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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED
USNRC

May 20 2008 (9:00am)

In the Matter of)

PA'INA HAWAII, LLC)

Material License Application)

) Docket No. 30-36974

) ASLBP No. 06-843-01

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

NRC STAFF'S RESPONSE TO BOARD'S MAY 7, 2008 ORDER

INTRODUCTION

On May 7, 2008, the Board issued an order presenting questions to be addressed by the NRC Staff in addition to the Staff's response to the Intervenor's Amended Safety Contention 7.¹

The Staff's responses to the Board's questions follow.

STAFF'S RESPONSES

(1) Must the license application for an irradiator include consideration of the dose received on site by emergency workers following an accident at or near the site?

- (a) If not, what is the regulatory basis for not considering such doses?
- (b) If so, what is the regulatory basis for considering such doses?

The NRC sets dose limits for occupational exposure at irradiators and dose limits for the public. See 10 C.F.R. §§ 20.1201 ("Occupational dose limits for adults"); 10 C.F.R. § 20.1301 ("Dose limits for individual members of the public"). The NRC also prescribes dose limits at specified distances from an irradiator's shielding; in the case of an underwater irradiator, the doses are measured at a distance of 30 centimeters over the edge of the irradiator pool. 10 C.F.R. § 36.25(b). A license application for an irradiator must provide sufficient information for the NRC Staff to determine whether the applicant can meet these criteria. Once a license is granted, the Staff verifies the licensee's compliance with all applicable dose limits through the NRC's inspection process. 10 C.F.R. § 30.52.

¹ Order (Directing NRC Staff to Answer Questions) (May 7, 2008) (unpublished).

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With respect to accident scenarios, the NRC does not require an applicant for an irradiator license to specifically address doses that may potentially be received by emergency workers following an accident. Nor, for that matter, does the NRC distinguish between emergency workers and any other member of the public for purposes of determining doses. The NRC's regulations pertaining to irradiators establish dose limits for normal operations and require numerous safety features intended to minimize the likelihood and potential consequences of an accident. See 10 C.F.R. §§ 20.1201, 20.1301; 10 C.F.R. Part 36 generally. In the event of an accident, the NRC's regulatory approach is to ensure that doses to emergency workers, other members of the public, and facility employees are kept as low as reasonably achievable.

Under NRC regulations, applicants for certain types of materials licenses must either perform a detailed evaluation of the maximum dose to a person offsite due to a release, 10 C.F.R. § 30.32(i)(1)(i), or prepare an emergency plan for responding to a release. 10 C.F.R. § 30.32(i)(1)(ii). The sealed sources at an underwater irradiator, however, are not the types of materials to which these requirements apply. Rather, the more stringent requirements apply only to applications to possess radioactive materials "*in unsealed form, on foils or plated sources, or sealed in glass* in excess of the quantities in § 30.72." (Emphases added.) Because an application for an underwater irradiator license is an application to possess sources in sealed form, the requirements of 10 C.F.R. § 30.32(i)(1) do not apply. Instead, the applicant must comply with 10 C.F.R. § 30.32(g), which requires the applicant to identify the source by manufacturer and model number, but does not require the applicant to perform a dose assessment or, alternatively, to prepare an emergency plan.

This does not mean that NRC regulations fail to take into account potential radiation exposures following an accident at a facility using sealed sources. As noted, 10 C.F.R. § 30.32(g) requires that an applicant identify the source by manufacturer and model number.

This requirement, together with the requirements at 10 C.F.R. § 36.21, "Performance criteria for sealed sources" and 10 C.F.R. § 32.210, "Registration of product information," ensures that sources are robustly designed.² In addition to robust design requirements, numerous other protective measures are in place. For example, the requirement in 10 C.F.R. § 36.29(b) for radiation monitors with audible and visible alarms would alert any person on site to abnormal radiation levels. Further, an application for an irradiator license must provide for emergency procedures to be followed in the case of an emergency or abnormal event. 10 C.F.R. § 36.53. Those procedures include reporting such events to the NRC. See 10 C.F.R. § 20.2202 ("Notification of incidents"), 10 C.F.R. § 20.2203 ("Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the constraints or limits"), 10 C.F.R. § 30.50 ("Report requirements"), 10 C.F.R. § 36.83 ("Reports"). In an accident scenario so severe that it prevented any contact with the NRC and damaged the radiation monitor alarms, there are other protections in place that would likely protect emergency workers from exposure to high doses. Local, state, and other federal entities interact with irradiator facilities, such that they are aware of the radioactive materials present at the facility. For example, local fire departments are likely to require that an irradiator have an emergency plan, as it would with any industrial facility. Presumably, the emergency plan will include maps of the facility indicating where the radioactive materials are located.³

(2) Is there any consideration in the Staff's review of the applications for an irradiator of the dose received on site by emergency workers following an accident at or near the site?

² See *Licenses and Radiation Safety Requirements for Irradiators*, 58 Fed. Reg. 7715, 7718 (February 9, 1993) (explaining that "the § 32.210 review is very extensive and considers many factors that could affect the integrity of the sealed sources, including their manufacture and conditions of use, on a case-by-case basis").

³ Subpart J of 10 C.F.R. Part 20, "Precautionary Procedures," requires caution signs and establishes posting requirements that would apply to an irradiator facility. 10 C.F.R. §§ 20.1901, 20.1902. These requirements may also help protect emergency workers, depending on the severity of any accident.

- (a) If not, what is the regulatory basis for not considering such doses?
- (b) If so, what is the regulatory basis for considering such doses?
- (c) Can the Staff grant a license for an irradiator without consideration of the dose received by emergency workers following an accident at or near the site?

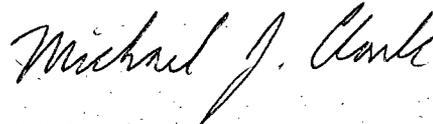
As stated above, the NRC does not distinguish between an emergency worker and any other member of the public, so the Staff does not specifically consider doses to emergency workers on site after an accident. Therefore, the Staff can grant an irradiator license without any specific consideration of the doses to emergency workers. However, in approving the irradiator application, the Staff reviews the design of the irradiator and verifies that it is in compliance with the applicable regulations, which as a whole prevent significant doses to any person, including emergency workers. 10 C.F.R. Parts 20, 30 and 36. For the reasons stated in the Staff's response to question 1, emergency workers are protected from abnormal doses by the design requirements, operating procedures and emergency procedures in place at irradiators.

- (3) Briefly describe the regulatory regime by which the Staff would consider and regulate irradiator employee and emergency worker doses following an accident at or near the site.

As stated in the response to question 1, the sealed sources in an underwater irradiator are not the types of materials for which the NRC requires either an evaluation of doses after an accident or an emergency plan. Compare 10 C.F.R. § 30.32(g) (sealed sources) with 10 C.F.R. § 30.32(i)(1) (unsealed sources). Accordingly, the NRC does not establish dose limits for irradiator employees or emergency workers following an accident at or near an irradiator site. This does not mean, however, that the NRC has given no consideration to radiation exposures following an accident. The regulatory regime for irradiators is based on the prevention of harmful doses to any person, including employees and emergency workers, by requiring irradiators to be designed robustly, and in such a way that even in the event of a severe accident, the source is protected. See, e.g., 10 C.F.R. § 36.33 ("Irradiator pools"), 10 C.F.R.

§ 36.39 ("Design requirements"). Irradiators also must have alarms to alert workers of high doses, and workers must wear dosimeters in the area around the irradiator pool. 10 C.F.R. §§ 36.29(b), 36.55(a). In addition, the applicant must have emergency procedures in place before the irradiator can be licensed, and those procedures are designed to protect both the irradiator workers and the public. 10 C.F.R. § 36.53(b). The Staff's consideration of irradiator employee and emergency worker doses from any exposure is considered in the initial licensing of the irradiator by verifying that the application complies with all applicable regulations. The Staff would further note that the NRC's regulation represents only part of the protection afforded irradiator employees and other persons. The regulatory regimes established by numerous other federal, state and local government agencies are also relevant to limiting radiation exposures.

Respectfully submitted,

A handwritten signature in cursive script that reads "Michael J. Clark".

Michael J. Clark
Counsel for the NRC Staff

Dated at Rockville, Maryland
this 19th day of May, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S RESPONSE TO BOARD'S MAY 7, 2008 ORDER" in the above-captioned proceedings have been Served on the following by deposit in the United States mail; through deposit in the Nuclear Regulatory Commission's internal system as indicated by an asterisk (*), and by electronic mail as indicated by a double asterisk (**) on this 19th day of May, 2008.

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