The Board should not accord any weight to the Staff's Response, Ketelle Affidavit, or DEIS because they rest on no data to support their conclusions and do not satisfy NEPA's requirement to obtain necessary information or explain why the costs of obtaining such information would be exorbitant. In no case does the Staff in the DEIS or in its Response analyze environmental impacts from the worst case scenario. Rather the Staff falls back on PFS's "Start Clean - Stay Clean" aspiration, thus avoiding any real analysis of the issue presented in Utah O. *See* Ketelle Aff. ¶ 8.

C. The DEIS and ER Are Fatally Flawed Because They Fail to Follow NRC Guidance.

In order to comply with Part 72, NRC guidance expressly states that, at a minimum, the "aquifer" and its hydrologic unit(s) under the site must be defined, and various types of hydrogeologic and water quality information must be prepared. *See e.g.*, NUREG 1567 §§ 2.4.5 and 2.5.5.

It is undisputed that the DEIS and ER fail to define the "aquifer." *See* Liang Tr. at 49 lns. 7 - 9 (ER does not define aquifer). It is also undisputed that neither the DEIS nor the ER presents the various types of aquifer information required by NRC guidance. *See* Liang Tr. at 47 ln. 25 - pg. 49 ln. 3 (Applicant has only complied with "some" of NUREG 1567 § 2.5.5); *see also* Utah Facts ¶¶ 30, 31, 32, 33, 34, 37, 40, 41. Like the Applicant in its Motion, the Staff in its Response fails to disclose that the NRC guidance was not followed, nor rationalize why it was not followed. In fact, the Staff's Response does not even mention

that NRC guidance exists regarding how to properly evaluate environmental impacts at proposed ISFSI sites. In the absence of a supportable reason why the Staff is ignoring the presence of NRC guidance, the Board must assume the guidance applies, and the failure of the DEIS and ER to follow that guidance is a fatal flaw in those documents.

D. The Staff's Response Raises Numerous Issues of Material Fact.

The Staff's Response (at 1) concludes the Applicant's Statement of Material Facts is "correct" but its expert states that 13 paragraphs of Applicant's Material Facts should be "clarified or corrected in minor respects." Ketelle Aff. ¶ 5. These proposed modifications present a third opinion as to the material facts in this matter, and indicate that a genuine issue of material facts exists with respect to certain specific aspects of Contention Utah O. For example, the Staff's expert disagrees with the Applicant's statement that "there are no credible sources or pathways of radiological or non-radiological contamination at the PFSF." *See* Ketelle Aff. ¶¶ 14, 16; *see also* id. at ¶ 19 ("credible" and "pathway" language struck through). In its place the Staff's expert proposes language which does not address "pathways," but instead focuses on the "likelihood of release," a completely different issue from pathways of migration. *See* Ketelle Aff. ¶¶ 14, 16, and 19. Proposing to strike the "pathways" language strongly suggests that the Staff's expert is unwilling to agree with the Applicant that there are no "credible" pathways, but is relying on the fall back position of there never being an accident at the PFS facility during its forty year lifetime. These changes are not minor, but go to the heart of Contention O. Interestingly, as described below, the Staff's expert appears to be an expert in groundwater migration and subsurface contaminant

pathways, not engineering design and industrial operating procedures to prevent releases.[7]

E. The Staff's Expert Is a Groundwater Geologist, Not an Expert in Nuclear Storage Design, Construction, and Operating Procedures.

The Staff's expert, Richard H. Ketelle, opines in areas which, like the Applicant's experts, are well outside of his area of expertise. According to his resume, the Staff's expert is a geologist with an expertise in subsurface hydrology. The State does not disagree he is qualified to opine in the area of groundwater contamination, remediation, and contaminant pathways, provided he has sufficient data on which to base his opinions. However, Mr. Ketelle is proposing changes to the Applicant's Material Facts which pertain to the ability of "design structures, construction practices, and operating procedures" to prevent releases and contain radiologics and non-radiologics. *See* Ketelle Aff. ¶¶ 8, 9, 10, 11, 14, 16, 21. Nothing in his affidavit or statement of qualifications indicates he has any education or experience in engineering design, construction, or industrial risk management (the effectiveness of industrial operating procedures). His groundwater geology background and experience does not qualify him to opine whether a structure is properly engineered or constructed to prevent releases, or if an industrial operating procedure will or will not present an unacceptable risk of accidental release. For these reasons his opinion on these matters is well outside his geologic expertise and should be given no weight.

Just as disconcerting is the fact that the Staff's Response relies upon the affidavit of a

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[7] To the extent Staff's expert is agreeing that there are credible pathways of exposure, the State agrees. However, based upon information and belief, the State does not believe the Staff's expert, a geologist, is qualified to opine as to the ability of an engineered system to contain radiologics or non-radiologics, or that he can predict whether certain operating procedures can prevent releases, accidents, or intentional misconduct by future employees.

person who admits he helped draft the Draft Environmental Impact Statement – the very document which is at issue regarding NRC's compliance with NEPA. *See* Ketelle Aff. ¶ 3. Although the Staff's expert does not directly opine as to whether or not the DEIS is adequate, to the extent his opinions agree with the Applicant's opinions that the DEIS is adequate, his opinion is not an independent third party review. It is usually not helpful to have the author of a document give an "expert" opinion on his own work product because it is presumed the author thinks it is more than adequate or he would not have drafted it that way. To the extent Staff's expert is opining directly or indirectly on his own work-product, *i.e.*, the DEIS, his opinions should be given little or no weight.

CONCLUSION

The Staff's Response is particularly unhelpful in this matter, and for the foregoing reasons and the reasons described in the State's Response, the State requests the Board deny PFS's motion and find in favor of the State.

DATED this 30th day of July, 2001.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of STATE OF UTAH'S REPLY TO NRC STAFF'S RESPONSE TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF UTAH CONTENTION O - HYDROLOGY was served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this 30th day of July, 2001:

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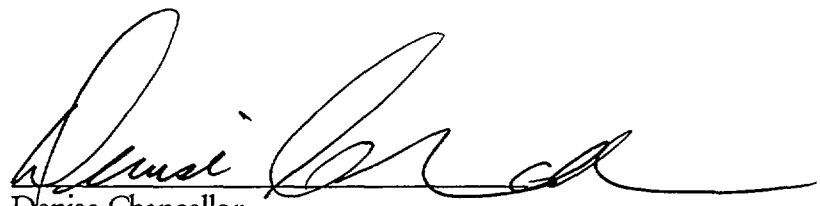

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Exhibit 1

STATE OF UTAH'S REPLY TO NRC STAFF'S RESPONSE TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION OF UTAH CONTENTION O - HYDROLOGY

July 30, 2001

Crossing Divides

1999 GSA Annual Meeting -- Denver, Colorado

Abstract 50818

HYDROGEOCHEMICAL RESPONSES OF KNOX GROUP SPRINGS TO PRECIPITATION AT OAK RIDGE, TENNESSEE

Presented by Ketelle, Richard H..
Authors:
Davies, Gareth J..

Key words: Hydrochemistry

In Session 144 T86. Hydrochemistry of Springs (GSA Hydrogeology Division) Wednesday, Wednesday, October 27, 1999 AM in Room: C201 at 09:15 AM for 15 min .

Abstract: The degree of variability of spring chemistry in temperate carbonate rocks has been shown to be related to recharge conditions and not aquifer conditions. This boundary condition variability can be interpreted using either temperature or electrical conductivity. Temperature and specific conductance data from springs draining an area in the Knox Group in Oak Ridge, Tennessee show that the spring waters can be modeled as mixtures of rapid-flowing and slow-flowing waters. Electrical conductivity data from the same springs show significant variability following storms. Modeling of a 15 month long record of daily specific conductance data using daily rainfall records revealed that the springs studied showed responses over periods of several days to major storm events before returning to pre-storm values. Empirically derived models for spring variability suggest that concentrated recharge accounts for up to 50% of the total recharge during storms, while percolation water feeds baseflow of springs between storm stresses.

In many carbonate aquifers spring chemistry variability has been shown to be related to the percentage of concentrated recharge feeding the spring. The Knox Group outcrop areas near Oak Ridge and elsewhere in the Valley and Ridge Province have developed very thick masses of silty clay residual soils with numerous macropores and dolines. Unlike many carbonate terranes there are few perennial sinking streams. Most recharge occurs as quickflow via the numerous dolines that concentrate runoff during precipitation events, or as water that percolates through pervious zones in the residuum. Aquifer recharge via dolines connected to conduits has the same effect on spring chemistry as would sinking streams. Most recharge water in the Knox aquifer at Oak Ridge travels through the residuum with significant soil/water interaction which attenuates dye tracer concentrations and many groundwater contaminants. Ground-water tracing shows that although many springs are not fed by sinking streams, flow velocities are as rapid as average karstic channel velocities worldwide.

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