



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005

F A C S I M I L E

**Name:** Michael Kohn  
**Organization:** Pa'ina Hawaii, LLC  
Docket No. 030-36974  
Mail Control No. 470601

**Fax:** 808-834-0578  
**Phone:** 808-834-0496  
**From:** Anthony D. Gaines  
**Date:** January 25, 2006  
**Subject:** Application dated June 23, 2005, for a New License and Geotechnical Report dated September 14, 2005  
**Pages:** 3

Mr. Kohn,

We have performed a review of your application dated June 23, 2005 and Geotechnical Report dated September 14, 2005. Attached are the deficiencies and questions we have for you to answer. **Please respond to this fax within 30 days of receipt.** You may fax us your response in order to expedite this request, as long as the faxed letter contains an original signature. Our fax number is (817) 860-8263. If you have any questions regarding this fax, please call me at (817) 860-8252. When responding to this fax, please include your docket number and mail control number located at the top of this page. Thank you.

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Anthony D. Gaines, Senior Health Physicist  
Nuclear Materials Licensing Branch

1. The Material License Application, page 34, states that the irradiator pool is fabricated off-site and leaked checked by off-site personnel. Please describe any receipt inspection to be performed of the pool on-site, prior to lowering the pool into the excavation, thereby insuring that no damage has occurred during shipment. Please describe other leak checks of the pool that will be performed after final installation to verify integrity of the inner pool liner.
2. The Material License Application, page 41, depicts the overhead trolley rail and hoist. Will the trolley and hoist be designed, installed, tested and maintained in accordance with American National Standard Institute (ANSI) B30.16, "Overhead Hoists (Underhung)? If not, what requirements will be applicable to the trolley and hoist?
3. The Weidig Geotechnical Report, Page 8, recommends that the chamber walls of the pool should be designed to resist a combined equivalent "at-rest" fluid pressure of 47 pounds per cubic foot, and below this level they should be designed to resist combined equivalent "at-rest" and hydrostatic pressure of 78 pounds per cubic foot. What pressure can the walls of the pool resist before failure? Does the bracing between the stainless steel and carbon steel pool liners serve any structural function after the pool is placed in the ground and filled with concrete? If the braces continue to serve a structural function, are there allowances made for corrosion due to dissimilar metals or is cathodic protection provided?
4. Please provide any recommendations or requirements for the irradiator pool foundation or installation methods provided by the designer of the irradiator chamber, Graystar, Inc.
5. It is unclear from the application and geotechnical report what seismic loads, including liquefaction, are applicable to the irradiation chamber and if the loads were considered during the design. The island of Oahu is located in an Uniform Building Code (UBC) seismic zone 2A, which has a specified effective peak ground acceleration of 0.15g. Please provide information of what seismic loads, including liquefaction, are applicable to the irradiation chamber and how they have been evaluated.
6. The Material License Application, page 46, does not show a separation between the building floor slab and the sides of the irradiation pool. Please provide justification of why isolation is not required between the slab and the pool liner during a seismic event, or provide details of the isolation requirements.
7. The Material License Application, page 46, shows the irradiation chamber on top of the "foundation material," without specifying what the material is. Page 34, of the Application states that the Pool is lowered onto a concrete foundation. Please confirm that the "foundation material" is concrete and provide the foundation dimensions along with design and construction requirements for the foundation. Are the tanks anchored to the "foundation material" or do they simply rest on the "foundation material?"

8. What are the design and construction requirements for the concrete used to fill the 6-inch void between the two tanks of the irradiation chamber? Please provide information of how the design strength of the concrete will be verified and how proper concrete placement/consolidation will be achieved?
9. The Geotechnical Report, page 2, states that when the pool is filled with water, the weight will be about 63.25 tons, plus an estimated 21.25 tons accounting for the foundation slab. On page 6 of the report, a statement was made that the soils can easily support the anticipated unit mat pressure of 2,350 pounds per square foot below the planned foundation level. Please provide details of how you arrived at these estimated weights and anticipated mat pressure.
10. In the Geotechnical Report Introduction, the statement was made that the approximate locations of the test borings are depicted on Plate A2, Site Plan. How close to the proposed pool location was boring B-5 and boring B-2? What inspection plans and construction contingencies are in place should a loose layer of gravelly sand (SP) be encountered at a depth of 20 feet, as found in boring B-2 (Standard Penetration Test blow-count of 4)?
11. What pile driving method will be employed or specified for installation of the sheet piles? What requirements will be specified for site de-watering methods employed during construction of the irradiation chamber foundation, to ensure that the soil strength at the proposed foundation depth is not affected by the ground water level?
12. It is not clear on page 52 of your application who will be providing the Radiation Safety Officer with on-the-job training and supervision for the first 3 months of operation discussed in the application. As stated in Appendix G of NUREG-1556, Volume 6, the on-the-job training and supervision must be provided under the supervision of a qualified irradiator operator. Please provide the name and qualifications of the person who will be providing this training and supervision.
13. On page 66 of your application you state, in part, that non-routine operations will be performed by the manufacturer, another authorized person, or the licensee will perform non-routine operations as outlined. You provide a list of procedures that the licensee will perform, the first three of which are for source repositioning, source loading, and source unloading, but you do not provide the procedures. To be authorized non-routine operations such as source repositioning, source loading, and source unloading you must provide the information listed in Appendix I of NUREG-1556, Volume 6, which includes, but is not limited to, naming the personnel who would perform these operations and the special training that they have had to be able to perform these operations. Please provide the information in Appendix I including the names and training of the personnel, or a statement that the you will not perform non-routine operations.

14. As part of the application and appropriate for the irradiator type, you were to provide an "outline" that specifically states the radiation safety aspects of each of the written emergency procedures, listed in 10 CFR 36.53(b). A review of your application indicates that you did not provide "outlines" for the procedures in 10 CFR 36.53(b)(5) and (9), which are respectively, emergency procedures for a low or high water level indicator, an abnormal water loss, or leakage from the source storage pool; and emergency procedures for natural phenomena, including an earthquake, a tornado, flooding, or other phenomena as appropriate for the geographical location of your facility. Please provide these emergency procedure "outlines".
  
15. For a pool type irradiator such as yours the methods detailed on page 8-52 of NUREG-1556, Volume 6, for leak testing are either by analysis of a sample of pool water or by continuous monitoring of the pool water. In your application you describe the method and means that you will use to continuously monitor the pool water for contamination, and this method is appropriate and sufficient to act as your means for leak testing. However, on page 71 of your application you provide a procedure for performing a leak test that includes, in part, smearing the inside of the source plenum every 6 months and on page 68 this is stated as a method for the 6 month leak test. It is not clear from the procedure and application that this method would be able to detect a leaking source. For example, on page 38 of the application it states that prior to raising the plenum for any reason the plenum is filled with water by venting the helium supply tube. Therefore, it would appear that when the plenum was raised for leak testing that the water that would re-enter the plenum would wash away the contamination. If you would like to use this method as your primary means of leak testing, please provide detailed information that describes why and how this method would be appropriate to detect a leaking source as opposed to continuously monitoring the pool water. If you no longer wish to use this method, ask that this method be deleted from your application and state that you will rely on your continuous monitoring of the pool water as your means of leak testing.