

December 2, 2005 (8:00am)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
Pa'ina Hawaii, LLC)
)
Materials License Application)
_____)

Docket No. 30-36974-ML
ASLBP No. 06-843-01-ML

PETITIONER'S REPLY IN SUPPORT OF ITS REQUEST FOR HEARING

I. INTRODUCTION

Neither Pa'ina Hawaii nor the Nuclear Regulatory Commission ("NRC") Staff challenge Concerned Citizens of Honolulu's standing to participate in this proceeding. Accordingly, as long as Concerned Citizens has raised at least one admissible contention, a hearing is required. For the reasons set forth in its initial hearing request and further discussed below, Concerned Citizens has raised numerous contentions regarding Pa'ina Hawaii's failure to satisfy the regulatory requirements for irradiators, including the fundamental obligation to ensure its "proposed equipment and facilities are adequate to protect health and minimize danger to life or property." 10 C.F.R. § 30.33(a)(2). Moreover, Concerned Citizens has raised admissible contentions regarding the NRC's failure to comply with the National Environmental Policy Act ("NEPA") in reviewing Pa'ina Hawaii's application. See id. §§ 30.33(a)(5) (barring approval of application until environmental review pursuant to NEPA concluded), § 51.94 (requiring consideration of environmental impact statement in decision-making process).

TEMPLATE = SECY - 037

SECY - 02

II. CONCERNED CITIZENS HAS STANDING

In light of the Staff's concession Concerned Citizens has representational standing and Pa'ina Hawaii's failure to contest the issue, the Board should find Concerned Citizens has established standing "under traditional judicial concepts of standing." Staff Response at 5. Should the Board desire to examine other bases for standing, it should also find Concerned Citizens has established "proximity-plus" standing, as well as standing based on procedural injury.

A. "Proximity-Plus" Standing.

Since the Staff "readily concedes that the proximity of at least some members of Concerned Citizens would be close enough to support almost any definition of an appropriate distance requirement for this facility," *id.* at 3, the only question for application of "proximity-plus" standing is whether Pa'ina Hawaii's proposed irradiator presents "an obvious potential for offsite consequences." Sequoyah Fuels Corp. and General Atomics (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n.22 (1994). The Staff's claim such potential does not exist cannot be squared with well-settled precedent that "proximity-plus" standing is available as long as there is a "plausible scenario," even if "a highly unlikely one," that "could result in the dispersion of radioactive material." CFC Logistics, Inc. (Cobalt-60 Irradiator), LBP-03-20, 58 NRC 311, 320 (2003). As Concerned Citizens explained in its moving papers, numerous plausible scenarios exist that would result in releases from Pa'ina Hawaii's proposed irradiator, including accidents related to cask drops, airplane crashes, terrorist attacks, tsunamis, and hurricanes. Petition at 4-6. As in CFC Logistics, a case involving a pool type food irradiator nearly identical to the one

proposed by Pa'ina Hawaii, the Board should find "it is appropriate to make the 'proximity-plus presumption' available in this proceeding." 58 NRC at 321.¹

The NRC's adoption of a categorical exclusion for irradiators does not, as the Staff claims, preclude application of "proximity-plus" standing. NEPA's implementing regulations recognize that even activities that are "normally excluded" from NEPA compliance may, in appropriate circumstances, nonetheless "have a significant environmental effect." 40 C.F.R. § 1508.4; see also 10 C.F.R. § 51.22(b) ("in special circumstances," action within categorical exclusion requires NEPA analysis). Here, the location Pa'ina Hawaii has selected for its proposed irradiator – immediately adjacent to active runways at Honolulu International Airport, in a tsunami evacuation zone, in an area vulnerable to hurricanes, etc. – presents a host of threats from both man and nature not normally present in the run-of-the-mill irradiator project. Combined with Pa'ina Hawaii's failure to provide adequate measures to guard against those threats, it is "neither 'extravagant' nor 'a stretch of the imagination'" to envision many scenarios that would result in radiation releases from the facility. Georgia Institute of Technology (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 117 (1995). Accordingly, application of "proximity-plus" standing is warranted.

¹ This case is easily distinguished from the Peach Bottom Nuclear Power Plant proceeding cited in the Staff's response, in which transfer of the non-operating 50-percent ownership interest in the power station would "result in no changes to the fiscal plant itself, its operating procedures, design basis accident analysis, management, or personnel." Exelon Generation Co. & PSEG Nuclear, LLC (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-05-26, slip op. at 6 (Oct. 26, 2005). In contrast, Pa'ina Hawaii proposes to construct and operate an entirely new facility, which poses threats that would not exist if its materials license application were denied.

B. Standing Based On Procedural Injury.

In arguing Concerned Citizens has not established standing based on procedural injury, the Staff “confuses the jurisdictional inquiry ... with the merits inquiry.” Ecological Rights Found. v. Pacific Lumber Co., 230 F.3d 1141, 1151 (9th Cir. 2000); see also Staff Response at 5 n.4. “[I]t has never been necessary ‘to establish, as a precondition to intervention, that [a petitioner’s] concerns are well-founded in fact.’” Consumers Power Co. (Palisades Nuclear Plant), LBP-79-20, 10 NRC 108, 115 (1979) (quoting Virginia Electric and Power Company (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 56 (1979)). Thus, whether Concerned Citizens’ allegations regarding the NRC’s failure to comply with NEPA ultimately “prove to be valid” is not relevant in determining whether it has standing to pursue its claims. Id.

To assert a procedural injury sufficient to support standing, Concerned Citizens need only establish a “sufficient geographic nexus to the site of the challenged project that [they] may be expected to suffer whatever environmental consequences’ may result” from construction and operation of the proposed irradiator. Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1112 (9th Cir. 2002) (quoting City of Davis v. Coleman, 521 F.2d 661, 671 (9th Cir. 1975)). The numerous declarations Concerned Citizens submitted with its petition establish that its members live, work, and recreate in areas that would be adversely affected should a release of radiation from Pa‘ina Hawaii’s irradiator occur. This is all Concerned Citizens must show to establish procedural injury. See Citizens for Better Forestry v. U.S. Department of Forestry, 341 F.3d 961, 972 (9th Cir. 2003) (in NEPA action, plaintiff need not present “‘proof’ that the challenged ... project will have particular environmental effects”) (quoting City of Davis, 521 F.2d at 671); Kootenai Tribe of Idaho, 313 F.3d at 1112 (NEPA plaintiffs “adequately allege injury in fact

when they aver that they use the affected area and are persons ‘for whom the aesthetic and recreational values of the area will be lessened’ by the challenged activity”) (quoting Friends of the Earth v. Laidlaw Env’tl. Serv., 528 U.S. 167, 183 (2000)).

III. CONCERNED CITIZENS’ CONTENTIONS ARE ADMISSIBLE

A. The Scope Of This Proceeding Broadly Includes All Issues Related To Whether Pa’ina Hawaii’s Irradiator Would Adequately Protect Public Health And Safety.

To be admissible, each of Concerned Citizens’ contentions must raise an issue that is (1) within the scope of this materials licensing proceeding and (2) “material to the findings the NRC must make to support the action that is involved in the proceeding.” 10 C.F.R. § 2.309(f)(1)(iv); see also id. § 2.309(f)(1)(iii). In this case, the NRC’s regulations expressly condition approval of Pa’ina Hawaii’s application for the use of licensed material on satisfying all the requirements contained in 10 C.F.R. § 36.13. Thus, the Board must look to section 36.13’s provisions to define the scope of this proceeding and identify the issues that are material.

The Board should squarely reject Pa’ina Hawaii’s and the Staff’s claim that the NRC’s sole task in this licensing proceeding is to tick off in a mechanical fashion whether Pa’ina Hawaii’s application contains entries for each of the items listed in 10 C.F.R. § 36.13(b)-(e), with no regard for the accuracy or adequacy of the information provided. See CFC Logistics, Inc. (Cobalt-60 Irradiator), LBP-03-20, 58 NRC 311, 326 (2003) (Board must determine whether applicant’s facility meets standards set forth in regulations). Adopting such a cramped interpretation of the NRC’s role would contravene the Atomic Energy Act’s command for the agency to regulate the possession and use of nuclear material in a manner that “protect[s] health [and] minimize[s] danger to life or property.” 42 U.S.C. § 2201(b). Moreover, it would conflict with the plain language of section 36.13, which expressly mandates a searching inquiry of public

health and safety issues related to Pa‘ina Hawaii’s proposed irradiator, obliging the NRC, prior to issuing a license, to ensure Pa‘ina Hawaii satisfies “the general requirements specified in § 30.33,” as well as all requirements set forth in Part 36, not just those found in section 36.13(b) thorough (e). 10 C.F.R. § 36.13(a); see also id. § 30.33(b).

Review of section 30.33 confirms that ensuring Pa‘ina Hawaii’s compliance with the “special requirements” for irradiators set forth in Part 36 is necessary, but not sufficient, for the NRC to approve the pending application for a materials license. Id. § 30.33(a)(4). Section 30.33 specifies that, in addition to finding Part 36 is fully satisfied, the NRC must conclude “[t]he applicant’s proposed equipment and facilities are adequate to protect health and minimize danger to life or property.” Id. § 30.33(a)(2). Moreover, should the NRC agree with Concerned Citizens that Pa‘ina Hawaii’s proposed irradiator would “significantly affect the quality of the environment,” it could not approve the application until environmental review pursuant to NEPA – including “weighing the environmental, economic, technical, and other benefits against environmental costs and considering alternatives” – were concluded. Id. § 30.33(a)(5); see also id. pt. 51, subpt. A.²

Prior to approving the requested materials license, the NRC must evaluate Pa‘ina Hawaii’s compliance with all “requirements contained in [Part 36],” not just the list of items that must be contained within the four corners of the application. Id. § 36.13(a). To carry out this mandate, the NRC is empowered, “[a]fter the filing of the original application,” to “request further information necessary to enable the Commission to determine whether the application should be granted or denied.” Id. § 36.19(a) (emphasis added). Among other things, the NRC

² Notably, section 30.33 prohibits commencement of any construction of the irradiator, including “any clearing of land, excavation, or other substantial action,” prior to full compliance with NEPA. Id. § 30.33(a)(5).

must evaluate pool integrity, including whether the proposed irradiator design ensures a dropped cask would not fall on sealed sources, id. § 36.39(c); whether the pool’s purification system is adequate to maintain required water clarity, id. §§ 36.33(e), 36.39(d), 36.63; whether Pa‘ina Hawaii has the requisite operating and emergency procedures, id. § 36.53; and whether Pa‘ina Hawaii can ensure water from the irradiator pool will be monitored for radiation before release to unrestricted areas, id. § 36.57(d).

Contentions regarding any of the issues discussed above are “material to the findings the NRC must make to support the action that is involved in the proceeding.” 10 C.F.R. § 2.309(f)(1)(iv).

B. Pa‘ina Hawaii’s Arguments About Other Nuclear Activities On O‘ahu Are Irrelevant.

The Board should reject as irrelevant Pa‘ina Hawaii’s arguments regarding other nuclear activities, past and present, on the island of O‘ahu. See Pa‘ina Answer at 8-10. The purpose of this proceeding is to determine whether Pa‘ina Hawaii has satisfied the requirements for issuance of a specific license for its proposed irradiator, including, but not limited to, the requirement to ensure the “proposed equipment and facilities are adequate to protect health and minimize danger to life and property.” 10 C.F.R. § 30.33(a)(2). Whether other facilities on O‘ahu satisfy these criteria has no bearing on whether the Board should accept or reject Pa‘ina Hawaii’s application.

The Board should also reject as baseless Pa‘ina Hawaii’s suggestion the Supreme Court has held activities posing nuclear risks are not subject to NEPA. The case Pa‘ina Hawaii cites, Weinberger v. Catholic Action of Hawaii, 454 U.S. 139 (1981), says nothing of the sort. Rather, Weinberger stands for the limited proposition that NEPA did not require the Navy to prepare and

release for public review a “hypothetical” environmental impact statement (“EIS”), where, due to national security reasons, the Navy’s regulations forbade it either to admit or deny whether nuclear weapons were actually stored at the West Loch branch of the Lualualei Naval Magazine. Id. at 145-46.

The Supreme Court emphasized, however, that, while national security concerns might preclude the public dissemination of an EIS, any proposal actually to store nuclear weapons at West Loch nonetheless would “trigger[] the Navy’s obligation to prepare an EIS.” Id. at 146. Although such an EIS would be prepared “solely for internal purposes,” the Court stressed it would help achieve NEPA’s goal to ensure the Navy “consider[s] environmental consequences in its decisionmaking process.” Id.

In this case, there is no question Pa‘ina Hawaii proposes to use nuclear material at its irradiator. Accordingly, as discussed more fully below, Pa‘ina Hawaii’s application triggers the NRC’s obligation to prepare a NEPA analysis to examine the unique environmental and public health and safety threats posed by this facility and to consider more environmentally friendly alternatives, including alternate locations for such a facility and alternate food treatment technologies.

C. Concerned Citizens’ Contentions Regarding Safety And Related Issues Are Admissible.

1. Failure To Ensure Against Cask Drops And Other Accidents Associated With Loading And Unloading Of Cobalt-60 Pencils.

CFC Logistics involved a license proceeding for a pool-type irradiator designed by Gray*Star that was nearly identical to the one Pa‘ina Hawaii proposes to build and operate. Resnikoff Dec. ¶ 3. In that case, as here, community members raised safety concerns related to the potential for a shipping cask to drop, “damaging the structure of the pool holding the water in

which the cobalt-60 sources would sit, possibly releasing the pool water into the ground and thus affecting the surroundings (while also losing the pool water's capacity to shield the surroundings from the sources' gamma radiation)." 58 NRC at 329. The petitioners in CFC Logistics also raised safety concerns about potential radioactive releases associated with mishandling of Cobalt-60 sources during loading and removal. Id. at 330. In granting the petitioner's request for a hearing, the Board held that both categories of concerns are germane to an irradiator licensing proceeding. Id.³

Like the community group in CFC Logistics, Concerned Citizens contends that cask drops and improper loading and unloading of Cobalt-60 pencils might threaten public health and safety, issues the Board must consider before passing on Pa'ina Hawaii's license application. These contentions involve concerns about both the design of the proposed irradiator (e.g., the need to use a single failure proof crane for loading and unloading of sources and to have a physical control to make movement of a cask over the Cobalt-60 sources impossible) and the procedures outlined in Pa'ina Hawaii's application (e.g., the inadequacy of mere administrative procedures to prevent cask drops). See Resnikoff Supp. Dec. ¶¶ 2-9.

Contrary to Pa'ina Hawaii's assertion that "no casks have ever been dropped at an irradiator facility," the NRC has documented such cask drops. Pa'ina Answer at 20 (emphasis in original); see Resnikoff Supp. Dec. ¶ 8; Exh. N: Information Notice No. 89-82: RECENT SAFETY-RELATED INCIDENTS AT LARGE IRRADIATORS (reporting cask drop incident at irradiator). In addition, that faulty procedures for handling sources might release radiation threatening public health is abundantly illustrated by an accident at an irradiator on O'ahu –

³ While the 2004 amendments to the NRC's rules of practice altered the specificity with which petitioners must frame their contentions, they did not alter the basic requirement applied in CFC Logistics that a petitioner's concerns be "germane" to the proceeding. Id. at 315; compare 10 C.F.R. § 2.1205(h) (2003) with 10 C.F.R. § 2.309(f)(1)(iii), (iv) (2005).

which, like Pa'ina Hawaii's proposed facility, was used to irradiate papayas – in which pool water contaminated with Cobalt-60 washed onto the ground both inside and outside the facility during cask removal. Exh. P: Rod Thompson, "Radioactive Leak on Oahu Discovered," Honolulu Star-Bulletin, Sept. 25, 1986.

Concerned Citizens contends Pa'ina Hawaii's license application should not be granted since it has failed to design the irradiator pool to ensure "that a dropped cask will not fall on sealed sources," as required by 10 C.F.R. § 36.39(c). Moreover, Pa'ina Hawaii has failed to provide adequate operating procedures for loading, unloading, and repositioning sources, as required by 10 C.F.R. § 36.53(a)(7), or emergency procedures for accidents that may occur during loading and unloading sources, as required by 10 C.F.R. § 36.53(b). Uncontrolled releases of pool water following a cask drop through cracks in the pool lining would also violate section 10 C.F.R. § 36.57(d), which requires Pa'ina Hawaii to ensure water from the irradiator pool will be monitored for radiation before release to unrestricted areas. The foregoing raise serious concerns about whether Pa'ina Hawaii's "proposed equipment and facilities are adequate to protect health and minimize danger to life or property," the litmus test established by 10 C.F.R. § 30.33(a)(2).

In opposing admission of Concerned Citizens' contentions, the Staff ignores completely the NRC's obligation to ensure compliance with sections 30.33(a)(2) and 36.57(d). Instead, it focuses only on section 36.53, alleging inaccurately that Pa'ina Hawaii need not provide procedures to address the range of potential accidents that may occur during loading and unloading. See Staff Response at 6-7. As detailed in Concerned Citizens' expert declarations, a dropped cask could crack the irradiator pool lining, removing the water that shields the sources and releasing pool water to the surroundings, and might also cause releases of radioactivity to the

air. Resnikoff Dec. ¶¶ 13-16; Resnikoff Supp. Dec. ¶¶ 5-6, 8. Loading and unloading accidents could, therefore, leave sources “in the unshielded position” (requiring appropriate procedures pursuant to § 36.53(b)(1)), result in “[p]ersonnel overexposures” (§ 36.53(b)(2)), or cause “abnormal water loss, or leakage from the source storage pool” (§ 36.53(b)(5)). Pa‘ina Hawaii’s application fails to “include an outline of the written ... emergency procedures” needed to address any of these situations, violating 10 C.F.R. § 36.13(c). See also NUREG-1556, Vol. 6, at 8-49 (Jan. 1999).

The Staff also inaccurately claims Pa‘ina Hawaii has satisfied 10 C.F.R. § 36.13(c)’s requirement to include in its application “an outline of the written operating ... procedures” for loading and unloading Cobalt-60 sources. See 10 C.F.R. § 36.53(a)(7). The only information included on page 66 of the Application, however, is a list of procedure titles and a notation that the procedures regarding “Source Repositioning,” “Source Loading,” and “Source Unloading” are “[a]vailable for review at the Licensee’s site.” Application at 66. This laundry list provides absolutely no information about “the radiation safety aspects of the procedures,” violating section 36.13(c)’s mandate to include such information in the application itself.⁴ Without this information, there is no way for the NRC to satisfy the Atomic Energy Act’s mandate to ensure

⁴ Pursuant to the Board’s instructions during the November 2, 2005 teleconference, Concerned Citizens has not, to date, been permitted to review a copy of these procedures. 11/2/05 Tr. at 16-19. Concerned Citizens contends that Pa‘ina Hawaii’s failure to include an outline of the procedures in its application violates section 36.13(c) as a matter of law. Should the Board hold otherwise, Concerned Citizens respectfully requests the opportunity to review the procedures and, following that review, submit revised contentions to highlight the procedures’ substantive deficiencies. Cf. Resnikoff Supp. Dec. ¶ 7 (administrative controls at CFC Logistics irradiator inadequate to prevent cask drop).

Pa'ina Hawaii's possession and use of nuclear material will "protect health [and] minimize danger to life or property." 42 U.S.C. § 2201(b).⁵

For its part, in opposing admission of Concerned Citizens' first set of contentions, Pa'ina Hawaii alleges that Concerned Citizens is impermissibly challenging the NRC's rules for irradiators. Pa'ina Answer at 17. This argument, which Pa'ina Hawaii seeks to apply across-the-board to all of Concerned Citizens' contentions, reflects the same fundamental misunderstanding the Board rejected in CFC Logistics. See id. at 14-16 (raising blanket objection to Concerned Citizens' contentions).⁶ In that case, as here, the applicant "point[ed] to Part 36 of the agency's regulations and argue[d] that those regulations embody rejection of the points the Petitioners [were] raising. CFC Logistics, 58 NRC at 326. The Board rejected that line of argument as "misconstru[ing] the role of regulations in a proceeding before us." Id. The Board explained:

To be sure, the regulations set the standards that must be applied to a facility like CFC's, but they do not embody a determination that the facility meets those standards. That the Company believes that its facility complies with those regulations, and that it has the Staff's endorsement of that view, does not remove the issue from our purview.

Id.

Like the petitioners in CFC Logistics, Concerned Citizens challenges whether Pa'ina Hawaii's proposed irradiator satisfies the applicable standards set forth in the NRC regulations.⁷ Such contentions raise issues that are undeniably "within the scope of [this] proceeding" and are

⁵ In her November 3, 2005 email to the Board, Staff counsel Margaret Bupp confirmed that Pa'ina Hawaii has not yet filed these procedures with the Staff. Thus, the Staff has had no opportunity to ensure their adequacy, as the regulations require.

⁶ Concerned Citizens fails to see the relevance of whether Pa'ina Hawaii has sought "waivers or exemptions to any of the rules" to the Board's determination whether the issues Concerned Citizens raises are admissible. Id. at 16.

⁷ Since Concerned Citizens seeks only to ensure compliance with the NRC's regulations, it need not establish "special circumstances" pursuant to 10 C.F.R. § 2.335(b).

“material to the findings the NRC must make to support the action that is involved in the proceeding.” 10 C.F.R. § 2.309(f)(1)(iii), (iv).

The rest of Pa‘ina Hawaii’s response improperly focuses on trying to disprove the merits of Concerned Citizens’ contentions. Resolving the merits is, however, “a test for another day.” CFC Logistics, 58 NRC at 326; see also id. at 330 (merits-based arguments “not cognizable at this juncture”). When the NRC extended the contention standard to proceedings regarding materials license applications, it emphasized “[t]he contention standard does not contemplate a determination of the merits of a proffered contention.” 69 Fed. Reg. 2,182, 2,190 (Jan. 14, 2004). At this stage of the proceedings, the Board determines only “whether the area of concern is relevant to the license application being considered, and is subject to being addressed in this proceeding.” CFC Logistics, 58 NRC at 326; see also Entergy Nuclear Vermont Yankee, LLC (Vermont Yankee Nuclear Power Station), LBP-04-28, 60 NRC 548, 555 (2004) (“The petitioner does not have to prove its contention at the admissibility stage”).

Finally, Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076 (1983), on which Pa‘ina Hawaii relies, actually supports admission of Concerned Citizens’ contention. The portion of the opinion Pa‘ina Hawaii quotes reached the merits of the intervenors’ challenge to the adequacy of the facility’s emergency procedures. Id. at 1095, 1107. In other words, the contention had been deemed to raise a material issue, which is the only question before the Board at this stage of this proceeding. Notably, in Louisiana Power, the applicant not only had an emergency plan, but the implementing procedures for that plan were available in draft form at the time of the hearing on the license application. Id. at 1107 n.50. Here, in contrast, Pa‘ina Hawaii’s application contains no discussion of “the written

operating and emergency procedures listed in § 36.53 that describes the radiation safety aspects of the procedures,” as the NRC’s regulations mandate. 10 C.F.R. § 36.13(c).

2. Risks Of Overheating.

Now that Concerned Citizens has had the opportunity to review Pa’ina Hawaii’s thermal calculations, it no longer contends that degradation of the sources from overheating is likely. Resnikoff Supp. Dec. ¶ 16. This does not, however, resolve the parties’ disputes regarding Pa’ina Hawaii’s failure to ensure against risks of overheating. Pa’ina Hawaii’s claim “[t]here is no scenario based upon physics that the temperature can significantly increase or decrease” is based on fundamentally flawed thermal calculations. Pa’ina Answer at 22. As discussed in Dr. Resnikoff’s supplemental declaration, without a functioning heat exchanger, the temperature of the pool water would inexorably rise to the boiling point, not remain static at 100 °F, as Pa’ina Hawaii wrongly assumes, resulting in removal of the water needed to shield the sources’ radioactivity and prevent releases. Resnikoff Supp. Dec. ¶¶ 10-15.

To protect public safety, a basic condition for granting a materials license application, Pa’ina Hawaii must ensure a heat exchanger will – not only might – be installed on the system and provide necessary documentation to show the heat exchanger would be adequate to maintain the water temperature at 100 °F. *Id.* ¶ 15; see also 10 C.F.R. § 30.33(a)(2).⁸ In addition, Pa’ina must provide adequate back-up systems to ensure the heat exchanger will continue functioning in the event of a natural or manmade disaster. Resnikoff Supp. Dec. ¶ 15. Concerned Citizens’ contention regarding the risks from overheating is admissible, and the parties’ dispute over this issue can only be resolved at hearing.

⁸ The only reference to a heat exchanger in Pa’ina Hawaii’s application is on page 62, in which it is noted in passing that “[a] heat exchanger is added to the water system if 100° F is exceeded.”

3. Inadequate Quality Assurance.

Concerned Citizens withdraws Safety Contention 3.

4. Failure To Address Accidents Involving Prolonged Loss of Electricity.

Pa'ina Hawaii's claim it need not include in its application any procedures for prolonged electricity outages is at odds with the plain language of 10 C.F.R. § 36.53(b)(6), which requires such procedures, and 10 C.F.R. § 36.13(c), which requires an outline of those procedures in the application. These requirements are reiterated in NUREG-1556's discussion of the necessary contents of irradiator license applications, which specifies that a licensee's emergency or abnormal event procedures for "[a] prolonged loss of electrical power" must "include [procedures for ensuring compliance with] 10 CFR 36.37 and 36.67(c) requirements." NUREG-1556 at 8-50 (emphasis added). Section 36.67(c)'s requirements apply only to underwater irradiators, debunking Pa'ina Hawaii's claim the NRC has determined power failures are not concerns for such facilities. Cf. CFC Logistics, 58 NRC at 330 ("concern about loss of facility electricity" relevant to materials license application for underwater irradiator).⁹

Pa'ina Hawaii's remaining arguments seek to rebut Concerned Citizens' contentions that the irradiator design is inadequate to ensure safe operation during power outages. Such disputes are properly resolved at hearing, not in ruling on the admissibility of Concerned Citizens' contentions.

⁹ Pa'ina Hawaii takes out of context the statement in NUREG-1556 that, "[f]or underwater irradiators, no response is required from the applicant in a license application." Pa'ina Answer at 25 (quoting NUREG-1556 at 8-32). That statement expressly applies only to a limited set of regulations that cover only panoramic irradiators. See NUREG-1556 at 8-31 (listing applicable regulations). It does not mean that underwater irradiators need not have any procedures to deal with power outages, as NUREG-1556's reference to section 36.67(c) makes clear.

The Staff concedes the regulations require Pa‘ina Hawaii “to have procedures in place to address a prolonged loss of electrical power” and to include outlines of such procedures in its application. Staff Response at 9. The Staff, however, elevates form over substance when it asserts “Pa‘ina Hawaii has addressed loss of power on page 39 of the application.” *Id.* at 10. The only statement on page 39 is a reiteration of Pa‘ina Hawaii’s allegation that requirements related to power failures are “[n]ot applicable to Pool Irradiators.” Application at 39. As discussed above, this statement is wrong as a matter of law. Pa‘ina Hawaii’s failure to describe its procedures for “[a] prolonged loss of electrical power,” including how it will comply with 10 C.F.R. § 36.67(c)’s specific requirements for underwater irradiators, violates NRC regulations. 10 C.F.R. § 36.53(b)(6); see also NUREG-1556 at 8-49 to -50; Fansteel, Inc. (Muskogee, Oklahoma Site), CLI-03-13, 58 NRC 195, 203 (2003) (identification of application’s failure to contain information on matter as required by law constitutes sufficient information to show genuine dispute exists).

5. Lack of Procedures To Address Break In Helium Or Compressed Air Lines.

Now that Concerned Citizens has had the opportunity to review a more complete version of Pa‘ina Hawaii’s application, it is in a position to clarify its contentions regarding Pa‘ina Hawaii’s failure to address potential breaks in the helium line to the plenum or compressed air lines to the bells. See id. at 204-05 & n.31 (proper to “elaborate or explain” concerns in reply).¹⁰ A break in the compressed air line would allow water to enter the bells, thereby contaminating the pool water and ion exchange resins with food product. Resnikoff Supp. Dec. ¶18. A break in

¹⁰ In its petition for hearing, Concerned Citizens mistakenly stated that helium, rather than compressed air, was present in the bells. The analysis presented did not depend on the nature of the gas involved. Resnikoff Supp. Dec. ¶ 17.

the helium line would submerge the Cobalt-60 pencils. Id. A break in either the helium or compressed air line could therefore plug the ion exchange filter and prevent the water from being cleaned, violating 10 C.F.R. §§ 36.33(e), 36.39(d), and 36.63's requirements for pool water purity.

Such an event would require the system to be shut down and the Cobalt-60 sources to be placed in a cask that would be shipped from the mainland. Id. With fouled water, it would be difficult to manipulate the underwater sources into the cask. The pool could then be emptied and cleaned. Worker exposures would rise during this operation, violating section 30.33(a)(2)'s mandate to "protect health and minimize danger to life."

In CFC Logistics, the Board held that "concerns about damaged air lines" to the bell and plenum in a nearly identical underwater irradiator were "germane" to review of the materials license at issue. 58 NRC at 330. It should similarly find Concerned Citizens' contention admissible here.

6. Failure To Address Risks From Natural Phenomena.

Pa'ina Hawaii's observation that NRC regulations do not prohibit irradiators in areas subject to tsunamis is a legal *non sequitur*. Pa'ina Answer at 27-28. Concerned Citizens does not claim the NRC is prohibited from licensing the proposed irradiator because the selected site would be threatened by tsunamis. Rather, it contends Pa'ina Hawaii's application fails to provide the requisite discussion of emergency procedures to address threats from tsunamis and hurricanes, violating 10 C.F.R. §§ 36.13(c) and 36.53(b)(9).¹¹ Concerned Citizens further

¹¹ It is stating the obvious to note the regulations would not require emergency procedures if, as Pa'ina Hawaii alleges, irradiators were inherently immune from risks associated with such natural phenomena. Moreover, as discussed in connection with Concerned Citizens' first safety

contends Pa‘ina Hawaii has failed to design its irradiator to withstand natural disasters, violating 10 C.F.R. § 30.33(a)(2).

As the tsunami in southeast Asia in December 2004 abundantly demonstrated, a tsunami could bring down Pa‘ina Hawaii’s entire building and cranes, shorting out the electricity and radiation monitors in the process. Resnikoff Supp. Dec. ¶ 19. It could undermine the foundation for the irradiator. It could crack the pool lining, allowing the shielding water to escape. Without a viable structure or an intact pool, members of the public could be exposed to unshielded Cobalt-60.

Even if the entire irradiator were not destroyed, flooding associated with a tsunami could short out the electricity and battery backup. *Id.* at ¶ 20. Radioactive monitors, heat exchangers, and tanks containing compressed air for the bells and helium for the plenum could similarly be washed away or disengaged. Water would enter the plenum and the product bells, causing the problems discussed above with respect to Safety Contention 5.

Pa‘ina Hawaii’s assertion the facility would be adequately protected from tsunamis is unsupported by any credible evidence. No expert declarations to support its claim the proposed irradiator site “is shielded by natural land formations.” Pa‘ina Answer at 28. Instead, Pa‘ina Hawaii contents itself with an unsworn and unsupported statement by O‘ahu District Airports Manager Benjamin Schlapak that the O‘ahu Civil Defense Agency’s Tsunami Evacuation Map, which shows the site as lying within the tsunami flood evacuation zone, should be disregarded. See Exh. I: O‘ahu Civil Defense Agency, Tsunami Evacuation Oahu Map 19: Airport to Waikiki; see also Exh. Q: O‘ahu Civil Defense Agency, Tsunami Questions and Answers at 1 (noting “all coastal area of Oahu are vulnerable” to tsunamis).

contention, Louisiana Power and Light Co. supports admission of Concerned Citizens’ contention regarding Pa‘ina Hawaii’s failure to provide mandated emergency procedures.

Even assuming Mr. Schlapak were qualified to opine on this subject (and he is not), the most Pa'ina Hawaii would be able to establish is a factual dispute about whether the site is vulnerable to tsunamis. A hearing is necessary to resolve this issue, as well as the parties' dispute about the potential for a tsunami to damage the irradiator, posing risks to the public and environment.¹²

7. Failure To Address Risks Of Aviation Accidents.

Pa'ina Hawaii's observation that irradiators are not categorically prohibited at airports misses the point. The question is whether the particular design Pa'ina Hawaii proposes for its irradiator would be safe in a location which is adjacent to several runways, where it might get hit by an airplane. The mere fact Part 36 does not prohibit irradiators at airports does not answer the question whether the design of the Pa'ina Hawaii irradiator is "adequate to protect health and minimize danger to life or property," the general condition precedent to any application's acceptance. 10 C.F.R. § 30.33(a)(2).

Unlike the panoramic irradiators the NRC discussed in the rulemaking for Part 36, Pa'ina Hawaii's irradiator would not be contained "within 6-foot thick reinforced-concrete walls." 58 Fed. Reg. 7,715, 7,726 (Feb. 9, 1993). Instead, they would be in a pool with a liner consisting of 6 inches of concrete, with ¼-inch steel on the inside and outside. Application at 34. There is little question that the shaft of a jet plane crashing into such a structure would breach the pool lining, allowing the water to leak out, leaving the Cobalt-60 pencils unshielded. Resnikoff Supp.

¹² Notably, Pa'ina Hawaii does not dispute that its irradiator would be vulnerable to hurricanes, requiring emergency procedures wholly lacking from its application.

Dec. ¶ 22.¹³ Even if some water did remain in the pool following the crash, the fires from burning 100,000 pounds of jet fuel would quickly evaporate it. Resnikoff Supp. Dec. ¶ 22. Moreover, the force of an airplane crash and associated explosions of jet fuel could disperse Cobalt-60 into the surroundings. Finally, such a crash would undoubtedly damage or destroy all required radiation and safety monitoring systems.

Due to the risks of catastrophic damage from an airplane crash, the location for Pa‘ina’s proposed irradiator is clearly inappropriate. Concerned Citizens contends that either the facility must be redesigned to withstand an airplane crash, or it should be relocated. A hearing is needed to resolve the parties’ dispute over this crucial safety issue.

8. Failure To Address Risks Of Transportation Accidents.

The presence of Pa‘ina Hawaii’s proposed irradiator means that the local populace would be subjected to potential danger due to transport accidents during shipping of Cobalt-60 sources to and from the facility. Resnikoff Supp. Dec. ¶ 25. If the irradiator were not present, this shipping danger would not exist in Honolulu’s neighborhoods. Pa‘ina Hawaii has failed to demonstrate that operation of its facility will “protect health and minimize danger to life or property,” as required by 10 C.F.R. § 30.33(a)(2).

Pa‘ina Hawaii’s and the Staff’s claims that such transportation concerns are irrelevant to this proceeding cannot be reconciled with the decision in CFC Logistics, in which the Board noted “the obvious germaneness of this concern.” 58 NRC at 332. The regulations governing irradiators have not been amended since the Board issued that ruling in 2003. The risks to public

¹³ The tragic events of September 11, 2001, vividly illustrate the devastation that an airline crash, whether accidental or intentional, would cause at Pa‘ina Hawaii’s proposed irradiator. See Exh. R (image of Pentagon following September 11, 2001 attack).

health and safety related to transportation hazards are as relevant now as they were when the Board ruled in CFC Logistics. Accordingly, Concerned Citizens' contention should be admitted.

9. Inadequate Provisions For Protecting Facility From Terrorist Attacks.

In CFC Logistics, the Board held that concerns about the adequacy of provisions to address threats from terrorist attacks on an irradiator are relevant to the decision whether to grant a materials license application. Id. at 331-32. As set forth in Concerned Citizens' expert declarations, risks of terrorist attack are similarly present in this case, especially since Pa'ina Hawaii has chosen to site its facility immediately adjacent to potential targets that are both symbolic (Pearl Harbor and other military installations) and vital to Hawai'i's economy (the international airport). Resnikoff Dec. ¶¶ 21-22; Resnikoff Supp. Dec. ¶¶ 26-27; Thompson Dec. ¶¶ V-1 to -6, VI-3. While the Staff professes uncertainty about "what law or regulation would require Pa'ina Hawaii to include such information, Staff Response at 12, 10 C.F.R. § 30.33(a)(2) plainly requires the applicant's proposed facility "to protect health and minimize danger to life or property."

In opposing admission of this contention, Pa'ina Hawaii focuses primarily on whether the NRC's NEPA analysis must include consideration of terrorist threats. That issue is, however, irrelevant to whether, to satisfy section 30.33(a)(2), Pa'ina Hawaii must site and design its irradiator to provide reasonable protection for Honolulu's residents from potentially catastrophic terrorist attacks. Nor do Pa'ina Hawaii's arguments that, on the merits, the facility is safe render Concerned Citizens' contention inadmissible. Merits-based arguments are "not cognizable at this juncture." CFC Logistics, 58 NRC at 330. The Board should follow its decision in CFC Logistics and admit this contention.

10. Inadequate Provisions For Protecting Sources From Terrorism While In Transit.

Potential harm to public health and safety from terrorist attacks on shipments of Cobalt-60 sources, especially as those sources near their destination, is directly relevant to evaluation of Pa'ina Hawaii's compliance with section 30.33(a)(2), since, but for the proposal to site an irradiator in the middle of urban Honolulu, such threats would not exist. Resnikoff Dec. ¶¶ 31-32; Resnikoff Supp. Dec. ¶¶ 26-27. In CFC Logistics, the Board concurred that concerns about the hazards that terrorism poses to transportation of Cobalt-60 sources are relevant to a materials license application. 58 NRC at 331-32. Pa'ina Hawaii and the Staff provide no justification for the Board to reach a different result in this proceeding.

11. Inadequate Liability Insurance.

As discussed in Dr. Resnikoff's initial declaration, the costs of cleaning up an accidental spill of Cobalt-60 at Pa'ina Hawaii's proposed irradiator could easily exceed \$1 billion. Resnikoff Dec. ¶ 32. Concerned Citizens contends that, due to such "special circumstances," the minimum \$113,000 financial assurance for decommissioning is inadequate. 10 C.F.R. § 2.335(b). The NRC's regulations expressly contemplate a petition for waiver or exemption in such situations. Thus, Concerned Citizens' stated intent to pursue such a remedy upon admission as a party does not constitute a rejection of the NRC's rules, as Pa'ina Hawaii asserts.

12. Improper Redaction Of Application.

Based on the Board's various orders providing assurances Concerned Citizens will soon have the opportunity to review a complete, unredacted version of Pa'ina Hawaii's application, Concerned Citizens withdraws this contention.

D. Concerned Citizens' Contentions Regarding Failures To Comply With NEPA Are Admissible.

NEPA's basic purpose is to "insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. § 1500.1(b). The goal is "to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment." *Id.* § 1500.1(c). NEPA cannot accomplish its goals, and the NRC cannot fulfill its statutory duty, unless the agency "take[s] a 'hard look' at the environmental consequences" of approving Pa'ina Hawaii's license application, whether the effects are direct, indirect or cumulative. Muckleshoot Indian Tribe v. U.S. Forest Serv., 177 F.3d 800, 814 (9th Cir. 1990); see also 40 C.F.R. § 1508.8; cf. 10 C.F.R. § 51.94 (NRC must consider EIS in making decision on application). In this case, the NRC subverted congressional intent when failed to consider the numerous "special circumstances" that make clear Pa'ina Hawaii's proposed irradiator poses the potential for serious harm to the human environment, rendering the invocation of a categorical exclusion unlawful. 10 C.F.R. § 51.22(b).

1. Failure To Justify Application Of Categorical Exclusion.

Pa'ina Hawaii and the Staff fail to come to terms with the binding case law that obliges the NRC, in invoking a categorical exclusion, to "supply a convincing statement of reasons why potential effects are insignificant." Steamboaters v. FERC, 759 F.2d 1382, 1393 (9th Cir.1985). The burden is on the NRC, not Concerned Citizens, to explain the basis for its decision to invoke a categorical exclusion. It has failed to do so. The agency cannot "simply restate[] the exclusion," as the NRC improperly did here. Alaska Center for the Environment v. U.S. Forest

Service, 189 F.3d 851, 859 (9th Cir. 1999); see also Jones v. Gordon, 792 F.2d 821, 828 (9th Cir. 1986).

The Staff's suggestion the NRC may decline to explain its decision not to conduct a NEPA analysis unless and until the issue comes up at a licensing hearing lacks legal support. In Calvert Cliffs' Coord. Com., the D.C. Circuit rejected a similar position, holding that "NEPA requires ... automatic consideration of environmental factors," even in "uncontested hearings." 449 F.2d at 1118. As the Supreme Court recently affirmed, "the agency bears the primary responsibility to ensure that it complies with NEPA." Department of Transp. v. Public Citizen, 541 U.S. 752, 765 (2004). The NRC cannot satisfy its legal obligations unless it provides an adequate justification for its decision not to subject Pa'ina Hawaii's proposed facility to NEPA analysis.

The Board should also reject the Staff's claim the NRC's regulations somehow preclude the agency from explaining its categorical exclusion decision, as NEPA demands. 10 C.F.R. § 51.22(b) provides that, "upon its own initiative," the NRC may determine that an action included in the list of categorical exclusions nonetheless requires an environmental assessment ("EA") or EIS due to "special circumstances." Section 51.22(b) clearly allows the NRC to make a case-by-case determination whether a particular project merits application of a categorical exclusion. Thus, it does not bar compliance with NEPA's requirement to justify the agency's decision to invoke a categorical exclusion.

2. Failure To Prepare Any NEPA Analysis.

Pa'ina Hawaii and the Staff inaccurately characterize Concerned Citizens' contention regarding the failure to prepare any NEPA analysis as a challenge to the NRC's 1984 rule establishing a categorical exclusion for irradiators. Both the NRC's rule and NEPA's

implementing regulations recognize that, “in special circumstances, ... actions included in the list of categorical exclusions” nonetheless pose the potential for environmental harm, requiring the preparation of an EA or EIS. 10 C.F.R. § 51.22(b); see also 40 C.F.R. § 1508.4 (agency procedures must “provide for extraordinary circumstances in which a normally excluded action may have a significant environmental effect”).¹⁴ Concerned Citizens contends that, due to the range of events – including, but not limited to, mechanical failures due to poor design, airplane crashes, tsunamis, and hurricanes – that might cause a significant release of radiation from Pa‘ina Hawaii’s proposed irradiator to the environment, special circumstances distinguishing the Pa‘ina Hawaii facility from the run-of-the-mill irradiator exist, triggering the NRC’s duty to prepare an EA or EIS before making a decision on the pending materials license application.¹⁵

Review of the Federal Register notice that promulgated the categorical exclusion for irradiators debunks Pa‘ina Hawaii’s and the Staff’s bald assertion the NRC fully considered risks from airplane crashes, tsunamis, hurricanes, and consumption of irradiated food. The NRC’s explanation for the categorical exclusion, in its entirety, is:

These devices are used for a variety of purposes in research and industry to expose products to large amounts of radiation. Typical uses include sterilization or microbiological reduction in medical and pharmaceutical supplies and insect eradication through sterile male release programs. Irradiators usually contain from

¹⁴ While “[s]pecial circumstances include” situations “where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102(2)(E) of NEPA,” they are not, as Pa‘ina Hawaii inaccurately asserts, limited to such situations. Pa‘ina Answer at 2 (quoting 10 C.F.R. § 51.22(b)) (emphasis added); see NUREG-1748 at 2-1 (Aug. 2003) (noting “[s]pecial circumstances include, but are not limited to,” such situations).

¹⁵ Concerned Citizens also contends that risks of terrorist attack, either on the facility itself or on Cobalt-60 sources in transit, create other “extraordinary circumstances in which a normally excluded action may have a significant environmental effect.” 40 C.F.R. § 1508.4; see also 40 C.F.R. 1502.22(b)(1) (“reasonably foreseeable impacts” include “impacts which have catastrophic consequences, even if their probability of occurrence is low”). Pending the outcome of the 9th Circuit challenge to the NRC’s refusal to consider such impacts, Concerned Citizens respectfully asks the Board to reserve judgment on this aspect of the contention.

a few hundred curies to megacuries of radioactive material, principally cobalt 60. The radioactive material is contained in sealed sources. Product irradiation occurs within areas to which access is controlled and which are shielded to protect both operating personnel and the environment.

Personnel exposures during use of these devices are less than 5% of the limits in 10 CFR Part 20. There are no effluent releases resulting from operation of irradiators.

49 Fed. Reg. 9352, 9377 (Mar. 12, 1984). Since the NRC did not “contemplate[] in the regulation’s adoption” the types of serious environmental threats that Pa’ina Hawaii’s proposed irradiator would pose, application of the categorical exclusion is inappropriate in this case. CFC Logistics, 60 NRC 475, 492 (2004); see also Staff Response at 17 (conceding NRC rulemaking did not discuss use of irradiators on food).¹⁶

The Staff’s contrary claim that the NRC’s mere mention of medical and pharmacological supplies means it fully evaluated the potential harm to human health from ingesting irradiated fruit lacks any support. The Federal Register notice provides no reason to conclude the NRC considered the possible ingestion of irradiated medical supplies; it more likely had in mind the use of radiation to sterilize medical equipment, the more common application. In addition, even had the NRC considered ingestion, the Staff fails to make any showing that medical and pharmacological supplies contain the dietary fats that make consuming irradiated food so dangerous. See Au Dec. ¶ 6(b)-(g). Finally, since studies showing the link between irradiated food containing dietary fats and cancer only came out in the last few years, the NRC would not

¹⁶ The NRC’s discussion of issues related to airplane crashes and tsunamis in connection with its promulgation of 10 C.F.R. Part 36 is not relevant, since those regulations were finalized nearly a decade after the categorical exclusion at issue herein. See 58 Fed. Reg. 7,728 (Feb. 9, 1993). Even if relevant, the NRC’s insistence that irradiator licensees “have and follow emergency or abnormal event procedures for ... [n]atural phenomena” reflects the agency’s understanding that events such as tsunamis and hurricanes can damage irradiators in ways that might pose public health and safety threats. 10 C.F.R. § 36.53(b)(9).

have been able to evaluate this threat fully, even if it had looked into the matter in 1984. Id. at ¶ 6(d).

The Board should also reject Pa‘ina Hawaii’s and the Staff’s claim the NRC may ignore some of the environmental impacts associated with approving the proposed irradiator on the grounds that such impacts fall within the regulatory jurisdiction of another agency – here, the Food and Drug Administration’s jurisdiction over food irradiated for human consumption. In Calvert Cliffs’ Coord. Com. v. U.S. Atomic Energy Comm’n, 449 F.2d 1109 (D.C. Cir. 1971), the court held that attempts by the NRC’s predecessor to rely entirely on the environmental judgments of other agencies was “in fundamental conflict with the basic purpose of [NEPA].” Id. at 1123. The court explained:

NEPA mandates a case-by-case balancing judgment on the part of federal agencies. In each individual case, the particular economic and technical benefits of planned action must be assessed and then weighed against the environmental costs; alternatives must be considered which would affect the balance of values. The point of the individualized balancing analysis is to ensure that, with possible alterations, the optimally beneficial action is finally taken.

Certification by another agency that its own environmental standards are satisfied involves an entirely different kind of judgment. Such agencies, without overall responsibility for the particular federal action in question, attend only to one aspect of the problem Their certification does not mean that they found no environmental damage whatever. In fact, there may be significant environmental damage ..., but not quite enough to violate applicable ... standards. Certifying agencies do not attempt to weigh that damage against the opposing benefits. Thus the balancing remains to be done. It may be that the environmental costs, though passing prescribed standards, are nonetheless great enough to outweigh the particular economic and technical benefits involved in the planned action. The only agency in a position to make such a judgment is the agency with overall responsibility for the proposed federal action – the agency to which NEPA is specifically directed.

Id. (emphasis added); see also Idaho v. Interstate Commerce Comm’n, 35 F.3d 585, 595-96 (D.C. Cir. 1994); Philadelphia Elec. Co. (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 A.E.C. 13, 24-25 (1974).

Consistent with this case law, courts have required the Federal Highway Administration (“FHWA”) to consider environmental impacts associated with industrial development that would not occur but for the construction of a new, federally funded highway interchange, even though “the environmental consequences of development will result from local and private action,” not actions under FHWA’s jurisdiction. City of Davis, 521 F.2d at 677. Likewise, the Forest Service was obliged to consider the impacts on mule deer of “residential development reasonably certain to follow development of ski slopes” pursuant to a Forest Service permit. Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 817 (9th Cir. 1987), rev’d on other grounds, 490 U.S. 332 (1989).

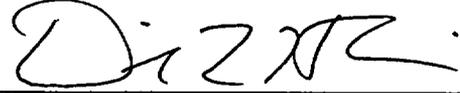
In this case, to satisfy NEPA, the NRC must evaluate the environmental impacts associated with irradiated food as one of many factors to consider in deciding whether to approve Pa’ina Hawaii’s irradiator or whether “the environmental costs, though passing prescribed standards, are nonetheless great enough to outweigh the particular economic and technical benefits involved in the planned action.” Calvert Cliffs’ Coord. Com., 449 F.2d at 1123. Indeed, the NRC’s own NEPA regulations require it to “weigh[] the environmental, economic, technical, and other benefits against environmental costs and considering alternatives” before determining whether “the action called for is the issuance of the proposed license.” 10 C.F.R. § 30.33(a)(5).

IV. CONCLUSION

For the foregoing reasons, Concerned Citizens has established its standing to participate in this proceeding and has submitted numerous admissible contentions. Concerned Citizens respectfully asks the Board to grant its request for a hearing on Pa’ina Hawaii’s materials license application.

Dated at Honolulu, Hawai'i, December 1, 2005.

Respectfully submitted,



DAVID L. HENKIN
Earthjustice
223 South King Street, Suite 400
Honolulu, Hawai'i 96813
Tel. No.: (808) 599-2436
Fax No. (808) 521-6841
Email: dhenkin@earthjustice.org

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-ML
)	ASLBP No. 06-843-01-ML
Materials License Application)	
_____)	

**SUPPLEMENTAL DECLARATION OF MARVIN RESNIKOFF, Ph.D.
IN SUPPORT OF PETITIONER'S AREAS OF CONCERNS**

Under penalty of perjury, I, Dr. Marvin Resnikoff, hereby declare that:

1. I have reviewed the Declaration of Russell N. Stein that Pa'ina Hawaii submitted with its answer to Concerned Citizens of Honolulu's Request for Hearing, as well as the Nuclear Regulatory Commission ("NRC") Staff's response to the hearing request. A point by point response to every statement made by Mr. Stein or the Staff with which I disagree would needlessly distract from the focus of this stage of the proceedings, which is whether Concerned Citizens has raised contentions relevant to the materials licensing proceeding, rather than resolution of the merits of those contentions. Accordingly, I will limit my response to clarifying the nature of the disputes over whether Pa'ina's proposed equipment and facilities are adequate to protect health and minimize danger to life or property.

2. **Risk of Cask Drop.** In my initial declaration, I stated that "the irradiator must have a system to prevent the cask from passing over the Co-60 pencils." The Staff claims it is difficult to tell whether I am raising concerns about the irradiator design or Pa'ina's proposed operating procedures. The answer is that I have concerns that both the

design and the procedures outlined in Pa'ina's application are inadequate to ensure "that a dropped cask will not fall on sealed sources," as required by 10 C.F.R. § 36.39(c). In my opinion, to ensure safety, Pa'ina must use a single failure proof crane for loading and unloading of sources and must design the irradiator so it is physically impossible for a cask to move over the plenum. Administrative controls alone are inadequate.

3. In paragraph 12 of his declaration, Mr. Stein quotes NRC staff in the CFC Logistics proceeding as having confidence that hoists and administrative controls would minimize the likelihood of a cask drop. This, of course, goes to the merits of the dispute, not whether a dispute over design adequacy exists. What Mr. Stein does not mention is that, in the CFC Logistics proceeding, the hearing officer allowed the contention regarding potential cask drops as a litigable issue. As part of the settlement in that proceeding, the company ultimately agreed to install automatic stops so that the cask could not pass over the Cobalt-60 sources.

4. While Pa'ina's application asserts the shipping cask will not travel over the Cobalt-60 sources at any time, paragraph 14 of Mr. Stein's declaration makes it clear the irradiator is not designed to prevent the casks from moving over the sources. Instead, only administrative controls – which, as discussed below, are inadequate to ensure against accidents – are contemplated. The irradiator design must include a physical stop similar to the one installed in the CFC Logistics irradiator, or the risk of a cask drop will remain, in violation of section 36.39(c).

5. If a 3 to 6.5 ton shipping cask were to fall on the Cobalt-60 pencils, the pencils would bend and potentially break. The pencil cladding may crack, exposing the

Cobalt-60 to the pool water. Under such conditions, it is likely that contamination would spread to the pool water and, ultimately, to the air as the water evaporates.

6. In addition, a dropped shipping cask might damage the structure of the pool in which the Cobalt-60 sources would sit, possibly releasing the pool water into the ground and thus affecting surrounding areas. A leak would also reduce, and potentially eliminate, the pool water's capacity to shield the surroundings from the sources' gamma radiation.

7. Administrative controls are not sufficient to prevent such accidents. I was present at the CFC Logistics facility when the administrative controls were reviewed. I was not impressed. Pa'ina could have an army present, but still could not stop a dropped cask from damaging the sources or pool structure. Physical controls that make movement of a cask over the Cobalt-60 pencils impossible is a necessary, reasonable solution to this problem.

8. In addition, a single failure proof crane is needed to prevent a cask drop. The essential problem is that, occasionally, crane systems fail. As an example, one of the incidents described in the Information Notice No. 89-82: RECENT SAFETY-RELATED INCIDENTS AT LARGE IRRADIATORS, was an uncontrolled descent of a shipping cask into an irradiator pool, due to brake malfunction on a lifting crane. While, in that case, the cask was arrested before causing damage (but only after a 19-foot freefall), the information notice stressed that "had the cask not been secured quickly, it could have damaged the radioactive sources in the pool or the pool itself." That is precisely the issue the Concerned Citizens seek to raise in this proceeding. Excerpts from

a true and correct copy of the information notice from the NRC website are attached hereto as Exhibit "N."

9. While the Staff asserts that an outline of Pa'ina's loading and unloading procedures appears on page 66 of the application, they do not. Only the names of the procedures appear, not any description of the procedures themselves. If these are the same administrative controls included in the CFC Logistics application, they are inadequate to solve the problems discussed above and, thus, do not satisfy the regulations. Alternatively, if the procedures Pa'ina proposes are not the same as those discussed in the CFC Logistics application, then it is anyone's guess regarding their adequacy, since page 66 of Pa'ina's application provides none of the required information.

10. **Thermal Considerations.** In paragraph 17 of his declaration, Mr. Stein states the applicant has shown the plenum will not overheat. At the time I submitted my initial declaration, I was unable to evaluate this claim since the Staff had redacted in its entirety the relevant section of Pa'ina's application. Now that I have had a chance to review Mr. Stein's calculations, I conclude they are flawed.

11. Mr. Stein's calculates thermal projections in three steps, as follows:

Step 1: Calculate the total heat given off by the sources that remains within the plenum. The total wattage is a sum of the beta plus 10% of the gamma power levels, or about 2.1 kilowatts (kW).

Step 2: Calculate the gas temperature within the plenum, fixing the walls at 100 °F (the temperature of water in the pool, assumed constant) and assuming

convection and radiative heat transfer and the wattage dissipated via the plenum walls is the same as the source output.

Step 3: Calculate the temperature of the source, given the gas temperature from step 2 and assuming the total wattage dissipated is the same as step 1.

12. Mr. Stein calculates a temperature of about 532 °F for the sources. But his calculations are wrong because he fails to take the gas temperature from step 2 and plug it into step 3. Instead, ignoring the heat build-up, he simply assumes the gas temperature is 100 °F. If one were to take the correct gas temperature from Step 2 and plug it into Step 3, then the sources are hotter, about 550 °F. Moreover, even if one were to assume the gas temperature were 100 °F in calculating Step 3, one would not end up with a source temperature of 532 °F. Mr. Stein's calculations are in error.

13. Mr. Stein's assumption that the temperature of the water would remain constant at 100 °F is based on his assumption that a heat exchanger would be added to the system if the water temperature were found to exceed 100 °F. There is no question that, absent a heat exchanger (or absent a functioning one, in case of power loss or damage from a natural disaster or human-caused accident), the pool temperature would rise.

14. If the temperature of the water were allowed to rise, then the temperature within the plenum will become hotter and the temperature of the sources will become hotter. In such a case, all of the gamma and electrons (not only 10%, as Mr. Stein assumes for his plenum heat-up calculation) would contribute to heating the water. This amounts to about 15 kW. Given the volume of water in the pool, it would take about 1.5 months for the pool water to reach 212 °F, assuming no heat loss from the open top of the pool.

15. While heat-up of the pool would be a slow process, it would be inexorable once the Cobalt-60 sources are placed in the pool. Evaporation will increase as the temperature rises and makeup water will have to be added to ensure adequate shielding of the sources remains in place. To protect public safety, Pa'ina must ensure a heat exchanger will – not only might – be installed on the system and provide necessary documentation to show the heat exchanger would be adequate to maintain the water temperature at 100 °F. In addition, Pa'ina must provide adequate back-up systems to ensure the heat exchanger will continue functioning in the event of a natural or manmade disaster.

16. At the temperatures the pool may reach, the sources may reach 620 °F. Now that I have had the opportunity to review Pa'ina's calculations, I concur that degradation of the sources at this temperature would not be expected.

17. **Lack of Procedures to Address Break in Helium or Compressed Air Lines.** In my initial declaration, I mistakenly stated that helium, rather than compressed air, was present in the bells. My analysis did not depend on the nature of the gas involved, and I stand by the opinions I previously provided.

18. A break in the compressed air line would allow water to enter the bells, thereby contaminating the water and ion exchange resins with food stuff. A break in the helium line would submerge the Cobalt-60 pencils. A break in either the helium or compressed air line could therefore plug the ion exchange filter and prevent the water from being cleaned. This event would require the system to be shut down and the Cobalt-60 sources to be placed in a cask that would be shipped from the main land. With fouled water, it would be difficult to manipulate the underwater sources into the cask.

The pool could then be emptied and cleaned. Worker exposures would rise during this operation.

19. **Tsunami.** Mr. Stein and the Staff claim not to understand how a tsunami would affect the safety of the system. As the tsunami in southeast Asia in December 2004 abundantly demonstrated, tsunami could bring down the entire building and cranes, shorting out the electricity and radiation monitors in the process. It could undermine the foundation for the irradiator. It could crack the pool lining, allowing the shielding water to escape. Without a viable structure or an intact pool, members of the public could be exposed to unshielded Cobalt-60.

20. Flooding associated with a tsunami could short out the electricity and battery backup. Radioactive monitors, heat exchangers, and tanks containing compressed air for the bells and helium for the plenum could similarly be washed away or disengaged. In this case, water would enter the plenum and the product bells. The full impact of a tsunami and the emergency response by Pa'ina, have not been discussed, as required by 10 C.F.R. § 36.53(b)(9), which requires emergency procedures for “[n]atural phenomena” including flooding and “other phenomena as appropriate for the geographical location of the facility.”

21. **Air crash.** Mr. Stein's observation that irradiators are not prohibited at airports misses the point. The question is whether the particular design Pa'ina proposes would be safe in a location which is adjacent to several runways where it might get hit by an airplane.

22. Unlike the panoramic irradiators the NRC discussed in the rulemaking for Part 36, Pa'ina's irradiator would not be contained “within 6-foot thick reinforced-

concrete walls.” Instead, they would be in a pool with a liner consisting of 6 inches of concrete, with ¼-inch steel on the inside and outside. There is little question that the shaft of a jet plane crashing into such a structure would breach the pool lining, allowing the water to leak out, leaving the Cobalt-60 pencils unshielded. Even if some water did remain in the pool following the crash, the fires from burning 100,000 pounds of jet fuel would quickly evaporate it. Moreover, the force of an airplane crash and associated explosions of jet fuel could disperse Cobalt-60 into the surroundings. Finally, such a crash would undoubtedly damage or destroy all required radiation and safety monitoring systems.

23. Due to the risks of catastrophic damage from an airplane crash, the location for Pa‘ina’s proposed irradiator is clearly inappropriate. Either the facility must be redesigned to withstand an airplane crash, or it should be relocated.

24. **Transportation.** In paragraph 32 and elsewhere, Mr. Stein discusses transportation, primarily to state that transportation does not have to be considered within this proceeding. He also compares shipments of Cobalt-60 pencils to the radioisotopes that are shipped by air into Honolulu Airport. However, as his own statements in paragraph 25 make clear, Mr. Stein knows full well that that the large quantities of Cobalt-60 in question would not be transported by air. He is comparing apples to oranges.

25. The presence of the proposed irradiator means that the local populace would be subjected to potential danger due to transport accidents or sabotage during shipping. If the irradiator were not present, this shipping danger would not exist in

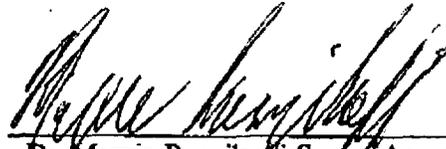
Honolulu's neighborhoods. This precise contention was admitted in the CFC Logistics proceeding and should be admitted here as well.

26. Security. Mr. Stein's claim he cannot openly discuss safeguard information (paragraph 21) ignores the fact that some information regarding potential threats to the proposed facility is openly available. My contention is that it is quite simple to overwhelm security personnel and to fire an anti-tank missile that can easily penetrate the walls of the irradiator. The Russian's Kornet missile can penetrate 4.5 meters of concrete and, thus, could easily breach the 6 inches of concrete Pa'ina proposes for its pool liner. See <http://www.defense-update.com/products/k/kornet-e.htm>, attached hereto as Exhibit "O."

27. Without water to shield the Cobalt-60 sources, the dose rates would be extremely high; an LD50 dose could occur within seconds. While Mr. Stein claims that my arithmetic and reading of the gamma dose factors is incorrect, this is a factual dispute that should be decided in a hearing, not at this stage of the proceeding.

I declare under penalty of perjury that the factual information provided above is true and correct to the best of my knowledge and belief, and that the professional opinions expressed above are based on my best professional judgment.

Executed at New York, New York on this 23rd day of November, 2005.



Dr. Marvin Resnikoff, Senior Associate
Radioactive Waste Management
526 West 26th Street, Room 517
New York, NY 10001
Phone (212) 620-0526
Fax (212) 620-0518



[Index](#) | [Site Map](#) | [FAQ](#) | [Help](#) | [Glossary](#) | [Contact Us](#)

U.S. Nuclear Regulatory Commission

[Home](#)

[Who We Are](#)

[What We Do](#)

[Nuclear Reactors](#)

[Nuclear Materials](#)

[Radioactive Waste](#)

[Facility Info Finder](#)

[Public Involvement](#)

[Home](#) > [Electronic Reading Room](#) > [Document Collections](#) > [General Communications](#) > [Information Notices](#) > [1989](#) > [IN 8](#)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

December 7, 1989

Information Notice No. 89-82: RECENT SAFETY-RELATED INCIDENTS AT
LARGE IRRADIATORS

Addressees:

All U.S. Nuclear Regulatory Commission (NRC) licensees authorized to possess and use sealed sources at large irradiators.

Purpose:

This notice is intended to inform recipients of recent safety-related incidents at large irradiators and emphasizes the need for proper management actions and attention to preventive maintenance programs. This notice also serves to remind licensees of other safety-related incidents at irradiators covered in Information Notice 87-29. It is expected that licensees will review this information, distribute the notice to responsible radiation safety staff, and consider actions, if appropriate, to ensure both proper preventive maintenance programs and proper management actions to preclude similar situations from occurring at their facilities. However, suggestions contained in this notice do not constitute any new NRC requirements, and no written response is required.

Description of Circumstances:

A description of each of the following events is provided in Attachment 1. In summary, these events included:

- x Deliberate bypass of the radiation monitor interlock system and another safety system designed to protect individuals from radiation-produced noxious gases.
- x Significant contamination of pool water remaining unnoticed, which could have been detected sooner, had the pool water been continuously circulated and monitored through the demineralizer.
- x An uncontrolled descent of a shipping cask into an irradiator pool, due to brake malfunction on a lifting crane.
- x Leaks in the irradiator pool caused by localized caustic stress corrosion in pool liner welds.

8911300050

IN 89-82
December 7, 1989
Page 2 of 3

EXHIBIT

N

Attachment 1
IN 89-82
December 7, 1989
Page 2 of 2

EVENTS THAT OCCURRED AT LARGE IRRADIATOR FACILITIES

(continued)

The State of Georgia and DOE are conducting investigations of other aspects and lessons learned as a result of this event. NRC has been periodically providing information in the NMSS Licensee Newsletter on the status of the DOE investigation into the cause of the source leakage. Licensees will be sent further information when it becomes available.

3. A contractor providing lifting crane services at a licensed facility was moving a shipping cask from the source storage pool to a mezzanine area, when the cask made an uncontrolled descent of approximately 19 feet. The cask stopped its descent approximately five feet below the surface, only after an operator activated a manual brake. No personnel were injured and there was no damage to, or contamination of, the licensee's facility or equipment as a result of this event. However, had the cask not been secured quickly, it could have damaged the radioactive sources in the pool or the pool itself.

This incident was a result of improper brake adjustment of the crane hoist. The crane brake was subsequently repaired and recertified for normal operations in accordance with current Occupational Safety and Health Administration regulations. Braking system inspection and adjustment, as well as functional load testing, are now established daily procedures before crane operation.

4. A licensee experienced a loss of pool water for several weeks that was approximately three times higher than expected from evaporative losses. The licensee performed tests to characterize the nature and quantity of the water loss and began daily assays of the pool water to determine compliance with release limits for unrestricted areas. Suspecting a leak in the irradiator pool, the licensee inspected the stainless steel liner and found localized caustic stress corrosion in many welds.

Apparently, welds made during construction of the facility in 1968 were not in accordance with industry standards. Thus, these faulty welds were subject to caustic stress corrosion which resulted in the recent pool water losses.

The facility has been shut down pending completion of repairs.



Year 2004 Issue: 2



Return to current Issue
Back Issues (1-04, 2-04, 3-04, 4-04)

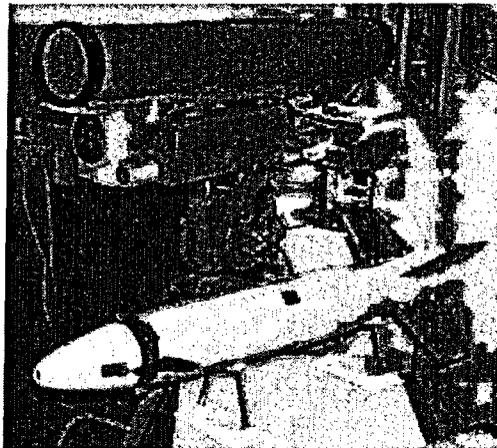
Topics & Features:

- [Armored Fighting Vehicles](#)
- [C4ISR](#)
- [Combat Aircraft](#)
- [Electronic Warfare](#)
- [Fire Support](#)
- [Future Combat Systems](#)
- [Homeland Defense](#)
- [Infantry Warfare](#)
- [Logistics & support](#)
- [Naval Systems](#)
- [Net Centric Warfare](#)
- [Precision Strike](#)
- [Protection & Survivability](#)
- [Spec-Ops, Counter Terror](#)
- [Unmanned Systems](#)
- [Defense Exhibitions](#)
- [RSS News Feed](#)

Relevant links:

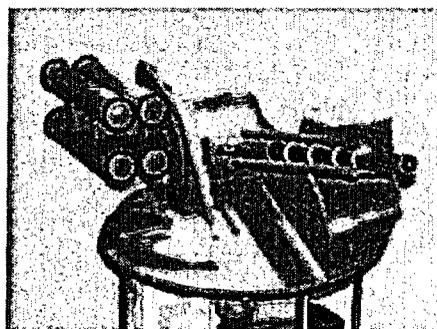
- [Armor at DEFEXPO](#)

Kornet E Laser Guided Anti-Tank Missile KBP (Russia)



This semi-automatic laser beam riding missile is effective at ranges of 100 – 5,500 m' in daytime and up to 3,500 m' at night. The missile utilizes a tandem shaped charge anti-tank warhead or a thermobaric (fuel-air explosive) charge, for anti-personnel and anti-material blast and incendiary effect. The manufacturer claims penetration of 1,200mm of steel armor or 4.5 meters of concrete.

A firing unit consisting of launcher, thermal sight and a single missile container weigh 65 kg and can be installed and ready for action in 3 minutes, operated by 3 men. Most often, the missile will be deployed on vehicular platforms, a modular design for such launcher can utilize a lightweight launcher or an integrated turret designed for a hummer sized vehicle, integrated with the thermal sight and four ready to fire missiles and five more in stowage. Other configurations include an automatic, remotely operated win-missile turret installed on the BMP-3 (16 missiles, of which 12 are stored in an autoloader) and BRTR-80 chasis (12 missiles, 8 in autoloader). The missile's launched is fitted with thermal imaging system, to facilitate effective operations under low visibility, day and night.



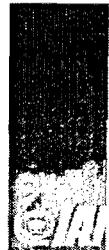
The missile is also deployed with the Kuliver single seat fighting compartment and weapon's turret, also designed by KBP for installation on BTR-80 and BMP series Armored Infantry Fighting Vehicles. Kuliver uses four ready to launch Kornet missiles, with associated fire control systems, a 30mm 2A72 automatic gun and 7.62 machine gun. The gunner's sight uses a built-in laser rangefinder and thermal imager, as well as the missile's guidance kit. An automatic fire control system handles two axis weapon

Search De

Start S

By G

- [Become](#)
- [Advertis](#)
- [Send su](#)
- [Comme](#)



stabilization, for firing on the move.

Updated: 01/26/2005

© 2002-2005 All Rights Reserved

[Contact us](#) - [Advertise](#)

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-ML
)	ASLBP No. 06-843-01-ML
Materials License Application)	
_____)	

SUPPLEMENTAL DECLARATION OF DAVID L. HENKIN

I, David L. Henkin, declare:

1. I am an attorney at law, duly licensed to practice before all courts of the State of Hawai'i, the U.S. District Court for the District of Hawai'i, the U.S. Court of Appeals for the 9th Circuit, and the U.S. Supreme Court. I am the lead attorney for petitioner Concerned Citizens of Honolulu.

2. I make this supplemental declaration in support of Concerned Citizens' Request for Hearing. This declaration is based on my personal knowledge, and I am competent to testify about the matters contained herein.

3. Attached hereto as Exhibit "P" is a true and correct copy of an article by Rod Thompson entitled "Radioactive Leak on Oahu Discovered," which appeared in the Honolulu Star-Bulletin on September 25, 1986.

4. Attached hereto as Exhibit "Q" is an excerpt from a true and correct copy of "Tsunami Questions and Answers," prepared by the O'ahu Civil Defense Agency. This document article is available on the web at: <http://www.co.honolulu.hi.us/ocda/tsunami2.htm>.

5. Attached hereto as Exhibit "R" is a true and correct copy of a photograph of the Pentagon following the September 11, 2001 terrorist attack. The photograph is available on the web at: <http://www.usni.org/resources/11September2001/Pentagon/1.htm>.

I declare under penalty of perjury that I have read the foregoing declaration and know the contents thereof to be true of my own knowledge.

Dated at Honolulu, Hawai'i, December 1, 2005.



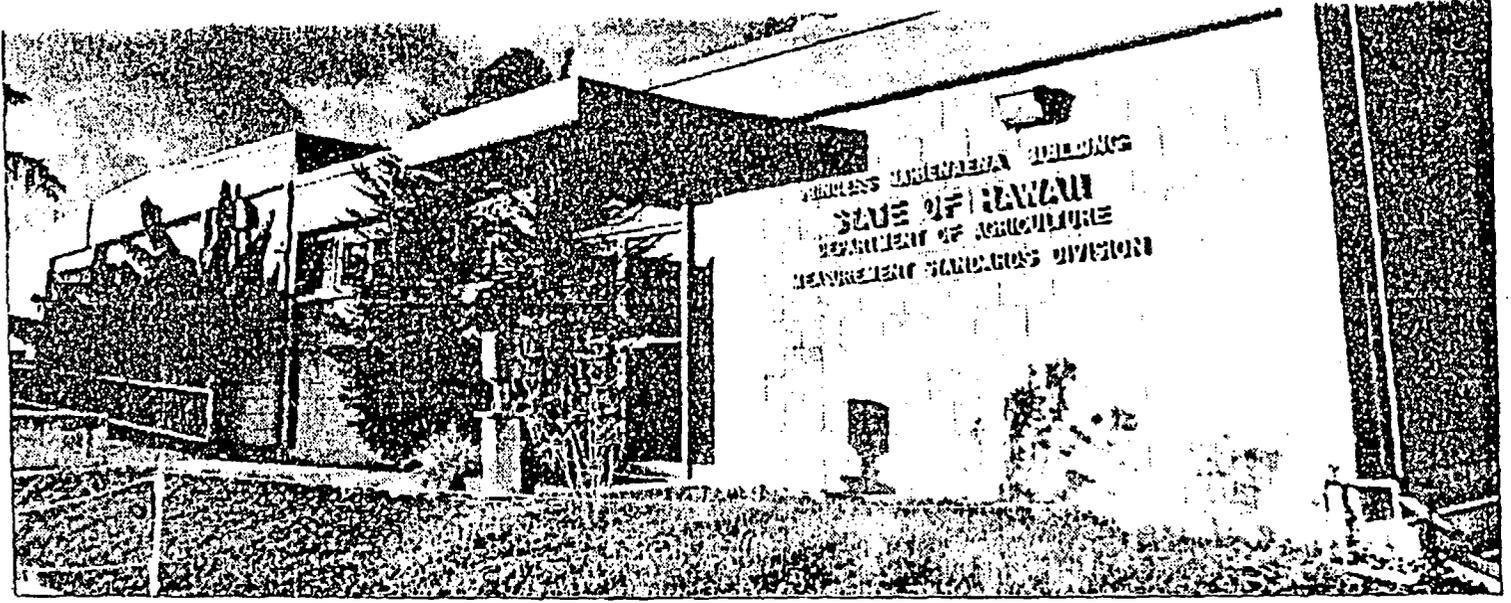
DAVID L. HENKIN

Sept. 25
1986

Honolulu
Star-
bulletin
headline
1-25-86

EXHIBIT

P



RADIATION SPILL SITE—Radioactive material lay on the ground outside this state Agriculture Department building for 13 years until it was cleaned up in 1980. —Star-Bulletin Photo by Dennis Oda.

Radioactive Leak on Oahu Disclosed

By Rod Thompson
Star-Bulletin Writer

HILLO — Radioactive material lay on the ground outside a state-run irradiation facility in Honolulu for 13 years until it was cleaned up in 1980, according to the East Hawaii Coalition to Stop Food Irradiation.

Although the public never was notified of the leak, no injuries resulted, according to a state Department of Agriculture official.

The contamination outside the building followed spillage of radioactive cobalt-60 inside the Hawaii Development Irradiator building at Fort Armstrong in 1967, Coalition spokeswoman Kathy Dorn said.

The coalition planned to disclose the incident at a press conference on the Big Island today.

Dorn cited the spill as an example of the danger an irradiator can pose to a community. A commercial irradiator is being considered for construction on the Big Island.

THE HAWAII Development Irradiator was operated by the state Department of Agriculture with federal money from 1967

to 1971, according to state documents obtained by Dorn. Dismantling of the facility was delayed until 1980, the documents show.

The facility irradiated papayas for studies of how well they held up in shipment and how wholesome they were, said Department of Agriculture administrator Masao Hanaoka.

Hanaoka confirmed that nine curies of cobalt-60 spilled inside the facility. He became safety officer for the facility after the spill was cleaned up, he said. Nine curies of cobalt-60 could give the equivalent of 180 chest X-rays per hour, said Brian Sprinsock of Food Irradiation Response in Santa Cruz, California.

Sprinsock estimated the material on the ground outside the facility could give the equivalent of two chest X-rays per hour when it was cleaned up in 1980, and eight chest X-rays per hour in 1967, before its strength declined.

No injuries are known to have resulted from the spill, Hanaoka said.

THE SPILL was due to defects in the manufacture of steel capsules which contained the cobalt, Hanaoka said. Most of

the spilled cobalt was confined to a pool of water used to shield workers from radioactivity, he said.

Some of that water washed onto the ground when a lead cask containing the damaged capsules was removed in 1967, Hanaoka said.

The soil contamination was discovered when consultant Ralph M. Baltzo decontaminated the entire facility in 1980, Baltzo said in a report to the state Department of Agriculture.

Although the radiation spillage was never publicized, Hanaoka said, there was no cover-up. No laws were violated, and state and federal officials "didn't think it was that much of a hazard to the public," he said.

Irradiation opponent Dorn disagreed about the danger. A similar spill at a proposed Big Island food irradiator could be worse if water soluble cesium-137 is used there instead of cobalt-60, Dorn said.

A cesium-137 leak "would be immediately washed into the groundwater," Dorn said. "It would inevitably lead to higher rates of cancer, birth defects, and damage to peoples' immune systems, making them more susceptible to infection," she said.

[Government](#) | [Kama'aina](#) | [Business](#) | [Visitors](#) | [Kids World](#) | [Seniors World](#) | [On-Line Services](#) | [Economic Development](#)

Quick

Find: Select One:

Search:

You are here: [Main](#) / [Civil Defense](#) / Tsunami Questions and Answers

Oahu Civil Defense Agency



TSUNAMI QUESTIONS AND ANSWERS

What is a Tsunami?

A series of ocean waves generated by vertical movement of the earth's crust (generally caused by underwater earthquakes which could occur very close to Oahu, within Hawaiian waters, or at a distant location). These waves may continue to arrive for several hours and are capable of causing destruction in coastal areas of Oahu, as they have in the past (for example 1946 and 1960).

What areas of Oahu are vulnerable to tsunami?

Generally, all coastal areas of Oahu are vulnerable. For specific areas, see the [maps](#) for the zones that must be evacuated. You should determine now whether you live, work, or go to school in an evacuation zone and develop individual or family emergency plans accordingly.

How will I know that a tsunami is expected?

- **An Earthquake Affecting Oahu:** A local earthquake, i.e., one that causes you to fall or hold on to something to keep from falling, is a natural tsunami warning. If outdoors, remain in open areas away from tall trees, poles, or buildings. If indoors, remain indoors and take cover. In either event, **when the shaking stops, immediately leave all evacuation zones.** There may be no time for an official warning.
- **An Earthquake in Hawaiian Waters:** If a significant earthquake occurs in the vicinity of the Hawaiian Islands, the Pacific Tsunami Warning Center (PTWC) will issue an URGENT TSUNAMI WARNING for those islands which could be affected by tsunami. The warning will be announced over radio through the Emergency Broadcast System in conjunction with the sounding of Civil Defense sirens. If an URGENT TSUNAMI WARNING specifically identifies Oahu, leave all evacuation zones immediately.



(DOD Photo: TSgt. Cedric H. Rudisill)

EXHIBIT *R*

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on December 1, 2005, a true and correct copy of the foregoing document was duly served on the following via e-mail and first-class United States mail, postage prepaid:

Fred Paul Benco
Suite 3409, Century Square
1188 Bishop Street
Honolulu, Hawai'i 96813
E-Mail: fpbenco@yahoo.com
Attorney for Pa'ina Hawaii, LLC

Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attn: Rulemakings & Adjudications Staff
E-Mail: HEARINGDOCKET@nrc.gov

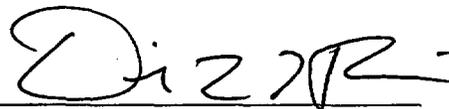
Margaret J. Bupp
Steven C. Hamrich
U.S. Nuclear Regulatory Commission
Office of the General Counsel
Mail Stop – O-15 D21
Washington, DC 20555-0001
E-mail: mjb5@nrc.gov
E-mail: sch1@nrc.gov

Administrative Judge
Paul B. Abramson
Atomic Safety & Licensing Board Panel
Mail Stop – T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-mail: pba@nrc.gov

Administrative Judge
Thomas S. Moore, Chair
Atomic Safety & Licensing Board Panel
Mail Stop – T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-Mail: tsm2@nrc.gov

Administrative Judge
Anthony J. Baratta
Atomic Safety & Licensing Board Panel
Mail Stop – T-3 F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
E-Mail: ajb5@nrc.gov

Dated at Honolulu, Hawai'i, December 1, 2005.



DAVID L. HENKIN
Attorney for Petitioner
Concerned Citizens of Honolulu



EARTHJUSTICE

BOZEMAN, MONTANA DENVER, COLORADO HONOLULU, HAWAII
INTERNATIONAL JUNEAU, ALASKA OAKLAND, CALIFORNIA
SEATTLE, WASHINGTON TALLAHASSEE, FLORIDA WASHINGTON, D.C.

December 1, 2005

By U.S. Mail and Electronic Mail

Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Attention: Rulemakings and Adjudications Staff
Email: HEARINGDOCKET@nrc.gov

Re: In the Matter of Pa'ina Hawaii, LLC, Docket No. 030-36974-ML, ASLBP No. 06-843-01-ML

To Whom It May Concern,

On behalf of Concerned Citizens of Honolulu, I am filing an original and two copies of Petitioner's Reply In Support Of Its Request For Hearing in the above-referenced license proceeding. Please note that the signature page of the supplemental declaration of Dr. Marvin Resnikoff is a faxed copy. I did not receive the original in time for this filing, but will file it as soon as I receive it.

Sincerely,

David L. Henkin

DLH/tt
Enclosure

cc: Service list