

May 21, 2007

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
PA'INA HAWAII, LLC)	Docket No. 30-36974
)	
Material License Application)	ASLBP No. 06-843-01

NRC STAFF SECOND RESPONSE TO THE
LICENSING BOARD'S APRIL 30, 2007 ORDER

INTRODUCTION

On April 30, 2007, the Atomic Safety and Licensing Board ("Board") in the above-captioned proceeding issued an order presenting questions to be addressed by the NRC staff ("Staff"). In accordance with the Order, the Staff responded to question 3a on May 7, 2007, as updated on May 15, 2007 to reflect new information. The Staff's responses to the Board's remaining questions follow.

STAFF RESPONSES

1. As noted above, the Staff in its Draft Topical Report and Draft Environmental Assessment, provides statements and analyses regarding the probability and consequences with respect to aircraft crashes, tsunamis, and hurricanes. In regard to probability, the Staff outlines its approach for making such an assessment and provides a description of the methodology set forth in NUREG-0800. Additionally, the Staff provides a brief discussion of the consequences of such events. What is missing from this discussion is a description of how the Staff determined that the risks associated with these events are acceptable taking into account the probability of the event's occurrence.

- a. Did the Staff make such a determination?

The Board, in providing background for its questions, makes reference to the *Private Fuel Storage, LLC (PFS)* case as analogous to the current situation in regard to establishing threshold probabilities for design basis events. The Staff does not believe these situations are analogous. In fact, the premise seems to indicate a mixing of safety criteria with environmental

criteria. The Staff has previously and continues to maintain that where the Commission explicitly decided that siting criteria were not necessary for irradiators from a safety standpoint, the decision to issue an Environmental Assessment (EA) in this particular case to settle an environmental contention does not transform this case into something akin to the *PFS* situation. An examination of the two situations follows and helps make this evident.

As part of its safety review of the application, the Staff did not establish a design basis threshold probability akin to the standard established for independent spent fuel storage installations (ISFSIs) by the Commission during the licensing proceeding for the PFS facility. The *PFS* proceeding concerned an application for authorization to construct and operate an ISFSI in Skull Valley, Utah pursuant to the NRC's regulations in 10 C.F.R. Part 72. *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), LBP-01-19, 53 NRC 416, 417 (2001). At issue was the threshold probability for a credible design basis accident. *Id.* at 429. 10 C.F.R. Part 72, Subpart E imposes siting requirements for ISFSIs and designates the external natural and man-induced events that the facility must be designed to withstand. See 10 C.F.R. §§ 72.92 and 72.94. However, the regulations do not define the threshold probability for the events that must be considered. Thus, in *PFS*, the question before the Board and, eventually, the Commission was the correct numerical threshold probability for design basis external natural and man-induced events at ISFSIs. *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255 (2001); *PFS*, LBP-01-19, 53 NRC at 429-431.

The question before the Board here is quite different. As the Board noted, in contrast to the explicit siting factors for ISFSIs in 10 C.F.R. Part 72, Subpart E, the existing regulatory framework for irradiators at 10 C.F.R. Part 36 does not address accidents, natural events, or terrorism, and, in fact, when implementing Part 36, the Commission specifically declined to impose siting requirements for irradiators. 58 Fed. Reg. 7715, 7725-26 (Feb. 9, 1993).

With respect to aircraft crashes in particular,¹ the Commission found that a prohibition against siting irradiators at airports was “not justified on safety grounds” because the design of the facility and the nature of the sources would ensure that “the radiological consequences of an airplane crash at an irradiator would not substantially increase the seriousness of the” crash. *Id.* The sole remaining admitted contention in the instant proceeding, Safety Contention #7, alleges that an analysis of the probability and consequences of an aircraft crash at the proposed irradiator was improperly omitted from the license application. This contention explicitly raises the question of whether, in light of the text of the applicable regulations and the regulatory history above, a threshold probability for design basis events should be established so that the safety consequences of events below the threshold can be analyzed. The Staff has maintained that the answer to the question is “no.”²

The Staff did prepare a “Draft Topical Report on the Effects of Potential Natural Phenomena and Aviation Accidents at the Proposed Pa’ina Hawaii, LLC Irradiator Facility” (“Draft Topical Report”), which included a calculation of the numerical probability of an aircraft crash at the proposed irradiator and an analysis of the potential consequences, but the Draft Topical Report was not intended to support the Staff’s safety review of the Pa’ina Hawaii license application. Rather, the purpose of the Draft Topical Report was to support the Staff’s environmental review of the license application which, despite the existence of a categorical

¹ The Commission also considered and rejected siting requirements with respect to possible flooding or tidal waves at irradiators, but did impose limited design requirements for irradiators constructed in seismic zones. *Id.* at 7726; 10 C.F.R. § 36.39(j). Otherwise, the Commission stated “that, in general, irradiators can be located anywhere that local governments would permit an industrial facility to be built.” 58 Fed. Reg. 7726.

² See “Staff Response to Request for Hearing by Concerned Citizens of Honolulu” at 11 (Oct. 29, 2005).

exclusion, was performed in an effort to settle this proceeding.³ In the NRC's environmental review process, if a finding of no significant impacts (FONSI) cannot be made, an environmental impact statement (EIS) must be prepared. Thus, in analyzing the probability and consequences of both aircraft crashes and accidents involving natural phenomena in the context of preparing the draft EA for the proposed irradiator, the Staff's threshold standard was "significance" in an informed, qualitative, not purely quantitative, analysis. NEPA does not require the use of strict numerical thresholds in its analyses, nor does it require that an agency base its analysis purely on quantitative data. Rather, a NEPA analysis may be based on qualitative assessments of accidents and consequences and the qualified judgments of experts. See *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016, 1031-32 (9th Cir. 2006); see also *Pacific Gas & Elec. Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-07-11, 64 NRC ___, slip op. at 4 (February 26, 2007). Unlike the *PFS* situation, the examination of probabilities in this case was for *environmental* purposes and was never meant to be examined using numerical criteria that would duplicate the development of design basis threshold probabilities utilized for other facilities in *safety* analyses.

³ Based on the Draft Topical Report, Pa'ina Hawaii, LLC ("the Applicant") sought to dismiss Concerned Citizens of Honolulu's ("the Intervenor") Safety Contention 7, which challenged the omission of an analysis of the probabilities and consequences of an aircraft crash as the proposed facility. "Applicant Pa'ina Hawaii, LLC's Motion to Dismiss Safety Contention #7" (Jan. 8, 2007). The Staff supported the Applicant's motion to dismiss because, if such an analysis were actually required, the information in the Draft Topical Report would cure the alleged *omission* of such information. "NRC Staff Response to Applicant Pa'ina Hawaii, LLC's Motion to Dismiss Safety Contention #7" (Jan. 19, 2007). However, because it has been and remains the Staff's position that no such analysis is required, the Draft Topical Report was produced with only the requirements of NEPA in mind. Thus, the Staff has not drawn safety conclusions from the Draft Topical Report.

b. If so,

i. What regulatory framework did the Staff use to determine the appropriate threshold?

As stated above, no threshold was determined for the Staff's safety review. For its environmental review, the Staff operated under the framework dictated by NEPA and implemented by the NRC's regulations in 10 C.F.R. Part 51.⁴

(a) What is that threshold?

The threshold in the environmental review is the "significance" of environmental effects. The purpose of the Staff's EA is to determine whether the proposed action (here, licensing the proposed irradiator) will "have a significant effect on the human environment." 10 C.F.R. § 51.14; *see also* 10 C.F.R. § 51.31.

(b) What is the legal authority for the Staff's use of such a threshold?

The use of this threshold is established under Section 102 of NEPA, which directs federal agencies to evaluate the environmental impacts of every major federal action. While, as explained above, the NRC's regulations implementing NEPA direct the Staff to determine whether a proposed action will have a significant effect on the human environment, Part 51 does not specifically define significant. Significance, however, is defined by the CEQ's regulations. 40 C.F.R. § 1508.27. In the context of NEPA, the term significantly "requires consideration of both context and intensity." *Id.* Context "means that the significance of an action must be analyzed in several contexts [depending on] the setting of the proposed action. . . . For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole." *Id.* Intensity "refers to the severity of impact." *Id.*

⁴ Pursuant to 10 C.F.R. § 51.10, the NRC also takes into account insights and guidance provided by the Council on Environmental Quality's (CEQ) regulations at 40 C.F.R. Parts 1500 through 1508.

(c) What were the essential factors for determining the threshold?

The essential factors for determining whether effects are significant are outlined in NUREG-1748, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," July 2003 ("NUREG-1748").⁵ These criteria include whether:

- There are significant adverse impacts despite the existence of beneficial impacts;
- There are undesirable public health or safety effects;
- The geographic area for the proposed action possesses unique characteristics such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild/scenic rivers or ecologically critical areas;
- The impacts on the quality of the human environment are controversial;
- The impacts on the human environment are highly uncertain or involve unique or unknown risks;
- The proposed action establishes a precedent for future actions with significant impacts;
- The proposed action is related to other actions with individually insignificant, but cumulatively significant impacts;
- The proposed action adversely affects districts, sites, structures or other objects listed in or eligible for listing in the *National Register* or will result in significant destruction of scientific, cultural, or historical resources;
- The proposed action will adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act; or
- The proposed action will cause a violation of Federal, State or local law or requirements for the protection of the environment.

NUREG-1748 at 3-12 to 3-13. If the response to any of the above is "yes," the impacts are significant and an EIS is normally required. *Id.* At 3-13. In this instance, after completion of the draft EA, the Staff determined that the response to all of the above is "no" and, therefore, issued a draft FONSI.

(d) Did the Staff, in determining the appropriate threshold, use an established regulatory framework that has been applied in previous reviews?

The regulatory framework in 10 C.F.R. Part 51 is well-established. The guidance in NUREG-1748, including the above guidance on significance, is followed in all Staff

⁵ These criteria are consistent with the definition of "significantly" at 40 C.F.R. § 1508.27.

environmental reviews for materials licensing actions. Because the Commission has determined in 10 C.F.R. § 51.22(c)(14)(vii) that applications for irradiators are subject to a categorical exclusion and do not require an EA, the general guidance on environmental reviews for materials licenses has not previously been applied to irradiator applications.

- ii. How did the regulatory framework take into account the dose limits set forth in 10 C.F.R. Part 20?

In preparing the draft EA, the Staff did take into account the dose limits set forth in 10 C.F.R. Part 20, as is the general practice in environmental reviews. For normal operations, it was determined that dose limits would be well below the occupational limits in Part 20. For accidents and natural events, the Staff's finding was based on the lack of a credible release pathway which would expose members of the public to doses in excess of the limits in Part 20.

2. If the Staff did not make the threshold determination described in question 1, can the merits of the Intervenor's contentions with respect to aircraft crashes, tsunamis, and hurricanes be addressed without first establishing an appropriate threshold probability?

- a. What is the legal authority for proceeding without such a threshold?

The Staff is proceeding without a threshold probability based on the applicable regulations, in particular, 10 C.F.R. Parts 30 and 36. Although other regulations, such as 10 C.F.R. Parts 20 and 30, are pertinent to licensing irradiators, the particular requirements specific to irradiators are set forth in 10 C.F.R. Part 36. Part 36 contains no siting requirements; as the Board noted, the Commission specifically determined that no such siting requirements are necessary. See 58 Fed. Reg. 7715, 7726 (Feb. 9, 1993).⁶ The Intervenor interprets the general regulation at 10 C.F.R. § 30.33(a)(2) that states that a license will be granted if the license "applicant's proposed equipment and facilities are adequate to protect health and minimize danger to life or property" as requiring an analysis of the probability and safety

⁶ This is in contrast to the regulations governing the issuance of licenses for ISFSIs, which, at 10 C.F.R. Part 72, Subpart E, specifically outline siting requirements.

consequences of an aircraft crash at the proposed facility despite the absence of any specific regulatory requirement to perform such an analysis. In contrast, the Staff has consistently applied 10 C.F.R. § 30.33(a)(2) in concert with other applicable regulations to determine compliance with section 30.33(a)(2). See NUREG-1556, "Consolidated Guidance About Materials Licenses," Vol. 6, "Program Specific Guidance About 10 CFR Part 36 Irradiator Licenses" at 8-19 to 8-32 (1999). The Staff has found that an applicant that demonstrates compliance with applicable specific regulations, such as 10 C.F.R. Part 36 or applicable provisions in 10 C.F.R. Part 20, has, absent extraordinary and unique circumstances calling for additional analysis, demonstrated compliance with 10 C.F.R. § 30.33(a)(2). The Staff's review of the safety portion of the application has found that the application demonstrates compliance with the applicable requirements of Part 36, Part 20, and other pertinent regulations, and the Staff has found no extraordinary or unique circumstances that would require additional analysis to demonstrate that the "applicant's proposed equipment and facilities are adequate to protect health and minimize danger to life or property" as required by 10 C.F.R. § 30.33(a)(2).

- b. Based upon established threshold probabilities for reactors and ISFSIs, provide an analysis of how an appropriate threshold would be established for irradiators if none currently exists.

If required, a design basis threshold probability for irradiators would be established in much the same way that the threshold probabilities were established for power reactors and ISFSIs. In the *PFS* proceeding, the Commission found that it was appropriate to set a lower threshold for ISFSIs than for power reactors because the failure of an ISFSI "would not pose nearly the same radioactive consequences as a reactor failure." *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264-65 (2001).

The proposed irradiator would contain far less radioactive material than is present at an ISFSI. Given the fact that the Commission found irradiators of such low environmental impact that it categorically excluded such facilities from the requirements from an environmental review,

and given that the Commission also determined that specific siting criteria were not necessary for irradiators, it reasonably follows that, because of the nature of the facility and the sources, the threshold probability for an irradiator would likely be much lower than the threshold probabilities for power reactors and ISFSIs.

- c. We note that the threshold for ISFSIs in PFS was established by the Licensing Board and affirmed by the Commission. Is the establishment of an appropriate threshold within the authority of this Board or does the Commission's ruling in PFS, CLI-01-22, 54 NRC 255 (2001), instruct that the Commission must make that determination in the first instance? That is to say, if this matter is one of "law and policy," must the Commission make this determination before we proceed?

It is the Staff's position that, pursuant to the Commission's decision in the *PFS* proceeding, it is unnecessary for the Board to establish any threshold. To do so would be inconsistent with the existing regulations. The present regulatory framework provides no threshold probability for irradiators, a situation directly analogous to the *PFS* licensing, where the Commission stated: "As no law or regulation establishes the threshold probability for design basis accidents at an ISFSI, the *Commission must* select a standard it finds sufficiently protective." CLI-01-22, 54 NRC 263 (emphasis added).

As discussed above in the response to Question 1.a., the Commission has previously considered imposing siting requirements and specifically rejected the notion. 58 Fed. Reg. 7725-26. To impose such requirements now and establish a design basis event threshold probability would contravene the current regulations and the Commission's specific intent in promulgating 10 C.F.R. Part 36. Thus, the determination to impose a design basis event threshold probability is substantially, though perhaps not solely, a question of policy and is a question squarely within the purview of the Commission. To the extent the Board may be inclined to impose such a threshold, the Board should certify the question to the Commission pursuant to 10 C.F.R. § 2.319(l).

- d. Since the Draft EA and Draft Topical Report address, in large part, the analysis of the probability and consequences of the various accident scenarios, would the establishment of a probability threshold, by the Commission or otherwise, require the Staff to issue new draft documents before proceeding in this licensing matter? If so, what would be the merit of moving forward with these contentions if new documents are forthcoming?

The Staff proceeded with the EA and the supporting Draft Topical Report as the result of settlement negotiations with the Intervenor, Concerned Citizens of Honolulu. It is the Staff's position that the regulations require no such environmental review. It is not, therefore, clear that there is any impetus to create a generic threshold applicable to irradiators. As discussed above, the Staff has followed its customary and well-established process for the environmental review of the Pa'ina Hawaii application and has also followed the relevant guidance for the safety review, NUREG-1556, which does not establish a threshold probability. Because the Staff has not considered any threshold probability in its safety review, were the Commission to implement such a threshold, the Staff may have to supplement its safety review. Even under this circumstance, however, the parties could move forward and resolve any admitted environmental contentions while the Staff completed any needed revisions to its safety review.⁷

3. Environmental Impact of Terrorism

- a. What is the Staff's time-frame for the completion of its NEPA review for a terrorist attack at the proposed site?

In its May 7, 2007 response, the Staff stated that the portion of the EA related to terrorism was to be published on May 15, 2007. However, as explained in the May 15, 2007 Board Notification, the supplement will now be issued by June 1, 2007.

⁷ As the Commission previously noted in this proceeding, bifurcating the proceeding between environmental and safety issues is not unusual in NRC proceedings. *Pa'ina Hawaii, LLC* (Material License Application), CLI-06-18, 64 NRC 1, 6 (2006).

- b. Will the Staff's review of the environmental impacts of such an attack use the probability threshold approach used in the design basis framework?

No, the portion of the EA related to terrorism will not establish a probability threshold akin to the design basis threshold for an ISFSI. Rather, the terrorism analysis will follow the significance standard discussed above using an informed qualitative analysis.⁸

- c. If so, could such a threshold be applied to unintentional aircraft crashes and natural phenomena?

As discussed above, the significance standard has already been applied to unintentional aircraft crashes and natural phenomena in the draft EA.

Respectfully submitted,

/RA by Margaret J. Bupp/

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Counsel for the NRC Staff

Dated at Rockville, Maryland
this 21st day of May, 2007

⁸ In CLI-07-11, the Commission specifically stated that when preparing an environmental assessment of the consequences of an act of terrorism, the Staff "may rely, where appropriate, on qualitative rather than quantitative considerations." 64 NRC ___, slip op. at 4.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF SECOND RESPONSE TO THE LICENSING BOARD'S APRIL 30, 2007 ORDER" in the above-captioned proceedings have been served on the following by deposit in the United States mail; through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (*), and by electronic mail as indicated by a double asterisk (**) on this 21st day of May, 2007.

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