

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Thomas S. Moore, Chairman
Dr. Paul Abramson
Dr. Anthony J. Baratta

In the Matter of

PA'INA HAWAII, LLC

(Material License Application)

Docket No. 30-36974-ML

ASLBP No. 06-843-01-ML

August 27, 2009

INITIAL DECISION

(Ruling on Concerned Citizens of Honolulu
Amended Environmental Contentions #3, #4, and #5)

I. INTRODUCTION

This initial decision concerns a material license application submitted by Pa'ina Hawaii, LLC, the Applicant, to build and operate a below-ground, pool-type industrial irradiator using up to a million curies of radioactivity in the form of cobalt-60 sources on the grounds of the Honolulu International Airport – a site for which the Applicant has yet to execute a lease.¹ The airport is adjacent to the ocean and is in a location alleged by the opponents to the application to be subject to, inter alia, aircraft crashes, hurricanes, and tsunamis.

In the proposed facility, items to be processed are loaded into a stainless steel chamber and lowered into a water-filled pool containing cobalt-60 sources where they are exposed to the radiation from the cobalt-60.² The pool measures 18 feet 6 inches deep and approximately 8

¹ Application for Material License for Pa'ina Hawaii, Rev. 00 (June 23, 2005) (ADAMS Accession No. ML052060372) [hereinafter Application].

² See NRC Press Release, NRC Announces Opportunity for Hearing on License Application for Commercial Irradiator in Honolulu, Hawaii (July 26, 2005) at 1 (ADAMS Accession No. ML052070251).

feet by 7 feet wide.³ The Applicant plans to use the facility to irradiate fresh fruits (primarily papayas), vegetables, cosmetics, and pharmaceutical products so that when they are sent to the United States mainland, they are insect-free.⁴ The irradiator will also be used for research and development projects and to irradiate other materials as approved by the NRC on a case-by-case basis.⁵ Currently before us is the challenge of Concerned Citizens of Honolulu, the Intervenor, to the Final Environmental Assessment (Final EA), asserting that it fails to comply with the requirements of the National Environmental Policy Act (NEPA).⁶ After considering the parties' arguments and written filings submitted in this 10 C.F.R. Part 2, Subpart L informal proceeding pursuant to 10 C.F.R. 2.1207, we conclude that the Staff has satisfied its obligation with regard to amended environmental contention 3, but not with regard to amended environmental contention 4.

II. PROCEDURAL BACKGROUND

After the Applicant filed an application for a license to possess and use byproduct material in an irradiator,⁷ the Nuclear Regulatory Commission (NRC) published a notice of opportunity for a hearing on the Pa'ina Hawaii, LLC application.⁸ In the notice, the NRC stated that "[a]n environmental assessment for this licensing action is not required, since this action is categorically excluded under the provisions of 10 CFR 51.22(c)(14)(vii)."⁹ Thereafter, the

³ Final Environmental Assessment Related to the Proposed Pa'ina Hawaii, LLC Underwater Irradiator in Honolulu Hawaii (Aug. 10, 2007) at 2, A-3 (ADAMS Accession No. ML071150121) [hereinafter Final EA].

⁴ See 70 Fed. Reg. 44,396 (Aug. 2, 2005) [hereinafter Notice].

⁵ See id. at 44,396.

⁶ Intervenor Concerned Citizens of Honolulu's Amended Environmental Contentions #3 Through #5 (Sept. 4, 2007) at 2 [hereinafter Amended Environmental Contentions].

⁷ See Application.

⁸ See Notice.

⁹ Id. at 44,396.

Intervenor timely filed a request for a hearing in which it asserted twelve safety and two environmental contentions.¹⁰ In its two environmental contentions, the Intervenor argued that the Staff improperly invoked the categorical exclusion, and should therefore prepare an environmental assessment (EA) or an environmental impact statement (EIS), because the proposed Pa'ina irradiator located at the Honolulu Airport immediately adjacent to the ocean presented "special circumstances" exceptions under the NRC's regulations.¹¹ The Board admitted the Intervenor's first environmental contention and the first portion of the Intervenor's second environmental contention.¹² The Board also admitted three of the Petitioner's safety contentions in a separate Order, which contentions were subsequently dismissed.¹³

The Intervenor and the NRC Staff then agreed to settle the admitted environmental contentions, stipulating that they would move jointly to dismiss them and that the Staff would prepare an environmental assessment (EA) for the Applicant's proposed irradiator as a prerequisite to issuing any Finding of No Significant Impact (FONSI).¹⁴ The Intervenor reserved

¹⁰ Request for Hearing by Concerned Citizens of Honolulu (Oct. 3, 2005).

¹¹ Id. at 19-25 (citing 10 C.F.R. § 51.22(b)). The Intervenor claimed that the "special circumstances" included the potential for mechanical failures, power outages, airplane crashes, hurricanes, and tsunamis, which would "cause a significant release of radioactive material from the Pa'ina Hawaii irradiator to the environment." Id. at 20.

¹² LBP-06-04, 63 NRC 99 (2006).

¹³ LBP-06-12, 63 NRC 403 (2006). All of the Intervenor's submitted safety contentions were dismissed. See Licensing Board Order (Ruling on Admissibility of Two Amended Contentions) (June 22, 2006) (unpublished); CLI-08-03, 67 NRC 151 (Mar. 17, 2008); Licensing Board Order (Dismissing Outstanding Safety Contentions and Permitting Submission of New Safety Contentions) (Apr. 2, 2008) (unpublished); Licensing Board Order (Ruling on Admissibility of Amended Safety Contention 7) (June 19, 2008) (unpublished).

¹⁴ NRC Staff and Concerned Citizens of Honolulu Joint Motion to Dismiss Environmental Contentions (Mar. 20, 2006). Ordinarily, the Staff need not prepare an environmental assessment for an irradiator facility because irradiators fall under the categorical exclusion of 10 C.F.R. § 51.22(c)(14)(vii). Here, however, the Staff, in effect, waived the categorical exclusion in the joint stipulation and thus was obligated to prepare an environmental assessment in full compliance with NEPA and applicable precedent, including those of the United States Court of Appeals for the Ninth Circuit – the federal circuit encompassing Hawaii.

its rights pursuant to 10 C.F.R. § 2.309(c) to file additional contentions challenging the adequacy of the Staff's NEPA review after the Staff published a final FONSI.¹⁵ Additionally, the Staff agreed in the joint stipulation to publish a draft FONSI for public comment and to hold a public meeting in Honolulu on the draft before issuing a final FONSI.¹⁶ Thus, on April 27, 2006, this Board approved the joint stipulation and dismissed environmental contentions 1 and 2.¹⁷

In late December 2006, the Staff issued its Draft Environmental Assessment (Draft EA) and a Draft Topical Report, addressing certain technical matters.¹⁸ Thereafter, the Intervenor timely filed detailed and lengthy environmental contentions 3 and 4, asserting that the Draft EA and Draft Topical Report failed to comply with NEPA, and environmental contention 5, claiming that the agency must prepare a full EIS.¹⁹ The Staff and the Applicant opposed the admission of these three contentions.²⁰ Rather than resolve the admissibility of the Intervenor's proffered contentions on the Draft EA, the Board refrained from ruling on the Intervenor's then pending

¹⁵ Id.

¹⁶ Id.

¹⁷ Licensing Board Order (Confirming Oral Ruling Granting Motion to Dismiss Contentions) (Apr. 27, 2006) (unpublished).

¹⁸ Draft Environmental Assessment Related to the Proposed Pa'ina Hawaii, LLC Underwater Irradiator in Honolulu, Hawaii (Dec. 21, 2006) (ADAMS Accession No. ML063470231); Draft Topical Report on the Effects of Potential Natural Phenomena and Aviation Accidents at the Proposed Pa'ina Hawaii, LLC Irradiator Facility (Dec. 2006) (ADAMS Accession No. ML063560344).

¹⁹ Intervenor Concerned Citizens of Honolulu's Contentions Re: Draft Environmental Assessment and Draft Topical Report (Feb. 9, 2007). Also, in response to the Staff's request for comments on the Draft EA and FONSI, the Intervenor filed voluminous comments supported by expert reports and affidavits closely mirroring environmental contentions 3 and 4. Re: Docket No. 030-36974 Draft Environmental Assessment and Finding of No Significant Impact for Proposed Pa'ina Hawaii, LLC Irradiator in Honolulu, Hawaii (Feb. 8, 2007) (ADAMS Accession No. ML070470615) [hereinafter Comments].

²⁰ NRC Staff Response to Intervenor Concerned Citizens of Honolulu's Contentions Re: Draft Environmental Assessment and Draft Topical Report (Mar. 12, 2007) [hereinafter Staff Response to Contentions Re: Draft EA and Draft Topical Report]; Applicant Pa'ina Hawaii, LLC's Answer to Intervenor Concerned Citizens of Honolulu's Contentions Re: Draft Environmental Assessment and Draft Topical Report (Mar. 9, 2007).

environmental contentions because it anticipated and transparently indicated to the Staff that, in light of Ninth Circuit precedent, many of the issues raised in the contentions might be “readily cured in the ordinary course of the Staff’s performance of its NEPA obligations [i.e., the Staff’s taking of public comment and subsequent preparation of the Final EA].”²¹ Thereafter, the Staff released its Final Topical Report.²² The Staff then issued its Final EA (with very few changes from the Draft EA), including Appendix B, addressing the effects of a terrorist attack on the Applicant’s proposed irradiator, and Appendix C, purportedly addressing public comments. The Staff then issued a final FONSI that incorporated the Final EA and NRC License No. 53-29296-01.²³ The license authorized the Applicant to possess and use sealed sources in connection with its proposed irradiator. After the Staff issued the license, the Intervenor filed a timely motion in which it asked the Board to stay the effectiveness of the NRC license.²⁴ The Board issued an Order in which it held the Intervenor’s stay request in abeyance because it found that the license did not present an imminent irreparable harm – an essential element under Commission precedent of any stay motion – since the Applicant had not yet executed a lease

²¹ Licensing Board Order (Regarding Environmental Contentions) (July 18, 2007) at 2 (unpublished). In the Order, the Board noted that it expected “that the Staff would welcome the opportunity to address at least some such omissions [raised in the contentions] in its imminently forthcoming Final Environmental Assessment.” Id.

²² Final Topical Report on the Effects of Potential Aviation Accidents and Natural Phenomena at the Proposed Pa’ina Hawaii, LLC, Irradiator Facility (May 2007) (ADAMS Accession No. ML071280833) [hereinafter Topical Report].

²³ Notice of Availability of Final Environmental Assessment and Finding of No Significant Impact for Proposed Pa’ina Hawaii, LLC Irradiator in Honolulu, Hawaii, 72 Fed. Reg. 46,249, 46,251 (Aug. 17, 2007); see also Final EA; Pa’ina Hawaii, LLC Materials License (Aug. 17, 2007) (ADAMS Accession No. ML072320269).

²⁴ Intervenor Concerned Citizens of Honolulu’s Application for Stay of NRC Staff’s Issuance of License for Possession and Use of Byproduct Material (Aug. 27, 2007).

on the land on which it planned to build its irradiator.²⁵ As previously indicated, the Applicant has still not, as of the date of this Order, executed a lease for the proposed irradiator site.²⁶

Following the Staff's issuance of the Final EA, the Intervenor timely proffered amended environmental contentions 3, 4, and 5, which are essentially the same contentions as the Intervenor filed on the Draft EA. These three amended environmental contentions claim that the Staff's Final EA, like the Draft EA, failed to comply with the requirements of NEPA.²⁷ Amended environmental contention 3, enumerating a number of alleged defects, asserts that the Staff in the Final EA failed to take the requisite hard look at the potential environmental impacts of the proposed irradiator; amended environmental contention 4 claims that the Staff in the Final EA failed to consider reasonable alternative technologies and locations; and amended environmental contention 5 states that the Staff was obligated to prepare an EIS for the facility.²⁸ The Staff and the Applicant opposed the admission of the amended environmental contentions,²⁹ and the Intervenor filed a Reply.³⁰ Because amended environmental contention 3 was, in reality, a compilation of numerous individual contentions, we admitted portions of the contention that complied with the requirements of 10 C.F.R. § 2.30(f)(1)(i)-(vi).³¹ We also

²⁵ Licensing Board Order (Temporarily Holding in Abeyance Stay Application) (Oct. 5, 2007) (unpublished).

²⁶ Lease Update in Response to ASLB's October 5, 2007 Order (Aug. 5, 2009).

²⁷ See Amended Environmental Contentions.

²⁸ Id. at 2-3.

²⁹ NRC Staff's Response to Intervenor Concerned Citizens of Honolulu's Amended Environmental Contentions #3 Through #5 (Sept. 20, 2007) [hereinafter Staff Response to Amended Environmental Contentions]; Applicant Pa'ina Hawaii, LLC's Answer to Intervenor Concerned Citizens of Honolulu's Amended Environmental Contentions #3 Through #5 (Sept. 18, 2007) [hereinafter Applicant Answer].

³⁰ Intervenor Concerned Citizens of Honolulu's Reply in Support of Its Amended Environmental Contentions #3 Through #5 (Oct. 1, 2007).

³¹ Licensing Board Order (Ruling on Admissibility of Intervenor's Amended Environmental Contentions) (Dec. 21, 2007) at 6-23 (unpublished) [hereinafter Ruling on Admissibility].

admitted the entirety of amended environmental contention 4, and found amended environmental contention 5 was premature.³²

Thereafter, the Board issued a Scheduling Order for the informal proceeding under Subpart L of the NRC's Rules of Practice in which we established deadlines for the remaining filings in the proceeding and the content and format of these filings.³³ In accordance with the Board's schedule, the parties filed their initial statements of position,³⁴ and their rebuttal statements.³⁵ The Board then ordered the Intervenor to file a full factual and substantive written statement of position and ordered the Staff and Applicant to file written responses.³⁶ The

³² Id. at 23-34.

³³ Licensing Board Order (Scheduling Order) (July 17, 2008) (unpublished). In issuing its Scheduling Order, the Board stated it would not entertain motions for summary disposition, noting that, because this proceeding is being conducted pursuant to 10 C.F.R. Part 2, Subpart L, "which requires the parties to present their case in written statements, affidavits, and exhibits, motions for summary disposition, which necessarily closely parallel the parties' Subpart L written presentations, [a motion for summary disposition] will not materially shorten the proceeding or otherwise save time in resolving the admitted contentions." Id. at 2.

³⁴ Intervenor Concerned Citizens of Honolulu's Initial Written Statement of Position (Aug. 26, 2008) [hereinafter Intervenor Initial Statement]; NRC Staff's Initial Statement of Position on Amended Environmental Contentions 3 and 4 (Aug. 26, 2008) [hereinafter Staff Initial Statement]; Licensee Pa'ina Hawaii, LLC's Trial Brief on the Law (Aug. 26, 2008).

³⁵ Intervenor Concerned Citizens of Honolulu's Rebuttal to NRC Staff's Statement of Position (Sept. 16, 2008) [hereinafter Intervenor Rebuttal to Staff]; Intervenor Concerned Citizens of Honolulu's Rebuttal to Pa'ina Hawaii, LLC's Statement of Position (Sept. 15, 2008) [hereinafter Intervenor Rebuttal to Applicant]; NRC Staff's Rebuttal Statement of Position and Testimony (Sept. 15, 2008); Licensee Pa'ina Hawaii, LLC's Rebuttal Memorandum in Opposition to Intervenor Concerned Citizens of Honolulu's August 26, 2008 Initial Written Statement of Position and in Response to NRC Staff's Initial Statement of Position and Initial Written Statement (Sept. 15, 2008) [hereinafter Applicant Rebuttal].

Even though the Board had informed the parties it would not entertain motions for summary disposition, see supra note 33, the Staff, after receiving the Intervenor's Rebuttal statement, filed a motion to dismiss portions of amended environmental contention 3 and for leave to seek summary disposition. See NRC Staff's Motion to Dismiss Portions of Amended Environmental Contentions and for Leave to Seek Summary Disposition (Sept. 26, 2008). As noted, see infra note 36, the Board directed the Intervenor to file its supplemental rebuttal statement, and has now resolved in this Initial Decision the Intervenor's amended environmental contention 3 on the merits. Accordingly, the Staff's motion is now moot.

³⁶ Licensing Board Order (Ruling on Intervenor's Motion to Strike Testimony, Releasing Previously Reserved Hearing Dates, and Directing Parties to Submit Scheduling Information for

Intervenor did so and the Staff and Applicant filed responses.³⁷ Subsequently, the Intervenor filed an amendment to amended environmental contention 3, which dealt specifically with

Hearing) (Dec. 4, 2008) at 2 (unpublished). Because the Intervenor took the position in its Initial and Rebuttal Statements that the administrative record rule precludes the Staff from correcting any deficiencies in the Final EA through the hearing process, see discussion infra Section IV.A, the Intervenor did not file any evidence rebutting the Staff's Initial Statement, and the Board directed it to file a full factual and substantive written statement of position so that the Board would have the benefit of the Intervenor's rebuttal and response to the allegedly, "post hoc," "improper," and "irrelevant" testimony submitted by the Staff and Applicant in their Initial and Rebuttal Statements of Position.

³⁷ Intervenor Concerned Citizens of Honolulu's Supplemental Statement of Position (Feb. 3, 2009) [hereinafter Intervenor Supplemental Statement]; NRC Staff's Response to Intervenor's Supplemental Statement of Position (Mar. 5, 2009) [hereinafter Staff Response]; Licensee Pa'ina Hawaii, LLC's Response to Intervenor Concerned Citizens of Honolulu's Supplemental Statement of Position (Mar. 4, 2009).

In accordance with the schedules established by the Board for the parties' filings pursuant to 10 C.F.R. § 2.1207, the Applicant timely filed its pleadings. We have not found it necessary specifically to address the Applicant's arguments because any significant arguments made by the Applicant are generally encompassed by the Staff's arguments. Moreover, the Applicant's arguments, as they have from the inception of this proceeding, evidence a misapprehension of the agency's regulations, procedures, and hearing process. In previous rulings, the Board attempted to explain to the Applicant the agency's hearing process and the different treatment accorded environmental contentions under NEPA and safety contentions under the AEA. See, e.g., Applicant Answer (Applicant asserts that new or amended environmental contentions are moot because the issues were studied and addressed by the Staff); but see Ruling on Admissibility at 8 n.36, 15-16, 21-22 n.75; Licensee Pa'ina Hawaii, LLC's Motion: To Reinstate "Categorical Exclusion" Status for Pa'ina Hawaii, LLC's Irradiator (Aug. 25, 2008); but see Licensing Board Order (Ruling on Pa'ina Hawaii, LLC Motion to Reinstate "Categorical Exclusion") (Oct. 15, 2008) (unpublished).

Recently, in its Rebuttal Statement, the Applicant argued that The Lands Council v. McNair, 537 F.3d 981 (9th Cir. 2008), sets forth the "proper standard of review of the Staff's Environmental Assessment." Applicant Rebuttal at 4. The Applicant contends that in McNair, which "announced a 'sea change,'" see id. at 1, the standard "ought to be the 'arbitrary and capricious' standard, with a 'highly deferential' standard to be applied where the NRC Staff applied its predictive, scientific expertise, i.e., in virtually all of its review." Id. at 4. The Applicant misapprehends the applicability of this Ninth Circuit case to the proceeding before this Board. Contrary to the Applicant's assertions, this case has no bearing on the instant proceeding because the Board is part of the administrative process. Accordingly, we are not the arbiters of whether the Staff's conclusions in the record regarding the proposed irradiator were "arbitrary and capricious;" rather, we are an integral part of developing the record in the first instance, and ensuring that it satisfies NEPA.

transportation accidents.³⁸ Both the Staff and the Applicant filed responses opposing the admission of the amended contention.³⁹

Although the Commission's Subpart L regulations appear to require a mandatory oral hearing, the regulations also provide that "[p]articipants and witnesses will be questioned orally or in writing and only by the presiding officer."⁴⁰ Because the Board has concluded from the parties' filings that it has no critical factual questions for the parties and that convening such a session cannot be justified, the Board informed the parties that it would not hold an oral hearing in Hawaii.⁴¹ The Board had presaged that possibility in its initial hearing notice stating "[e]xcept to the extent . . . other circumstances renders [it] unnecessary, the Board may conduct an oral argument."⁴²

III. NEPA AND ENVIRONMENTAL ASSESSMENTS

NEPA was enacted in 1969 to "encourage productive and enjoyable harmony between man and his environment [and] to promote efforts which will prevent or eliminate damage to the environment."⁴³ The Ninth Circuit, which encompasses Hawaii, has found that the purpose of NEPA is twofold: to ensure the agency "will have available, and will carefully consider, detailed information concerning significant environmental impacts[, and guarantee] that the relevant

³⁸ Intervenor Concerned Citizens of Honolulu's Amendment to Environmental Contention 3 Re: Transportation Accidents (Apr. 6, 2009) [hereinafter Amendment].

³⁹ NRC Staff's Response in Opposition to Intervenor's Amendment to Environmental Contention 3 Re: Transportation Accidents (May 1, 2009); Licensee Pa'ina Hawaii, LLC's Opposition to Intervenor's Amendment to Environmental Contention 3 Re: Transportation Accidents (May 1, 2009).

⁴⁰ 10 C.F.R. § 2.1207(b)(6).

⁴¹ Licensing Board Order (Notice Regarding Hearing) (June 5, 2009) (unpublished).

⁴² Notice of Hearing, 71 Fed. Reg. 25,862, 25,862 (May 2, 2006).

⁴³ 42 U.S.C. § 4321.

information will be made available to the larger [public] audience.”⁴⁴ NEPA is a “procedural statute that requires Federal agencies to assess the environmental consequences of their actions before those actions are undertaken.”⁴⁵ Although NEPA “does not mandate particular results,” it does “prescribe the necessary process.”⁴⁶ Stated less diplomatically, “NEPA does not prohibit the government from taking actions for whatever political, ecological or economic reasons motivate the proposed action. It does, however, require a transparent process so that the public is informed about their choices.”⁴⁷ The NRC, along with all other Federal agencies, is obligated to comply with NEPA and prepare an EA or an EIS in which it assesses the environmental consequences of a proposed action.⁴⁸

An EA, along with the FONSI, “constitutes an agency’s evaluation of the environmental effects of a proposed action – unless a more detailed statement is required.”⁴⁹ Under the NRC’s regulations, an EA “means a concise public document for which the Commission is responsible that serves to: (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an [EIS] or a [FONSI] [and] (2) Aid the Commission’s compliance with NEPA.”⁵⁰ As an independent regulatory commission, the Commission’s “policy [is] to take account of the [NEPA] regulations of the [Council on Environmental Quality (CEQ)] voluntarily’ . . . [as]

⁴⁴ N. Idaho Cmty. Action Network v. U.S. Dep’t of Transp., 545 F.3d 1147, 1153 (9th Cir. 2008); see also Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989).

⁴⁵ Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt., 387 F.3d 989, 993 (9th Cir. 2004).

⁴⁶ Methow Valley, 490 U.S. at 350.

⁴⁷ Soda Mountain Wilderness Council v. Norton, 424 F. Supp. 2d 1241, 1262 (E.D. Cal. 2006).

⁴⁸ Duke Power Co. (Catawba Nuclear Station, Units 1 and 2), CLI-83-19, 17 NRC 1041, 1049 (1983).

⁴⁹ Pac. Gas & Elec. Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-26, 68 NRC 509, 514 (2008). A more detailed EIS is required only if the proposed action is “a major Federal [action] *significantly* affecting the quality of the human environment.” Id. (quoting 42 U.S.C. § 4322(2)(C)).

⁵⁰ 10 C.F.R. § 51.14(a).

tempered by the Commission's overriding 'responsibility as an independent regulatory agency for protecting the radiological health and safety of the public.'"⁵¹

When considering whether an EA has satisfied the requirements of NEPA, the Ninth Circuit borrows and applies many of the same standards it uses when reviewing an EIS's compliance with NEPA.⁵² In resolving NEPA challenges to the Staff's environmental documents in the administrative hearing process, licensing boards, as a part of the administrative process, nevertheless apply some of the same standards as the reviewing federal courts because, in part, that is the same measure by which the agency's NEPA compliance ultimately will be judged. Accordingly, because of the location of the proposed facility at issue in this proceeding, we follow the Ninth Circuit's lead and apply, where appropriate, the NEPA standard used by that circuit to our evaluation of the Staff's environmental documents for the proposed Pa'ina irradiator.⁵³

Among other requirements, NEPA requires, regardless of whether an EIS or an EA is involved, that Federal agencies must take a "hard look" at the environmental consequences of proposed actions before taking them. For an EA to meet the "hard look" standard, the agency's environmental document must "provide sufficient evidence and analysis for determining whether to prepare an [EIS] or a [FONSI]"⁵⁴ and be adequate to "[a]id the Commission's compliance with NEPA when no [EIS]."⁵⁵ "If an agency decides not to prepare an EIS, it must supply a

⁵¹ Pac. Gas & Elec. Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-01, 67 NRC 1, 12 n.49 (2008) (quoting 10 C.F.R. § 51.10(a), (b)).

⁵² See, e.g., Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1194 (9th Cir. 2008) (citing Native Ecosystems Council v. U.S. Forest Serv., 428 F.3d 953 (9th Cir. 2005)); Klamath-Siskiyou, 387 F.3d at 993-94.

⁵³ The Commission has had few occasions to review the sufficiency of an environmental assessment under NEPA and therefore, provides only minimal guidance in this respect to this Board. See, e.g., Diablo Canyon, CLI-08-26, 68 NRC 509.

⁵⁴ 10 C.F.R. § 51.14(a); see also 40 C.F.R. § 1508.9(a)(1).

⁵⁵ 10 C.F.R. § 51.13(a); see also 40 C.F.R. § 1508.9(a)(2).

'convincing statement of reasons' to explain why a project's impacts are insignificant."⁵⁶ Accordingly, "[t]he statement of reasons is crucial to determining whether the agency took a 'hard look' at the potential environmental impact of a project."⁵⁷ As the Ninth Circuit has made clear, the NEPA requirement in CEQ regulation 40 C.F.R. § 1502.8 that EISs "shall be written in plain language . . . so that decisionmakers and the public can readily understand them" is equally applicable to EAs, so that "[e]ven accepting the [agency's] representation that 'specialists' can understand the information in these EAs, the documents are unacceptable if they are indecipherable to the public."⁵⁸

Finally, section 102(2)(E) of NEPA⁵⁹ requires that federal agencies "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." Federal agencies are also required to ensure that project proposals include, "choices or alternatives that might be pursued with less environmental harm."⁶⁰ The Ninth Circuit has held that "consideration of alternatives is critical to the goals of NEPA,"⁶¹ and that "NEPA . . . requires that alternatives . . . be given full and meaningful consideration."⁶² Accordingly, when in the Ninth Circuit, proposed actions will be "set aside"⁶³ if the agency has not taken into account the

⁵⁶ Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1212 (9th Cir. 1998).

⁵⁷ Id. (quoting Save the Yaak Comm. v. Block, 840 F.2d 714, 717 (9th Cir. 1988)).

⁵⁸ Klamath-Siskiyou, 387 F.3d at 996.

⁵⁹ 42 U.S.C. § 4332(2)(E).

⁶⁰ Lands Council v. Powell, 395 F.3d 1019, 1027 (9th Cir. 2005).

⁶¹ Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228-29 (9th Cir. 1988).

⁶² Id. at 1229.

⁶³ Soda Mountain, 424 F. Supp. 2d at 1246.

“possible approaches to a particular project . . . which would alter the environmental impact and cost-benefit balance.”⁶⁴

By considering environmental consequences in advance of pursuing a proposed action, a Federal agency “foster[s] both informed decision-making and informed public participation.”⁶⁵ The CEQ’s regulations state that “NEPA procedures must insure that environmental information is available to public . . . citizens before decisions are made and before actions are taken,” because “public scrutiny [is] essential to implementing NEPA.”⁶⁶ Moreover, the regulations require the Federal agencies to “[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures.”⁶⁷ Ninth Circuit and NRC case law reiterate this public involvement requirement. The Ninth Circuit recently held that “[a]n agency, when preparing an EA, must provide the public with sufficient environmental information, considered in the totality of circumstances, to permit members of the public to weigh in with their views and thus inform the agency decision-making process.”⁶⁸ Likewise, the Commission has stated that

NEPA requires agencies to include the public in NEPA reviews. Indeed, public information and public participation form a large part of NEPA’s raison d’etre. At the NRC, public input includes not just an opportunity to comment on draft [environmental document], but also an opportunity to contest environmental findings at agency hearings on the licensing action in question.⁶⁹

⁶⁴ Bob Marshall, 852 F.2d at 1228 (quoting Calvert Cliffs Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n, 449 F.2d 1109, 1114 (D.C. Cir. 1971)); see infra § V.A.

⁶⁵ Biological Diversity, 538 F.3d 1172 at 1194 (internal citations omitted); see also 40 C.F.R. § 1500.2(b).

⁶⁶ 40 C.F.R. § 1500.1(b); see also id. § 1501.4(b) (requiring an agency to “involve . . . the public, to the extent practicable, in preparing [environmental] assessments”).

⁶⁷ Id. § 1506.6(a).

⁶⁸ Bering Strait Citizens for Responsible Res. Dev. v. U.S. Army Corps of Eng’rs, 524 F.3d 938, 953 (2008).

⁶⁹ Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 354 (2002) (internal citations omitted); see also S. Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), CLI-07-17, 65 NRC 392, 395 (explaining that a Licensing Board’s

Finally, because it is the agency's obligation to comply with NEPA, the Staff has the burden of proof on all NEPA issues.

IV. AMENDED ENVIRONMENTAL CONTENTION #3

The Intervenor's third amended environmental contention asserts that the Final EA fails in five areas to take the NEPA-mandated "hard look" at the potential environmental impacts of the proposed irradiator.⁷⁰ The Intervenor's contention claims that the Final EA does not (a) respond to the comments on the deficiencies of the draft EA;⁷¹ (b) contain sufficient evidence and analysis of impacts;⁷² (c) consider potential significant impacts from natural disasters, aviation accidents, and the transportation of sources;⁷³ (d) provide a serious, scientifically-based analysis of the risks and consequences of terrorist acts;⁷⁴ and (e) discuss impacts associated with irradiating food for human consumption.⁷⁵

"work on environmental issues requires compliance with the public participation and public comment process of NEPA and associated regulations").

⁷⁰ As fully explained in our Memorandum and Order on the admissibility of the Intervenor's amended environmental contention 3, the various portions of the contention were essentially admitted as contentions of omission because each portion of the contention asserted that the Final EA failed to include essential information necessary for the EA to comply with NEPA. See Ruling on Admissibility at 6-20. Although analyzed for contention admissibility on that basis, the determination of whether the component parts of the contention are meritorious necessarily now requires a determination of whether in each asserted particular instance the Staff has complied with NEPA.

⁷¹ See Amended Environmental Contentions at 7-8.

⁷² See id. at 8-14.

⁷³ See id. at 14-18.

⁷⁴ See id. at 18-29.

⁷⁵ See id. at 29-30. The Commission took sua sponte review of the issue of whether NEPA requires the NRC to consider potential health effects of consuming irradiated food, and concluded that it does not. See CLI-08-04, 67 NRC 171 (2008); CLI-08-16, 68 NRC 221, 222-23, 230 (2008). Accordingly, the fifth segment of Amended Environmental Contention 3 is no longer a part of the contention.

The NEPA-mandated “hard look” standard ensures that the Federal agency considering a proposed action employs “a reasonably thorough discussion of the significant aspects of the probable environmental consequences.”⁷⁶ The law in the Ninth Circuit is that a satisfactory EA must provide “sufficient information,” and to be sufficient, it must be “more than perfunctory.”⁷⁷ In order for a Federal agency to demonstrate it has taken a “hard look,” its “reasonably thorough discussion” must do more than “shunt[] aside [significant questions] with merely conclusory statements,”⁷⁸ or make “‘vague and conclusory statements’ unaccompanied by ‘supporting data.’”⁷⁹ The discussion must instead “‘directly address’ ‘substantial questions,’” include a “meaningful consideration of . . . fundamental factors,” and “provide . . . [a] foundation” for its inferences.⁸⁰

Thus, although the Commission’s regulations explain that an EA is a “concise public document” that, *inter alia*, briefly describes various prescribed matters,⁸¹ to be satisfactory and consistent with the Ninth Circuit precedent, the discussion in an EA can neither be so concise and abbreviated, nor the description of the issues be so brief and conclusory, that it deprives members of the public of sufficient information to permit them to weigh in with their views and inform the agency decisionmaking process. In other words, the EA must be adequate in light of the issues raised by the proposed project and the serious substantive public comments

⁷⁶ Biological Diversity, 538 F.3d at 1194 (internal quotations omitted).

⁷⁷ Klamath-Siskiyou, 387 F.3d at 994 (quoting Ocean Advocates v. U.S. Army Corps of Eng’rs, 361 F.3d 1108, 1128 (2004)).

⁷⁸ Biological Diversity, 538 F.3d at 1223 (quoting Found. for N. Am. Wild Sheep v. U.S. Dep’t of Agric., 681 F.2d 1172, 1179 (9th Cir. 1982)).

⁷⁹ Id. at 1223-24 (quoting Great Basin Mine Watch v. Hankins, 456 F.3d 955, 973 (9th Cir. 2006)).

⁸⁰ Id. at 1223 (quoting N. Am Wild Sheep, 681 F.2d at 1179); see also Idaho Sporting Cong. v. Thomas, 137 F.3d 1146, 1150 (9th Cir. 1998) (“NEPA requires that the public receive the underlying environmental data from which [each cited expert] derived [its] opinion.”).

⁸¹ 10 C.F.R. § 51.14(a).

submitted to the agency, and no prescribed page limit can determine the sufficiency of the EA.⁸² Additionally, if the public involvement and purpose of the NEPA document is to be fulfilled, the adequacy of an EA must be judged through the lens of the general public and not by whether a highly sophisticated expert in the particular field would be able to decipher a cryptic or complex discussion.

A. The Intervenor's Overarching Challenge

As part of its opposition to the sufficiency of the Final EA, the Intervenor first raises an overarching challenge to the Staff's clarification and augmentation of its environmental document through its evidentiary submittals as part of the administrative hearing process. According to the Intervenor, the Commission's regulations, 10 C.F.R. §§ 51.102(c) and 51.34(b), in identical language, specifically permit a licensing board to modify an EIS or FONSI only "[w]hen a hearing is held on the proposed action under the regulations in subpart G of part 2 of this chapter." Because the instant proceeding on the Final EA is not a Subpart G proceeding but rather a Subpart L proceeding, the Intervenor argues that the regulations must be read to prohibit the Staff from in any way modifying its environmental review under the statutory construction doctrine of inclusio unius est exclusio alterius (i.e., "to express or include one thing implies the exclusion of the other, or of the alternative"⁸³). The Intervenor argues, therefore, that in this Subpart L proceeding, the regulations, 10 C.F.R. §§ 51.31(a), 51.34(a), authorize the Staff to prepare the Final EA and FONSI only, and the deficient environmental

⁸² Because the agency's regulations define an EA as a "concise" document, the Staff opines that it should be "in the range of ten to fifteen pages," impliedly suggesting that the length of its 47-page Final EA and appendices is seemingly reason enough to find it adequate. Contrary to the Staff's assertions, the length of its EA does not determine its adequacy. See Staff Initial Statement at 18-19. In commenting on the significance of the length of an EA, Judge, now Justice, Breyer succinctly noted that "[w]e should not give conclusive weight, one way or the other, to the simple facts of EA length These facts do not by themselves show that the EAs' conclusion – 'no significant impact' – is correct, nor do they show it is incorrect." Sierra Club v. Marsh, 769 F.2d 868, 875 (1st Cir. 1985).

⁸³ Black's Law Dictionary 620 (8th ed. 2004).

documents must be returned to the Staff for any amendment and recirculation for public comment.⁸⁴

Relying upon the administrative record rule applicable to federal court review of agency action, the Intervenor also argues that the text of the Staff's environmental document is the sole basis upon which the adequacy of the Final EA can be assessed, and that the hearing process cannot cure any deficiencies in the Final EA.⁸⁵ In this regard, the Intervenor claims that the Staff's reliance upon the Commission's decision in North Anna⁸⁶ as going behind the face of the EA to the administrative record for clarifying details from the hearing process is misplaced.⁸⁷ In North Anna, the Commission stated that the adjudicatory tribunal may look to the entire administrative record to determine whether "the Staff's underlying review was sufficiently detailed to qualify as 'reasonable' and a 'hard look' under NEPA – even if the Staff's description of that review in the [NEPA document] was not."⁸⁸

Although at first blush the Intervenor's proposed construction of the Commission's regulations gives them a desirable symmetry, the agency's procedures, as well as Commission precedent, specifically allow evidence in the hearing process to augment and clarify the administrative record underlying Staff NEPA documents and to become part of the environmental document. In any proceeding in which a hearing is held on a proposed action, 10 C.F.R. § 51.104 authorizes any party, including the Staff, to take a position and offer evidence on aspects of the proposed action within the scope of NEPA, and directs the licensing board to decide the NEPA matters in controversy. Because the NRC adjudicative hearing

⁸⁴ Intervenor Rebuttal to Staff at 3-4.

⁸⁵ Id. at 4-5.

⁸⁶ Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site), CLI-07-27, 66 NRC 215 (2007).

⁸⁷ Intervenor Rebuttal to Staff at 3.

⁸⁸ North Anna, CLI-07-27, 66 NRC at 230 (emphasis omitted).

process is but one part of the agency's overall administrative process – a process that is not complete in a contested proceeding until the licensing board issues a decision and all administrative appeals are concluded – the administrative record rule relied upon by the Intervenor is inapposite. Nor is the Staff's reliance upon the Commission's North Anna decision misplaced. The Commission has consistently indicated that the adjudicatory record and decisions on NEPA issues become, in effect, part of the agency's environmental documents. That Commission doctrine, although not limitless with regard to the extent of supplementation, is applicable regardless of the type of hearing procedures involved.⁸⁹ Accordingly, contrary to the Intervenor's overarching argument, there is no per se regulatory bar that precludes the Staff from using the hearing process to clarify the administrative record underlying its Final EA, and that record, along with any adjudicatory decision, becomes, in effect, part of the final environmental document. We turn now to the individual components of the Intervenor's amended environmental contention 3.

B. The Final EA Failed to Respond to Comments Regarding the Draft EA's Deficiencies

The Intervenor alleges in the first part of its amended environmental contention 3 that the Staff's Final EA contravenes NEPA, Ninth Circuit precedent, and the joint stipulation entered into by the Staff and Intervenor because it fails to respond to nine specific public comments submitted by the Intervenor on the Draft EA and Appendix B.⁹⁰ The Intervenor states that the Staff failed to satisfy NEPA and comply with Ninth Circuit precedent because the Staff "ignored . . . 'or, at best, shunted . . . aside with mere conclusory statements,'" the Intervenor's

⁸⁹ See id. at 230, 233 (Subpart G proceeding); Diablo Canyon, CLI-08-26, 68 NRC at 526 (Subpart K proceeding); Hydro Res., Inc. (P.O. Box 15910, Rio Rancho, NM) CLI-01-04, 53 NRC 31, 53 (2001) (Subpart L proceeding).

⁹⁰ Amended Environmental Contentions at 7-8; see also Intervenor Initial Statement at 8-9; Intervenor Supplemental Statement at 20-21.

“voluminous comments” that pointed out these deficiencies in the Draft EA.⁹¹ Further, the Intervenor claims that the Staff did not meet its obligations under the joint stipulation because that document, which was later entered as an Order by the Board, “expressly mandated substantial opportunities for the public to provide input.”⁹² Accordingly, the Intervenor argues that the Board should “remand the matter to the Staff to prepare a revised EA that fully addresses these comments.”⁹³

For its part, the Staff acknowledges it “has an obligation to consider comments received on any draft EA,” but notes that “the NRC’s NEPA-implementing regulations do not specifically address the manner in which the Staff should reply to public comments.”⁹⁴ Relying upon the Commission’s regulation addressing the content of an EIS, 10 C.F.R. § 51.91, the Staff argues that even those provisions give it substantial flexibility in determining the manner of responding to comments,⁹⁵ and that the critical issue regarding an EA “is whether the agency considered significant public comments . . . in reaching its conclusions.”⁹⁶ According to the Staff, the manner in which it responds to comments is a matter left to its discretion.⁹⁷

⁹¹ Amended Environmental Contentions at 7-8 (quoting N. Am. Wild Sheep, 681 F.2d at 1179); see also Intervenor Initial Statement at 8-9; Intervenor Supplemental Statement at 20-21.

⁹² Intervenor Rebuttal to Applicant at 12; see also Intervenor Rebuttal to Staff at 7; Intervenor Supplemental Statement at 21.

⁹³ Intervenor Initial Statement at 10 (citing N. Am. Wild Sheep, 681 F.2d at 1183); see also Intervenor Supplemental Statement at 23.

⁹⁴ Staff Initial Statement at 21-22.

⁹⁵ The Staff’s discussion of 10 C.F.R. § 51.91 does not mention that the EIS content regulation provides that the EIS “will include responses to any comments on the draft [EIS]” and that the responses may include, inter alia, an “[e]xplanation of why comments do not warrant further response.” 10 C.F.R. § 51.91(a).

⁹⁶ Staff Initial Statement at 22.

⁹⁷ Id.

The Staff is correct that the agency's regulations do not explicitly address how it should respond to public comments on the Draft EA. In defining an EA, however, the regulations provide that it is a document "that serves to . . . [a]id the Commission's compliance with NEPA."⁹⁸ It would appear axiomatic, therefore, that first considering and then responding to substantial, substantive public comments is an obvious component of the agency taking a "hard look" at the impact of the proposed action and we do not understand the Staff's argument to contest this point. In any event, long standing Ninth Circuit precedent requires an agency to respond to public comments on a draft EA.⁹⁹ Accordingly, the remaining question concerning each of the nine comments identified in the Intervenor's contention is whether the Staff now has adequately responded to them in the Final EA and the administrative record.

1. The first comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA "to consider significant factors in evaluating the likelihood the proposed irradiator would be in an aviation accident."¹⁰⁰ In that regard, the Final EA states that, "[a]s described in more detail in the Safety Topical Report . . . , the probability of an aircraft crash into the proposed facility is 2.1×10^{-4} (i.e., about once every five thousand years)."¹⁰¹ The Final EA further notes that "the probability that an aircraft will crash into the proposed facility does not reflect the potential for release or dispersal of the radioactive Co-60 from the doubly-encapsulated sources."¹⁰² The Final EA also provides a detailed physical description of the facility and notes that during routine operations, the

⁹⁸ 10 C.F.R. § 51.14(a).

⁹⁹ See N. Am Wild Sheep, 681 F.2d at 1178-79; see also Oregon Natural Res. Council Action v. U.S. Forest Serv., 445 F. Supp.2d 1211, 1229 (D. Or. 2006); Sierra Nevada Forest Protection Campaign v. Weingardt, 376 F. Supp.2d 984, 991 (E.D. Cal. 2005).

¹⁰⁰ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 8-9; Intervenor Supplemental Statement at 20.

¹⁰¹ Final EA at 9.

¹⁰² Id. at 9-10.

radioactive sources are locked in place at the bottom of the irradiator pool in a plenum (i.e., a watertight box), covered by 12-18 feet of water.¹⁰³ In responding to the allegation that the airplane crash estimate in the Draft EA was too low, Appendix C of the Final EA merely repeats the same information it provided in the Final EA, but additionally states that its crash probability number is “conservatively estimated.”¹⁰⁴ The Topical Report referenced in the EA details in 17 pages the methodology and data used to determine the probability of an aircraft crash into the proposed facility and includes a section explaining why the probability estimate is conservative (i.e., an overestimation).¹⁰⁵ Finally, the testimony of the Staff’s expert who calculated the crash probability and prepared that portion of the Topical Report addresses each of the major criticisms of the Staff’s aircraft crash probability raised by the Intervenor’s expert in his comments.¹⁰⁶ As just one example, in his comments on the Draft EA, the Intervenor’s expert asserts that, instead of using the methodology set forth in the NRC Staff document, NUREG-0800, published in 1981, the Staff should have used the Department of Energy’s methodology for determining aircraft crash probabilities.¹⁰⁷ In response to that comment, the Staff’s expert testified that in preparing the Final EA, he analyzed the probability of a crash at the Honolulu Airport using both methodologies and found that “[t]he cumulative probability for takeoffs and landings on all runways is not significantly different, regardless of which methodology is

¹⁰³ Id. at 2-6.

¹⁰⁴ Id. at C-14.

¹⁰⁵ Topical Report at 2-1 through 2-17.

¹⁰⁶ Staff Initial Statement, Exh. 2, NRC Staff’s Testimony of James Durham, Amitava Ghosh, John Stamatakos and Kaushik Das Concerning Amended Environmental Contention 3 at A.14-A.18 [hereinafter CNWRA Testimony].

¹⁰⁷ Intervenor Initial Statement, Exh. 2, The Probability of Aircraft Impact into the Proposed Pa’ina Hawaii Irradiator at 1-2 (Feb. 7, 2007).

used.”¹⁰⁸ Thus, the Final EA, Topical Report, and Staff testimony directly address and adequately answer the Intervenor’s first comment on the Draft EA and it cannot reasonably be said, as the Intervenor’s contention asserts, that the claims of the Intervenor’s expert were either shunted aside or insufficiently considered and answered.

2. The second comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA “to quantify the impact of flying airplane and building debris following an aviation accident to determine if sources would be breached.”¹⁰⁹ The Final Topical Report acknowledges that “[a] portion of the force generated by an aircraft crash will damage the building and the structures in the pool.”¹¹⁰ Nevertheless, the Staff’s expert explains that while “it is possible that airplane or building debris could fall into the irradiator pool . . . it is highly unlikely this debris will be moving at the same speed the plane was moving prior to striking the irradiator building, and any debris falling into the pool will be limited in size by the pool opening.”¹¹¹ Furthermore, the expert states that “[e]ven if we assume that debris falls into the irradiator pool, it is simply not feasible that airplane or building debris would simultaneously pierce the steel-and-concrete pool liner below the water table and damage the sources to the extent where Co-60 could escape through the breach in the liner.”¹¹² Additionally, the Topical Report concludes that “it is not feasible that a significant amount of contamination can be released into the pool water and lead to contamination of the surrounding environment in the timeframe of days to weeks considered in the case of an aircraft accident.”¹¹³

¹⁰⁸ CNWRA Testimony at A.15.

¹⁰⁹ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20.

¹¹⁰ Topical Report at 2-17.

¹¹¹ CNWRA Testimony at A.19.

¹¹² Id.

¹¹³ Topical Report at 1-3.

The Topical Report explains that contamination of the pool water or the surrounding environment could occur only if the source were removed from the source plenum, the inner and outer containment capsules were breached, and “a significant amount of the cobalt source material [were] corrode[d] to the extent that corroded cobalt metal significantly contaminates the water.”¹¹⁴ The Topical Report then considers two aspects of corrosion: thermodynamic and kinetic aspects. While the Topical Report explains that “it is thermodynamically possible for cobalt to corrode,” it also found that because “the pool water will be maintained at a low temperature and at a low conductivity, the cobalt corrosion rate is anticipated to be very low.”¹¹⁵ The Final EA states that “even if a source were to contaminate the pool water, the radiation monitors would be activated and the irradiator would be shut down and the leaking sources would be removed.”¹¹⁶ Therefore, the Staff’s expert concludes that “[d]ispersal of Co-60 is not a plausible consequence of an aircraft crash.”¹¹⁷ Finally, the Staff’s expert responds to the Intervenor’s concern that the water table surrounding the proposed Pa’ina irradiator could become contaminated if the Co-60 source were “pulverized” as a result of an aircraft crash¹¹⁸ by stating that the Co-60 “sources are activated iron or steel plugs encapsulated in a nickel shell . . . contained in one or two layers of stainless steel that are welded shut” so “[a]t temperatures above -200 degrees Celsius, [the sources] cannot be ‘pulverized.’ Instead iron and steel are ductile materials, which means that they have the ability to be deformed and

¹¹⁴ Id.

¹¹⁵ Id.

¹¹⁶ Final EA at 8.

¹¹⁷ CNWRA Testimony at A.19.

¹¹⁸ See Intervenor Supplemental Statement, Supplemental Written Testimony and Declaration of Marvin Resnikoff, Ph.D., at A.9.

elongated without fracturing.”¹¹⁹ Thus, the Topical Report and Staff testimony directly address and adequately answer the Intervenor’s second comment on the Draft EA and the Intervenor’s assertions that its expert’s claims were either shunted aside or insufficiently considered and answered are without merit.

3. The third comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA to “quantify hurricane storm surge and tsunami inundation runup potential.”¹²⁰ The Final EA summarizes the Staff’s analysis regarding hurricane storm surge and tsunami inundation runup potential and concludes that “the wave velocity required to remove a Co-60 source from the bottom of the pool is larger than the wave velocity of any historical tsunami in Hawaii”¹²¹ and that “the wave velocity associated with a storm surge is significantly less than that associated with a tsunami.”¹²² The Staff’s expert explains that the “analysis showed that a source could not be removed at a wave velocity below 200 mph, which far exceeds the velocity of any wave that might plausibly strike the Pa’ina irradiator.”¹²³ Further, the Topical Report states that “[a]t the shore, tsunami waves up to 10 m

¹¹⁹ Staff Response, Exh. 62 at A.16 (testimony of Durham).

¹²⁰ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20.

¹²¹ Final EA at 10.

¹²² Id. at 11.

¹²³ CNWRA Testimony at A.9.

[32.8 ft] can reach velocities up to 13 m/s [29 mph],”¹²⁴ which “is less than 15 percent of that necessary to remove the source assembly from the bottom of the pool.”¹²⁵

Additionally, the Staff responds to the Intervenor’s expert’s argument that the Staff should have used a numerical modeling study to quantify tsunami and storm surge runoff potential.¹²⁶ The Staff’s expert explains that numerical modeling is useful “where there is uncertainty that might be resolved with more precise information. In this case, there is no uncertainty over whether a tsunami or hurricane might cause a loss of control of radioactive material Accordingly . . . [t]here was simply no reason to perform numerical modeling.”¹²⁷ Thus, the Topical Report and Staff testimony directly address and adequately respond to the Intervenor’s third comment on the Draft EA and the claims of the Intervenor’s expert were not shunted aside or insufficiently considered and answered.

4. & 5. The fourth and fifth comments the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements are the failure of the EA “to consider the effects on the irradiator pool of increases in buoyancy forces due to hurricane surge or tsunami inundation,” and the “potential consequences of hurricane winds.”¹²⁸ The Staff’s expert states that “it is not plausible that major flooding would cause either the sources or the irradiator pool

¹²⁴ Topical Report at 3-6 (internal citations omitted). In Section 3.3 of the Topical Report, the Staff reviewed publically available data from the National Oceanic and Atmospheric Administration (NOAA) and the National Hurricane Center of the National Weather Service of NOAA and found that the maximum water-level rise at Oahu since the 1950s was 0.78 meters or 2.6 feet. Accordingly, the Staff’s assessment of tsunami waves of up to 10 m or 32.8 feet is considered to be a conservative assessment. Id. at 3-6 to -11.

¹²⁵ Id. at 3-6.

¹²⁶ Intervenor Initial Statement, Exh. 3, Declaration of George Pararas-Carayannis, Ph.D. in Support of Concerned Citizen’s Contentions Re: [Draft EA] and Draft Topical Report ¶ 29 (Feb. 9, 2007) [hereinafter Pararas-Carayannis Decl.].

¹²⁷ CNWRA Testimony at A.39.

¹²⁸ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20.

to become buoyant such that there would be any environmental impact” because, “[e]ven if saltwater completely replaced the freshwater in the pool, the marginal increase in density would not cause sources to float out of the pool. Nor, for that matter, would there be an increase in buoyancy sufficient to cause the pool to lift and tilt, thereby spilling water.”¹²⁹ The Staff’s expert further explains that even if the pool tilted to the side and spilled water, “the pool would not release radioactive effluence[;] . . . [u]nless the sources are removed, there will not be any loss of control of radioactive material, and increased buoyancy is not going to remove the sources.”¹³⁰ The Staff’s expert concludes that “[w]hile wind-generated projectiles could potentially damage the irradiator building, the sources would not be damaged by these projectiles . . . because the sources would remain at the bottom of the pool, covered by 12-18 feet of water.”¹³¹ Furthermore, the Staff’s expert states that “sources would also be covered by the plenum and possibly by one or more product bells. Any projectile falling into the pool would be slowed or stopped by the pool water and would not damage the source.”¹³² Finally, the Staff’s expert explains that even if a projectile were to pierce the pool below the water level, “[t]here would not be any environmental impact . . . because the pool water would not be contaminated.”¹³³ Accordingly, the Staff’s testimony responds to the Intervenor’s fourth and fifth comments on the Draft EA and the assertions of the Intervenor’s expert were not ignored or insufficiently considered.

6. The sixth comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements is the failure of the EA “to evaluate unique features of Ke’ehi

¹²⁹ CNWRA Testimony at A.38.

¹³⁰ Id.

¹³¹ Id. at A.31.

¹³² Id.

¹³³ Id.

Lagoon that might increase the potential for tsunami-related impacts.”¹³⁴ Specifically, the Intervenor’s expert alleges that runups and coastal flooding could be more significant today than it was in the past.¹³⁵ The Staff expert explains that “[w]hile . . . wave heights remain in debate given the data . . . cite[d] in the Topical Report, [wave heights were not addressed] in the revision because, even if such flooding were to take place, it would not generate the high water velocities and large lifting forces necessary to remove the cobalt sources from the pool.”¹³⁶ The Staff’s expert adds that he and others “conducted extensive research into the historical data relating to tsunamis, storm surges and wave heights that might be relevant to assessing hazards to Pa’ina’s irradiator.”¹³⁷ The Staff’s testimony therefore responds to the Intervenor’s sixth comment on the Draft EA.

7. The seventh comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA “to consider potential focusing effects of seismic energy on O’ahu.”¹³⁸ The Final EA states that “a seismically-induced radiological accident is considered negligible due to the nature of the facility and the seismic hazard for the site.”¹³⁹ The Topical Report provides data on the greatest intensity values on record for Oahu, which reached only Force VI intensities twice: once in 1871 in Lanai (M = 6.8), and again in 1948 a few miles south of Honolulu (M = 4.6).¹⁴⁰ Additionally, Figure 3-1 of the

¹³⁴ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20. “The apex of Keehi Lagoon is . . . between the runway and the proposed facility.” Topical Report at 2-4.

¹³⁵ Intervenor Initial Statement, Exh. 2, Pararas-Carayannis Report at 12-18 (Feb. 2007) [hereinafter Pararas-Carayannis Report].

¹³⁶ CNWRA Testimony at A.32.

¹³⁷ Id. (citing Staff Exhs. 49, 51, 57).

¹³⁸ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20.

¹³⁹ Final EA at 10.

¹⁴⁰ Topical Report at 3-3.

Topical Report provides data on all earthquakes from the United States Geological Survey on the Hawaiian islands between 1868 and October 30, 2006 with magnitudes greater than M = 4.0.¹⁴¹ The Staff's expert concludes, after "looking at the available data, [that there is] no evidence of focusing effects at or near the Pa'ina irradiator. If there were focusing effects, the seismic records would show higher intensity values reported for areas affected by recent earthquakes."¹⁴² Furthermore, the Staff's expert responds directly to the claims of the Intervenor's expert about the focusing effects of seismic energy on Oahu by stating that, "[i]t is entirely speculative to conclude, as [the Intervenor's expert] apparently has, that Pa'ina's site will experience much higher ground motions than any included in the existing earthquake record merely because the site could possibly focus earthquake energy."¹⁴³ Accordingly, the Final EA, the Final Topical Report, and the Staff's expert respond to the Intervenor's seventh comment on the Draft EA and neither shunted aside nor insufficiently considered the Intervenor's asserted concerns.

8. The eighth comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA to "evaluate properly the threat of liquefaction."¹⁴⁴ The Staff's expert explains it "dismissed this scenario as speculative because

¹⁴¹ Id. at 3-2.

¹⁴² CNWRA Testimony at A.33.

¹⁴³ CNWRA Supp. Testimony at A. 25. Additionally, the Staff's expert responds directly to the claim of the Intervenor's expert that focusing effects on Oahu might have significantly higher intensities than those previously recorded. The Intervenor's expert cites to the focusing effects in California's San Fernando Valley during the 1994 Northridge Earthquake. See Pararas-Carayannis Report at 19-20. In response, the Staff's expert explains that the San Fernando Valley "is approximately 2500 miles from Honolulu. Moreover, this earthquake is an inappropriate analog for seismicity on O'ahu [because t]he tectonic conditions and resulting thrust faulting that led to the San Fernando Valley earthquake are very different from the hot-spot generated earthquakes in Hawaii." CNWRA Testimony at A.33.

¹⁴⁴ Amended Environmental Contentions at 7; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20.

there is no evidence of liquefaction from past earthquakes at or near the Pa'ina site;" in other words, "Honolulu . . . is not in a seismic area."¹⁴⁵ Furthermore, the Final EA explains that "[e]ffects of seismic activity would be mitigated by the facility's compliance with the International Building Code and the source design to minimize the amount of force that could be transferred to the source."¹⁴⁶ Even if liquefaction were to occur, the Staff's expert explains that the result would be that the irradiator would be "pushed out of the ground and tilted, causing some water to spill [T]he sources would remain intact in the pool, partially shielded by water, so there would be no radiological impact."¹⁴⁷ Accordingly, the Final EA concludes that "potential seismic activity would have no significant impacts on public health and safety from the proposed irradiator."¹⁴⁸ Thus, the Final EA, Topical Report, and Staff testimony address the Intervenor's eighth comment on the Draft EA and the claims of the Intervenor's expert were not shunted aside or insufficiently considered.

9. The ninth comment the Intervenor asserts the Staff either ignored or shunted aside with conclusory statements was the failure of the EA "to examine accidents involving transportation of Co-60 sources to and from the proposed irradiator."¹⁴⁹ This ninth comment overlaps with the transportation component of the third part of amended environmental contention 3, and is addressed below.¹⁵⁰

¹⁴⁵ CNWRA Testimony at A.34 (citing Staff Initial Statement, Exhs. 48, 52-53, 56). The Staff's expert once again responds to the concern of the Intervenor's expert about the 1994 Northridge Earthquake and explains that while San Fernando Valley is in a "seismic area" as defined by 10 C.F.R. § 36.2, Honolulu is not. See supra note 143.

¹⁴⁶ Final EA at 10.

¹⁴⁷ CNWRA Testimony at A.34.

¹⁴⁸ Final EA at 10.

¹⁴⁹ Amended Environmental Contentions at 7-8; see also Intervenor Initial Statement at 9; Intervenor Supplemental Statement at 20-21.

¹⁵⁰ See infra § IV.D.9.

C. The Final EA Contains Insufficient Evidence and Analysis Regarding Potential Impacts

The Intervenor alleges in the second part of its amended environmental contention 3 that the Staff's discussion in the Final EA concerning the potential impacts of the proposed Pa'ina irradiator is "far too cursory [to] satisfy the document's basic purposes."¹⁵¹ Quoting the CEQ's regulations, which are essentially identical to the NRC's parallel regulations, the Intervenor's contention states that the purpose of an EA is to "provide sufficient evidence and analysis for determining whether to prepare an [EIS] or a [FONSI] and to '[a]id [the NRC's] compliance with [NEPA]' in the event no EIS is prepared."¹⁵² The Intervenor asserts that Ninth Circuit precedent holds that "NEPA requires that the public receive the underlying data from which [the Staff's experts] derived [their] opinion[s]" so as to meet NEPA's public disclosure of information requirement.¹⁵³ By contrast, the Intervenor asserts, the Staff's Final EA, including its appendices, "offers nothing more than 'generalized conclusory statements that the effects are not significant,'" in contravention of the CEQ regulations, Ninth Circuit precedent, and NEPA.¹⁵⁴ The admitted portions of the Intervenor's contention then list twelve deficiencies in the Final EA that allegedly make it inadequate. We address each in order.

1. The Intervenor's first allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that "it is unlikely that an employee could receive more than the occupational dose limit' or quantification of what it means by 'unlikely.'"¹⁵⁵ The Final EA

¹⁵¹ Amended Environmental Contentions at 8; see also Intervenor Initial Statement at 10; Intervenor Supplemental Statement at 23.

¹⁵² Amended Environmental Contentions at 8 (quoting 40 C.F.R. § 1508.9(a)(1), (2)); see also Intervenor Initial Statement at 10; Intervenor Supplemental Statement at 23.

¹⁵³ Amended Environmental Contentions at 11 (quoting Idaho Sporting, 137 F.3d at 1150); see also Intervenor Initial Statement at 12; Intervenor Supplemental Statement at 28.

¹⁵⁴ Amended Environmental Contentions at 8 (citing Klamath-Siskiyou, 387 F.3d at 996); see also Intervenor Initial Statement at 24; Intervenor Supplemental Statement at 10.

explains that “the maximum dose at the pool surface would be well below 1 millirem/hour,” whereas the occupational dose limit is 5,000 millirem/year.¹⁵⁶ The Staff’s witness states that “[e]ven if an employee were standing directly above the irradiator pool eight hours a day, five days a week, there is no way the employee would exceed the occupational limit under normal operations.”¹⁵⁷ Instead, “[i]n practice, employees will be working at some distance from the irradiator pool, usually around 20-25 feet away, where the dose rate will be indistinguishable from background.”¹⁵⁸ Appendix C of the Final EA further explains that “[a]ccess controls for workers . . . are required to ensure that radiation doses to [employees] are within the limits prescribed by regulation and are as low as reasonably achievable.”¹⁵⁹ These access controls for workers include “specialized training, radiation monitoring, personnel monitoring, audit programs, access barriers, and other engineering controls.”¹⁶⁰ Finally, the Staff’s witness states that he used the term “unlikely” to mean “not plausible” or “zero.”¹⁶¹ Thus, the Final EA and Staff’s testimony provide more than generalized, conclusory statements to support the Staff’s conclusions regarding the likelihood an employee would receive more than the occupational dose limit.

2. The Intervenor’s second allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim “regarding its evaluation of ‘expected dose rate’

¹⁵⁵ Amended Environmental Contentions at 8 (quoting Final EA at 8); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁵⁶ Final EA at 8. The agency’s regulations, 10 C.F.R. § 20.1201, provide that the annual occupational limit is 5 rem.

¹⁵⁷ Staff Initial Statement, Exh. 1, NRC Staff’s Testimony of Matthew D. Blevins Concerning Amended Environmental Contentions 3 and 4 at A.12 [hereinafter Blevins Testimony].

¹⁵⁸ Id.

¹⁵⁹ Final EA at C-10.

¹⁶⁰ Id.

¹⁶¹ Blevins Testimony at A.13.

outside the irradiator.”¹⁶² The Staff’s witness explains that his conclusion regarding the expected dose rate outside the irradiator “is supported by calculations and data, including the MicroShield calculations and the CFC inspection report.”¹⁶³ As stated above, those calculations and data show that “the dose rate above the surface of the pool will be very close to background.”¹⁶⁴ Moreover, the Staff’s witness asserts that “[u]nder normal operations, if the dose rate above the irradiator pool were to reach 1 mR/hr, workers will be alerted of the need to add water, and they would quickly reduce the dose rate to the rate noted in the MicroShield calculations, which is close to background.”¹⁶⁵ Accordingly, “[g]iven that the rate above the surface of the irradiator pool will be only approximately close to background, and given that the radiation above the pool will consist of a well-collimated beam, it follows that the dose rate outside the building will be indistinguishable from background.”¹⁶⁶ Thus, the Final EA, Staff’s testimony, and Staff exhibits provide more than generalized, conclusory statements that validate the Staff’s claim regarding the expected dose rate outside the irradiator.

3. The Intervenor’s third allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that “it is unlikely that a member of the public could receive more than the public limit’ or quantification of what it means by ‘unlikely.’”¹⁶⁷ The Final EA explains that the public dose limit is 100 millirem/year.¹⁶⁸ The Staff’s witness adds that

¹⁶² Amended Environmental Contentions at 8 (quoting Final EA at 8); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁶³ Blevins Testimony at A.14.

¹⁶⁴ Id.

¹⁶⁵ Id.

¹⁶⁶ Id.

¹⁶⁷ Amended Environmental Contentions at 9 (quoting Final EA at 8); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁶⁸ Final EA at 8.

under normal operation of the irradiator, “the dose rate above the irradiator pool will be approximately background.”¹⁶⁹ Nevertheless, even if the dose rate above the pool were 1 mR/hr, which is a high estimate, “a member of the public would have to place himself 30 centimeters above the irradiator pool for 100 hours to reach the public dose limit in 10 C.F.R. § 20.1301(a)(1), . . . [which is] wholly implausible.”¹⁷⁰ Furthermore, the Staff’s witness asserts that his “conclusion is supported by the calculations and data in the MicroShield summary and the CFC inspection report, as well as by an analysis of Pa’ina’s operating safety procedures.”¹⁷¹ The Staff’s witness states that it is therefore “not only ‘unlikely,’ but simply not foreseeable, that a member of the public would exceed the dose limit during normal operations.”¹⁷² Finally, the Staff’s witness explains, as stated above, that he used the term “unlikely” to mean “not plausible” or “zero.”¹⁷³ Accordingly, the Final EA, Staff’s testimony, and Staff exhibits provide more than generalized, conclusory statements that confirm the Staff’s claim regarding the likelihood a member of the public would receive more than the public dose limit.

4. The Intervenor’s fourth allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that “[t]ransportation impacts from normal operations would be small.”¹⁷⁴ This allegation overlaps with the transportation component of the third part of amended environmental contention 3, and so it will be addressed below.¹⁷⁵

¹⁶⁹ Blevins Testimony at A.15.

¹⁷⁰ Id.

¹⁷¹ Id.

¹⁷² Id.

¹⁷³ Id. at A.13.

¹⁷⁴ Amended Environmental Contentions at 9 (quoting Final EA at 8); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁷⁵ See infra § IV.D.9.

5. The Intervenor's fifth allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that the "proposed irradiator would potentially have small beneficial impacts to socioeconomics."¹⁷⁶ As support for this assertion, the Final EA points to the Statements of Consideration (SOCs) from two U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) rulemakings that indicate that "the result of irradiation treatments would be lower costs and increased flexibility for importers, gains which could be realized by U.S. consumers through lower prices."¹⁷⁷ Furthermore, the Final EA explains that sweet potato farmers, banana farmers, and importers of fresh flowers and foliage could benefit from potentially cheaper treatment alternatives.¹⁷⁸ The Staff's witness references a third study by APHIS,¹⁷⁹ and concludes that "[t]hese [three APHIS] studies provide the data and information supporting the Staff's conclusion that Pa'ina's irradiator could 'potentially' have small socioeconomic benefits."¹⁸⁰ Even though the Staff filed these SOCs as exhibits, it does not point out where in the documents the alleged supporting information may be found. The Commission in Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2), CLI-89-03, 29 NRC 234 (1989) held that "parties must clearly identify evidence" and that "Commission practice is clear that a petitioner may not simply incorporate massive documents by reference" and explained that it "expects parties to bear their burden and to clearly identify the matters on which they intended to rely with reference to a specific point."¹⁸¹ Here, the Staff has not

¹⁷⁶ Amended Environmental Contentions at 9 (quoting Final EA at 8); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁷⁷ Final EA at 8 (citing Staff Initial Statement, Exh. 44; see also Staff Initial Statement, Exh. 46).

¹⁷⁸ Id.

¹⁷⁹ Staff Initial Statement, Exh. 45.

¹⁸⁰ Blevins Testimony at A.17 (citing Staff Initial Statement, Exhs. 44-46).

¹⁸¹ CLI-89-03, 29 NRC at 240-41.

complied with that Commission directive and it cannot now attempt to use the unidentified information in Staff Exhibits 44, 45, and 46 to bootstrap its case. We have, nonetheless, “searched for a needle that may be in a haystack”¹⁸² and read through the three SOCs. In doing so, we found that the Final EA and Staff exhibits, along with the Staff’s testimony, now provide more than generalized, conclusory statements that support the Staff’s assertion regarding the potentially small beneficial impacts of the proposed irradiator to socioeconomics.¹⁸³

6. The Intervenor’s sixth allegation is that the Final EA does not justify “focusing its review of potentially significant impacts on ‘offsite consequences.’”¹⁸⁴ The Staff’s witness responds to this claim by stating that “[t]he contention misquotes the EA. In fact, the EA says, ‘the NRC staff focused its review on the release of radioactive material which could have off-site consequences,’ . . . it could also have onsite consequences. The Staff analyzed both possibilities in the EA.”¹⁸⁵ Thus, although poorly explained, the Staff nonetheless considered onsite as well as offsite consequences.

7. The Intervenor’s seventh allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that “a loss of 6 feet of pool water would result in a dose of approximately 300 millirem/hour” or to justify its assertion that “the increased dose rate will not be sufficient to have a significant environmental effect on the area around the

¹⁸² Id. at 241.

¹⁸³ For example, one of the rules states that “[t]he range of commodities imported and moved interstate for which irradiation will be an approved treatment will increase. At the same time, dosage levels, and therefore operating costs, will decrease for many commodities.” Staff Initial Statement, Staff Exh.44, 71 Fed. Reg. 4451, 4456 (Jan. 27, 2006) [hereinafter Treatments for Fruits and Vegetables]. Additionally, it states that “[t]he changes to irradiation doses and provisions allowing the use of pest-specific doses to treat commodities for interstate movement will facilitate the importation of fruits, vegetables, cut flowers, and foliage and their interstate movement from Hawaii, Puerto Rico, and the U.S. Virgin Islands.” Id.

¹⁸⁴ Amended Environmental Contentions at 9 (quoting Final EA at 9); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24.

¹⁸⁵ Blevins Testimony at A.18.

proposed facility.”¹⁸⁶ In this regard, the Staff’s witness points out that “[t]he Staff’s conclusion regarding the dose rate from a six-foot water loss is supported by MicroShield calculations.”¹⁸⁷ The Staff’s witness explains that the Staff used the MicroShield computer program “to analyze shielding and estimate exposure from gamma radiation.”¹⁸⁸ Additionally, the Final EA based its conclusion regarding the insignificant environmental effect an increased dose rate would have on the area around the proposed facility on “the highly collimated beam, and the ability to easily add water” if the radiation alarm were to sound.¹⁸⁹ The Staff’s witness states that these conclusions are supported by the MicroShield computer program.¹⁹⁰ Thus, the Final EA, Staff’s testimony, and Staff exhibits provide more than generalized conclusory statements regarding the impact a 6-foot loss of pool water would have on the dose rate, and the impact an increased dose rate would have on the environment.

8. The Intervenor’s eighth allegation is that the Final EA fails to justify its “decision to analyze only a 6-foot water loss, especially given that the depth of the water table is 2.4 m (8 feet) below the water facility floor.”¹⁹¹ The Staff’s witness explains that he ran the MicroShield numbers for full shielding, a six-foot water loss, and an eight-foot water loss, but “inadvertently omitted [calculations for the eight-foot loss] from the Final EA.”¹⁹² The Staff’s witness states that his “calculations for the eight-foot water loss were later verified . . . and added to the hearing

¹⁸⁶ Amended Environmental Contentions at 9 (quoting Final EA at 9); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 24-25.

¹⁸⁷ Blevins Testimony at A.19 (citing Staff Initial Statement, Exh. 28 (MicroShield calculations)).

¹⁸⁸ Id.

¹⁸⁹ Final EA at 9.

¹⁹⁰ Blevins Testimony at A.20.

¹⁹¹ Amended Environmental Contentions at 9 (quoting Final EA at 9; Topical Report at 1-2); see also Intervenor Initial Statement at 11; Intervenor Supplemental Statement at 25.

¹⁹² Blevins Testimony at A.21 (citing Staff Initial Statement, Exh.29).

file.”¹⁹³ Accordingly, the Intervenor’s claim that the Staff failed to justify its decision to analyze only a 6-foot water loss is in error because the Staff, in fact, also analyzed full shielding and, albeit belatedly, an eight-foot water loss.

9. The Intervenor’s ninth allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that “‘worker doses should not be significantly increased in the area around the pool’ in the event of a loss of shielding water or quantification of what it means by ‘significantly increased.’”¹⁹⁴ The Staff’s witness states that “[t]aking into account [the dose rate for an eight-foot water loss] and the well-collimated beam, dose rates to workers would not be significantly increased in the area around the irradiator pool”¹⁹⁵ because employees would evacuate the building, or “[t]o the extent an employee were not able to evacuate before the accident occurred, he or she would have been trained in radiation safety principles and would know not to approach the irradiator pool.”¹⁹⁶ Nevertheless, the Staff’s witness adds, “[e]ven if an employee were not able to evacuate prior to or immediately after the accident, the dose to the employee would not be significantly increased unless he or she were directly above the pool and unable to move . . . [which is a] purely speculative [scenario].”¹⁹⁷ The Staff’s witness also notes that by “‘significantly increased,’” he intended to convey in the Final EA “that worker doses would not be increased to the point where they exceed the [10 C.F.R.] Part 20 dose limits.”¹⁹⁸ Thus, the Final EA and the Staff’s testimony now provide more

¹⁹³ Id.

¹⁹⁴ Amended Environmental Contentions at 9 (quoting Final EA at 9); see also Intervenor Initial Statement at 11-12; Intervenor Supplemental Statement at 25.

¹⁹⁵ Blevins Testimony at A.22.

¹⁹⁶ Id.

¹⁹⁷ Id.

¹⁹⁸ Id. at A.23.

than generalized, conclusory statements regarding the impact a loss of shielding water would have on worker doses around the irradiator pool, and the meaning of “significantly increased.”

10. The Intervenor’s tenth allegation is that the Final EA fails to provide “any analysis to justify its assumption that that ‘debris around the pool’ would prevent ‘inadvertent access to the areas of elevated radiation directly above the pool.’”¹⁹⁹ The Staff’s witness responds to this assertion by stating that “[if] an accident . . . were sufficient to cause a significant loss of shielding water, the accident would also cause debris that would prevent inadvertent access to the area of elevated radiation above the irradiator pool [because it] would prevent inadvertent access by acting as a physical barrier.”²⁰⁰ The Staff’s witness also states that the proposed irradiator’s “operating procedures will require training of emergency response personnel.”²⁰¹ Furthermore, the Staff’s witness states that “the presence or absence of debris is completely irrelevant to assessing the radiological consequences of an aircraft crash . . . because emergency responders will exercise caution when approaching the irradiator pool regardless of whether or not debris is covering the pool.”²⁰² Thus, the Staff’s testimony provides more than generalized, conclusory statements regarding the debris that would fall around the irradiator pool in the event of an accident and prevent inadvertent access to the areas of elevated radiation above the pool.

11. The Intervenor’s eleventh allegation is that the Final EA contains insufficient evidence and analysis to substantiate its claim that “[t]he likelihood of accidents involving exposure of workers to lethal doses from this specific irradiator design is expected to be low’ or

¹⁹⁹ Amended Environmental Contentions at 9 (quoting Final EA at 9); see also Intervenor Initial Statement at 12; Intervenor Supplemental Statement at 25.

²⁰⁰ Blevins Testimony at A.24.

²⁰¹ Staff Supplemental Statement, Exh. 61, NRC Staff’s Supplemental Testimony of Matthew D. Blevins at A.3 [hereinafter Blevins Supp. Testimony].

²⁰² Id.

any quantification of what it means by a ‘low’ likelihood.”²⁰³ Appendix C of the Final EA states that “[a]ccess controls for workers . . . are required to ensure that radiation doses to these groups are within the limits prescribed by regulation and are as low as reasonably achievable.”²⁰⁴ Appendix C of the Final EA then lists these controls, which include “specialized training, radiation monitoring, personnel monitoring, audit programs, access barriers, and other engineering controls to reduce radiation doses.”²⁰⁵ Additionally, the Staff’s witness explains that “[t]he risk is low because an underwater irradiator uses passive shielding, in the form of pool water, such that the source is not exposed in a room that employees might inadvertently enter,” and because “the underwater irradiator will consist of multiple layers of steel and concrete, . . . Pa’ina will have continuous monitoring systems in place to detect radioactivity in and above the pool[, and] Pa’ina will have source loading procedures, as well as general radiation safety procedures.”²⁰⁶ Finally, the Staff’s witness explains that the word “low” “is a qualitative term meant to convey that a lethal accident involving a worker is highly unlikely.”²⁰⁷ Accordingly, the Final EA in conjunction with the Staff’s testimony provide more than generalized, conclusory statements regarding the likelihood that accidents could occur at this irradiator that would expose workers to lethal doses, and the meaning of a “low” likelihood.

12. The Intervenor’s twelfth allegation is that the Final EA contains insufficient evidence and analysis to substantiate its “speculation that ‘there is no reason to believe the

²⁰³ Amended Environmental Contentions at 10-11 (quoting Final EA at C-10); see also Intervenor Initial Statement at 12; Intervenor Supplemental Statement at 25.

²⁰⁴ Final EA at C-10.

²⁰⁵ Id.

²⁰⁶ Blevins Testimony at A.25.

²⁰⁷ Id.

irradiator would have an effect' on tourism."²⁰⁸ Appendix C of the Final EA explains that there are other irradiators in Hawaii and that "[t]he proposed irradiator would be visually indistinguishable [from] other typical industrial buildings in the area."²⁰⁹ As a result, the Staff's witness explains that "a tourist is unlikely to know that he or she is looking at an irradiator [and thus,] there will be no impact to tourism from seeing an irradiator."²¹⁰ Additionally, the Staff's witness states that "to the extent the comments suggest the impact to tourism will come from the fear of having an irradiator in Hawaii, rather than from any actual environmental impact, they are identifying a psychological factor that the Staff typically does not consider in its NEPA reviews."²¹¹ Finally, the Staff's witness addresses the Intervenor's claim that his statements regarding the impacts of the proposed irradiator on tourism lack a supporting basis because he has no training or expertise related to assessing such impacts.²¹² The Staff's witness explains that he does "not believe that any such background is necessary . . . because the Final Topical Report prepared by the CNWRA establishes that it is not reasonably foreseeable there will be a radiological release involving Pa'ina's irradiator. If a radiological release is speculative, any secondary impact to tourism tied to such a release is also speculative."²¹³ Thus, the Final EA and the Staff's testimony provide more than generalized, conclusory statements regarding potential impacts of the irradiator on tourism, and correctly assert that contrary to the Intervenor's argument, expertise in tourism is not required under the circumstances.

²⁰⁸ Amended Environmental Contentions at 11 (quoting Final EA at C-12); see also Intervenor Initial Statement at 12; Intervenor Supplemental Statement at 25.

²⁰⁹ Final EA at C-12.

²¹⁰ Blevins Testimony at A.26.

²¹¹ Id.

²¹² See Intervenor Supplemental Statement at 30 n.16.

²¹³ Staff Response, Exh. 61, A.4.

D. The Final EA Fails to Consider Potentially Significant Impacts from Natural Disasters, Aviation Accidents, and Transportation of Cobalt Sources

The Intervenor alleges in the third part of its amended environmental contention 3 that the Staff's analysis in the Final EA of the potential consequences of natural disasters, aviation accidents, and transportation of sources to and from the Pa'ina irradiator on the Pa'ina irradiator violates NEPA's command to take a "hard look at the effects from proceeding" with the proposed irradiator.²¹⁴ Moreover, the Intervenor argues, "the Staff 'cannot avoid preparing an EIS by making conclusory assertions that an activity will have only an insignificant impact on the environment.'"²¹⁵ Instead, the Staff must consider "the range of environmental impacts likely to result" from the proposed project.²¹⁶ The Intervenor asserts nine instances of alleged deficits in the Final EA.

1. The Intervenor's first allegation is that the Final EA "fails completely to consider potential impacts associated with major flooding."²¹⁷ Section IV.B.4&5 above summarizes the portions of the Staff's Final Topical Report and testimony that respond, with more than conclusory assertions, to the Intervenor's concerns regarding the potential radioactive impacts associated with major flooding. Additionally, the Staff's expert responds to claims of the Intervenor's expert that the Staff failed to consider a loss of electricity and the destruction of

²¹⁴ Amended Environmental Contentions at 14; see also Intervenor Initial Statement at 15; Intervenor Supplemental Statement at 31.

²¹⁵ Amended Environmental Contentions at 16 (quoting Ocean Advocates, 402 F.3d at 864); see also Intervenor Initial Statement at 17; Intervenor Supplemental Statement at 32.

²¹⁶ Amended Environmental Contentions at 15 (quoting San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n, 449 F.3d 1016, 1034 (9th Cir. 2006), cert. denied sub nom, Pac. Gas & Elec. Co. v. San Luis Obispo Mothers for Peace, 549 U.S. 1166 (2007); see also 40 C.F.R. § 1502.22(b)); see also Intervenor Initial Statement at 16; Intervenor Supplemental Statement at 31.

²¹⁷ Amended Environmental Contentions at 15; see also Intervenor Initial Statement at 16; Intervenor Supplemental Statement at 31.

The Intervenor notes that the Final EA mentions "minor flooding due to hurricane surges." Id.

backup generators.²¹⁸ The Staff's expert concluded that "[i]n the event of major flooding, the failure of electricity or backup generators would have no impact on the sources. The sources, which are contained in the source assembly, would remain at the bottom of the pool, and they would actually have additional shielding."²¹⁹ Accordingly, the Staff's expert responded with more than conclusory statements to the Intervenor's allegations regarding the impacts of major flooding and the failure of electricity or backup generators.

2. The Intervenor's second allegation is that the "Final EA's analysis of tsunami risks is . . . deficient [The Staff was obliged either to] quantify this risk through numerical modeling or, at a minimum, analyze [in the Final EA] 'the range of environmental impacts likely to result in the event' of a major tsunami."²²⁰ As noted in Section IV.B.3 above, the Staff's expert provides more than conclusory assertions when responding to the Intervenor's allegations regarding the method used by the Staff to assess the risks associated with major flooding. Furthermore, as stated in Section IV.B.3 above, the Final EA and Topical Report provide more than conclusory assertions when quantifying the environmental risks that could result from a major tsunami at the proposed irradiator.

3. The Intervenor's third allegation is that the Final EA "fails to consider numerous other potential impacts related to natural disasters, such as the potential for increased buoyancy due to hurricane storm surge or tsunami inundation to compromise the irradiator pool's integrity or allow shielding water to drain out, damage from hurricane-force winds, and liquefaction during an earthquake."²²¹ In Sections IV.B.4&5 and IV.B.8 above, the portions of the Staff's

²¹⁸ Pararas-Carayannis Decl. ¶ 15.

²¹⁹ CNWRA Testimony at A.37.

²²⁰ Amended Environmental Contentions at 15 (quoting Mothers for Peace, 449 F.3d at 1034, cert. denied sub nom, Pac. Gas, 549 U.S. 1166 (2007); see also 40 C.F.R. § 1502.22(b)); see also Intervenor Initial Statement at 16; Intervenor Supplemental Statement at 31.

²²¹ Amended Environmental Contentions at 16; see also Intervenor Initial Statement at 17; Intervenor Supplemental Statement at 32.

Final EA and testimony about the potential impacts associated with buoyancy due to hurricane storm surge or tsunami inundation, damage from hurricane-force winds, and liquefaction during an earthquake are recounted and respond to the Intervenor's claims with more than conclusory assertions.

4. The Intervenor's fourth allegation is that the Final EA failed to "consider credible scenarios under which an aircraft crash might result in exposures above regulatory limits."²²² The credible scenarios include, but are not limited to, "damage to the irradiator pool structure at or below the groundwater level, resulting in a loss of vital pool shielding water, and release of water contaminated with radioactive cobalt through a tear in the pool lining, contaminating groundwater and nearby Ke'ehi Lagoon."²²³ As noted above in Section IV.B.2 above, the Staff's expert provides more than conclusory assertions when responding to the Intervenor's allegations regarding the credible scenarios under which an aircraft crash might cause impermissible exposures

5. The Intervenor's fifth allegation is that while "the Final EA presents the results – but not the underlying data – of calculations regarding the increase in radiation dosage associated with a six-foot loss of shielding water, it provides no justification for considering only this scenario, which dramatically understates potential impacts."²²⁴ As stated in Section IV.C.8 above, the Staff considered an eight-foot water loss in addition to a six-foot water loss, which, because of the depth of the water table, is the minimum possible water loss.

6. The Intervenor's sixth allegation is that the Final EA "was obliged to evaluate situations in which more shielding water might be removed from the irradiator, either from the

²²² Amended Environmental Contentions at 16; see also Intervenor Initial Statement at 17; Intervenor Supplemental Statement at 33.

²²³ Amended Environmental Contentions at 16; see also Intervenor Initial Statement at 17; Intervenor Supplemental Statement at 33.

²²⁴ Amended Environmental Contentions at 16-17; see also Intervenor Initial Statement at 18; Intervenor Supplemental Statement at 33.

force of an explosion or through evaporation in a fuel fire, which would result in far higher radiation doses.”²²⁵ The Staff’s expert states that “an explosion or fuel fire would not plausibly lead to more than an eight-foot water loss.”²²⁶ The Staff’s experts cite the NTSB data from 1976 to 2007, which provides no “evidence of an exploding aircraft involving any flight either departing from or scheduled to arrive at HNL.”²²⁷ The Staff’s experts also contacted the Airport Manager at HNL who reported that since 1962, “there have been only two fatal aircraft crashes at HNL . . . [n]either accident involv[ing] an explosion.”²²⁸ Moreover, the Staff’s expert states that even if there were an explosion above the irradiator pool, “the force generated by an exploding aircraft would not remove a significant amount of water from the irradiator pool [because] the pool . . . will contain . . . approximately 29 tons [and] the force would have to be directed straight down into the irradiator pool.”²²⁹ Furthermore, the Staff’s expert explains, “the object causing the force would be directly above the pool, preventing all but a small amount of water from leaving the pool.”²³⁰ The Staff’s expert also responds to the Intervenor’s expert’s claim that an explosion could remove all water from the irradiator pool.²³¹ The Staff’s expert states that “[t]his scenario is wholly implausible” because an explosion cannot “both remove all water and, at the same time, keep the pool liner intact, such that the pool would not be refilled”

²²⁵ Amended Environmental Contentions at 17; see also Intervenor Initial Statement at 18; Intervenor Supplemental Statement at 33.

²²⁶ CNWRA Testimony at A.22.

²²⁷ Id.

²²⁸ Id.

²²⁹ Id.

²³⁰ Id.

²³¹ See Intervenor Initial Statement, Exh. 2, The Probability of Aircraft Impact into the Proposed Pa’ina Hawaii Irradiator at 21 (Feb. 7, 2007) [hereinafter Resnikoff Report].

because the shallow depth of the water levels.²³² Nonetheless, the Staff's expert concludes that "even if such an event could occur, the resulting dose would be in a well-collimated beam directly above the irradiator pool."²³³ Finally, the Topical Report considers whether a jet fuel fire might cause the irradiator pool water to evaporate, thereby producing higher radiation doses. The Topical Report explains that because "[j]et fuel is less dense than water, . . . burning jet fuel will burn above the water and will not lead to a significant amount of evaporation of the pool water until the fuel is nearly depleted, at which time evaporation will be minimal."²³⁴ Thus, the Final Topical Report and the Staff's expert responded with more than conclusory statements to the Intervenor's allegations regarding the loss of shielding water due to an explosion or evaporation.

7. The Intervenor's seventh allegation is that the Staff "ignore[d] the potential for physical destruction of the sources to . . . allow dispersal of pulverized Co-60 via breaches in the pool lining."²³⁵ The Final Topical Report explains that "[f]or the irradiator pool water to become contaminated, the inner and outer capsules must be breached to expose the radioactive Co-60 slug, and the slug must be allowed to corrode in the water."²³⁶ The Final Topical Report further explains that in light of the fact that "[t]he cobalt slugs inside the source capsules are plated with nickel—a material that is not radioactive and does not readily corrode in water [–] corrosion of the cobalt can occur only if a slug is cracked or split, exposing the cobalt to the pool water."²³⁷ The Staff's expert also analyzed the potential for pool water

²³² CNWRA Testimony at A.22.

²³³ Id.

²³⁴ Topical Report at 2-17.

²³⁵ Amended Environmental Contentions at 17; see also Intervenor Initial Statement at 18; Intervenor Supplemental Statement at 34.

²³⁶ Topical Report at 1-3.

²³⁷ Id.

contamination as a result of pulverized Co-60 and found that the Co-60 “sources are activated iron or steel plugs encapsulated in a nickel shell . . . contained in one or two layers of stainless steel that are welded shut” so “[a]t temperatures above -200 degrees Celsius, [the sources] cannot be ‘pulverized.’ Instead iron and steel are ductile materials, which means that they have the ability to be deformed and elongated without fracturing.”²³⁸ Accordingly, the Final Topical Report along with the Staff’s testimony respond with more than conclusory statements to the Intervenor’s claims that physical destruction of the sources will contaminate the pool water or allow pulverized Co-60 to be dispersed.

8. The Intervenor’s eighth allegation is that the Final EA “improperly dismisses the potential for significant impacts in the event an airplane crash destroys all monitoring equipment or incapacitates irradiator personnel.”²³⁹ The Staff’s expert explains that “the loss of emergency personnel and monitoring equipment would not necessarily result in any increased dose [because t]he sources would still be fully shielded under 12-18 feet of water.”²⁴⁰ The Staff’s expert also explains that “Pa’ina’s operating procedures specifically provide for training of emergency response personnel, including representatives from local police, fire and rescue departments.”²⁴¹ Additionally, the expert states that emergency workers would likely respond to a crash, would be well aware of the source’s radioactivity, and would not have to linger above the source for an extended period of time.²⁴² Thus, the Final Topical Report and the Staff’s testimony provide more than conclusory assertions in response to the Intervenor’s claims that

²³⁸ Staff Response, Exh. 62, at A.16 (testimony of Durham).

²³⁹ Amended Environmental Contentions at 17; see also Intervenor Initial Statement at 19; Intervenor Supplemental Statement at 34.

²⁴⁰ CNWRA Testimony at A.25.

²⁴¹ Id.

²⁴² Id.

the Staff fails to consider significant impacts should an airplane crash destroy all monitoring equipment or incapacitate irradiator personnel.

9. The Intervenor's ninth allegation asserts that, "while the Final EA considers . . . '[t]ransportation impacts from normal operations,' it fails completely to examine the likelihood and consequences of accidents that might occur during the annual transport of Co-60 sources to and from the proposed irradiator."²⁴³ In the Board's December 21, 2007 Order admitting the contention, we stated that while the Staff concluded in the Final EA "that transportation impacts from normal operations would be small[,"²⁴⁴ it] omitted any consideration of impacts from transportation accidents, [which is] the subject of the Intervenor's challenge here."²⁴⁵ With regard to the Staff's argument that it was not obligated to consider transportation impacts from both normal operations and accidents in the first place because transportation activities will be conducted by a Part 71 licensee and transportation impacts fall under the umbrella of a GEIS,²⁴⁶ we stated that "[h]aving introduced transportation impacts in the draft and final EA, the Staff cannot now fence off the subject from challenge."²⁴⁷ Further, we explained that "the Staff's reliance on a GEIS in its response to the Intervenor's contention is too little and too late to

²⁴³ Amended Environmental Contentions at 18 (quoting Final EA at 8); see also Intervenor Initial Statement at 19; Intervenor Supplemental Statement at 35.

²⁴⁴ Final EA at 8. Contrary to the Intervenor's claim, see supra text accompanying note 174, the Staff provided sufficient evidence and analysis to substantiate its claim that impacts from normal transportation would be small. See Final EA at 8.

²⁴⁵ Ruling on Admissibility at 18 n.62.

²⁴⁶ Staff Response to Amended Environmental Contentions at 11 n.9.

²⁴⁷ Ruling on Admissibility at 18. We note that we have been unable to locate the GEIS to which the Staff cites, NUREG-0161. See Staff Response to Amended Environmental Contentions at 11. Accordingly, we cannot say whether this GEIS provides the requisite information about the impacts of transportation accidents. Instead, we believe the Staff intended to cite to NUREG-0170, whose title, "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes," refers to the issues at hand and is later cited by the Staff. "NUREG-0170: Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes" (Dec. 31, 1997) (ADAMS Accession No. ML022590265) [hereinafter NUREG-0170].

defeat the contention Neither the draft nor the final EA cite[s] this GEIS, much less summarize[s] in the final EA the issues and reasoning of the generic study as is required when incorporating such environmental documents.”²⁴⁸ Finally, in response to the Staff’s argument that it was unnecessary for the EA to consider transportation impacts from either normal operations or accidents for such impacts were outside the scope of this proceeding,²⁴⁹ we indicated in admitting the contention that “[b]ecause the Applicant’s proposed facility cannot operate without regular shipments of Co-60 sources, the transportation of the radioactive sources shipped to and from the facility, along with transportation accidents that are an inevitable fact of life, appear to be connected and intertwined actions.”²⁵⁰

On April 6, 2009, the Intervenor filed an amendment to amended environmental contention 3. Because the Staff addressed for the first time in its response to the Intervenor’s Supplemental Statement the subject of the Intervenor’s contention, transportation accidents, which left the Intervenor with no way to respond with its own evidence, the Intervenor’s Amendment to its contention challenged the Staff’s treatment of the impacts from transportation accidents.²⁵¹ In its newly proffered amended contention, the Intervenor argues that in its Response to the Intervenor’s Supplemental Statement of Position, “the Staff, for the first time, presented an analysis of the likelihood ‘any radiation would be released as the result of an accident occurring during the transport of cobalt-60 to Pa’ina’s irradiator.’”²⁵² Moreover, the Intervenor alleges that “the information presented in its March 5, 2009 response falls far short of satisfying NEPA’s mandate to take a ‘hard look’ at potential environmental impacts from

²⁴⁸ Ruling on Admissibility at 18-19 (citing 40 C.F.R. § 1508.28 (describing the Staff’s obligation to tier documents it relies on in its environmental document)).

²⁴⁹ Staff Response to Amended Environmental Contentions at 11.

²⁵⁰ Ruling on Admissibility at 18 (citing 40 C.F.R. § 1508.28).

²⁵¹ See Amendment.

²⁵² See id. at 1 (quoting Staff Response at 36).

transportation accidents.”²⁵³ Finally, the Intervenor states that the Board should admit its contention because “the issues it raises are central ‘to the findings the NRC must make to support the action that is involved in the proceeding,’ and [the Intervenor] otherwise satisfies all requirements for filing this amended contention.”²⁵⁴

Since our December 21, 2007 Order admitting the contentions, the Staff has continued to argue that it “was not required to analyze transportation impacts” in its EA “because transportation impacts, from both normal operations and accidents, have already been considered by both the NRC and the U.S. Department of Transportation (DOT) during NEPA reviews conducted prior to each agency’s issuance of regulations applying to the transportation or radioactive materials.”²⁵⁵ Furthermore, the Staff has alleged that “[t]he licensing of radioactive materials carriers and the licensing of Pa’ina’s irradiator are not ‘connected actions’ for purposes of NEPA.”²⁵⁶

As stated in our December 21, 2007 Order admitting the Intervenor’s contentions, the operation of the proposed irradiator and the impacts of the transportation of Co-60 are connected actions.²⁵⁷ The CEQ regulations provide that “[a]ctions are connected if they . . . (ii)

²⁵³ See id. at 2 (citing Klamath-Siskiyou, 387 F.3d at 1001).

²⁵⁴ See id. (citing 10 C.F.R. § 2.309(f)(1)(iv)); see also id. at 16-20 (citing 10 C.F.R. § 2.309(f)(1), (f)(2), (c)).

²⁵⁵ See Staff Initial Statement at 57-58; see also Staff Response to Amended Environmental Contentions at 11; Staff Response to Contentions Re: Draft EA and Draft Topical Report at 9. We note that the document to which the Staff cites, NUREG-0170, does not, by its own admission, “specifically consider facets unique to the urban environment,” the environment in which the proposed irradiator facility is located. Id. at iv. Rather, NUREG-0170 states that “[a] separate study specific to such considerations is being conducted and will result in a separate environmental statement specific to such an urban environment.” Id. To date, the Staff has not filed or cited the allegedly forthcoming and relevant environmental study on the transportation of radioactive material in urban environments.

²⁵⁶ See Staff Initial Statement at 60.

²⁵⁷ See Ruling on Admissibility at 18.

[c]annot or will not proceed unless other actions are taken previously”²⁵⁸ In this regard, the operation of the proposed irradiator cannot proceed unless Co-60 is regularly transported to and from the facility. In an analogous situation, the Commission has found that there can be “no serious dispute” that the NRC’s NEPA analysis with regard to licensing nuclear facilities should extend to “related offsite construction projects – such as connecting roads and railroad spurs.”²⁵⁹ And, as three Licensing Boards stated recently in U.S. Dep’t of Energy (High Level Waste), LBP-09-06, 69 NRC __, __ (slip op. at 38) (May 11, 2009), with regard to a parallel transportation issue,

NRC’s NEPA responsibilities do not end at the boundaries of the proposed repository, but rather extend to the transportation of nuclear waste to the repository. The two are closely interdependent. Without the repository, waste would not be transported to Yucca Mountain. Without transportation of waste to it, construction of the repository would be irrational. Under NEPA, both must be considered.²⁶⁰

The Staff’s repeated argument that the operation of the proposed irradiator and the impacts from the transportation of Co-60 to the proposed irradiator are not “connected actions” cannot insulate it from addressing the merits of the Intervenor’s contention whose sole focus is on the impacts of transportation accidents.

Moreover, on March 5, 2009, in its last filing on the amended environmental contentions, the Staff presented the testimony of Mr. Easton, one of its experts. Mr. Easton’s testimony regarding accidents fails to respond directly or sufficiently to the Intervenor’s contention.

²⁵⁸ 40 C.F.R. § 1508.25(a)(1)(ii).

²⁵⁹ Kansas Gas & Elec. Co. (Wolf Creek Nuclear Generating Station, Unit No. 1), CLI-77-1, 5 NRC 1, 8 (1977); see also Detroit Edison Co. (Greenwood Energy Center, Units 2 and 3), ALAB-247, 8 AEC 936 (1974) (Licensing Board correctly assessed environmental impacts of transmission line routes extending ninety miles beyond the nuclear facility).

²⁶⁰ In the High Level Waste proceeding, the Boards quoted one of the petitioners’ arguments that “[w]ithout transportation of the waste to [Yucca Mountain, the high level waste repository], Yucca Mountain would be just a very large, fancy, and expensive hole in a mountain.” LBP-09-06, 69 NRC at __ (slip op. at 37). Similarly, without transportation of the Co-60 to the Pa’ina proposed irradiator, the irradiator facility would be just a large, fancy, and expensive pool by the ocean.

Instead, in his testimony, Mr. Easton states that “during the past 30 years, there has never been a reported case of a release of radioactive material from a Type B package during either routine transportation or for shipments involved in an accident.”²⁶¹ The Staff’s expert then goes on to describe Type B packaging and the probability a transportation accident will occur.²⁶² Finally, in a few, unsupported sentences, the Staff’s expert makes broad, generalized statements regarding the impacts of transportation accidents, which marks the first time the Staff or any of its experts has attempted to respond to the Intervenor’s contention.²⁶³ Mr. Easton states that “[i]n the extremely unlikely event that a breach in a cobalt-60 shipping package should occur, it is unlikely that cobalt-60 would be widely dispersed into the environment. The impact from such an event would be very localized and, with proper recovery, short-lived.”²⁶⁴

Accordingly, as part of Staff’s obligation to take a “hard look” and consider the environmental consequences of accidents that might occur during the annual transport of Co-60 sources to and from the proposed irradiator, the Staff must now provide such information. Because, as is fully explained in Part V addressing the Staff’s treatment of alternatives, the EA must, in any event, be returned to the Staff, it must now amend the Final EA so that it responds to the Intervenor’s specific admitted contention, and provides more than conclusory assertions

²⁶¹ Staff Response, Staff Exh. 70, Testimony of Earl Easton at A.6 [hereinafter Easton Testimony].

²⁶² Id. at A.7. Contrary to the testimony of the Staff’s expert, the Intervenor’s expert states that there have been at least two reported transportation accidents since 1979 that involve Type B packages and have resulted in the release of radioactive material. Amendment, Declaration of Marvin Resnikoff, Ph.D. Re: [Intervenor] Amendment to Environmental Contention 3 Re: Transportation Accidents at ¶¶ 5-6 (Apr. 2, 2009). In its revised Final EA, the Staff must therefore reconcile its expert’s findings with those of the Intervenor’s expert.

²⁶³ In the Final EA, the Staff addresses “[t]ransportation impacts from normal operations,” see Final EA at 8, and in Appendix C of the Final EA, the Staff states that the lead-shielded steel casks in which the Co-60 will be transported “are designed to withstand the most severe accidents, including collisions, punctures, and exposure to fire and water depths.” Final EA at C-11. Neither of these statements provides a response to the Intervenor’s contention regarding the impacts of a transportation accident.

²⁶⁴ Easton Testimony at A.7.

regarding the environmental consequences of transportation accidents. Furthermore, the Staff should provide a full citation to any documents it relies on in its review, including, if relevant to transportation accidents, the GEIS on the transportation of radioactive material in urban environments,²⁶⁵ and summarize the issues and reasoning set forth in these incorporated documents as is required when documents are tiered.²⁶⁶ Thus, the Board will refrain from needlessly devoting time and effort to resolving the battle between the Staff and the Intervenor over the admissibility of its newly filed contention. Instead, the Staff should properly demonstrate it has, at last, taken a “hard look” at the impacts of transportation accidents in its amendment to the EA.

E. The Final EA Fails to Take a Hard Look at Potential Impacts from Terrorism

The Intervenor alleges in the fourth part of its amended environmental contention 3 that the Staff failed to furnish a complete analysis of potential terrorist acts involving the proposed irradiator.²⁶⁷ The contention asserts that the final EA failed to provide a serious, scientifically-based analysis of the risk of a terrorist attack, disclose data underlying its terrorism analysis, address the significance of the identified effects, and consider all reasonably foreseeable impacts.²⁶⁸ In response to this portion of the Intervenor’s contention, the Staff argued that the Intervenor failed to show a dispute on a material issue of law or fact, and failed to support its claim with facts or expert opinions. The Staff also argued that the Intervenor seeks to circumvent the rules that protect safeguards information.

We withheld our determination of the admissibility of this segment of amended environmental contention 3 until the Commission ruled on similar pending contentions in the

²⁶⁵ See supra note 255.

²⁶⁶ See 10 C.F.R. Pt. 51, Subpt. A, App. A (quoting 40 C.F.R. § 1502.20).

²⁶⁷ See Amended Environmental Contentions at 18-29.

²⁶⁸ Id.

Diablo Canyon proceeding.²⁶⁹ On January 15, 2008, the Commission issued its decision on the analogous Diablo Canyon contentions.²⁷⁰ Thereafter, we issued an Order directing the parties to file responsive briefs that explained how the Commission's decision impacted the admissibility this section of amended environmental contention 3.²⁷¹ After carefully reviewing the parties' responsive briefs,²⁷² and in accordance with the Commission decision, we admitted the fourth segment of the Intervenor's amended environmental contention 3 only to the extent it alleged that the Staff failed "to disclose data underlying [its] terrorism analysis"²⁷³ of the proposed irradiator in the final EA and its Appendices and thereby failed to meet the NEPA-mandated "hard look" standard.²⁷⁴ In accordance with the Commission's approach in the Diablo Canyon proceeding, we also ordered the Staff to prepare a Vaughn²⁷⁵ index that would enable the Intervenor and this Board to assess the completeness and adequacy of the data used by the

²⁶⁹ Ruling on Admissibility at 19-20.

²⁷⁰ See Pac. Gas & Elec. Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-08-1, 67 NRC 1 (2008).

²⁷¹ Licensing Board Order (Requiring Parties to File Responsive Pleadings) (Jan. 24, 2008) (unpublished).

²⁷² Intervenor Concerned Citizens of Honolulu's Initial Brief Re: the Commission's January 15, 2008 Diablo Canyon Decision (Jan. 31, 2008); NRC Staff's Response to Board's January 24, 2008 Order (Jan. 31, 2008); Licensee Pa'ina Hawaii, LLC's Response to ASLB's January 24, 2008 Order Requiring Parties to File Responsive Pleadings (Jan. 31, 2008); Intervenor Concerned Citizens of Honolulu's Reply Brief Re: the Commission's January 15, 2008 Diablo Canyon Decision (Feb. 5, 2008); NRC Staff's Reply to Intervenor's Brief Regarding Diablo Canyon (Feb. 5, 2008).

²⁷³ Amended Environmental Contentions at 23.

²⁷⁴ Licensing Board Order (Ruling on Admissibility of Intervenor's Terrorism-Related Challenges) (Mar. 4, 2008) at 5 (unpublished).

²⁷⁵ See Vaughn v. Rosen, 484 F.2d 820, 823-25, 827-28 (D.C. Cir. 1973).

Staff, and thus, whether it applied the requisite “hard look” standard.²⁷⁶ We received the Vaughn index on July 31, 2008.²⁷⁷

The Intervenor nevertheless continues to argue that the Final EA is deficient and needs to be recirculated for public comment because one document listed in the Vaughn index was not initially referenced in the Staff’s terrorism analysis in Appendix B of the Final EA, and that same document, as well as another document referenced in Appendix B, were not released in redacted form during the comment period on the Draft EA.²⁷⁸ With regard to the document that the Staff did reference in Appendix B, the testimony of the Staff author of the EA terrorism supplement indicated that he only used the source for background information, and for no other purpose, in explaining the framework of how the agency assesses potential vulnerabilities so he did not initially cite the document.²⁷⁹ Only after the Board admitted the Intervenor’s contention and directed the Staff to prepare a Vaughn index did the Staff author, in conducting a further review, recognize that his explanation of the security assessment framework in Appendix B needed to include the document in the Staff’s Vaughn index.²⁸⁰ The Staff’s Initial Written Statement regarding this document and its Vaughn index specifically identifying all the data the Staff used in its terrorism analysis (Appendix B) show that this aspect of the Staff’s analysis meets the NEPA “hard look” standard. Further, the fact that the redacted version of this same document as well as another sensitive document used by the Staff in its analysis was not made public during the period for comment on the Draft EA does not require, as the Intervenor would

²⁷⁶ Licensing Board Order (Ruling on Admissibility of Intervenor’s Terrorism-Related Challenges) (Mar. 4, 2008) at 5 (unpublished).

²⁷⁷ NRC Staff’s Vaughn Index and Updates to Disclosures Required by 10 C.F.R. § 2.336(d) and 10 C.F.R. § 2.1203(c) (July 31, 2008) (ADAMS Accession No. ML082130703) [hereinafter NRC Vaughn Index].

²⁷⁸ Intervenor Supplemental Statement at 40-45, 47.

²⁷⁹ Staff Response, Exh. 60, Testimony of Frederick C. Sturz at A.4-A.7 (Sept. 5, 2008).

²⁸⁰ Id. at A.5.

have it, that the Staff recirculate the EA for public comment. In like circumstances, the Commission in the Diablo Canyon proceeding, after admitting a similar contention and directing the Staff to prepare a Vaughn index, did not require the supplement to the EA to be recirculated for comment.²⁸¹

F. Compliance with NEPA

Before addressing amended environmental contention 4, we believe it is appropriate to note that in resolving the Intervenor's contentions with respect to all but one portion of amended environmental contention 3, the testimony of the Staff's witness or witnesses was frequently central to determining the matter before us because, in those instances where it did more than just reiterate what was in the Final EA, it often provided the explanation missing from the Final EA. It is most unfortunate that the Staff, in preparing the Final EA, did not provide a brief synopsis of the information provided in such testimony in its Final EA. The Staff had before it the Intervenor's comments on the Draft EA, as well as the Intervenor's contentions on the Draft EA, so it is troubling it chose largely to ignore those comments rather than address them in the Final EA as required by Ninth Circuit precedent. Similarly, as noted,²⁸² the Board, in refraining from ruling on the admissibility of the Intervenor's proffered NEPA contentions on the Draft EA, transparently indicated to the Staff that it expected many of the issues raised in the Intervenor's contentions might be readily cured by the Staff in crafting the Final EA and meeting its obligations under NEPA. We think this proceeding aptly demonstrates that had the Staff expended the effort in the first instance to develop adequately the Final EA, it would have saved the Staff an enormous effort thereafter in preparing its adjudicatory materials. Indeed, it would be unfortunate if the Commission doctrine that permits the agency to cure the environmental

²⁸¹ Diablo Canyon CLI-08-01, 67 NRC at 18, 19.

²⁸² See supra note 21 and accompanying text.

documents through the hearing process were to provide a disincentive to the Staff from preparing such documents adequately and correctly in the first instance.

V. AMENDED ENVIRONMENTAL CONTENTION # 4

In its fourth amended environmental contention, titled “The Final EA Fails to Consider Reasonable Alternatives,”²⁸³ the Intervenor asserts that NEPA mandates that federal agencies, including the NRC, must evaluate alternatives to a particular project.²⁸⁴ The contention states that “[t]he Final EA violates this core requirement, failing to consider reasonable alternatives that would avoid impacts inherently associated with Pa’ina’s preferred technology (a Co-60 irradiator) and location (a site subject to aviation accidents and natural disasters).”²⁸⁵

A. Alternative Technologies

With regard to alternative technologies, amended environmental contention 4 asserts that “the final EA fails adequately to analyze all reasonable alternative quarantine control technologies.”²⁸⁶ While noting that the EA “briefly mentions two alternate methods for controlling fruit flies, methyl bromide gas and heat treatment,” the contention alleges that the EA fails to “[r]igorously explore and objectively evaluate” the relative environmental costs and benefits of using these technologies compared to the proposed facility, thus violating the basic purposes of NEPA to foster informed agency decisionmaking and informed public participation.²⁸⁷ According to the contention, an even more obvious deficiency is “the Final EA’s

²⁸³ Amended Environmental Contentions at 30.

²⁸⁴ Id. (citing Lands Council, 395 F.3d at 1027); see also Intervenor Initial Statement at 24-25; Intervenor Supplemental Statement at 61.

²⁸⁵ Amended Environmental Contentions at 31; see also Intervenor Initial Statement at 26; Intervenor Supplemental Statement at 63.

²⁸⁶ Amended Environmental Contentions at 31; see also Intervenor Initial Statement at 26; Intervenor Supplemental Statement at 64.

²⁸⁷ Amended Environmental Contentions at 31-32 (quoting Morongo Band of Mission Indians v. Fed. Aviation Admin., 161 F.3d 569, 575 (9th Cir. 1998)); see also Intervenor Initial Statement at 26; Intervenor Supplemental Statement at 64.

failure to consider the alternative control technology most similar to the one Pa'ina proposes: an irradiation facility using an electron-beam instead of Co-60 sources” even though such a facility is currently in operation on the island of Hawaii performing the same tasks as those the Applicant proposes.²⁸⁸ The contention notes that the Intervenor urged the Staff to consider this reasonable alternative in its comments on the Draft EA and that using a non-nuclear technology would eliminate potential impacts associated with the release of, and exposure to, radioactive material thereby altering the environmental impact and cost-benefit balance.²⁸⁹

The Commission’s regulation, 10 C.F.R. § 51.30(a)(1)(ii), requires an EA to “include . . . [a] brief discussion of . . . [a]lternatives as required by section 102(2)(E) of NEPA.” That NEPA provision directs that “all agencies of the Federal Government shall . . . study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” Section 102(2)(E) of NEPA, as well as section 51.30(a)(1)(ii) of the Commission’s regulations mandating compliance with that NEPA provision, sets forth an independent requirement separate and apart from the agency’s obligation to determine and provide evidence (i.e., take a hard look) concerning the significant environmental impacts of the proposed action. In comparing and contrasting section 102(2)(E) to the other “alternatives” provision in NEPA applicable only to an EIS, section 102(2)(C), the Ninth Circuit in Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1228-29 (9th Cir. 1988) explained that:

NEPA requires that federal agencies consider alternatives to recommended actions whenever those actions “involve[] unresolved conflicts concerning alternative uses of available resources.” 42 U.S.C. § 4332(2)(E) (1982). The goal of the statute is to ensure “that federal agencies infuse in project planning a thorough consideration of environmental values.” Conner v. Burford, 836 F.2d 1521, 1532 (9th Cir. 1988). The consideration of alternatives requirement furthers that goal by guaranteeing that agency decisionmakers “[have] before

²⁸⁸ Amended Environmental Contentions at 32; see also Intervenor Initial Statement at 26.

²⁸⁹ Amended Environmental Contentions at 32; see also Intervenor Initial Statement at 27; Intervenor Supplemental Statement at 66.

[them] and take [] into proper account all possible approaches to a particular project (including total abandonment of the project) which would alter the environmental impact and the cost-benefit balance.” Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n, 449 F.2d 1109, 1114 (D.C. Cir. 1971) (emphasis added). NEPA’s requirement that alternatives be studied, developed, and described both guides the substance of environmental decisionmaking and provides evidence that the mandated decisionmaking process has actually taken place. Id. Informed and meaningful consideration of alternatives-including the no action alternative-is thus an integral part of the statutory scheme.

Moreover, consideration of alternatives is critical to the goals of NEPA even where a proposed action does not trigger the EIS process. This is reflected in the structure of the statute: while an EIS must also include alternatives to the proposed action, 42 U.S.C. § 4332(2)(C)(iii) (1982), the consideration of alternatives requirement is contained in a separate subsection of the statute and therefore constitutes an independent requirement. See id. § 4332(2)(E). The language and effect of the two subsections also indicate that the consideration of alternatives requirement is of wider scope than the EIS requirement. The former applies whenever an action involves conflicts, while the latter does not come into play unless the action will have significant environmental effects Thus the consideration of alternatives requirement is both independent of, and broader than, the EIS requirement. See City of New York v. U.S. Dep’t of Transp., 715 F.2d 732, 742 (2d Cir. 1983), cert. denied, 465 U.S. 1055 (1984); Envtl. Def. Fund, Inc. v. Corps of Engineers, 492 F.2d 1123, 1135 (5th Cir.1974); California v. Bergland, 483 F. Supp. 465, 488 (E.D. Cal. 1980), aff’d sub nom. California v. Block, 690 F.2d 753 (9th Cir.1982). In short, any proposed federal action involving unresolved conflicts as to the proper use of resources triggers NEPA’s consideration of alternatives requirement, whether or not an EIS is also required.

As the court stated again last fall in North Idaho Community Action Network v. U.S. Department of Transportation., 545 F.3d 1147, 1153 (9th Cir. 2008), the NEPA alternatives provision of section 102(2)(E) “applies whether an agency is preparing an [EIS] or an [EA], and requires the agency to give full and meaningful consideration to all reasonable alternatives.” The court noted, however, that an agency’s obligation to consider alternatives in an EA is a lesser one than its obligation to consider alternatives in an EIS.²⁹⁰ Therefore, in considering alternatives in an EIS, the CEQ regulations, 40 C.F.R. § 1502.14(a), provide that an agency must “[r]igorously explore and objectively evaluate all reasonable alternatives” but in considering

²⁹⁰ N. Idaho, 545 F.3d at 1153. Accord Biological Diversity, 538 F.3d at 1217; Native Ecosystems, 428 F.3d at 1246 (“we join our sister circuits in holding that an agency’s obligation to consider alternatives under an EA is a lesser one than under an EIS”).

alternatives in an EA, the Commission's regulations, 10 C.F.R. § 51.30(a)(1)(ii), like those of the CEQ, 40 C.F.R. § 1508.9(b), provide that the agency must provide "[a] brief discussion of . . . [a]lternatives as required by section 102(2)(E) of NEPA." Accordingly, the Intervenor's argument that the NRC is required to rigorously explore and objectively evaluate all reasonable alternatives in the Final EA²⁹¹ is incorrect. Equally incorrect is the Staff's argument that "[a]ll that is required of the Staff is that it briefly discuss reasonable alternatives."²⁹² The Staff's argument ignores the "as required by section 102(2)(E)" language of the Commission's regulations.²⁹³ Although the discussion of alternatives in the EA need only be "brief" it must nevertheless be sufficient to comply fully with the requirement of section 102(2)(E) (*i.e.*, study, develop, and describe appropriate alternatives) and applicable circuit precedent ("give full and meaningful consideration to all reasonable alternatives"²⁹⁴). The law in the Ninth Circuit is that, "[s]o long as 'all reasonable alternatives' have been considered and an appropriate explanation is provided as to why an alternative was eliminated, the regulatory requirement is satisfied,"²⁹⁵ and "[t]he range of alternatives that must be considered need not extend beyond those reasonably related to the purposes of the project."²⁹⁶ And the "rule of reason" necessarily informs that choice.²⁹⁷

1. Methyl Bromide Fumigation and Hot Water Immersion Alternative Technologies

²⁹¹ Amended Environmental Contentions at 32; see also Intervenor Initial Statement at 26; Intervenor Supplemental Statement at 64.

²⁹² Staff Response at 54.

²⁹³ 10 C.F.R. § 51.30(a)(1)(ii).

²⁹⁴ N. Idaho, 545 F.3d at 1153.

²⁹⁵ Native Ecosystems, 428 F.3d at 1246.

²⁹⁶ Trout-Unlimited v. Morton, 509 F.2d 1276, 1286 (9th Cir. 1974).

²⁹⁷ See City of Carmel-by-the-Sea v. U.S. Dep't of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997).

Applying these standards, we first examine the Intervenor’s challenge to the sufficiency of the Staff’s treatment of the technology alternatives of methyl bromide fumigation and heat treatments.²⁹⁸ To provide context for the discussion of these quarantine technologies, the EA section entitled “The Need for the Proposed Action” states that there are currently four treatment facilities in the state all located on the island of Hawaii, three heat treatment facilities and one e-beam irradiator facility.²⁹⁹ The section then states that these facilities are not available to all producers in the state and that a facility located on Oahu, the hub for air and sea transportation, would provide the widest access to mainland and foreign markets with the shortest delays.³⁰⁰

The first mention of methyl bromide in the Final EA also appears in the discussion of the need for the proposed action and states that one of the options for importers of products in which an invasive species is found is to treat with methyl bromide.³⁰¹ The next, and last specific mention of methyl bromide in the Final EA appears under the heading “Environmental Impacts of the Alternatives to the Proposed Action” where the Final EA states that alternatives control technologies include “the use of methyl bromide gas and various types of heat treatments.”³⁰² Thus, with respect to methyl bromide fumigation, the EA merely states that,

²⁹⁸ In the Final EA, the Staff also considers the no-action alternative. Final EA at 12. Amended Environmental Contention 3 does not challenge the Staff’s treatment of the no-action alternative.

²⁹⁹ Final EA at 6.

³⁰⁰ Id.

³⁰¹ Id. In that regard, the EA then states, “[t]reatment by methyl bromide is an alternative; however it has some drawbacks such as increased cost, product degradation, and potential damage to the Earth’s ozone layer.” Id. at 6-7.

Although, as just noted, the same need section of the Final EA states that there are only four treatment facilities in the state – three heat treatment facilities and one e-beam irradiator – the Final EA states in the context of the threat of invasive species to Hawaii that one option for importers of infested products is treatment with methyl bromide. The Final EA does not explain the seeming contradiction of how methyl bromide is an option if there are no treatment facilities in the state.

³⁰² Id. at 12.

although the most common method for controlling quarantine pests, it has certain limitations, contributes to the destruction of the ozone layer and, while quarantine uses are exempted, its production is being phased out so the cost of the chemical is expected to increase significantly.³⁰³

With regard to the alternative of heat treatment, the EA states that there are several such methods available but only comments on hot-water immersion stating simply that:

There are currently several different methods of heat treatments available. Hot-water immersion consists of submerging the fruit in a hot-water bath at a specific

³⁰³ Id. In toto, the EA states:

Methyl bromide fumigation is the most common method for controlling quarantine pests. However, methyl bromide is limited to certain commodities at specific temperatures because some commodities are highly sensitive, including certain Hawaiian tropical fruits (EPA, 2006a). Methyl bromide is also known to contribute to the destruction of the Earth's ozone layer and is currently being phased out of production. While quarantine uses are exempted, it is expected that the cost of methyl bromide will increase significantly (APHIS, 2004) as the number of manufactures decrease and others phase back production.

Fuller citations for the short form citations in the EA text, i.e., (EPA, 2006a), (APHIS, 2004), appear on the last pages of the Final EA, before the appendices. See Final EA at 14-15. In that regard, all of the Final EA citations appear to support only the sentence or portion of a sentence in which the short form citation appears. Moreover, none of the citations in the Final EA references a page in the cited source but only refers to a complete document, a practice that not only defeats the public information purpose of NEPA but makes any adjudicatory tribunal's use of the reference (even assuming they can be located) laborious and enormously time consuming. See supra text accompanying notes 181-182.

The full citation for short form citation (EPA 2006a) in the above-quoted paragraph references a document from the website of the Environmental Protection Agency (EPA) that the citation indicates was accessed on September 7, 2006. See Final EA at 14. It appears the document is no longer available on the EPA website so it is not possible to verify the validity or accuracy of the information in the Final EA text that is purportedly supported by the citation. Nor were we successful in independently locating the document anywhere else on EPA's website. Apparently, Staff Exhibit 40 is the current version of the EPA document (current as of July 2007) at the EPA web address set out in the full citation for (EPA 2006a). That EPA document, however, does not support the factual statements in the sentence for which the source is cited. Additionally, it does not appear that any of the Staff's adjudicatory filings addressing the alternative of methyl bromide fumigation cites or refers to Staff Exhibit 40 or explains its purpose. In that regard, it should be noted that the Staff Initial Statement contains 59 exhibits, many of which are substantial documents. The vast majority of these exhibits are neither cited nor otherwise referenced in the Staff Initial Statement, subsequent filings, or the testimony of the Staff witnesses. With the exception of the Staff exhibits containing testimony of the witnesses, in those instances in which the Staff cites or refers to a document, it consistently fails to provide the page in the exhibit document to which it purportedly refers.

temperature and time based on the fruit being treated and the pests that may be present. This method is also useful for cut flowers and bulbs. While useful for many fruits, this method is not approved for papayas and guavas and is not recommended for fruits such as grapefruits, plums, and peaches due to unacceptable fruit damage (EPA, 2006b).³⁰⁴

In a third short paragraph the EA concludes its discussion of the alternative technologies stating that, while the environmental impacts of the proposed action and the alternatives are similar, small economic benefits would be foregone by decreased market outlets for producers on islands other than Hawaii and from potentially lower-priced more rapid quarantine treatments.³⁰⁵

In the Staff's adjudicatory filings addressing alternative technologies, the testimony of the primary preparer of the Draft and Final EAs, Mr. Blevins, generally reiterates the scant information in the Final EA, adding only a few additional points. He states that he researched pest control alternatives, including methyl bromide fumigation and hot-water immersion – subjects on which he claims to have “read numerous articles.”³⁰⁶ Additionally he notes that his research included reports posted on the website of the EPA and the United States Department of Agriculture (USDA) and that “APHIS had a good deal of relevant information.”³⁰⁷ Mr. Blevins testified that he “believes” the three paragraphs in the EA explain why neither fumigation nor hot-water immersion fulfill the purposes of the proposed action set forth in the need section of the Final EA because neither alternative can be used for the entire range of products the

³⁰⁴ Final EA at 12. The short form citation, *i.e.*, (EPA, 2006b), references a document from the EPA's website that the full citation indicates was accessed on September 7, 2006. *See id.* at 14. Again it appears that the cited document is no longer available at the EPA web address set out in the full citation, and the Board was unsuccessful in independently locating it on the EPA website. According, it is not possible to verify the validity or accuracy of the information in the Final EA text, purportedly supported by the citation.

³⁰⁵ *Id.* at 13.

³⁰⁶ Blevins Testimony at A.30.

³⁰⁷ *Id.*

Applicant intends to treat and both alternatives are either not approved or recommended for several types of fruit the Applicant “will likely treat at its facility, such as papayas.”³⁰⁸

In what can only be characterized as hyperbole, the Staff in the argument portion of its initial written statement filed pursuant to 10 C.F.R. § 2.1207(a)(i) argues that it “thoroughly considered alternative technologies when developing the Pa’ina EA.”³⁰⁹ It argues that, in addition to considering the no-action alternative, the Staff discussed in the EA “methyl bromide fumigation, and various types of heat treatment”³¹⁰ and its consideration was based upon the purpose and need of the proposed action.³¹¹ Because the EA does not state such a conclusion, the Staff argues that, “[a]s explained in the EA and in the Staff’s testimony, the Staff ultimately determined that these alternatives would not meet the purpose of the proposed action.”³¹² Finally, citing the EA and the testimony of its witness on these two alternatives, the Staff argues that “[t]he EA and the references upon which the Staff relied clearly show why methyl bromide fumigation and heat treatment technologies would not be appropriate for the uses proposed by Pa’ina.”³¹³

Even with the addition of its witness testimony that largely reiterates the meager information in the Final EA, we cannot find that the Staff treatment of the methyl bromide and hot-water immersion alternatives receives a passing grade. Section 102(2)(E) of NEPA mandates that the EA “study, develop, and describe” each considered alternative and

³⁰⁸ Id.

³⁰⁹ Staff Initial Statement at 71 (emphasis supplied).

³¹⁰ Id. Contrary to the Staff’s claim, the EA “discusses” only hot water immersion. See Final EA at 12.

³¹¹ Staff Initial Statement at 71.

³¹² Id.

³¹³ Id. at 71-72.

controlling Ninth Circuit precedent requires that the Staff give “full and meaning consideration”³¹⁴ to each considered alternative so that it “both guides the substance of environmental decisionmaking and provides evidence that the mandated decisionmaking process has actually taken place.”³¹⁵

Even though the Staff asserts that the discussion in the EA regarding methyl bromide as an alternative to the preferred alternatives is sufficient to satisfy its NEPA obligations, neither the Final EA nor the testimony of the Staff’s witness provides basic information on which Hawaiian fruits and vegetables grown for export to the mainland can and cannot legally be treated by fumigation, which of these products are to be treated by the preferred alternative, and what, if any, effects there are on each of the products treated by fumigation. The Staff witness testified that neither alternative can be used for the entire range of products the Applicant intends to treat but nowhere states what those products are or even quantifies the range. Similarly, neither the EA nor the testimony of the Staff witness presents even the simplest comparisons on such matters (or the information upon which such comparison could be made) with the proposed action.³¹⁶ The EA states merely that methyl bromide is limited to certain commodities at specific temperatures and that some commodities like “certain Hawaiian tropical

³¹⁴ N. Idaho, 545 F.3d at 1153 (internal citation omitted).

³¹⁵ Bob Marshall, 852 F.2d at 1228.

³¹⁶ As the Intervenors notes:

The EA fails to identify the “certain Hawaiian tropical fruits” that cannot be treated with methyl bromide or analyze the percentage of the total product volume Pa’ina plans to treat that such fruits represent, deficiencies that render it impossible to assess the extent to which using methyl bromide would limit accomplishing the project’s goals. Final EA at 12. Whether the difference between using methyl bromide and Co-60 irradiation in accomplishing the stated goals is de minimus or significant is never discussed.

Intervenor Rebuttal to Staff at 29 n.21. See Intervenor Initial Statement at 26.

fruits” are “highly sensitive.”³¹⁷ The testimony of the Staff witness is only marginally more specific stating that fumigation is either not approved or not recommended for several types of fruit that the Applicant “likely” will treat, such as papayas. Additionally, neither the EA nor the testimony of the Staff witness provide even the simplest statement on how methyl bromide is used to fumigate the unidentified fruit, what quantities of the chemicals are used for such treatment, and what impact, if any that use has on the ozone layer. The EA simply states, without any elaboration on how it is possible, that “the environmental impacts of the proposed action and the alternatives are similar.”³¹⁸

The Staff’s presentation of the hot-water immersion treatment alternative is similarly wanting. Unlike its treatment of the fumigation alternative that lacks any description of the process, the EA states there are several different methods of heat treatment available and briefly comments on the hot water immersion treatment, although it neither names nor describes the other processes or explains why the immersion method was chosen over other heat treatments. The EA states that immersion treatment is useful for cut flowers and bulbs and many fruits but is not approved for papaya and guavas and is not recommended for fruit such as grapefruit, plums, and peaches due to fruit damage. Although slightly more specific than the information in the EA on the fumigation alternative regarding several fruit that can and cannot be treated, the EA does not state which fruits and vegetables grown in Hawaii for export to the mainland can be treated by immersion and which of these products, including guavas, grapefruit, plums, and peaches, if any, are grown for export to the mainland and are to be treated by the preferred alternative. Again, neither the EA nor the testimony of the Staff witness presents even the simplest comparison with the preferred alternative on these matters. In this

³¹⁷ Final EA at 12. As stated above, see supra note 301, the EA needs section comments in the context of imports, that one drawback of the use of the chemical is “product degradation.” Final EA at 6-7.

³¹⁸ Final EA at 13.

regard, the only information added by the testimony of the Staff witness is that the Applicant is “likely” to treat papayas.³¹⁹

From the scant information and discussion in the EA of the methyl bromide fumigation and heat immersion alternatives, and taking account the testimony of the principal preparer of the document, it cannot fairly be said that the document and the testimony show, as it must, that the Staff studied, developed, and described the alternatives³²⁰ and gave them full and meaningful consideration.³²¹

Nor can the Staff’s argument that “[t]he EA and the references upon which the Staff relied clearly show why methyl bromide fumigation and heat treatment technologies would not be appropriate for the uses proposed by Pa’ina,” serve to raise its failing grade.³²² For each alternative, the EA relies upon a reference from the website of the EPA, none of which is currently available³²³ and cannot therefore be examined to determine whether they support the Staff’s treatment of the fumigation or immersion alternatives. Further, the Staff’s exhibits include a successor document from the cited web address, which itself does not support the statements for which it is cited.³²⁴ Additionally, the Final EA cites three sources (APHIS, 2003), (APHIS, 2004), and (APHIS, 2006) that are statements of considerations for USDA rulemakings permitting various fruits and vegetables to be moved interstate from Hawaii if they undergo irradiation, each of which is included as an exhibit to the Staff’s initial adjudicatory filing pursuant

³¹⁹ Blevins Testimony at A.30.

³²⁰ Bob Marshall, 852 F.2d at 1228 (“NEPA’s requirement that alternatives be studied, developed, and described . . . provides evidence that the mandated decisionmaking process has actually taken place.”).

³²¹ N. Idaho, 545 F.3d at 1153.

³²² Staff Initial Statement at 71-72 (emphasis supplied).

³²³ See supra notes 303 and 304.

³²⁴ See supra note 303.

to 10 C.F.R. § 2.1207.³²⁵ Even though it filed these three SOC's as exhibits, nowhere in its argument on the fumigation and heat immersion alternatives that tout these references supposedly relied upon by the Staff, does the Staff point out where in the documents the alleged supporting information may be found. Thus, as stated above,³²⁶ the Staff has not complied with the Commission directive in Seabrook and it cannot now attempt to use the unidentified information in Staff Exhibits 44, 45, and 46 to provide support for its case.³²⁷

We have nonetheless "searched for a needle that may be in a haystack"³²⁸ and scratched our way through the three SOC's. Nothing in them changes the Staff's failing grade for its inadequate treatment of the methyl bromide fumigation and heat immersion alternatives. We note, however, the three SOC's raise a number of additional questions about the sufficiency and quality of the Staff's EA. For example, Staff Exhibit 46, the SOC on the final rule permitting the use of irradiation as a treatment for sweet potatoes to be moved interstate from Hawaii, states that methyl bromide fumigation is conducted on the Island of Oahu.³²⁹ Because the SOC is dated prior to the need section of both the Draft and Final EA stating that Hawaii currently has four treatment facilities (three heat treatment facilities and one e-beam irradiator) all on the island of Hawaii, the EA statement may be accurate. If so, no explanation is readily apparent

³²⁵ Final EA at 12-13. Full citations to these sources appear on page 14 of the Final EA. (APHIS, 2003) is Staff Exhibit 45, 68 Fed. Reg. 5796 (Feb. 5, 2003) titled "Fruits and Vegetables from Hawaii." The rule allows bell peppers, eggplant, mangoes, certain pineapples, Italian squash, and tomatoes to be moved interstate from Hawaii if they undergo irradiation. (APHIS, 2004) is Staff Exhibit 46, 69 Fed. Reg. 7541 (Feb. 18, 2004) titled "Irradiation of Sweet Potatoes from Hawaii." The rule provides for the use of irradiation as a treatment for sweet potatoes to be moved interstate from Hawaii. (APHIS, 2006) is Staff Exhibit 44, 71 Fed. Reg. 4451 (Jan. 27, 2006) titled "Treatments for Fruits and Vegetables." The rule provides inter alia, for the use of irradiation as a treatment for cut flowers, foliage, and bananas, and adds vapor-heat treatment as an acceptable treatment for sweet potatoes.

³²⁶ See supra text accompanying notes 180-181.

³²⁷ See CLI-89-03, 29 NRC at 241.

³²⁸ Id.

³²⁹ 69 Fed. Reg. at 7546.

for the later statement in the same section of the EA that invasive species pose a large threat to Hawaii's native ecology and, when such pests are found, an importer has three options, one of which is treatment with methyl bromide.³³⁰ Similarly, Staff Exhibit 44, the SOC on the final rule permitting the use of irradiation as a treatment for cut flowers and bananas to be moved interstate from Hawaii and allowing vapor heat treatment for sweet potatoes, states that there are three vapor heat facilities on the island of Hawaii. That information is literally consistent with the statement in the needs section of the EA that there are three heat treatment facilities on the island of Hawaii and it may well be that one or more of the heat treatment facilities that offer vapor heat treatment also offers heat immersion services – a form of heat treatment that the Staff's EA never mentions. But the information in the SOC serves to highlight further the inadequacy of the consideration in the EA of the heat immersion alternative. The EA does not identify the reason the Staff chose to consider the heat immersion alternative from among the "several different methods of heat treatments available" or whether there are even such facilities in the state.³³¹ The importance of such information takes on added significance because the EA states that heat immersion is not approved for papayas but the SOC indicates that vapor heat treatment is an approved treatment for papayas.³³²

³³⁰ Final EA at 6.

³³¹ Id. at 12.

³³² Treatments for Fruits and Vegetables at 4457. Staff Exh. 44 also calls into question the validity of the general statement in the section of the Final EA addressing the impacts of the proposed action in which the Staff, purportedly relying upon the SOC, states that "operation of the proposed irradiator would provide Hawaii sweet potato farmers with an effective and potentially cheaper alternative to fumigation with methyl bromide (APHIS, 2004)." Final EA at 8. The economic analysis in the USDA rulemaking indicates that the EA's statement is accurate only for fewer than two pallets of sweet potatoes (a pallet contains 1500 pounds of sweet potatoes), and that for three to twelve pallets, fumigation with methyl bromide is a progressively less expensive option. 71 Fed. Reg. at 4457-58.

Even though we have given the Staff's treatment of the fumigation and immersion alternatives in the EA a failing grade, an exhibit in the record,³³³ that is neither cited in the EA nor cited or relied upon by the Staff in its argument or witness testimony on these two alternatives, shows the inappropriateness of fumigation and immersion heat treatments. That exhibit is a February 28, 2007 letter from Michael Kohn, a principal of Pa'ina Hawaii, LLC, to the primary Staff author of the EA.³³⁴ Although the letter is understandably an advocacy piece for the proposed facility, it lists the required quarantine treatments for the nineteen Hawaiian fruits and vegetables that can be moved interstate from Hawaii and was compiled by a USDA research entomologist.³³⁵ The letter also provides the percentage distribution of approved

³³³ Staff Initial Statement, Exh. 26, Kohn Letter on Alternatives (Feb. 28, 2007) [hereinafter Kohn Letter].

³³⁴ The same letter was also filed as an exhibit by the Intervenor. See Intervenor Initial Statement, Exh. 18, Kohn Letter on Alternatives (Feb. 28, 2007). Staff Exhibit 26 should not be confused with the citation in the need section of the Final EA (Kohn, 2006) that is an e-mail from Mr. Kohn to Mr. Blevins of the Staff dated August 29, 2006. See Final EA at 6, 14. The Final EA relies upon the August 29, 2006 letter as the basis for its statement of the four specific uses of the proposed irradiator, including "[c]entrally located treatment of Hawaiian products for export." Id at 6. That letter, although referenced and relied upon in the Final EA, was included as an exhibit to the Staff's Initial Statement, see Staff Initial Statement, Exh. 36, Email M.Kohn to M.Blevins (Aug. 29, 2006), but nowhere cited or referenced in the Staff's adjudicatory filings. It is, however, buried in the hearing file and nearly impossible to locate in ADAMS because it is included as the last letter among a package of 36 letters under the date of February 17, 2006, and the title of "36 Letters Expressing Support for the Irradiator Being Proposed by Pa'ina and Correspondence Describing the Irradiator Economic Impact to Hawaii." Needless to say, the burial in that way of referenced and relied upon Final EA information in ADAMS does not comport with the public information purposes of NEPA.

³³⁵ Kohn Letter. The summary list included in the February 28, 2007 letter is generally self explanatory:

treatments for all nineteen products.³³⁶ From the basic information in Staff Exhibit 26, it appears that only a single vegetable, the sweet potato, is approved for treatment by fumigation.³³⁷

Further, although the information compiled by the USDA entomologist does not differentiate between heat treatments by vapor heat and hot water immersion and, if the scant information in the EA regarding immersion is correct that it is not approved for papayas or recommended for grapefruit, it would appear that at most only five and most likely a far lesser number of fruit are even possible candidates for hot water immersion. This, of course, shows the EA's inclusion of peaches, plums, and guavas in its discussion of the hot water immersion alternative is totally irrelevant information with respect to the purposes of the recommended action. Thus, it is

Summary: Commodity quarantine treatments for Hawaii's fruits and vegetables

Abiu	I	Longan	I, H
Atemoya	I	Lychee	I, H
Avocado	C	Mango	I
Banana	I, N	Papaya	I, H
Bell pepper	I	Pineapple	I, N, H
Carambola	I, C	Rambutan	I
Citrus	H	Sapodilla	I
Durian	N	Sweet potato	I, F
Eggplant	I	Tomatoes	I
Italian squash	I		

I = irradiation, C = cold, N = non-host status, H = heat (hot water immersion or vapor heat), F = fumigation
compiled by: Dr. Peter Follett, Research Entomologist, Postharvest Tropical Commodities Research Unit

³³⁶ Id. Again the information is self explanatory:

The percentage distribution of approved treatments for all 19 approved products is as follows:

Irradiation 84%
Heat 26%
Cold 10%
Fumigation 5%
Non-host status 5%

³³⁷ It should be noted that there appears to be a discrepancy between the information in Mr. Kohn's letter on permitted treatment methods for sweet potatoes, and Staff Exhibit 44, the SOC for the USDA including authorizing, inter alia, vapor heat treatment for sweet potatoes.

obvious from this basic information compiled by a USDA entomologist that fumigation and immersion are inappropriate alternatives because fumigation is approved for a single vegetable and immersion for, at most, five fruit, but likely far less than that, while irradiation is approved for at least sixteen of the nineteen fruits and vegetables to be moved interstate from Hawaii and proposed to be treated by the proposed irradiator. The information compiled by the USDA entomologist was available to the Staff well before it issued the final EA.³³⁸ Rather than set out such basic, essential, and self explanatory information in the EA from independent Staff research that meets professional standards and thereby fulfill the purposes of NEPA, the EA in large measure, provides nonessential, largely worthless generalities and some information of questionable validity. Indeed, as the information in Staff Exhibit 26 from the USDA entomologist shows, the fumigation and immersion alternatives are so obviously inappropriate for meeting the purposes of the preferred alternative set forth in the Commission's hearing notice that we are left to wonder how the Staff reached the decision to consider them in light of the requirement of NEPA section 102(2)(E) to "study, develop, and describe appropriate alternatives to the recommended course." Nonetheless, with the addition of the information from the adjudicatory record, which does not change the implicit conclusions the Staff reached in the EA with regard to the fumigation and immersion alternatives, and under agency precedent,³³⁹ the EA is deemed clarified by our decision and the agency's treatment of these two alternatives can now be given the lowest possible minimum passing grade.

2. Electron-Beam Irradiator Alternative Technology

³³⁸ It appears that the information in Staff Exhibit 26 and such basic information on the approved treatments for the products grown for movement interstate from Hawaii is set out in 7 C.F.R. Part 301, 305, 318 and 319, although admittedly it takes effort to decipher it. The testimony of the Staff witness does not indicate his research included such an obvious source and neither the Draft or Final EA cites to the USDA chapters of the Code of Federal Regulations. Blevins Testimony at A.30.

³³⁹ See Philadelphia Elec. Co. (Limerick Generating Station, Units 1 and 2), ALAB-819, 22 NRC 681, 705-07 (1985).

The Intervenor's fourth amended environmental contention also challenges the Final EA's failure to consider the electron-beam (e-beam) irradiator contrary to NEPA's requirement to consider all reasonable alternatives. As previously noted, it asserts that the Final EA neglects to consider the alternative most like the one the Applicant proposes by using an e-beam instead of radioactive cobalt-60 sources, even though such an irradiator is currently operating in Hawaii performing the identical tasks proposed for the Pa'ina irradiator. The contention states that the consideration of a non-nuclear technology that would eliminate potential impacts associated with the release of radioactive material and exposure to unshielded sources would alter the environmental impact and cost-benefit analysis required by NEPA. Finally, the contention noted that the Intervenor's public comments on the Draft EA urged the Staff to consider this reasonable alternative, as required by NEPA.³⁴⁰

The Final EA, like the Draft EA before it, makes only passing reference to the e-beam irradiator in the need section noting that it is one of the four pest control treatment facilities in the state.³⁴¹ There is no other mention of the e-beam irradiator, specifically, in either document.³⁴² Nor did the EA provide any explanation as to why the e-beam alternative was not considered. In the Staff Initial Statement filed pursuant to 10 C.F.R. § 2.1207, the Staff included the written testimony of Mr. Blevins, the Draft and Final EAs' primary preparer, to address the Staff's position. With the filing of Mr. Blevins' testimony, the parties learned for the first time why the Staff had not addressed the e-beam irradiator. As will be seen from his testimony, the Staff rejected the e-beam irradiator from consideration in the EA primarily because it concluded the

³⁴⁰ Amended Environmental Contentions at 32. The Intervenor's comments on the Draft EA are included as Exh. 2 to the Intervenor's Initial Statement. See Comments.

³⁴¹ Final EA at 6.

³⁴² The only other mention of irradiator facilities generally is on page C-12 of Appendix C of the Final EA, where the Staff states that "[t]here are currently several others [sic] irradiators in Hawaii." Although the statement in Appendix C uses the plural in speaking of "irradiators," it does not identify the type of irradiators, their locations, or uses.

technology was economically uncertain. Thereafter, the Intervenors and the Applicant filed testimony on this issue and all parties then filed supplemental and rebuttal material and exhibits.

We find that the Staff's conclusion cannot be sustained. Although contrary to our preferred form of decisions, we have freighted this one with the material from the administrative record because it tellingly reveals why the Staff's conclusion and reasoning are in error. To simplify the treatment of the party's material and exhibits and, because the sole issue before us is whether the EA improperly failed to consider the alternative of the e-beam irradiator as required by NEPA, we have sometimes combined the party's initial and rebuttal materials in setting out the record material.

a. Administrative Record

In addressing why the EA neither discussed nor explained the absence of any consideration of the e-beam irradiator, Mr. Blevins testified that he "conducted quite a bit of research into the electron-beam irradiator" and although it was appropriate for the products the Applicant intends to treat and had the same effect on food as a cobalt-60 irradiator, "[t]he problem with the electron-beam irradiator is economic uncertainty."³⁴³ Mr. Blevins stated that there is currently an e-beam irradiator operating in Hawaii manufactured by SureBeam, "the main manufacturer of the electron-beam irradiator," but in 2004 the company filed for bankruptcy.³⁴⁴ He testified that at the time he was researching alternatives in 2006 and 2007 "there were still numerous articles questioning whether the electron-beam technology had long-term viability."³⁴⁵

In his rebuttal testimony, Mr. Blevins pointed to Staff Exhibits 63 and 64 to confirm his earlier testimony that articles supported his economic uncertainty conclusion.³⁴⁶ Because of the

³⁴³ Blevins Testimony at A 31.

³⁴⁴ Id.

³⁴⁵ Id.

time period since his research in preparing the EA, Mr. Blevins testified that he could not say whether he previously reviewed the articles in the exhibits but stated that they were “representative of the information [he] reviewed” and “believe[d] they provide ample support for [his] conclusions.”³⁴⁷ Mr. Blevins declared that the articles “state that electron-beam irradiators were experiencing significant financial difficulties, with a number of the irradiators going out of business or requiring financial assistance from their parent companies” and “Hawaii Pride [the company operating the e-beam irradiator in Hawaii] is mentioned as being in the latter category.”³⁴⁸

In his initial testimony, Mr. Blevins stated that as a part of his research, he e-mailed Michael Kohn, who Mr. Blevins stated was the President of Pa’ina Hawaii, LLC³⁴⁹ asking if he “could elaborate on any consideration [he] gave to alternative technologies (e.g. electron beam or heat treatment).”³⁵⁰ Mr. Blevins testified that Mr. Kohn’s response “stated that an electron-beam irradiator would not be a feasible alternative, in part because of the cost associated with

³⁴⁶ Blevins Supp. Testimony at A.7. Staff Exhibit 63 appears to be an article printed off the internet from the web address www.foodandwaterwatch.org. Staff Response, Exh. 63, “Aloha Disaster: Hawaii and Food Irradiation” (filed Mar. 5, 2009) [hereinafter Aloha Disaster]. It seems that the article, titled “Aloha Disaster: Hawaii and Food Irradiation,” was posted on January 29, 2007 by Food and Water Watch in conjunction with the organization’s efforts to encourage attendance at the public meeting the Staff held in Honolulu to hear public comments on the Draft EA. See supra text accompanying note 16. Staff Exhibit 64 appears to be an article printed off the internet from the web address www.citizen.org, the website of Public Citizen that the logo at the top of the first page of the article indicates is a “National Non-Profit Public Interest Organization” for “Protecting Health, Safety & Democracy.” The article is titled “A Backgrounder on Food Irradiation Facilities.” Staff Response, Exh. 64, “A Backgrounder on Food Irradiation Facilities” (filed Mar. 5, 2009) [hereinafter Backgrounder on Food Irradiation]. There is no way of knowing when the article was either written or posted from the article itself or the website address from which it was printed.

³⁴⁷ Blevins Supp. Testimony at A.7.

³⁴⁸ Id.

³⁴⁹ Blevins Testimony at A 31. Mr. Kohn testified he was the managing member of Pa’ina Hawaii, LLC. Applicant Rebuttal, Written Direct Testimony of Michael Kohn at A.1 (Sept. 15, 2008) [hereinafter Kohn Testimony].

³⁵⁰ Kohn Letter.

providing additional electricity to the facility.”³⁵¹ In his rebuttal testimony Mr. Blevins stated that he did not contact Mr. Weinert, the Vice President of Hawaii Pride, about e-beam irradiators.³⁵² Mr. Blevins declared that based “primarily on the economic uncertainty surrounding the future of electron-beam technology, but also because of the additional costs associated with that technology, [he] concluded the electron beam irradiator would not be a feasible alternative” so he “saw no need to discuss this fifth alternative in the EA itself.”³⁵³ In concluding his initial testimony, Mr. Blevins gave an additional reason for not including in the EA the e-beam irradiator alternative. He states that, at the time he was conducting his research, the Staff already had a good sense that there was no foreseeable risks from the cobalt-60 irradiator at the proposed location.³⁵⁴ Similarly, in his rebuttal testimony, Mr. Blevins testified that, because the proposed action did not present any significant environmental impacts, he did not consider the use of an e-beam irradiator eliminating some potential hazards of the cobalt-60 irradiator a significant factor.³⁵⁵

As previously noted, Mr. Kohn’s electronically transmitted letter responding to Mr. Blevins is understandably an advocacy piece for his proposed facility.³⁵⁶ That aside, it explains that his current company, the Hawaii Fruit Company, is a small packer and shipper of

³⁵¹ Blevins Testimony at A 31.

³⁵² Blevins Supp. Testimony at A.10.

³⁵³ Blevins Testimony at A.31. Because the EA addressed only three alternatives (*i.e.*, no-action, fumigation, and hot water immersion) we assume Mr. Blevins meant “three” not “five.”

In his rebuttal testimony Mr. Blevins quoted from Mr. Kohn’s letter regarding the bankruptcy of SureBeam, noted that Mr. Kohn’s statement was consistent with the information he came across in his research and that based upon all this information he “concluded the electron beam alternative would not meet the goals of Pa’ina’s proposed action.” Blevins Supp. Testimony at A.7.

³⁵⁴ Blevins Testimony at A 31.

³⁵⁵ Blevins Supp. Testimony at A.8.

³⁵⁶ See supra text accompanying note 335.

papayas and other tropical fruit on Oahu that has been exporting papayas since 1988 mainly to markets in European Union countries that do not require pest control treatment of his imports.³⁵⁷ Mr. Kohn's letter details the many problems of treating papayas with vapor heat treatment, the difficulties of sorting, packing, and shipping them when such treatment is involved, and the projected advantages he sees of building a cobalt-60 irradiator on Oahu close to the state's most important distribution center, Honolulu airport and Honolulu harbor.³⁵⁸ In his letter, Mr. Kohn then states that there are "some significant differences between x-ray technology and cobalt-60" and presents a brief comparison that "is limited to the only x-ray food irradiator in the US, which is located on the Big Island of Hawaii."³⁵⁹ The letter explains that an e-beam works well and efficiently for products that are thin and uniform but the e-beam must be converted to x-ray to penetrate produce boxes and that during such conversion 93% of the energy is lost.³⁶⁰ His letter states that because the cost of electricity in Hawaii is high, he estimates the treatment cost at over 4 cents per pound for electricity alone.³⁶¹ Further, Mr. Kohn's letter states that x-ray technology is "very sophisticated and requires constant upkeep by highly qualified personnel," that there have been frequent breakdowns at the facility, some lasting two weeks, resulting in tremendous losses for shippers, and that an x-ray facility would cost 6.5 million dollars to build near Honolulu airport while a cobalt-60 irradiator facility would cost less than 3 million dollars with the capability of doubling the maximum annual capacity of an e-beam irradiator.³⁶² Finally, Mr. Kohn's letter states that "[t]he economic future of x-ray technology was put on hold when

³⁵⁷ Kohn Letter.

³⁵⁸ Id.

³⁵⁹ Id.

³⁶⁰ Id.

³⁶¹ Id.

³⁶² Id.

Sure Beam, the vendor, went bankrupt” and that “[i]t would make little sense for Paina Hawaii to invest in a failed company and a technology that does not suit Hawaii’s needs.”³⁶³

Mr. Kohn’s testimony makes many of the same points as his letter to Mr. Blevins but expands upon a number of them and adds several new ones. He states that he is “the managing member of Pa’ina Hawaii, LLC,” that his interest in shipping papayas to the mainland began in the 1990’s, and that in 1996 he participated in a pilot program that shipped fruit directly to Chicago and Newark where they were then irradiated.³⁶⁴ Next, he testified that in 1999, the Titan Corporation invited the Hawaiian agricultural community to a presentation and introduced a “relatively new and uncertain irradiation technology” to Hawaii, the e-beam irradiator that a company called Hawaii Pride intended to purchase.³⁶⁵ He testified that one of the Titan Corporation’s representatives at the meeting gave him a price tag of \$10 million for the e-beam facility.³⁶⁶ Mr. Kohn stated that in previous years he had made financial calculations and believed that a price tag of \$10 million for a e-beam irradiator with x-ray feature was too high and that he later learned “Hawaii Pride would also employ various skilled workers to maintain and operate the equipment, a substantial added cost which [he] hadn’t even considered before.”³⁶⁷ Mr. Kohn stated that Hawaii Pride started operating in the summer of 2000 and that by 2002 the company’s “economic situation was so grim” from insufficient throughput that he declined to invest in it.³⁶⁸ He testified that Hawaii Pride had frequent equipment failures that led to the shut down of the irradiator, often for a few days, but that he recalled “in particular two

³⁶³ Id.

³⁶⁴ Kohn Testimony at A.1-2.

³⁶⁵ Id. at A.3.

³⁶⁶ Id.

³⁶⁷ Id. at A.4.

³⁶⁸ Id. at A.4-A.5.

Christmas seasons, normally the busiest and most profitable time of the year for Hawaii shippers,” in which “the X-ray unit shut down for two weeks” devastating many famers and shippers.”³⁶⁹ Mr. Kohn stated that by late 2002 or early 2003 Titan Corporation had “spun off” their irradiator unit under the name of SureBeam and, at the time, an officer of SureBeam estimated the price of a completed facility at \$6.75 million, a figure he stated the SureBeam officer later reduced to \$4.75 million.³⁷⁰ He testified that, using the late 2002 or early 2003 figures from the SureBeam officer, there would be a far greater initial investment with the e-beam irradiator.³⁷¹ Mr. Kohn next testified that he was not aware of any company in the United States producing an e-beam irradiator of a size appropriate for Hawaii and that, he believed a Belgian company, IBA, was selling larger units for \$10 million and higher.³⁷² Additionally, Mr. Kohn testified that his calculations showed profitability for his proposed cobalt-60 irradiator at annual throughput levels of 1.8 million pounds of product and at “well over 20 million pounds of throughput for the now-bankrupt SureBeam unit.”³⁷³ Further, Mr. Kohn indicated that electricity costs and the need for skilled workers to operate the facility made “[t]he operational cost for the SureBeam unit is far greater” and that there is “no technical support for the SureBeam E-beam with X-ray added, and no reliable replacement parts for the equipment.”³⁷⁴ Finally, Mr. Kohn testified that SureBeam’s bankruptcy “suggest[ed] that there is very little if any market or demand for relatively smaller e-beam units in the U.S. anymore.”³⁷⁵

³⁶⁹ Id. at A.7.

³⁷⁰ Id. at A.8.

³⁷¹ Id. at A.9.

³⁷² Id.

³⁷³ Id.

³⁷⁴ Id.

³⁷⁵ Id. at A.10.

Included with the Intervenor's section 2.1207 filings were the rebuttal and supplemental testimony of Eric C. Weinert, the Vice President of CW Hawaii Pride, LLC, the owner and operator of the x-ray beam irradiator on the island of Hawaii. Mr. Weinert testified that he "was the point person who led the effort to build the first irradiator in the world designed specifically to meet U.S. Department of Agriculture quarantine regulations for treatment of Hawai'i fruit to be exported to the U.S. mainland" and that Hawaii Pride treats all types of locally grown produce.³⁷⁶ He testified that, as vice president, he was in charge of day-to-day operations of the company's x-ray, e-beam irradiator.³⁷⁷ Mr. Weinert explained that Hawaii Pride chose a non-nuclear technology because in the 1998 election the citizens of the island of Hawaii split 50/50 on the question whether the use of radioactive materials for commercial purposes should be prohibited" in the county and, out of respect for the concerns of the residents opposed to cobalt-60 irradiation, the company chose x-ray technology.³⁷⁸

Mr. Weinert testified that he had never been contacted by Mr. Blevins to discuss Hawaii Pride's operations and that, to the best of knowledge, neither Mr. Blevins nor any other NRC Staff member ever contacted anyone else associated with Hawaii Pride to discuss its operations.³⁷⁹ He testified further that in August of 2005, he received an e-mail from Jack Whitten of NRC's Region IV informing him of the opportunity to request a hearing on the Pa'ina license application and that shortly thereafter he discussed the matter in a telephone call with Mr. Whitten.³⁸⁰ In response to a question whether he agreed with the assessment in the Staff's

³⁷⁶ Intervenor Rebuttal to Staff, Written Rebuttal Testimony and Declaration of Eric D. Weinert at A.2-A.3 (Sept. 16, 2008) [hereinafter Weinert Testimony].

³⁷⁷ Intervenor Supplemental Statement, Supplemental Written Testimony and Declaration of Eric D. Weinert at A.1 (Feb. 3, 2009) [hereinafter Weinert Supp. Testimony].

³⁷⁸ Weinert Testimony at A.3.

³⁷⁹ Id. at A.5.

³⁸⁰ Id. at A.6.

Initial Statement claiming that the e-beam irradiator was not a feasible alternative because of economic uncertainty and Mr. Blevins testimony stating that the problem with the e-beam irradiator was economic uncertainty because SureBeam, the manufacturers of the Hawaii Pride irradiator filed for bankruptcy in 2004, Mr. Weinert testified that he did not and had Mr. Blevins contacted him while preparing the EA, he would have told him so.³⁸¹ Mr. Weinert explained that, although SureBeam filed for bankruptcy in 2004 “the reason had to do with mismanagement of company funds, not any problems with the electron beam technology.”³⁸² He testified that “SureBeam going out of business did not affect in any way the ability of a company like Pa’ina to acquire a reliable electron beam irradiator.”³⁸³ He stated that SureBeam was a subsidiary of Titan Corporation, a financially stable defense contractor in San Diego and that when SureBeam stopped doing business, Titan continued to sell the necessary equipment to build and operate an x-ray e-beam irradiator identical to the Hawaii Pride unit.³⁸⁴ Mr. Weinert stated further that Titan Corporation was not the only company that sold x-ray e-beam irradiators and that “[t]he same type of equipment is sold by L-3 Communications (another California defense contractor), Rad Source Technologies in Florida, ScanTech Holding is in Atlanta, and IBA Industrial, a Belgian corporation.”³⁸⁵ Additionally, Mr. Weinert stated that “[t]he essential point is that Mr. Blevins and the rest of the NRC Staff were mistaken in assuming that SureBeam’s bankruptcy meant the electron beam technology was economically uncertain.”³⁸⁶ In answer to the question whether he agreed with the statement in Mr. Kohn’s letter, relied upon by the Staff

³⁸¹ Id. at A.7.

³⁸² Id.

³⁸³ Id.

³⁸⁴ Id.

³⁸⁵ Id.

³⁸⁶ Id.

in its Initial Statement and by Mr. Blevins in his testimony, that e-beam technology was not economically feasible because of the recurring cost of electricity needed to generate the e-beam, Mr. Weinert stated that Mr. Kohn's statement was baseless.³⁸⁷ He testified that Hawaii Pride has proven the economic feasibility of x-ray e-beam irradiation in Hawaii and that his company's facility operates on the island of Hawaii where electricity cost are approximately \$0.40 per kilowatt hour compared to Oahu, the location of the proposed Pa'ina facility, where electricity costs are approximately \$0.30 per kilowatt hour.³⁸⁸ Mr. Weinert testified that "[e]ven with these relatively high electricity costs, Hawaii Pride has consistently been making a profit treating local produce for export" and that the company "currently operate[s] at only about fifteen percent of our facility's capacity and still make a profit."³⁸⁹

In his rebuttal testimony, Mr. Weinert stated that, in 1999 when Titan Corporation made its presentation to the Hawaiian agricultural community, the technology to convert electricity to x-ray beams to irradiate products had been around for decades and had always been very reliable so he disagreed with Mr. Kohn's testimony that Titan was presenting a relatively new and uncertain technology.³⁹⁰ He testified that "now that Hawaii Pride has more than eight years of experience successfully irradiating millions of pounds of all types of tropical produce for export from Hawai'i, no one could seriously question the efficiency of using x-ray technology for this purpose" and that "[b]y the time the Nuclear Regulatory Commission staff prepared its environmental assessment for Pa'ina's proposed irradiator in 2007, the use of x-ray technology to treat Hawaiian produce for export had become routine."³⁹¹ With regard to Mr. Kohn's

³⁸⁷ Id. at A.8.

³⁸⁸ Id.

³⁸⁹ Id.

³⁹⁰ Weinert Supp. Testimony at A.3.

³⁹¹ Id.

testimony stating various costs for an x-ray e-beam irradiator of \$10 million, \$6.75, and \$4.75 million, Mr. Weinert testified that “[b]ased upon [his] experience purchasing x-ray technology, \$4.75 million is an appropriate price.”³⁹² He stated that Mr. Kohn’s statement was correct that there was a 93% loss of energy when converting e-beam to x-rays and that Hawaii has relatively high electricity costs but that years of experience at Hawaii Pride disproves Mr. Kohn’s assumption that electricity costs make an x-ray irradiator uneconomical and that Hawaii Pride’s costs for electricity are “only about one cent per pound of treated produce.”³⁹³ Mr. Weinert also testified that Mr. Kohn’s assumption that it takes high-priced, highly skilled workers to maintain and operate an x-ray irradiator “is simply wrong” and that Hawaii Pride employs two people to maintain and operate its equipment.³⁹⁴ He stated that the employee “responsible for production scheduling, dosimetry, USDA/APHIS reporting, radiation safety and maintaining the electronic portion of the linear accelerator” has only a bachelor’s degree in general engineering and attended a three-day workshop to learn how to maintain the equipment.³⁹⁵ He explained that the company’s second employee, who is responsible for all production, the supervision of all production employees, and maintaining the mechanical portion of the accelerator, did not even graduate from college but only has a GED.³⁹⁶ In response to Mr. Kohn’s testimony that there is no technical support for the Hawaii Pride irradiator and no reliable replacement parts for the equipment, Mr. Weinert testified that the company has a maintenance service contract with a California based company specializing in preventative maintenance, emergency maintenance, and telephone support for e-beam irradiators and that Hawaii Pride has never had any problems

³⁹² Id. at A.4.

³⁹³ Id. at A.5.

³⁹⁴ Id.

³⁹⁵ Id.

³⁹⁶ Id.

securing parts for its irradiator.³⁹⁷ He testified that “Hawaii Pride’s electricity and variable labor costs total less than three cents per pound of treated produce” and “[t]he fact that Hawaii Pride has consistently been making a profit treating local produce for export disproves Mr. Kohn’s unsupported claim that costs for electricity (which would be substantially lower on O’ahu) and labor make use of an x-ray irradiator uneconomical.”³⁹⁸

Mr. Weinert testified that, as Mr. Kohn stated, Hawaii Pride was struggling financially in 2002 but its financial difficulties “were a direct result of how SureBeam had structured the purchase agreement” with the company, were “unrelated to the economic viability of operating an x-ray irradiator in Hawai‘i,” and “had nothing to do with inadequate throughput or excessive production costs, as Mr. Kohn suggests.”³⁹⁹ He testified further that Mr. Kohn’s testimony was incorrect that “Hawaii Pride requires annual throughput treatment of 16 million pounds of papayas, 5.2 million pounds of sweet potatoes/bananas, and half a million pounds of other fruit just to break even” and that the company’s “annual throughput averages only 8.4 million pounds – less than half of what Mr. Kohn asserts is the bare minimum to cover costs – and we turn a profit.”⁴⁰⁰ In response to Mr. Kohn’s testimony that Hawaii Pride has experienced frequent equipment failures leading to shutdown of the irradiator, including a two week closure during two Christmas seasons, Mr. Weinert stated that the company’s operations were interrupted only once during the Christmas season in 2005 when Hawaii Pride had been acquired by a new owner and both Titan Corporation and SureBeam no longer had any interest in maintaining the facility.⁴⁰¹ He explained that during the 2005 Christmas season the facility had two instances

³⁹⁷ Id. at A.5, A.10.

³⁹⁸ Id. at A.5.

³⁹⁹ Id. at A.6.

⁴⁰⁰ Id. at Q.7, A.7.

⁴⁰¹ Id. at A.8.

where cables providing sensory data failed due to embrittlement from five years of high radiation exposure – a failure that both could and should have been prevented with proper maintenance.⁴⁰² Mr. Weinert stated that once Hawaii Pride assumed responsibility for maintaining its own equipment, which had not previously been the case, he immediately instituted a preventative maintenance program that included stocking spare parts that might be expected to fail from use.⁴⁰³ He stated that since 2005 the company’s preventative maintenance program has been extremely successful and that, in the past three years, there has not been unscheduled downtime lasting more than a few hours “prov[ing] that, with proper maintenance, x-ray irradiators are extremely reliable.”⁴⁰⁴ Finally, in response to Mr. Kohn’s testimony that he was not aware of any U.S. company now producing an e-beam irradiator of a smaller size appropriate for Hawaii, Mr. Weinert testified that, although he had not done extensive research, “[h]e knew for a fact that L-3 Corporation, an American company that purchased Titan in 2006, has several 5 MeV systems identical to ours available for purchase.”⁴⁰⁵

As is evident from Mr. Kohn’s letter (Staff Exh. 26) and testimony and Mr. Weinert’s rebuttal and supplemental testimony, the two of them are looking at e-beam technology and the operation of the Hawaii Pride facility through different lenses. As previously noted,⁴⁰⁶ Mr. Kohn’s letter, quite understandably, is an advocacy piece of a salesman for his proposed irradiator and we wish to make it clear we do not question his good faith. Nonetheless, a number of the assertions in his letter about the Hawaii Pride facility are clearly opinions, obviously strongly held, that need to be viewed through an objective lens. It is apparent from

⁴⁰² Id.

⁴⁰³ Id.

⁴⁰⁴ Id.

⁴⁰⁵ Id. at A.9.

⁴⁰⁶ See supra text accompanying note 335.

his letter and testimony that he has no actual experience purchasing or operating an e-beam facility. Further, his letter and testimony are not completely consistent or always clear. Similarly, in a number of instances in his letter and testimony, he addresses matters relating to the operation of the Hawaii Pride e-beam irradiator and provides estimates – the support for which is not readily apparent – not facts, and his information does not appear to be based upon intimate, insider, first-hand knowledge of either the history of the Hawaii Pride facility or its operations.

Although Mr. Weinert's company on the island of Hawaii may experience some competition from Mr. Kohn's proposed irradiator on the island of Oahu, it is not apparent that any such possible future competition has in any way colored Mr. Weinert's testimony. He did not seek to intervene in this proceeding to oppose the Pa'ina application nor did he state he opposes the facility. Indeed, Mr. Weinert, as the point person who led the effort to build the e-beam irradiator facility to meet USDA quarantine regulations for the treatment of Hawaiian produce, located the facility on the island of Hawaii, as opposed to another island such as Oahu, for a reason. So the likelihood of significant possible future competition is anything but certain. In any event, his testimony is based upon years of first-hand knowledge of the vendor from whom the irradiator was purchased, and the history and operation of the Hawaii Pride e-beam facility – both its ups and downs – gained as the vice president of the company in charge of day-to-day operations of the company's irradiator. Thus, we find it entirely appropriate to rely upon Mr. Wienert's testimony about matters involving the e-beam irradiator industry and technology and the Hawaii Pride facility in particular.

b. Staff Position Cannot Be Sustained

Section 102(2)(E) of NEPA requires that the agency consider "appropriate alternatives to recommended course of action"⁴⁰⁷ and the Ninth Circuit has made clear that the agency must

⁴⁰⁷ 42 U.S.C. § 4332(2)(E).

consider “all reasonable alternatives.”⁴⁰⁸ Here the Staff’s Mr. Blevins discarded consideration of the e-beam irradiator in the EA because he concluded “primarily” that “economic uncertainty” made the e-beam irradiator an infeasible alternative.⁴⁰⁹ Mr. Blevins reached this conclusion because of what he described as “the main manufacture” of the e-beam irradiator filed for bankruptcy in 2004, the year before Pa’ina filed its application and, in 2006-2007 when he was “researching alternatives . . . there were still numerous articles questioning whether the electron beam technology had long-term viability.”⁴¹⁰ Mr. Blevins also testified that he rejected consideration of the e-beam irradiator in the EA “because of the additional [electricity] costs associated with that technology” from which he “concluded the electron-beam irradiator would not be a feasible alternative.”⁴¹¹ Lastly, Mr. Blevins rejected considerations of the e-beam irradiator in the EA because, again at the time he was “conducting research on electron beam technology,” the Staff already had essentially determined there were no significant environmental impacts from the cobalt-60 irradiator at the proposed site.⁴¹² We examine each of Mr. Blevins reasons in turn.

Mr. Blevins did not explain in his testimony why the fact that SureBeam, the manufacture of the e-beam irradiator used by Hawaii Pride, filed for bankruptcy in 2004 created “economic uncertainty.” There are many reasons a company files for bankruptcy and without, at a minimum, knowing the reasons SureBeam filed for bankruptcy, the mere fact of filing for bankruptcy cannot provide a legitimate foundation for Mr. Blevins conclusion of “economic uncertainty” of a whole technology industry. Further, even if SureBeam was, as Mr. Blevins

⁴⁰⁸ N. Idaho, 545 F.3d at 1153; accord Native Ecosystems, 428 F.3d at 1246.

⁴⁰⁹ Blevins Testimony at A.31.

⁴¹⁰ Id.

⁴¹¹ Id.

⁴¹² Id.

claims, the “main” manufacturers of e-beam irradiators, no legitimate conclusion about economic uncertainty of the e-beam technology can be drawn from that additional fact, singularly or in combination with the bare fact of a filing for bankruptcy. Even if true, “main” does not mean “sole,” “only,” or “exclusive” and the loss of one in a field of more than one (or among many), does not create “economic uncertainty” about the future of a whole technology.

To support his economic uncertainty conclusion footed on the 2004 bankruptcy of SureBeam, Mr. Blevins purportedly relied upon numerous articles in the 2006-2007 time period “questioning whether the electron-beam technology had long-term viability.”⁴¹³ In his initial testimony, Mr. Blevins provided no listing or exhibit copies of the articles he relied upon from respected business or financial journals, or agricultural economic publications, or reports of financial analysts. Nor did he include as exhibits to his testimony his research file or research notes. Rather, in his rebuttal testimony, Mr. Blevins referred to Staff Exhibits 63 and 64 as support for his economic uncertainty conclusion stating that he could not say whether he previously reviewed the articles but that the exhibits were representative of the information he reviewed and “they provide ample support for [his] conclusions.”⁴¹⁴ Contrary to Mr. Blevins testimony, we cannot find that these two articles support his conclusions. The NEPA regulations of the CEQ require that “[t]he information must be of high quality”⁴¹⁵ that an agency uses to prepare and support its NEPA documents.⁴¹⁶ The articles relied upon by Mr. Blevins as

⁴¹³ Id.

⁴¹⁴ Blevins Supp. Testimony at A.7.

⁴¹⁵ 40 C.F.R. § 1500.1(b).

⁴¹⁶ As an independent regulatory commission, the NRC is not bound by the CEQ regulations. The Commission’s policy, however, is, in effect, to follow the CEQ regulations so long as they do not interfere with its responsibility to protect the radiological health and safety of the public. See supra text accompanying note 51. Requiring the Staff to use and rely upon “high quality” information neither conflicts nor interferes with ensuring the radiological health and safety of the public. Indeed, it ensures it. Accordingly, this CEQ NEPA requirement is fully applicable here. By analogy, many Commission regulations require that the information provided to the agency

support for his economic uncertainty conclusion do not come close to meeting the high quality information standard that NEPA demands.

As previously noted,⁴¹⁷ Staff Exhibit 63 is a brief article by Food and Water Watch titled “Aloha Disaster: Hawaii and Food Irradiation” pulled from the internet. The purpose of the piece appears to be to encourage the public to attend the meeting in Honolulu the Staff was to hold a few days later to take comments on the Draft EA in accordance with its stipulated settlement agreement with the Intervenors. Under no circumstances, can the article be accurately or reasonably characterized as objective or from an objective source and it certainly does not qualify as “high quality” information. Even more troubling are the implications of Mr. Blevins’ testimony that the article was representative of the information he reviewed and relied upon to support his conclusions of economic uncertainty of the e-beam technology. Taking him at his word, this article unfortunately appears to indicate that Mr. Blevins did not objectively screen this article or the information in it to determine its accuracy and validity and then pursue only objective information in his research. Unfortunately, reliance upon this article appears to indicate that Mr. Blevins’ research was superficial, insubstantial, and lacking professional standards – traits also readily apparent from his purported research of the fumigation and hot water immersion alternatives in the EA.⁴¹⁸

by an applicant or licensee must be complete and accurate in all material aspects. See, e.g., 10 C.F.R. §§ 30.9, 40.9, 50.9. To hold the Staff to a lesser standard than using and relying upon high quality information when preparing NEPA documents would be unfathomable.

⁴¹⁷ See supra note 346.

⁴¹⁸ Putting aside the decisive issue of the quality of the information, the article is little more than an indictment of the entire food irradiation industry, cobalt-60 and e-beam irradiators alike. The first sentence states “[f]ood irradiation facilities threaten environmental and worker safety.” Aloha Disaster. Under the subheading “A Failing Technology,” the article states that across the United States, food irradiation companies have faltered financially: that in the 1990’s Dole Plantation opened and then shut an irradiator facility in Hawaii without indentifying the type of irradiator; that the University of Hawaii shut down its food irradiator in 2005, citing security concerns over the potential for a “dirty bomb,” which definitionally would have been an irradiator using radioactive sources; and, after just over a year of operation, a cobalt-60 facility was closed in Pennsylvania. Id. The article states that other unnamed facilities have closed their doors. Id.

Staff Exhibit 64, as also previously noted,⁴¹⁹ is an article by Public Citizen entitled “A Backgrounder on Food Irradiator Facilities” pulled from the internet and although more specific in factual details it again cannot fairly and reasonably be said to meet the required standard of “high quality” information. And, like the Exhibit 63 article, Staff Exhibit 64 cannot reasonably be characterized as from a completely objective and neutral source. The tenor of the article is essentially one of passing sentence on the entire food irradiator industry and the article names both cobalt-60 irradiator facilities and companies as well as e-beam facilities and companies as purportedly having financial difficulties. And, it is not at all clear from the article, because of the lack of explicit information, whether it names more e-beam facilities and companies than cobalt-60 facilities and companies. In any event, this article, like Exhibit 63, is not the type of high quality information required for reaching any legitimate, accurate, and supportable conclusions about the economic uncertainty of e-beam technology. Overlooking the decisive issue of the nature and bias of the source, the most reasonable conclusion to be drawn from the article is that the entire food irradiation industry is having difficult financial times, cobalt-60 irradiator facilities and companies and e-beam facilities and companies alike.⁴²⁰

Finally, it states that Hawaii Pride was described in 2004 by the federal government as sometimes underutilized and that the remaining food irradiation facilities in the country are often financially propped up by parent companies. Id. This portion of the article then states that, in 2003, Hawaii Pride’s parent company, Titan, announced that it would make loan payments for Hawaii Pride. Id. The article closes with a brief section on the weak market in the United States for irradiated food and a brief section on the health concerns from irradiated food. Id. Taking the article at face value, one would have to conclude from counting its list of enumerated failed irradiators that cobalt-60 irradiators were in more trouble than e-beam irradiators.

⁴¹⁹ See supra note 346.

⁴²⁰ Staff Exhibit 64 begins by stating that “[t]here are approximately 50 irradiation facilities in the United States, many of which irradiate food, including spices, beef, chicken, fruit and vegetables. The exact number of irradiation facilities is not known, nor is the number of facilities that irradiate food, due to the secretive nature of the industry.” Backgrounder on Food Irradiation. Next, under the subheading “Food Irradiation Facilities,” the article lists two cobalt-60 facilities, “[k]nown to be in operation in the U.S.” Id. (emphasis supplied). The article lists a cobalt-60 irradiator in Mulberry, Florida, and a closed cobalt-60 irradiator in Quakertown, Pennsylvania. Id. The article also includes a discussion of SureBeam, noting that it filed for bankruptcy in 2004 after a series of problems, including questions about its accounting

After claiming in his rebuttal testimony that Staff Exhibits 63 and 64 “provide ample support” for his economic uncertainty conclusion regarding the future of e-beam technology, Mr. Blevins next testified that his conclusion is consistent with the negative comments on the e-beam irradiator the Staff received at its public meeting on the Draft EA.⁴²¹ As support, he quotes snippets of two comments from the public meeting.⁴²² The first, as quoted by Mr. Blevins, states “the last irradiator failed . . . it was in financial ruin.”⁴²³ Mr. Blevins does not identify the speaker, provide any information on the speaker’s background, employment, expertise, or any other information establishing the statement is anything other than a citizen opinion, rather than reliable fact or expert opinion about the economic uncertainty of e-beam irradiator technology. Although public comments are an important component of the NEPA process and, without in any way denigrating the speaker, this edited comment, standing alone and without a great deal more information than Mr. Blevins provides, does not support, let alone establish, the legitimacy of his conclusion regarding the economic uncertainty of e-beam technology. Hence, this snippet of a quotation also is not the type of “high quality” information required by NEPA to support Staff decisionmaking. Indeed when read in context, the commenter’s remarks are concerned with the lack of markets for Hawaiian produce and irradiated food in particular.⁴²⁴ If such a comment could be taken as support for Staff actions in

practices, and is now out of business. Id. Further, the article notes that SureBeam sold a unit to Hawaii Pride and to a Brazilian operation, and that both facilities have experienced financial difficulties “and it is unclear whether they are still operating.” Id.

⁴²¹ Blevins Supp. Testimony at A.7.

⁴²² The pages of the transcript of the Staff’s February 1, 2007 public meeting in Honolulu, Hawaii on the Draft EA are included as Exhibit 65 to the Staff Response.

⁴²³ Blevins Supp. Testimony at A.7.

⁴²⁴ That speaker, identified as a member of the Hawaii Environmental Alliance, stated in the full paragraph from which Mr. Blevins extracted his quotation:

One of the things that I think is the most important issue that’s come up tonight is economic situation of farmers here is very – the farmers here are really struggling to survive and to find markets. And one of the problems that I see with irradiators

its EA, the most that could be drawn from the comment is that it casts doubt on the economic viability of any method of irradiating food, including the proposed action because of the lack of demand for such products – a subject nowhere addressed by Mr. Blevins in the EA. For the same reasons, the second fragment of a public comment quoted by Mr. Blevins in his rebuttal testimony, suggesting that the NRC should look into “the other irradiators that have collapsed financially,” does not meet the NEPA standard of “high quality” information that properly can be used to support his economic uncertainty conclusion.⁴²⁵

As the last support for his economic uncertainty conclusion, Mr. Blevins relies upon a statement from Mr. Kohn’s February 28, 2007 letter, responding to his e-mail asking if Mr. Kohn “could elaborate on any consideration [he] gave to alternative technologies.”⁴²⁶ In his rebuttal testimony Mr. Blevins quotes Mr. Kohn’s statement that

“[t]he economic future of x-ray technology was put on hold when SureBeam, the vendor, went bankrupt, leaving investors with losses in excess of \$100 million. Even the Big Island X-ray facility had to reorganize under new ownership. It would make little sense for Pa’ina Hawaii to invest in a failed company and a technology that does not suit Hawaii’s needs.”⁴²⁷

and the reason that the last irradiator failed was that it was in financial ruin because they could not find markets for irradiated food. And this is what I fear, is that farmers here are being set up because if there are not markets for irradiated food and you guys are putting all your eggs in that basket, it’s really, really a problem.

Staff Response, Exh. 65, Tr. at 96 (filed Mar. 5, 2009).

⁴²⁵ Blevins Supp. Testimony at A.7. Putting aside the apparent contradiction of his statement, Mr. Blevins testified with respect to the second comment that “[g]iven that there was only one existing food irradiator in Hawaii, I understood these comments to be referring to Hawaii Pride’s electron-beam irradiator.” Id. The short paragraph from which Mr. Blevins’ quote was extracted, was spoken by another member of the Hawaii Environmental Alliance who stated: “And I agree with the economics as well. We need to look into other irradiators that have collapsed financially and have led to ruin of many farming markets.” Staff Response, Exh. 65, Tr. at 104-05 (filed Mar. 5, 2009).

⁴²⁶ Kohn Letter.

⁴²⁷ Blevins Supp. Testimony at A.7.

Mr. Blevins then testified that Mr. Kohn's statement was "entirely consistent" with the comments the Staff received at the public meeting and with his research.⁴²⁸ As we have already detailed, the fact of SureBeam's bankruptcy, Mr. Blevins' research represented by Staff Exhibits 63 and 64, and Mr. Blevins' reliance on the public comments in Staff Exhibit 65, cannot appropriately be used as support, and do not support, his economic uncertainty conclusion. Similarly, Mr. Blevins' reliance on Mr. Kohn's opinion regarding SureBeam's bankruptcy does nothing to undergird his faulty economic uncertainty conclusion. As previously noted,⁴²⁹ Mr. Kohn's opinion needs to be viewed through an objective lens and not, as Mr. Blevins apparently has done, accepted as immutable and irrefutable fact.⁴³⁰

⁴²⁸ Id.

⁴²⁹ See supra p. 84.

⁴³⁰ The quoted statement from Mr. Kohn's letter that Mr. Blevins relies upon to support his conclusion about the economic viability of the e-beam technology, is part of a comparison in which Mr. Kohn purports to identify "significant differences between x-ray technology and cobalt-60." Kohn Letter. The second sentence of Mr. Kohn's comparison states that "[t]he following comparison is limited to the only x-ray food irradiator in the US, which is located on the Big Island of Hawaii." Id. Although the comparison in Mr. Kohn's letter may be limited to his understanding of the Hawaii Pride irradiator and his proposed irradiator, Mr. Kohn's statement that the Hawaii Pride facility is "the only x-ray food irradiator in the US, which is located on the Big Island" is clearly incorrect if he means what his sentence states.

On April 2, 2009, the Applicant filed a motion to file supplemental testimony of Mr. Kohn. Motion for Leave to File Supplemental Direct Testimony of Michael Kohn, President of Pa'ina Hawaii, LLC (Apr. 2, 2009). In addition to the supplemental testimony of Mr. Kohn, the Applicant also attached three exhibits: (1) an Internet article, apparently from the "China View," stating that an irradiator in Vietnam will resume its exporting activities after addressing a "failure of the irradiation equipment"; (2) a Public Citizen article titled "Food Irradiation in Asia" describing, among other things, the SureBeam irradiator that, at the time the article was written, was being built in Vietnam; and (3) pages from SureBeam's Quarterly report ending on June 30, 2002, which provide information about the SureBeam irradiator in Vietnam.

This motion is denied as untimely under 10 C.F.R. § 2.323(a), which states that a motion "must be made no later than ten (10) days after the occurrence or circumstance from which the motion arises." As argued by the Intervenor, see [Intervenor] Opposition to Pa'ina's Motion for Leave to File Supplemental Written Direct Testimony of Michael Kohn at 2 (Apr. 13, 2009), the information upon which the Applicant based its motion was available on the Internet by mid-February 2009, which means that the Applicant should have filed its motion in early March, and not early April, if it sought to do so. Regardless, the material that is the subject of the motion is of no significance because, without knowing why the unit in Vietnam failed, it in no way supports a conclusion about the economic uncertainty of the e-beam technology. Likewise, Mr. Kohn's

Any doubt about the erroneous nature of Mr. Blevins economic uncertainty conclusion is erased by Mr. Weinert's testimony. As Mr. Weinert explained, SureBeam's bankruptcy in 2004 was caused by the mismanagement of company funds, not problems with e-beam technology.⁴³¹ He testified that SureBeam was a subsidiary of Titan Corporation, a financially sound defense contractor and that when SureBeam ceased doing business Titan Corporation continued to sell irradiators identical to the Hawaii Pride Unit.⁴³² Indeed, Mr. Weinert testified that three other American companies sold the same type of equipment.⁴³³ Accordingly, Mr. Blevins' "primary" reason for rejecting considerations of the e-beam irradiator alternative in the EA (i.e., the economic uncertainty of e-beam technology) has no appropriate basis in fact and cannot be sustained. Had Mr. Blevins, in fact, undertaken serious, substantial, and professionally-conducted research on the e-beam technology and industry, he could not reasonably have reached the conclusion he did.

Like his "primary" reason, Mr. Blevins' secondary reason for eliminating the e-beam irradiator from consideration in the EA also cannot withstand scrutiny. He testified that, in his letter, "Mr. Kohn stated that an electron-beam irradiator would not be a feasible alternative, in part because of the cost associated with providing additional electricity to the facility."⁴³⁴ Mr. Blevins stated that based upon his subsequent research, he confirmed that "it made sense that an electron beam irradiator would generate more recurring costs for electricity than a cobalt

testimony, which is based on the inconsequential exhibits, is of no greater significance. Furthermore, the material does not satisfy the NEPA standard, which requires the Staff to support its NEPA documents with high quality information. 40 C.F.R. § 1500.1(b). Moreover, the Applicant's motion must be rejected for once again failing to comply with 10 C.F.R. § 2.323. See, e.g., Licensing Board Order (Ruling on Pa'ina Hawaii, LLC Motion to Reinstate "Categorical Exclusion") (Oct. 15, 2008) at 6 n.21 (unpublished).

⁴³¹ Weinert Testimony at A.7.

⁴³² Id.

⁴³³ Id.

⁴³⁴ Blevins Testimony at A.31.

irradiator” so he “concluded that the electron-beam irradiator would not be a feasible alternative.”⁴³⁵

In light of Mr. Blevins’ consideration of fumigation alternative in the EA, his conclusion that the recurring electricity costs of an e-beam irradiator preclude it from being a feasible alternative redefines the meaning of a feasible alternative to suit the moment. As previously discussed, the fumigation alternative can be used to treat only one of the nineteen fruits and vegetables grown in Hawaii for shipment to the mainland, while the proposed action can treat at least sixteen. Mr. Blevins concedes that the e-beam x-ray irradiator can accomplish the identical tasks as the proposed action.⁴³⁶ Similarly, Mr. Blevins considered the hot water immersion alternative in the EA, when it can treat no more than five, and likely far fewer, of the fruits and vegetables grown for export to the mainland. NEPA, however, prescribes something other than such a “luck of the draw” approach for the consideration of alternatives.

Sections 102(2)(E) requires the agency to consider “appropriate alternatives to recommended courses of action” and controlling Ninth Circuit precedent requires the agency to give “full and meaningful consideration to all reasonable alternatives.”⁴³⁷ Although there is no question that an e-beam irradiator uses more electricity than a cobalt-60 irradiator and that electricity rates in Hawaii are relatively high, the fact that Hawaii Pride has consistently operated at a profit doing the identical tasks the Pa’ina facility intends to perform⁴³⁸ demonstrates that the e-beam irradiator is a reasonable alternative that must be considered in the EA to comply with NEPA. Contrary to Mr. Blevins’ conclusion, that fact also shows it is an economically feasible alternative.

⁴³⁵ Id.

⁴³⁶ Id.

⁴³⁷ N. Idaho, 545 F.3d at 1153.

⁴³⁸ Weinert Testimony at A.8; Weinert Supp. Testimony at A.5.

In researching his conclusion, Mr. Blevins relied upon Mr. Kohn's letter. That letter, however, is based only upon Mr. Kohn's estimates concerning Hawaii Pride's operating costs and not first hand knowledge. Mr. Kohn's letter states that he estimated the per pound cost of treatment for electricity was over four cents.⁴³⁹ Contrary to Mr. Kohn's estimate, Mr. Weinert, who is in charge of the day to day operations of the facility, testified that Hawaii Pride's costs for electricity are "only about one cent per pound of treated produce."⁴⁴⁰ He also explained that Hawaii Pride operates on at the island of Hawaii where the company's electricity costs are approximately twenty five percent higher than on Oahu, the location of the proposed facility. Further, Mr. Weinert testified that even with such relatively high electricity costs, the company has consistently been making a profit treating local produce for export and that it is currently operating at about fifteen percent of maximum capacity and still making a profit.⁴⁴¹ Mr. Kohn's letter and testimony state that x-ray technology is very sophisticated and requires constant upkeep by highly qualified personnel at additional costs.⁴⁴² Mr. Weinert testified that Mr. Kohn's assumptions that it takes high-priced, highly skilled workers to operate and maintain an e-beam x-ray irradiator were incorrect, and that Hawaii Pride employs two individuals for such purpose, a general engineer with a bachelor's degree and an individual with the equivalent of a high school diploma.⁴⁴³ He stated that Hawaii Pride's electricity and variable labor costs total less than three cents per pound of treated produce and the fact that the company has consistently been making a profit treating local produce for export disproves Mr. Kohn's unsupported claim

⁴³⁹ Kohn Letter.

⁴⁴⁰ Weinert Supp. Testimony at A.5.

⁴⁴¹ Weinert Testimony at A.8.

⁴⁴² Kohn Letter; Kohn Testimony at A.4.

⁴⁴³ Weinert Supp. Testimony at A.5.

that electricity and labor costs make the e-beam irradiator uneconomical.⁴⁴⁴ Thus, as Mr. Weinert's testimony shows there is no sound factual underpinning for Mr. Blevins' conclusion that the cost of electricity makes an e-beam irradiator uneconomical and an infeasible alternative. Accordingly, his conclusion is without merit.

Like his first two reasons for not considering the e-beam irradiator in the EA, Mr. Blevins' third reason is equally without merit. Mr. Blevins testified that at the time he was researching e-beam technology, the Staff had already essentially determined that there were no foreseeable risks of any significant environmental consequences at the proposed site so he saw no need to discuss the e-beam irradiator alternative in the EA.⁴⁴⁵ Mr. Blevins' stated reason is contrary to the requirements of section 102(2)(E) of NEPA and, therefore, cannot validate his conclusion not to consider the e-beam irradiator alternative in the EA.

As the Ninth Circuit has made clear, the alternatives requirement of section 102(2)(E) of NEPA is an "independent" requirement of "wider scope" and "broader" than the alternatives requirement limited to EISs in NEPA section 102(2)(C).⁴⁴⁶ While the alternatives section for EISs in section 102(2)(C) comes into play when the action will have significant environmental effects, the requirements of section 102(2)(E) are independent of the question of EISs and are operative even if there are no significant environmental impacts.⁴⁴⁷ Thus, under section 102(2)(E), that is fully applicable here, Mr. Blevins could not properly avoid considering the e-beam irradiator alternative in the EA because the Staff had concluded there were no significant

⁴⁴⁴ Id.

⁴⁴⁵ Blevins Testimony at A 31.

⁴⁴⁶ Bob Marshall, 852 F.2d at 1229.

⁴⁴⁷ Id. at 1228-29. Or, as Judge Posner stated regarding NEPA section 102(2)(E) in River Road Alliance, Inc. v. Corps of Eng'rs of U.S. Army, 764 F.2d 445, 452 (7th Cir. 1985), "[f]or nonsignificant impact does not equal no impact; so if an even less harmful alternative is feasible, it ought to be considered."

impacts from the proposed action.⁴⁴⁸ Stated otherwise, because section 102(2)(E) deals with alternative uses of available resources, a purpose different from that of section 102(2)(C), the requirement of section 102(2)(E) is intended to ensure that agency decisionmakers have before them and take account of “all possible approaches to a particular project” which could alter the environmental impact and cost-benefit balance.⁴⁴⁹ Thus, the requirement of section 102(2)(E) that all appropriate alternatives to the proposed action be studied, developed, and described when alternative uses of available resources are involved, cannot be squared with cutting off consideration in the EA of a reasonable alternative because Mr. Blevins and the Staff had concluded the proposed action had no significant environmental impacts. Additionally, Mr. Blevins’ actions were plainly contrary to one of the fundamental purposes of section 102(2)(E) that he “provide[] evidence that the mandated decisionmaking process has actually taken place.”⁴⁵⁰ That purpose of section 102(2)(E) also dovetails with one of the overarching purposes of NEPA that information be made available to the public.⁴⁵¹ In this regard, not only did the content of the EA itself keep the public in the dark as to why the agency, reasonably or otherwise, did not consider the e-beam irradiator alternative in the EA (when NEPA calls for shining a light on the agency’s decisionmaking regarding alternative uses of resources), Mr. Blevins’ testimony in this proceeding accomplishes absolutely nothing to remedy that

⁴⁴⁸ Because at the time Mr. Blevins was purportedly researching alternatives the Staff had already concluded that there were no significant impacts from the proposed action, he testified that he did not consider whether the e-beam irradiator might eliminate some of the hazards potentially associated with using Cobalt-60 sources. Blevins Supp. Testimony at A.7. The Staff therefore has never considered whether, as asserted in Intervenor’s environmental contention 3, the use of a non-nuclear technology would eliminate the potential impacts associated with the release of, and exposure to, radioactive material thereby altering the environmental impact and cost-benefit balance. Amended Environmental Contentions 4 at 32.

⁴⁴⁹ Bob Marshall, 852 F.2d at 1229 (quoting Calvert Cliffs, 449 F.2d at 1114).

⁴⁵⁰ Id.

⁴⁵¹ N. Idaho, 545 F.3d at 1153.

shortcoming. Accordingly, Mr. Blevins third stated reason for not considering the e-beam irradiator alternative in the EA also cannot withstand scrutiny.

Additionally, in seeking to justify Mr. Blevins' failure to consider the e-beam irradiator alternative, the Staff argues that it need not consider alternatives that are remote and speculative like the e-beam irradiator.⁴⁵² In light of the fact that, at the time Mr. Blevins was supposedly researching alternatives to the proposed action, the Hawaii Pride e-beam x-ray facility was profitably operating doing the same task that the proposed Pa'ina irradiator intends to perform, it cannot seriously be contended that the e-beam irradiator is a remote and speculative alternative.

Finally, the Staff argues that in considering alternatives it is appropriate to take the Applicant's goals into account so it was justified in dismissing the e-beam irradiator from consideration in the EA. According to the Staff, Pa'ina seeks to build a cobalt-60 irradiator because it reads Mr. Kohn's overall testimony as expressing dissatisfaction with the service provided by Hawaii Pride.⁴⁵³ Ninth Circuit precedent, however, makes clear that the range of alternatives that must be considered are those that are "reasonably related to the purposes of the project."⁴⁵⁴ Here, whether dubbed purposes or goals of the proposed action, the Staff, in the needs section of its EA, stated that:

The Proposed irradiator would be mainly used for the production and research irradiation of food and cosmetic products (Paina, 2005). The irradiator would satisfy several needs related to the control of invasive pest species (Wong, 2006). Specific uses would include (Kohn, 2006):

- Centrally located treatment of Hawaiian products for export,
- Centrally located treatment of products for import to Hawaii,
- Sterilization of fruit fly pupae for preventative release programs, and,

⁴⁵² Staff Response at 58.

⁴⁵³ Id.

⁴⁵⁴ Trout Unlimited v. Morton, 509 F.2d 1276, 1286 (9th Cir. 1974).

- Use as a research tool.

Mr. Blevins testified that the effects of x-ray generated by an e-beam irradiator and gamma rays from a cobalt-60 irradiator was essentially the same on fruits and vegetables⁴⁵⁵ and the Staff does not argue that the other purposes outlined in its own EA would not be met by an e-beam irradiator. Rather, the Staff argument now goes well beyond its own listing of the reasonable purposes and needs of the proposed action and creates a list of the Applicants “wants” to justify its action in not considering the e-beam irradiator alternative. The Staff argument is directly contrary to the requirements of section 102(2)(E) of NEPA and controlling precedent that require it to consider reasonable and appropriate alternatives to the recommended action and that obligation cannot be dodged by creating fanciful Applicant “wants” that would effectively reduce the consideration of alternatives to a binary choice of granting or denying the sought license. Accordingly, we find that the Staff has failed to provide any factually or legally sound justification for its failure to consider the e-beam irradiator in the EA as asserted in the Intervenor’s amended environmental contention 4.

Although Mr. Blevins testified that he considered the e-beam irradiator, his consideration of it was in the context of the economic uncertainty of the e-beam irradiator technology, and thus, the alternative was not worthy of consideration in the EA.⁴⁵⁶ As previously noted,⁴⁵⁷ it is apparent from the information Mr. Blevins relied upon to reach that conclusion that his research was superficial, insubstantial, and lacking professional standards. Thus, we cannot conclude that Mr. Blevins’ asserted consideration of the alternative was consonant with the dictates of

⁴⁵⁵ Blevins Testimony at A.31.

⁴⁵⁶ Id.; Blevins Supp. Testimony at A.7.

⁴⁵⁷ See supra text accompanying note 418.

section 102(2)(E) of NEPA, that the Staff “study, develop, and describe” the alternative and “give full and meaningful consideration” to it.⁴⁵⁸

c. Remedy

Section 102(2)(E) of NEPA mandates that the agency study, develop and describe appropriate alternatives to the proposed action and controlling Ninth Circuit precedent requires the agency give full and meaningful consideration to all reasonable alternatives. Here, the Intervenor’s amended environmental contention asserts, in effect, that the Staff failed even to mention the alternative of the e-beam irradiator in the EA, much less consider it in accordance with the requirements of NEPA. We have found that the Staff failed to provide any factually or legally sound justification for not considering the e-beam irradiator in the EA in accordance with the requirements of NEPA. Accordingly, the EA must be returned to the Staff to consider, in accordance with section 102(2)(E) of NEPA and controlling Ninth Circuit precedent, the appropriate and reasonable alternative of the e-beam irradiator.

We are required to take this step because of the unique posture of this proceeding. Normally, the adjudicatory process and the evidence presented, as well as the licensing board decision resolving the admitted NEPA contentions, can be used to clarify and augment the Staff’s environmental documents and become, in effect, part of the agency’s environmental documents and record of decision. That practice and its regulatory underpinning are longstanding and there are a number of Commission and former Appeal Board decisions approving and following that practice.⁴⁵⁹ None of these cases, however, deals with the situation

⁴⁵⁸ N. Idaho, 545 F.3d at 1153.

⁴⁵⁹ Diablo Canyon, CLI-08-26, 68 NRC at 526 (“[c]onsistent with longstanding NRC practice, today’s decision becomes part of the environmental record of decision along with the environmental assessment itself”); Hydro Res., Inc. (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-04, 53 NRC 31, 53 (2001) (in an adjudicatory hearing, to the extent that any environmental findings by the Presiding Officer (or the Commission) differ from those in the EIS, the EIS is deemed modified by the decision); Louisiana Energy Servs., L.P. (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 89 (1998) (“[t]he adjudicatory record and Board

presented here. In each of those decisions the challenge to the Staff environmental document and the posture of the hearing was such that the evidence taken by the licensing board permitted the board or the appellate tribunal to rectify or correct any deficiencies in the Staff environmental document. Unlike the situation in each of those cases, the administrative record on this portion of the Intervenor's contention was not created, nor ever intended, to fill the void created by the Staff's failure to consider the e-beam irradiator alternative. Rather, the record is exclusively focused upon whether the Staff's justification for not considering the e-beam irradiator alternative in the EA was factually or legally valid. Thus, the hearing record and our decision cannot modify, clarify, or augment something that does not exist. Because the Staff's EA was silent on the alternative of the e-beam irradiator and the Staff in its adjudicatory filings presented for the first time three reasons why the Staff did not include in the EA that alternative, the Staff's evidence, and the evidence of other parties, was directed to the validity or invalidity of the Staff's three reasons for not considering the e-beam alternative. We have found, as the Intervenor's amended environmental contention 3 asserts, that the Staff failed to provide any factually or legally sound justification for its failure to consider the e-beam irradiator in the EA.

Necessarily, therefore, only the Staff can now comply with the requirements of section 102(2)(E) of NEPA and controlling Ninth Circuit precedent that it study, develop, and describe the e-beam irradiator alternative and give that alternative full and meaningful consideration. The administrative record as it currently stands does not allow this Board to fill the vacuum created by the Staff's failure to consider the e-beam irradiator alternative in the EA in the first instance.

decision (and, of course, any Commission appellate decision) become, in effect, part of the FEIS"); Limerick, ALAB-819, 22 NRC at 705 ("[a]mendment of the [Final Environmental Statement (FES)] by the adjudicatory hearing record and subsequent Licensing Board decision is entirely proper under NRC regulations and court precedent"); Allied-Gen. Nuclear Servs. (Barnwell Nuclear Fuel Plant Separations Facility), ALAB-296, 2 NRC 671, 680 (1975) ("[t]he Commission's regulations, however, recognize that evidence presented at a hearing may cause a licensing board to arrive at conclusions different from those in the FES"); Niagara Mohawk Power Corp. (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 371 (1975) ("the Licensing Board's evaluation of the energy conservation alternatives is deemed to modify the Final Environmental Statement").

Nor can the Board properly undertake this task, ab initio, which, if done appropriately in accordance with the dictates of section 102(2)(E), would take it outside the administrative record (i.e., study, develop, and describe the alternative) and its adjudicatory function. Accordingly, the Staff must now amend or supplement its EA.

Further, because the Staff has not previously discussed the e-beam irradiator alternative in either its Draft or Final EA, it must allow a brief opportunity for written public comment on its draft amendment or supplement to the EA before either finalizing the draft amendment on the e-beam irradiator alternative or reaching its final conclusion regarding the proposed irradiator. After again reviewing the joint stipulation of the Intervenor and the Staff and our April 27, 2000 Order accepting the joint stipulation settlement, the opportunity for brief written comment is required by the settlement stipulation we approved. Because the parties agreed that the Staff would allow an opportunity for public comment on the Draft EA (or a draft finding of no significant impact, which in this case incorporated the Draft EA), and the Staff has yet to produce such a document with respect to its consideration of the e-beam irradiator alternative, a period for written comment must be provided pursuant to the stipulated settlement on the draft amendment that properly considers the e-beam irradiator alternative in accordance with section 102(2)(E) of NEPA and controlling Ninth Circuit precedent. Moreover, even if the opportunity for written comment were not required by the stipulation settlement we accepted, we find that the circumstances presented here meet the test adopted by the court in Bering Strait Citizens for Responsible Resource Development v. U.S. Army Corp of Engineers, 524 F.3d 938, 954 (9th Cir. 2008) for when an agency must allow comment on an EA. As should be obvious from our decision addressing the portion of the Intervenor's contention on the Staff's failure to consider the e-beam irradiator alternative in the EA, the manner in which the Staff has, to date, dealt with this alternative requires the opportunity for public comment to inform the agency's decisionmaking process in the EA.

Finally, we remind the Staff that in considering this or any alternative pursuant to section 102(2)(E), NEPA does not mandate any particular outcome. It does require, however, that the Staff neutrally and objectively study and develop the alternative in a manner such that the agency decisionmakers and the public are informed about the agency choices. If, for example, after an objective study of the alternative, the Staff were to conclude that the alternative had more advantages than disadvantages in relation to the proposed action, that conclusion in no way requires the Staff to reject the application for the proposed action. Because NEPA is purely a procedural statute, it only prescribes a process – albeit an action forcing one – so the decisionmakers and the public have all necessary environmental information before them.⁴⁶⁰ It does not require that the deck be stacked to ensure the licensure of any proposed action – it only requires neutrality, objectivity, and transparency.

3. Alternative Locations

In its amended environmental contention 4, the Intervenor additionally challenges the failure of the final EA to consider alternative locations for the proposed Pa'ina irradiator.⁴⁶¹ The contention states that the EA emphasizes the importance of centrally located treatment for imports and exports and that locating a facility on Oahu is preferred because it is a central air and sea transportation hub. The contention asserts that the EA violates the core requirement of NEPA to consider reasonable alternatives by not considering any alternative sites that might present less environmental harm.⁴⁶² According to the contention, locations further away from the airport and runways would, inter alia, eliminate or reduce the risks and threats from airplane crashes, tsunami run-up, and hurricane storm surge, while “[s]ites on solid ground, rather than

⁴⁶⁰ See supra text accompanying notes 45-48.

⁴⁶¹ Amended Environmental Contentions at 30-31, 33-34; see also Intervenor Initial Statement at 24-29; Intervenor Supplemental Statement 61-64, 69-75.

⁴⁶² Amended Environmental Contentions at 33; see also Intervenor Initial Statement at 27-28; Intervenor Supplemental Statement at 69-70.

unconsolidated fill, would lay to rest concerns about liquefaction during earthquakes.”⁴⁶³ Finally, the contention states that the failure of the EA to consider reasonable alternatives is not excused because the NRC has no authority to prescribe a different location.⁴⁶⁴ The Intervenor made essentially the same points in its written comments to the Staff on the Draft EA as those in its contention.⁴⁶⁵

The body of the Final EA, like the Draft EA, does not mention nor consider any alternative sites for the proposed irradiator. In Appendix C of the Final EA – the appendix that purportedly responds to the comments on the Draft EA – the Staff states that it received a comment on the failure of the Draft EA to consider reasonable alternative locations that would avoid impacts associated with aviation accidents and natural disasters.⁴⁶⁶ In its response to this, among other comments that it described generally, Appendix C starts by stating that the NRC has determined by regulation that irradiators do not have a significant effect on the human environment and thus there is no need to prepare an EA for irradiators – a task reserved for EISs.⁴⁶⁷ Appendix C next states that its settlement agreement with the Intervenors provided that the Staff prepare an EA but it “does not normally consider alternative locations in [an] environmental assessment[]” because “if there are no significant impacts there is no need to consider other locations” and the “NRC has no authority to prescribe a different location.”⁴⁶⁸

The Staff’s asserted rationale in Appendix C that it need not consider alternative sites because there are no significant environmental impacts from the irradiator is contrary to the

⁴⁶³ Amended Environmental Contentions at 33.

⁴⁶⁴ Id. at 34.

⁴⁶⁵ See Comments at 9.

⁴⁶⁶ Final EA at C-7.

⁴⁶⁷ Id. at C-8.

⁴⁶⁸ Id.

requirements of section 102(2)(E) of NEPA.⁴⁶⁹ For precisely the same reasons, we held that the Staff could not avoid considering the e-beam irradiator alternative in the EA because it had concluded there were no significant impacts from the proposed action,⁴⁷⁰ the Staff cannot avoid considering reasonable alternative sites that might present less environmental impact. We will not make this decision even longer by repeating that analysis. It suffices to note that the Ninth Circuit has declared that section 102(2)(E) of NEPA is an independent requirement that is of wider scope and broader application than the alternatives requirement of section 102(2)(C), which is applicable only to EISs, and serves a different purpose than the latter requirement.⁴⁷¹ As such, the requirements of section 102(2)(E) to consider reasonable alternatives are fully operative even if there are no significant environmental impacts from the proposed action.⁴⁷²

Similarly flawed is the Staff's argument in Appendix C that it need not consider alternative sites because the NRC has no authority to prescribe a location different from the one proposed by the applicant.⁴⁷³ Neither does the agency have the authority to require the applicant to employ the methyl bromide fumigation process or the hot water immersion treatment that the Staff considered in the EA. The consideration of alternatives requirement

⁴⁶⁹ We note that the Staff's reliance in Appendix C on the agency's categorical exclusion for irradiators based upon the regulatory determination that irradiators have no significant effect on the environment is inappropriate. See supra note 14. In agreeing to prepare an EA as part of its settlement agreement with the Intervenor, the Staff waived or, in effect, repealed the categorical exclusion with respect to the proposed Pa'ina irradiator along with the regulatory determination that an irradiator has no significant impact on the environment. We will not speculate on why the Staff agreed to prepare an EA and, in connection therewith, hold a public meeting in Hawaii to hear comments on the Draft EA. Having done so, however, the Staff cannot fall back on the categorical exclusion for any reason in this proceeding. Rather, it was obligated to prepare properly an EA in full compliance with the requirements of NEPA and applicable circuit court precedent.

⁴⁷⁰ See supra notes 445-451 and accompanying text.

⁴⁷¹ Bob Marshall, 852 F.2d at 1228-29.

⁴⁷² Id. at 1229.

⁴⁷³ Final EA at C-8.

under NEPA is not dependent solely upon the agency's authority.⁴⁷⁴ Section 102(2)(E) requires that the Staff consider appropriate alternatives, and applicable circuit precedent requires that "all reasonable alternatives" be considered⁴⁷⁵ that are "reasonably related to the purposes of the project."⁴⁷⁶ Here, the major purposes of the project are centrally located treatment for imports and exports on Oahu, the central hub for air and sea transportation.⁴⁷⁷ Accordingly, the consideration of reasonable alternative sites or locations that would accomplish the project's purposes with less significant impacts ought to be considered. In this regard, Mr. Kohn, the managing member of Pa'ina Hawaii, recognized this possibility himself. He indicated in an e-mail to the Staff, after the Pa'ina application had been filed, that "Pa'ina has not yet been able to lease the existing proposed location" and it was considering other locations in existing buildings that were "further from the active operations of the airport and further from the ocean."⁴⁷⁸ Similarly, in his e-mail to Mr. Blevins, Mr. Kohn stated that "siting and technology are inseparable given the special geographic circumstances in Hawaii."⁴⁷⁹

⁴⁷⁴ See generally 40 C.F.R. § 1502.14(c). The EIS must "[i]nclude reasonable alternatives not within the jurisdiction of the lead agency." Although section 1502.14(c) is applicable to EISs, the section illustrates that NEPA is not as cabined as the Staff would have it.

⁴⁷⁵ N. Idaho, 545 F.3d at 1153.

⁴⁷⁶ Trout Unlimited, 509 F.2d at 1286.

⁴⁷⁷ Final EA at 6.

⁴⁷⁸ Intervenor Initial Statement, Exh. 20, 08/28/2006 Kohn Email.

⁴⁷⁹ Kohn Letter.

In generally arguing against the necessity of the Staff to consider alternative sites, the Staff relies upon the Commission decision in Hydro Resources, CLI-01-3, 53 NRC at 55, in which the Commission discusses the consideration of alternatives in an EIS under section 102(2)(C) of NEPA. Staff Initial Statement at 68-69. In Hydro Resources, the Commission notes that agencies need only discuss alternatives that are reasonable and will bring about the ends of the proposed project and, when reviewing an application by a private applicant, an agency may properly give substantial weight to the preferences of the applicant in the siting of the project. Hydro Resources, CLI-01-3, 53 NRC at 55. In Hydro Resources, the Commission quotes from and relies upon the court's statements in Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195, 197 (D.C. Cir. 1991), also an EIS case, involving the consideration of alternatives under section 102(2)(C) of NEPA. Even under section 102(2)(E) of NEPA, an

Finally, the Staff argues that there is no requirement that the agency consider alternative sites in an EA because NEPA section 102(2)(E) applies only to “any proposal which involves unresolved conflicts concerning alternative uses of available resources.” Thus, the Staff argues that where the available resource is a particular parcel of land, constructing the facility at another site cannot be considered an alternative for the resource in question.⁴⁸⁰ The sole cited support for the Staff’s crabbed interpretation of section 102(2)(E) is a case outside the Ninth Circuit from the United States District Court in the Northern District of Illinois, Wicker Park Historic District Preservation Fund v. Pierce, 565 F. Supp. 1066 (N.D. Ill. 1982), involving a contentious fight over the construction of federally subsidized housing in an established neighborhood, where the court accepted that argument. Since that decision was issued over a quarter century ago, it has not been cited by any court for the proposition that there is no requirement that an agency consider alternative sites in an EA. Indeed, less than a decade after Wicker Park was decided, the same court (i.e., judge) determined in Village of Palatine v. U.S. Postal Service, 742 F. Supp. 1377, 1386 (N.D. Ill. 1990) that section 102(2)(E), “[e]ven if the [environmental] assessment is that the impact upon the environment will not be significant, the agency nevertheless is required to consider feasible alternative sites to determine whether an alternative site might serve the agency’s purpose with even less environmental impact.” In Village of Palatine, the court, following circuit precedent, further held that “[t]he evaluation of alternatives mandated by section 102(2)(E) is an evaluation of alternative means to reach a

independent requirement of wider and broader scope than section 102(2)(C), an agency must give weight to the preferences of the private applicant; however, the application of that principle here does not preclude the consideration of alternative sites any more than it precludes consideration of alternative technologies. In Hydro Resources, the Commission was reasonably applying that principle to a proposal to mine an ore body under land owned by the applicant, a very specific and obviously limiting purpose, CLI-01-3, 53 NRC at 55-56, not at all like the purposes of the proposed Pa’ina proposed irradiator.

⁴⁸⁰ Staff Initial Statement at 69-70; see also Staff Response at 60.

general goal” and that the “range of alternatives” therefore “includes alternative sites.”⁴⁸¹ As the Intervenor notes, the Ninth Circuit, as do other circuits, routinely examines EAs to determine whether it has adequately considered a reasonable range of alternative locations and sites.⁴⁸² Accordingly, the Staff’s argument that section 102(2)(E) does not require it to consider alternative sites in the EA is without merit.

The same reasons detailed in Part V.A.2.c regarding the remedy for the Staff’s failure to consider the e-beam irradiator alternative in the EA, are fully applicable to the Staff’s failure to consider alternative sites. Thus, the EA must be returned to the Staff to consider and permit written comment on alternative sites in accordance with section 102(2)(E) of NEPA.

VI. CONCLUSION

For the foregoing reasons, the Board finds that aside from its review of the impacts of transportation accidents, as noted in Section IV.D.9 above, the Staff has satisfied its obligation to take a “hard look” at the potential environmental impacts of the proposed irradiator. With regard to amended environmental contention 4, we conclude that the Staff has not complied

⁴⁸¹ 742 F. Supp. at 1392. In responding to the Intervenor, the Staff argues that Village of Palatine is inapposite because the Postal Service was required to consider alternative sites pursuant to its own regulation, and thus the requirement was not one under section 102(2)(E) of NEPA. Staff Response at 61-62. The Staff is simply incorrect. As our quotation from Village of Palatine in the text shows, the court held that the requirement to consider alternative sites was a requirement of NEPA. Moreover, the court in Village of Palatine specifically noted that the CEQ NEPA regulations, 40 C.F.R. § 1507.3, “require that every federal agency draft its own administrative regulations to implement and supplement the regulations promulgated by the Council on Environmental Quality.” 742 F. Supp. at 1380. In any event, and contrary to the Staff’s argument, when an agency considers alternative sites in an EA in accordance with its own NEPA regulations, the agency actions necessarily are also done pursuant to NEPA.

⁴⁸² Intervenor Rebuttal to Staff at 27. See, e.g., Morongo Band, 161 F.3d at 575-76 (EA considered locations of alternative routes for aircraft flying into Los Angeles International Airport); Friends of Endangered Species v. Jantzen, 760 F.2d 976, 988 (9th Cir. 1985) (EA considered alternative sites for proposed development). In its response, the Staff seeks to distinguish, on narrow grounds, the cases from other circuits that the Intervenor cites, see Intervenor Rebuttal to Staff at 27, as illustrative of the point that the federal courts of appeal regularly scrutinize EAs to determine whether they have sufficiently considered a reasonable range of alternative sites. Staff Response at 62 n.122. A reasoned reading of the cases cited by the Intervenor shows that other circuits, not just the Ninth Circuit, examine agency determinations in EAs regarding alternative sites.

with section 102(2)(E) of NEPA because it failed to consider the electron-beam irradiator alternative technology and alternative sites. Accordingly, the Final EA is returned to the Staff for all appropriate and required actions consistent with this decision.⁴⁸³ After considering all of the Staff's submissions, we find that it has no obligation to prepare an EIS, and therefore dismiss amended environmental contention 5.⁴⁸⁴

Pursuant to 10 C.F.R. § 2.1210(a), forty days after issuance of this decision, it will constitute final agency action on the Intervenor's contention unless: (1) a party files a petition for Commission review within fifteen days after service of this decision pursuant to 10 C.F.R. §§ 2.341(b)(1), 2.1212, or a party files a petition for Commission review within any extended period of time granted by the Commission for "good cause" shown pursuant to 10 C.F.R. § 2.307(a); or (2) the Commission, in its discretion, determines that review is warranted pursuant to 10 C.F.R. § 2.1210(a)(3). Unless otherwise authorized by law, a party who wishes

⁴⁸³ All issues or arguments presented by the parties and not addressed herein have been found to be lacking in merit or unnecessary to this decision.

⁴⁸⁴ Although we expect the Staff will give full and meaningful consideration to transportation accidents and alternatives in its amended Final EA, in the event the Intervenor should seek to challenge the Staff's issuance of its Final EA as appropriately amended, the Intervenor must fully comply with the requirements of 10 C.F.R. § 2.309.

to seek judicial review of this decision must first seek Commission review pursuant to 10 C.F.R. § 2.1212.

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD*

/RA/

Thomas S. Moore, Chairman
ADMINISTRATIVE JUDGE

/RA/

Dr. Paul B. Abramson
ADMINISTRATIVE JUDGE

/RA/

Dr. Anthony J. Baratta**
ADMINISTRATIVE JUDGE

** Judge Baratta differs from the Majority on particular issues discussed in Section V.A, and has therefore filed a "Dissent in Part" that immediately follows this Initial Decision.

Rockville, Maryland
August 27, 2009

* Copies of this memorandum and order were sent this date by Internet e-mail transmission to counsel for (1) Applicant Pa'ina Hawaii, LLC; (2) Intervenor Concerned Citizens of Honolulu; and (3) the NRC Staff.

Administrative Judge Anthony J. Baratta, Dissenting in Part

While I concur with my colleagues that the EA prepared by the Staff is deficient, I do not agree with my colleagues regarding their opinion concerning the analysis of alternative technologies.

Specifically, I do agree with my colleagues that the EA failed to discuss the most comparable alternative technology, the electron beam irradiator. What I disagree with my colleagues on is the need to modify the EA to address this alternative technology. I do this for the following reason.

As noted above in section IV.A, the agency's procedures, as well as Commission precedent, specifically allow evidence in the hearing process to augment and clarify the administrative record underlying Staff NEPA documents and to become part of the environmental document. I consider that the testimony and exhibits clearly augment and clarify the administrative record and have now become part of the environmental document, obviating the need for the Staff to modify the EA to discuss electron beam technology.

While my colleagues opine that the testimony does not support the Staff's position that there is considerable uncertainty with regard to the economics of electron beam irradiation, my reading of the record concludes that it does. We have before us opposing testimony from Mr. Weinert, of Hawaii Pride -- a competitor to Pa'ina -- that says there is no uncertainty regarding economic viability, and Mr. Kohn, of Pa'ina, who claims there is. Both provide informed testimony concerning the long-term economic viability of the process -- one supporting, the other not. The sheer fact that these two witnesses disagree supports the position of the staff regarding economic uncertainty. While such disagreement might be settled in a hearing, we did not pursue that course since there are other fatal omissions in the Staff's analysis (which I do not dispute). Also, one need only consider the debate regarding global energy prices to conclude that

any energy user faces significant uncertainty with regard to future energy costs, making it difficult to project future operational costs. Based on the assertions, I find that the Staff's position is valid and is well supported in the record, eliminating the need for further discussion in the EA.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
PA'INA HAWAII, LLC) Docket No. 30-36974-ML
)
(Honolulu, Hawaii Irradiator Facility))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing INITIAL DECISION (RULING ON CONCERNED CITIZENS OF HONOLULU AMENDED ENVIRONMENTAL CONTENTIONS #3, #4, AND #5) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

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[Original signed by Christine M. Pierpoint]

Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 27th day of August 2009