

SECY-02

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

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

DECLARATION OF METE A. SOZEN, Ph.D. IN SUPPORT OF  
CONCERNED CITIZENS' AMENDED SAFETY CONTENTIONS #13 AND #14

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

1. As previously stated, I am the Purdue University Kettelhut Distinguished Professor of Structural Engineering, and have a Ph.D. in Civil Engineering. Details regarding my more than 50 years of training and experience in the field of structural engineering were provided in my declaration dated February 8, 2007.

2. In my declarations in support of the contentions Concerned Citizens filed on February 9, 2007, I noted the failures of the draft Environmental Assessment and draft Topical Safety Report to analyze the potential for a high-temperature conflagration associated with an aviation accident to release radioactive Cobalt-60 into the human environment. While the final Topical Safety Report adds a paragraph discussing the potential consequences of a fuel fire following a plane crash, its analysis is flawed and cannot support a finding that Pa'ina's proposed irradiator design is safe.

3. Recent events in the San Francisco Bay area illustrate the catastrophic damage that fire from burning fuel can cause to steel structures, confirming both the need for the Nuclear Regulatory Commission to analyze seriously the consequences of an

airplane striking Pa'ina's proposed irradiator and illustrating the deficiency of the final Topical Safety Report's analysis.

4. On Sunday, April 29, 2007, a crash involving a tanker truck carrying 8,600 gallons of fuel led to the collapse of the steel structure for a highway overpass in Emeryville, California. See Demian Bulwa & Peter Fimrite, "Tanker fire destroys part of MacArthur Maze," S.F. Chronicle, Apr. 29, 2007, a true and correct copy of which is attached hereto as Exhibit "21;" see also Photographs of the tanker fire and resulting damage to the highway overpass which were posed on the S.F. Chronicle website on April 30, 2007, true and correct copies of which are attached hereto as Exhibit "22." An aviation accident at Pa'ina's proposed facility could involve far greater amounts of burning fuel. When fully loaded, the Boeing 767-200ER that Dr. Christophe Hoffmann and I used in our analysis of potential effects of an aviation crash (discussed in my February 8, 2007 declaration) carries 23,980 gallons of fuel, nearly three times the amount of fuel involved in the Emeryville accident. See Boeing, "Technical Characteristics – Boeing 767-200ER," a true and correct copy of which is attached hereto as Exhibit "23."

5. Based on my review of photographs of the incident as well as reports by agency officials, it is abundantly clear the temperatures in the steel structure reached levels that were adequate to cause buckling of the web in the supporting plate girders, even though the fire occurred in an essentially open environment. See "San Francisco Workers Get Free Transit After Partial Freeway Collapse," FoxNews.com, Apr. 30, 2007, a true and correct copy of which is attached hereto as Exhibit "24." In order to cause this type of instability in the overpass's structural steel elements, the fuel fire must have

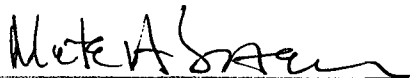
reached temperatures approaching 600 degrees Celsius or higher. The Emeryville incident demonstrates that the final Topical Safety Report is inaccurate when it makes its unsupported claim on page 2-17 that "[j]et fuel burns in air at a temperature of up to 315 °C [599 °F]." The Emeryville fire was nearly double that temperature, and perhaps even hotter.

6. Significantly, the fire in Emeryville occurred in open air. A fire associated with an airplane crash into Pa'ina's proposed irradiator would likely occur in a more confined environment, where much higher temperatures would be expected. The final Topical Safety Report fails to take into account this factor, further rendering its analysis unreliable.

7. The recent incident in Emeryville highlights the importance of assessing the consequences of possible aviation accidents thoroughly, including damage to Pa'ina's proposed irradiator pool and Co-60 sources from burning fuel, to determine the likelihood that radioactive Co-60 may be introduced into the human environment.

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

Executed at Soke, Turkey, on this 1<sup>st</sup> day of June, 2007.



Dr. Mete A. Sozen

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**SUPPLEMENTAL DECLARATION OF METE A. SOZEN, Ph.D. IN SUPPORT  
OF CONCERNED CITIZENS' AMENDED CONTENTIONS #13 AND #14**

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

1. As previously stated, I am the Purdue University Kettelhut Distinguished Professor of Structural Engineering, and have a Ph.D. in Civil Engineering. Details regarding my more than 50 years of training and experience in the field of structural engineering were provided in my declaration dated February 8, 2007.

2. In my June 1, 2007 declaration, I explained why the Final Topical Report's brief discussion of the potential consequences of a fuel fire following a plane crash is flawed and cannot support a finding that Pa'ina Hawaii, LLC's proposed irradiator design is safe. I also noted that a fire associated with an airplane crash into Pa'ina's proposed irradiator would likely occur in a confined environment, where one would expect much higher temperatures to occur than in an open-air fire.

3. In response to my declaration, Pa'ina asserts that jet fuel (Jet A) burns at only 260-315 degrees Celsius. Pa'ina fails to mention that the temperature range it cites is for jet fuel burning in open air and that the maximum burning temperature of Jet A is 980 degrees Celsius. As noted in my previous declaration, because a conflagration at the

proposed Pa'ina irradiator would be enclosed, one would expect temperatures far in excess of those that would occur if the fire took place in open air.

4. Moreover, in the case of a structure fire, one must consider the temperatures of the materials burning within the building. In other words, the jet fuel from the airplane crash will ignite any flammable material in the building, which may augment the temperature of the fire.

5. Neither Pa'ina nor the Final Topical Report has provided a proper analysis of the temperatures that would occur in a fire following an aviation accident involving the proposed irradiator or the likely consequences of such a conflagration. A proper analysis is essential to determine the likelihood that an aviation accident would result in radioactive Cobalt-60 being introduced into the human environment.

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

Executed at Soke, Turkey on this 2<sup>nd</sup> day of July, 2007.



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## CERTIFICATE OF SERVICE

The undersigned hereby certifies that, on July 20, 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:

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Dated at Honolulu, Hawai'i, July 20, 2007.



DAVID L. HENKIN  
Attorneys for Intervenor  
Concerned Citizens of Honolulu



EARTHJUSTICE

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SEATTLE, WASHINGTON    TALLAHASSEE, FLORIDA    WASHINGTON, D.C.

## TRANSMITTAL LETTER

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

FIRST CLASS MAIL

FROM: David L. Henkin

DATE: July 20, 2007

RE: NRC Docket No. 030-36974  
Pa'ina Hawaii, LLC, Irradiator in Honolulu, HI

COPIES	DATE	DESCRIPTION
original and two copies	7/20/07	NOTICE OF FILING ORIGINAL DECLARATION IN SUPPORT OF CONCERNED CITIZENS AMENDED SAFETY CONTENTIONS #13 AND #14 DATED JUNE 1, 2007 AND SUPPLEMENTAL DECLARATION IN SUPPORT OF CONCERNED CITIZENS' AMENDED CONTENTIONS #13 AND #14 DATED JULY 2, 2007; CERTIFICATE OF SERVICE

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