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NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF THE SECRETARY  
RULEMAKING AND  
ADJUDICATIONS STAFF

In the Matter of:	)	Docket No. 72-22-ISFSI
PRIVATE FUEL STORAGE, LLC	)	ASLBP No. 97-732-02-ISFSI
(Independent Spent Fuel	)	
Storage Installation)	)	December 17, 2001

STATE OF UTAH'S REPLY TO NRC STAFF'S RESPONSE  
TO APPLICANT'S MOTION FOR SUMMARY DISPOSITION  
OF CONTENTION UTAH L, PART B

The State files this Reply to the Staff's December 7, 2001 Response to the Applicant's November 9, 2001, Motion for Summary Disposition of Part B of Utah Contention L. The Staff and PFS are asking the Board to find PFS's ISFSI design "conservative." The State has supported its assertions with expert testimony by qualified witnesses that there are significant unconservatisms in PFS design. Conversely, the Staff's advocacy of PFS's Motion is unsupported and at times inconsistent with the position it has taken in the Safety Evaluation Report ("SER"). Furthermore, the Staff has completely ignored the public interest component of the exemption standard. There still remain disputed questions of relevant material fact and, as a matter of law, PFS is not entitled to summary disposition of Contention Utah L, Part B.

ARGUMENT

- I. **The Staff's Position Is, in Part, Misleading, Inconsistent with its SER, and Offers No Support for the Facts That Remain in Dispute.**

In its Response the Staff states: "[a]s set forth in considerable detail in the Staff's SER of September 29, 2001 [sic]<sup>1</sup>, the Staff has evaluated the Applicant's seismic exemption

<sup>1</sup>The date is actually September 29, 2000.

request and determined that it should be granted.” Staff’s Response at 9. There are many inconsistencies between the Staff’s position in the SER and the position it has taken in its Response. Moreover, some of the Staff’s edits to PFS’s Facts are misleading. Significantly, the Staff relies entirely on PFS’s witnesses and provides no independent basis for altering PFS’s Facts. The Staff’s editorial changes to PFS’s Facts do not in any way change the State’s Statement of Disputed and Relevant Material Facts (“Utah Facts”). Moreover, the Staff’s edited Facts offer no support for PFS’s Motion for Summary Disposition.

In its Response, the Staff proclaims that “it agrees with the Applicant’s Statement of Material Facts in all material respects.” Staff Response at 11. Although it provides no independent support for or distinction as to which of the Applicant’s Facts are “material,” the Staff nonetheless concludes there are no genuine issues of material fact with respect to Contention Utah L, Part B. *Id.* Because the Staff’s statement is merely conclusory and lacking in any supporting detail, the Board and the State are left to speculate which of PFS’s Facts the Staff, in fact, adopts and which are material. In the Utah Facts, the State has already shown that a substantial number of genuine issues of material fact remain in dispute. Nevertheless, the State here attempts to address the Staff’s partial adoption of PFS’s facts.

A. Conservatism of Design Basis Remains a Genuine Issue of Material Fact In Dispute.

Staff witness Daniel Pomerening strikes “5 to 20 or more times” from PFS’s Fact ¶ 32. *See* Staff’s Response, Aff. ¶ 5, Edited PFS Fact ¶ 32. In striking this phrase, the Staff essentially disputes and undermines a key linchpin in PFS’s summary disposition argument. PFS argues that a 2,000-year design basis earthquake is essentially equivalent to the standard

posed in DOE-STD-1020-94. Applicant's Motion at 7. PFS further argues that equivalent performance goals to DOE-STD-1020-94 are unnecessary to insure design conservatism because performance goals are implicit in the PFS design, whereas NRC standard review plans ("SRPs") have "risk reduction ratios in the range of 5 to 20, or greater." *Id.* at 7-8, Cornell Dec. at ¶¶ 22-25. DOE-STD-1020-94 specifies risk reduction ratios of "5 to 20" for category PC3 and PC4 facilities.<sup>2</sup> See PFS's Motion, Cornell Dec., Exhibit 2, DOE-STD1020-94 at C-5. Notwithstanding that the State disputes PFS Fact ¶ 32,<sup>3</sup> in striking "5 to 20 or more times," the Staff eliminates PFS's claimed design conservatism equivalence with DOE-STD-1020-94. Either the Staff is not supporting this critical aspect of PFS's argument or it does not comprehend the importance of the "5 to 20 or more times" in PFS's argument. In any event, the Staff's edits are misleading of PFS's position and do nothing to support the claimed conservatism of PFS's ISFSI design.

B. The Staff Takes an Inconsistent Position Concerning Annual or Total Probability.

The Staff apparently adopts PFS Fact ¶ 39, otherwise there would be no point in Staff witness John Stamatakos revising it to state: "Under a probabilistic seismic hazard assessment approach, the proper focus in making facility safety decisions is on annual probabilities or frequencies of occurrence. Cornell Dec. ¶ 49; see also Arabasz Dep. at 51-52." Staff Response, Aff. ¶ 5, Edited PFS Fact ¶ 39. The Staff's position before the Board is contradictory to the position it has taken in the SER and in SECY-01-0178. See Utah

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<sup>2</sup>Note in draft DOE-STD-1020-2001, the risk reduction ratio for category PC3 and PC4 facilities are 4 to 20. State Response, Joint Dec., Exhibit D, DOE-STD-1020-2001 at C-6.

<sup>3</sup> See Utah Fact ¶ 32.

Response, Arabasz Dec. ¶ 29. One of the Staff's reasons for support of SECY-01-0178, allowing for the generic use of a 2,000-year earthquake at ISFSI sites, is a claimed equivalence between the total probability of exceedance for a design earthquake at an ISFSI facility with an operational period of 20 years and the proposed pre-closure facility at Yucca Mountain with an operational period of 100 years.<sup>4</sup> SECY-01-0178 at 7. In relying on the total probability for the life of a facility to justify, in part, the same 2,000-year DBE for an ISFSI requested in this case, the Staff takes a totally inconsistent and contradictory position.

The Staff does not independently support its edits to PFS Fact ¶ 39; instead it relies on Cornell Dec. ¶ 49. But the Cornell Declaration relies on a paper by Paté-Cornell to support Dr. Cornell's proclamation: "in virtually all areas of public safety hazards are measured as annual probabilities (or frequencies) of occurrence, regardless of the length of the activity in question, the exposure time, the estimated facility life, or the licensing duration..." However, the Paté-Cornell paper does not establish such a societal norm. See Arabasz Dec. ¶¶ 30-37. In addition, Dr. Cornell's reason for focusing on annual risks in making safety decisions is, in part, based on his assumption that "any facility providing a needed service will, at the end of its operating life, most likely be replaced by some other facility used for the same purposes with its own, similar risks." Here the focus is not societal risks in general. The issue at hand is a risk-acceptance decision specific to the PFS site. Arabasz Dec. ¶37. Accordingly, Cornell Dec. ¶ 49 does not support either the original PFS

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<sup>4</sup>The Staff's position in the Modified Rulemaking does not comport with the 40 year design life listed in Table 4-3 of the PFS SER. SER at 4-8. Furthermore, the Modified Rulemaking Plan makes an illogical comparison, *i.e.*, a license term of an ISFSI (20 years) with an operation life of another facility. See State's Objections and Response to Applicant's 7<sup>th</sup> Set of Discovery Requests, at 9-10 (September 28, 2001).

Fact ¶ 39 or the Staff's edited version of that fact.

C. The Staff's Rationale in the SER Contradicts Its Adoption of Using a Mean Reference Probability of Exceedance.

One of the Staff's five bases for finding PFS's exemption request to use a 2,000-year DBE acceptable, includes the citing to Reg. Guide 1.165 that nuclear power plant have a certain median reference probability level. SER at 2-42. Reg. Guide 1.165 discusses the Staff's preference and rationale to define the reference probability as a median value. See State Response, Arabasz Dec. at ¶¶ 15-16. Now, however, the Staff adopts PFS Fact ¶ 19 that the "use of a median estimate in lieu of the mean estimate for the design of [ ] ISFSIs, could lead to inconsistent mean SSE probabilities..." Staff Response, Aff. ¶ 5, Edited PFS Fact ¶ 19. In its haste to support PFS, the Staff has apparently now abandoned the long established Reg. Guide 1.165 and part of its bases in the SER for finding PFS's exemption request acceptable. The Staff's own Reg. Guide and SER dispute the Staff's adoption of PFS's fact ¶ 19, and the Staff has failed to account for its apparent change in position.

D. The Staff Fails to Support its Edits to PFS's Facts.

In editing PFS Facts ¶¶ 12, 40, and 48, the Staff makes substantive changes to PFS's statement of facts. See Staff's Response, Aff. ¶ 5. There is no independent support for these substantive changes and they are misleading of PFS declarations that remain in support of those facts. In Edited PFS Fact ¶ 12, Staff witness John Stamatakos adds "among others" to modify PFS's statement about "two factors that are relevant to determining the likelihood of seismic failure." *Id.* However the original citations only discuss the two factors described.<sup>5</sup>

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<sup>5</sup>See PFS Motion, Cornell Dec. at ¶¶ 18-19; Arabasz Tr. at 41-42, 81-84, 115-117.

Staff witness Henry Lee makes a material change to PFS Fact ¶ 40 by adding that the cask will be “designed to withstand non-seismic (*i.e.*, impact) loads which significantly exceed the loads that would be induced by a design earthquake.” Staff’s Response, Aff. ¶ 5 Edited PFS Fact ¶ 40. The citation for ¶ 40, Holtec Dec ¶¶ 11-13, fails to support the Staff’s change. PFS witnesses maintain, as in the original Fact ¶ 40, that the cask resists very large earthquake induced forces. Id.

Staff witness Michael Waters adds to PFS Fact ¶ 46 that the dose rate at the PFS facility boundary “will remain below NRC accident dose limits.” Staff Response, Aff. ¶ 5, Edited PFS Fact ¶ 46. Again, the Staff provides no independent support for the insertion. Moreover, PFS witnesses make no mention of an accident dose rate and thus, their joint declaration cannot support the edited Fact. *See* PFS Motion, Holtec Dec. ¶¶ 25-32.

Although Staff witness Michael Waters modifies and adopts PFS Fact ¶ 48, neither the Staff nor PFS provides any support for the statement. *See* Staff Response, Aff. ¶ 5, Edited PFS Fact ¶ 48. The supporting citation is to PFS’s witness stating that another contractor performed dose calculations. However, in relying on the calculations, the PFS witness does not cite to or append the relevant calculations. Here, we have the Staff relying on a PFS witness who is relying on another uncited source. This is hardly persuasive.

The Staff strikes PFS’s claimed estimates of conservatism in PFS Facts ¶¶ 36, 37, 54. *See* Staff Response, Aff. ¶ 5. On the one hand, the Staff apparently supports PFS’s gross, unquantified claims of conservatism, but its elimination of PFS’s attempt to quantify its design conservatism leaves the reader puzzling over whether the Staff does, in fact, accept PFS’s position. One interpretation of the Staff’s position is that by eliminating the

quantified terms, the Staff disputes the PFS's Facts that it adopts. Whatever the interpretation, the Staff's position does not overcome the State's dispute of PFS Facts ¶¶ 37, 54. See Utah Facts ¶¶ 36, 37, 45.

The Staff also strikes "directly quantifiable" from PFS Fact ¶ 55. Staff's Response, Aff. ¶ 5. The Staff's action is curious. Although striking the term "directly quantifiable," the Staff leaves untouched the term "non-quantifiable conservatisms" later in the statement. *Id.* Also, the Staff's edits in ¶ 55, which cross reference PFS Facts ¶¶ 50-53, are inconsistent with PFS Facts ¶¶ 51 and 52 where the modifier "directly quantifiable" remains unstricken by the Staff. Here the reader cannot fathom the Staff's position on whether PFS has quantified the claimed conservatisms in its ISFSI design.

Notwithstanding the Staff's grammatical and substantive edits to PFS's Facts, the State disputes of PFS Facts remain in contention.<sup>6</sup> The Staff has taken a position inconsistent with the SER and by editing PFS's facts while still relying on PFS's original citations, the edited facts are misleading as to the cited references. The State urges the Board to set this matter for hearing.

## **II. The Staff's Response Offers No Support that PFS's ISFSI Design for the Skull Valley Site Is Conservative.**

The design standard PFS proposes to use for the Skull Valley site is not conservative. Both the Staff and PFS ignore that fact that ground motions at the PFS Skull Valley ISFSI site are approximately 0.7 g for a 2,000-year earthquake; for a 10,000-year earthquake ground

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<sup>6</sup>The Staff has edited PFS Facts ¶¶ 7, 12-15, 19, 24-26, 29, 31, 32, 35-37, 39, 40, 43, 44, 46, 48, 50, 51, 54-56. In its Response to PFS's Motion, the State disputed most of PFS's Facts edited by the Staff. See Utah Facts ¶¶ 19, 25, 27-32, 35-41, 45.

motions would increase to 1.2 g to 1.3 g. *See e.g.*, Utah Response Exh. 5. The Staff and PFS attempt to rely on standards that have been developed for sites where ground motions are in the range of 0.2 - 0.5 g;<sup>7</sup> they completely ignore the fact that, in some instances, there are no generic design standards (*e.g.*, for foundations of the CTB and storage pads); or that when standards do exist they do not translate to the PFS ISFSI. *See* Utah Response at 14-15.

The Staff and PFS are asking the Board to find that PFS's ISFSI design is conservative and protective of public health and safety. They even argue that the design can withstand a 10,000-year earthquake. *See* Staff's Response at 10-11 (item 9). But the design standards are not conservative and the Staff's and PFS's rationale for the requested exemption are riddled with mistakes, inapplicable comparisons and unsupported conclusions. To find for PFS and the Staff, the Board would have to ignore the unconservatism of PFS's design and the critical safety issues stemming from that design that the State has presented in its Response and in this Reply. To ignore these issues is antipodal to the protection of public health and safety and to the public interest.

In its Response, the Staff, in part, appears to adopt PFS's new rationale<sup>8</sup> while at the same time it still clings to its rationale in the SER. *See e.g.*, Staff's Response at 8-9. As pointed out above, such a position has created inconsistencies between the SER and the Staff's current position before the Board. Moreover, in championing PFS's Motion, the Staff has blinded itself to the issues the State initially raised in Utah L, Part A, and Utah QQ

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<sup>7</sup>The HI-STORM Certificate of Compliance, for example, is bounded by ground motions of less than 0.5 g (State Response, Resnikoff Dec. ¶12); at the INEEL TMI-2 ISFSI site, ground motions for a 2,000-year and a 2,500-year earthquake are 0.30g and 0.36g, respectively. State's Response, Exh. 5.

<sup>8</sup> This fact must be gleaned from the Staff's asserted position that the Staff agrees with PFS's Facts "in all material respects" albeit with some qualifications. Staff's Response at 11.

-- issues that are germane to deciding whether PFS's design is conservative.<sup>9</sup> Id. at n. 14.<sup>10</sup>

The Staff asserts that no genuine dispute of Facts remains. Id. at 9. It supports this proposition by merely summarizing PFS's Motion for Summary Disposition in eight one sentence items. Id. at 9-10. The Staff summarily concludes: "the use of a PSHA with a 2,000-year return period ensures an adequate level of conservatism." Id. at 10 (item 8). The Staff props up this naked conclusion by referring to the State's witness, Dr. Arabasz, as agreeing that the use of probabilistic seismic hazard analysis is an appropriate methodology for the PFS facility. Staff's Response at 9 (item 1). This is not accurate. The State's witness qualifies his endorsement of the PSHA methodology for the PFS facility. First, in Dr. Arabasz's opinion, PFS has not conducted a fully deterministic seismic hazard analysis.<sup>11</sup> Second, Dr. Arabasz is of the opinion that, in addition to a DSHA being required by current NRC regulations, it "establishes a benchmark to which results of any probabilistic seismic hazard analysis can correctly be compared to evaluate the conservatism of the PSHA results...." Arabasz Dec. ¶9. Finally, Dr. Arabasz agrees with PFS's proposition that sufficient protection depends on both the probability of occurrence of the seismic event and the level of conservatism incorporated in the design procedures and criteria but,

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<sup>9</sup> To the extent that footnote 14 suggests that the State's witnesses agree that Utah QQ raises "untimely" design issues, the State believes the Staff has misread Dr. Ostadan's and Dr. Bartlett's deposition testimony. In the professional judgment of both of the State's witnesses, they assert that the issues raised in Utah QQ cannot be divorced from a finding of whether or not PFS's facility design is conservative. See Joint Dec. at ¶25.

<sup>10</sup> Footnote 14 does not appear to relate to item 4 to which it is appended. Item 4 relates to the Staff's disavowal of the radiation dose approach presented in SECY-98-126. Response at 10.

<sup>11</sup> See Arabasz Dec. ¶9 to the Utah Response, *citing* to Staff's Response to Utah's 6th Set of Discovery to the Staff, dated February 14, 2000 (acknowledgment by Staff that PFS did not conduct a DSHA that meet 10 CFR Part 100, App. A).

significantly, Dr. Arabasz defers to the State's experts, Drs. Ostadan, Bartlett and Khan, as to what constitutes an "appropriately conservative" and "sufficiently protective" design of the PFS facility. Arabasz Dec. ¶¶ 12 and 38. This then leads to item 2 of the Staff's Response, wherein "sufficiently protective of the public health and safety" is asserted by considering the higher protection standard for nuclear power plants, performance standards for DOE performance category 3 ("PC-3") facilities under DOE-STD-1020-94, and "the existence of risk reduction factors in the PFSF [sic] facility design." Staff Response at 9.

The Staff has presented nothing new from what PFS presented in its Motion. What is new from the Staff's position in the SER is the Staff's acceptance of PFS's risk reduction ratios. Not only are the risk reduction ratios claimed by PFS for its facility in comparison to DOE PC-3 and 4 facilities unsubstantiated but also SRPs for ISFSIs may incorporate less conservatism than SRPs for nuclear power plants;<sup>12</sup> this undermines PFS's claims of risk reduction ratios for the PFS ISFSI. Joint Dec. ¶¶ 51-54.

In the SER, the Staff completely ignored any evaluation or analysis of DOE performance standards. SER at 2-40 to -42. The selection of the design basis earthquake ground motion is explicitly coupled with a thorough evaluation of the fragility of or damage to the SSC. Utah Response, Utah Joint Dec. ¶ 36. In the SER the Staff merely used DOE-STD-1020 to support the selection of a 2,000-year earthquake and ignored the remaining philosophy of DOE-STD-1020 as it relates to performance goals. Furthermore, in its

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<sup>12</sup>As the Staff acknowledges that ISFSIs are less vulnerable to earthquake-induced accidents than nuclear power plants ("NPPs") and the potential consequences of seismic failure of ISFSIs are much less severe than those of NPPs, the SRPs in NUREG 1536 and 1567 may already incorporate less conservatism than NPP SRPs. See Utah Joint Dec. ¶ 54.

Response, the Staff is mute on the fact that DOE-STD-1020-01 now proposes to use a 2,500-year DBE for performance category 3 facilities.

Item 9 of the Staff's Response is extremely cryptic: "various aspects of the PFSF design" result in SSCs at PFS capable of withstanding even a 10,000-year earthquake (*i.e.*, "the severe seismic events postulated by the State"). Staff's Response at 11. The Staff does not elaborate on what "various aspects" it is relying upon to champion PFS's position. Moreover, the SER offers no hint of what these "various aspects" may be because the rationale in the SER for recommending the grant of the exemption is mute on whether SSCs at PFS can withstand a 2,000-year or a 10,000-year return period earthquake. SER at 2-41, -42. As described in the State's Response, the potential for significant uplift and uncontrolled sliding of the HI-STORM casks at the PFS site is certainly one aspect of the PFS facility design that demonstrates that up to 4,000 critical SSCs may not withstand a 10,000-year earthquake – or a 2,000-year one.<sup>13</sup> Utah Response at 15-16; Utah Joint Dec. ¶¶ 62-75 and Att F. This aspect of PFS's design – unanchored casks that are supposed to slide in a "controlled" manner during intense ground shaking – demonstrates the unconservatism built into SSCs at the PFS site. Not only is this aspect of PFS's design unprecedented and defiant of general engineering practices, Utah Response at 14, but also it is unprecedented for the NRC to approve the use of unanchored casks at a site with ground accelerations are greater than 0.4g. Utah Response, Utah Joint Dec. ¶ 30.<sup>14</sup>

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<sup>13</sup>The State's independent analysis of the capability of the HI-STORM casks to withstand strong ground motions at the PFS site concludes that the unanchored HI-STORM casks will likely experience excessive dislocation and tip over at ground accelerations of 0.7g. Utah Response, Utah Joint Dec. ¶¶ 55, 74.

<sup>14</sup>Even PFS's witness acknowledged that unanchored HI-STORM 100 casks have never been considered at any site with ground accelerations at or above 0.7g. Utah Joint Dec. ¶ 30 n. 3.

Finally, in items 3 and 4, the Staff refers to SECY-98-126 and finds that it is of no consequence. The Staff has still failed to discuss why, at the time it recommended the grant of an exemption to PFS, it ignored SECY-98-126; the Commission's qualified approval of a modification to the rulemaking plan, SECY-01-178, does not excuse the Staff disregarding directions from the Commission at that time. Moreover, SECY-98-126, allowing for the use of a PSHA and 10,000-year earthquake, still provides a valid consideration of an appropriately design earthquake for the PFS site. See Utah Response at 8-10.

**III. The Staff and PFS Have Not Meet the Burden of Showing that a Grant of an Exemption to PFS from the Seismic Regulations Is in the Public Interest.**

Nowhere in the Staff's Response is there a discussion of the public interest component of the exemption standard. See 10 CFR § 72.7. As the agency charged with protection of public health and safety, it should be incumbent upon NRC to address the public interest component of PFS's request to be exempted from duly promulgated regulations. As stated in the State's Response, PFS's exemption will defeat the underlying purpose of the rule. Utah Response at 9-10. Moreover, undue risk to public health and safety will ensue from the radical and unconservative nature of PFS's design, and public confidence will be undermined when compared to other non-nuclear facilities in Utah that are designed to more stringent earthquake standards than those proposed for the PFS site. Utah Response, Utah Joint Dec. ¶¶ 29, 32, 33. As the record now stands, the Staff's position on PFS's exemption request is arbitrary and capricious and cannot provide a basis for one of the required findings the Commission must make in order to issue a license to PFS – that the activities authorized by a license issued to PFS “can be conducted without endangering the

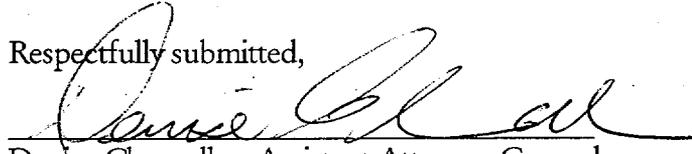
health and safety of the public and ... these activities will be conducted in compliance with the applicable regulations of [Part 72] . . .” 10 CFR § 72.40(a)(13).

### CONCLUSION

The crux of PFS’s Motion is whether the Board can indisputably determine that PFS’s design is conservative; that the design is protective of public health and safety; and that the requested exemption, as recommended for approval by the Staff, is in the public interest. The answer to any and all of these concerns is a resounding no. For the reasons stated above, the State requests the Board deny PFS’s Motion for Summary Disposition and set this matter for hearing.

DATED this 17th day of December, 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 CONTENTION UTAHL, PART B was served on the persons listed below by electronic mail (unless otherwise noted) with conforming copies by United States mail first class, this 17th day of December 2001:

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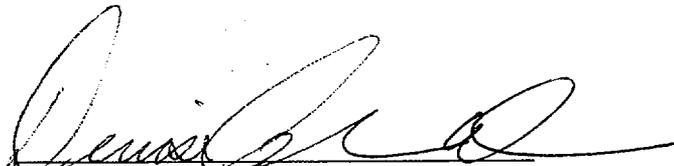
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