

RAS 13299

DOCKETED  
USNRC

March 22, 2007 (4:13pm)

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

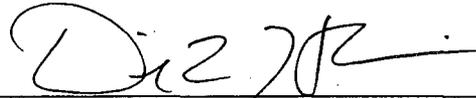
Docket No. 30-36974-ML  
ASLBP No. 06-843-01-ML

NOTICE OF FILING ORIGINAL SUPPLEMENTAL DECLARATION OF  
METE A. SOZEN, Ph.D. IN SUPPORT OF INTERVENOR CONCERNED  
CITIZENS OF HONOLULU'S CONTENTIONS RE: DRAFT  
ENVIRONMENTAL ASSESSMENT AND DRAFT TOPICAL REPORT

Attached hereto is the original, signed supplemental declaration of Mete A. Sozen, Ph.D.,  
filed on March 19, 2007 in support of Concerned Citizens of Honolulu's Contentions Re: Draft  
Environmental Assessment And Draft Topical Report.

Dated at Honolulu, Hawai'i, March 21, 2007.

Respectfully submitted,



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

TEMPLATE = SECY-037

SECY-02

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

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

**SUPPLEMENTAL DECLARATION OF METE A. SOZEN, Ph.D. IN  
SUPPORT OF CONCERNED CITIZENS' CONTENTIONS RE:  
DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT TOPICAL REPORT**

Under penalty of perjury, I, Dr. Mete A. Sozen, hereby declare that:

1. As stated in my original declaration, I am the Purdue University Kettelhut Distinguished Professor of Structural Engineering, and have a Ph.D. in Civil Engineering. I have over 50 years of training and experience in the field of structural engineering, and I have been retained by numerous private organizations and state and federal agencies, including the Nuclear Regulatory Commission ("NRC"), on special projects concerned with structural safety and potential structural damage. A true and correct copy of my resume is attached to my original declaration.

2. Together with Dr. Christoph Hoffmann, I prepared a numerical analysis to simulate the potential for damage from an aircraft striking a steel structure adjacent to active runways at the Honolulu International Airport, similar to the proposed Pa'ina irradiator. I then concluded, based on this simulation and my expertise and experience as a structural engineer, that an aircraft impact at the considered ground speed (which, as discussed in our report, was chosen to ensure our analysis would be conservative) could

destroy the building housing the irradiator and the 3 ½ foot lip of the irradiator pool. I also concluded that destruction of the pool lip could undermine the integrity of the pool, causing the water shielding the Co-60 sources to drain out; a high-temperature conflagration caused by the impact could destroy the pool by heating the steel; and flying debris could breach the source assembly or pool. In all of these instances, radioactive Co-60 could be introduced to the human environment.

3. I have reviewed Pa'ina Hawaii, LLC's Answer to Concerned Citizens of Honolulu's contentions, with particular attention to the declaration of Gray\*Star, Inc. Vice President and Chief Operating Officer Russell N. Stein. Pa'ina does not dispute Dr. Marvin Resnikoff's conclusion that the likelihood of an aviation crash is more than the one-in-a-million threshold the NRC uses to evaluate aviation risks or Dr. Hoffmann's and my findings that the building housing the irradiator, as well as the irradiator pool's lip as modeled, would be destroyed in the event of an aircraft impact. Pa'ina does attempt to refute, through Mr. Stein's declaration, my conclusion that an aircraft crash may cause radioactive Co-60 from the irradiator to be introduced to the human environment. I address Mr. Stein's declaration below.

4. Initially, it troubles me that Mr. Stein claims to be responsible for all design and engineering for the Genesis irradiator that Pa'ina proposes to build and operate, because Mr. Stein has not demonstrated he has any training or experience as an engineer. In fact, it appears from the files of another NRC proceeding that Mr. Stein's only "formal education" was as an economist, having received a Bachelor of Arts degree in that field. See 5/3/04 Email from GrayStar (ML041250238), a true and correct copy of which is attached hereto as Exhibit "13." It is obviously one thing to design an irradiator

that can be economically viable, and entirely another to design an irradiator that can withstand the forces of an airplane crash.

5. Despite his stated lack of expertise evaluating the “potential severity of various incidents that may have impact at the site of the facility,” Mr. Stein nonetheless asserts, with no basis in fact or quantitative analysis, that his irradiator design could prevent nuclear materials from dispersing, even in the event of an aviation accident. Stein Decl. ¶ 7. He claims the numerical model Dr. Hoffmann and I prepared is based on “false premises” because we allegedly did not have a “proper understanding of the design.” Id. ¶¶ 6 and 8. According to Mr. Stein, we failed to consider that the 42” lip of irradiator is to be made of only ¼” stainless steel, with no concrete or structural I-beams, and is “designed to be sacrificial.” Id. ¶ 10(A).

6. Any misunderstanding about the construction of the pool lip is due to the imprecise description provided in Pa’ina’s application, which states that the pool is “constructed of two steel layers with a concrete filled six-inch space between them.” Application at 23. The application notes that “[t]he pool is mainly below ground with a 42” upper lip extending above the facility floor;” it does not indicate explicitly that the construction of the lip differs from that of the rest of the pool, of which it is a part. Id. The drawings to which Mr. Stein refers similarly do not clearly indicate the pool lip is made up of only ¼” stainless steel.

7. In any event, Mr. Stein’s comments about the construction of the pool lip serve only to demonstrate his lack of understanding of the structural defense mechanisms of the system. The lip that Dr. Hoffmann and I modeled with concrete and structural I-beams (based on the description in the application) is much stronger and tougher than the

design Mr. Stein describes. Thus, damage to the lip and resulting damage to the irradiator pool that Pa'ina apparently proposes to build would be considerably more than what was calculated. That Dr. Hoffmann and I modeled using conservative assumptions merely confirms that Mr. Stein's less robust design could certainly not stand up to a similar aircraft impact. Mr. Stein's notation in paragraph 10(A) that "most of the stainless steel inner liners on other irradiators are less than 1/4" thick" misses an important point: Other irradiators are not located immediately adjacent to active runways at an international airport and, thus, do not have to be robust enough to withstand the impact of a passenger jet.

8. Further, Mr. Stein's assertion that he intended the irradiator pool lip "to be sacrificial" is irrelevant to the structural analysis of what would happen to the integrity of the pool in the event of an aviation accident. As stated in my report and prior declaration, damage to the lip, which is attached to the pool, will undermine the structural stability of the pool, creating a situation of potential release of radioactive material. Mr. Stein has not provided quantitative evidence to challenge this conclusion (and, since presumably his irradiator design has not previously been hit by an airplane, has no empirical data on which to rely) and has not even attempted to show that radioactive material could not be released under the phenomena associated with an aviation accident.

9. Mr. Stein's declaration notably fails to address situations in which flying debris – pieces of the airplane that hit the irradiator facility and/or portions of the building itself – breach the source assembly or pool. As discussed in my previous declaration and attached report, it is my opinion, based on over five decades of

experience in the field of structural engineering, that, in such circumstances, radioactive Co-60 could be introduced to the human environment.

10. While Mr. Stein accuses Dr. Hoffmann and me of speculation, he offers no hard proof contradicting the conclusions we derived from our numerical modeling and professional experience. For example, Mr. Stein asserts that the source retaining mechanisms are designed to disconnect and leave the source at the bottom of the pool, yet offers no experiential proof or mathematical modeling to demonstrate the sources could not be pulled out of the pool in the event of an aviation accident. Similarly, rather than offer alternate analysis, he merely asserts that impact to the lip could not transfer significant forces to the pool itself. Mr. Stein also fails to provide any evidence to back up his assertion that damage to the sources from an airplane crash would “not lead to an environmental issue.” Stein Decl. ¶ 10(B).

11. I stand by the opinions offered in my original declaration, which were based on a reliable numerical modeling study using methodologies accepted in the structural engineering field, as well as my experience as a structural engineer and researcher.

\\

\\

\\

\\

\\

\\

\\

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

Executed in San Diego, CA, on this 15<sup>th</sup> day of March, 2007.



---

Dr. Mete A. Sozen  
Licensed Structural Engineer (Illinois)  
Lafayette, Indiana  
550 Stadium Mall Drive  
West Lafayette, IN 47907-2051  
Phone (765) 494-2186  
Fax (765) 494-0395

CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on March 21, 2007, a true and correct copy of the foregoing document was duly served on the following via e-mail and first-class United States mail, postage prepaid:

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

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

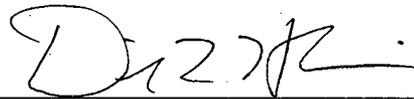
Margaret J. Bupp  
U.S. Nuclear Regulatory Commission  
Office of the General Counsel  
Mail Stop – O-15 D21  
Washington, DC 20555-0001  
E-mail: mjb5@nrc.gov

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

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

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

Dated at Honolulu, Hawai'i, March 21, 2007.



DAVID L. HENKIN  
Attorney for Intervenor  
Concerned Citizens of Honolulu



**EARTHJUSTICE**

*Because the earth needs a good lawyer*

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

**TRANSMITTAL LETTER**

TO: Office of the Secretary VIA FIRST CLASS MAIL  
 U.S. Nuclear Regulatory Commission  
 Washington, DC 20555-0001  
 Attention: Rulemakings and Adjudications Staff

FROM: David L. Henkin

DATE: March 21, 2007

RE: Pa'ina Hawaii, LLC (Materials License Application), Docket No. 30-36974-ML,  
 ASLBP No. 06-843-01-ML

---

ENCLOSURES	DATE	DESCRIPTION
Original and two copies:	3/21/07	NOTICE OF FILING ORIGINAL SUPPLEMENTAL DECLARATION OF METE A. SOZEN, Ph.D. IN SUPPORT OF INTERVENOR CONCERNED CITIZENS OF HONOLULU'S CONTENTIONS RE: DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT TOPICAL REPORT

- |   |  |
|---|--|
| <input type="checkbox"/> For Your Information.      | <input checked="" type="checkbox"/> For Filing.      |
| <input checked="" type="checkbox"/> For Your Files. | <input type="checkbox"/> For Recordation.            |
| <input type="checkbox"/> Per Our Conversation.      | <input type="checkbox"/> For Signature & Return.     |
| <input type="checkbox"/> Per Your Request.          | <input type="checkbox"/> For Necessary Action.       |
| <input type="checkbox"/> For Review and Comments.   | <input type="checkbox"/> For Signature & Forwarding. |
| <input type="checkbox"/> See Remarks Below.         |  |

REMARKS: