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August 28, 1996

The Applied Radiant Energy Corporation (ARECO)
ATTN: Dr. James J. Myron,
Radiation Safety Officer
Venture Drive/Forest Commercial Center
P. O. Box 289
Forest, Virginia 24551

SUBJECT: REQUEST FOR MORE INFORMATION ABOUT A MATERIALS LICENSE
RENEWAL APPLICATION (REFERENCE: 252009; 030-33087)

Dear Dr. Myron:

This refers to your application dated January 21, 1988, for renewal of License No. 45-11496-01. As you are aware, NRC has held your application in a "deemed timely filed" status awaiting the removal of the WESF source capsules from your pool irradiator. With the pending removal of these capsules, I plan to re-activate your application for renewal.

During the intervening time frame (January 1988 to the present), changes have occurred which will affect the renewal of your license. These include:

1. NRC has issued 10 CFR 36 "LICENSES AND RADIATION SAFETY REQUIREMENTS FOR IRRADIATORS." (Copy enclosed)
2. NRC has revised its policies and procedures for licensing commercial irradiators (See enclosures 2 and 3).
3. Considerable correspondence has occurred between ARECO and NRC about the renewal application and about the removal of the WESF capsules from your pool irradiator.
4. Financial assurance information for decommissioning must be submitted. (See 10 CFR 30.35). I will send a separate letter regarding additional information needed to complete this matter.

Thus, to ensure an accurate license, please revise your application to delete all outdated information and provide current information for each of the items addressed in enclosure 2.

Enclosure 2 contains a summary of the requirements from 10 CFR 36 which I believe may be related to operation of the ARECO pool irradiator facility at Lakeside Drive, Lynchburg, Virginia.

Accordingly, please review enclosures 2 and 3 and 10 CFR 36 for applicability and submit complete information about your intended operations. Since the information that you provide will be the basis for your license, please be sure that it is complete and accurate. Also, refer to Mail Control No. 252009 on your revised application.

ARECO

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If have questions about this letter or your license, please call me at 404/331-5617.

Sincerely,

EW
Earl G. Wright
Senior License Reviewer
Division Nuclear Materials Safety

Enclosures:

1. 10 CFR 36
2. Summary of Part 36 requirements
for pool irradiators
3. Draft Regulatory Guide DG-0003

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**SUMMARY OF 10 CFR 36 REQUIREMENTS FOR POOL IRRADIATORS
[SEE ALSO 10 CFR 36 AND DG 0003]**

1. The name of manufacturer, model No. and sealed source registration number for each different type of sealed source to be possessed under your license. Do you still possess BNL standard source strips?
2. A description of any flammable materials that you intend to irradiate. Please specify:
 - A. The name of each flammable material with flash point less than 140 degrees fahrenheit (SEE p 8, DG-0003 dated 1/94)
 - B. The quantity of material to be irradiated at any one time
 - C. The maximum quantity of material that will be in your facilities and the pool irradiator at any one time
3. A description of your organizational structure for managing the irradiator. Specify the duties, responsibilities and authority of the Radiation Safety Officer and any other management personnel who have important radiation safety responsibilities. In particular, your application should describe who has the authority to stop unsafe operations.
4. A description of the training you will provide to irradiator personnel
 - A. Operator training should include such factors as:
 - (1) Classroom training;
 - (2) On-the-job or simulator training;
 - (3) Safety reviews;
 - (4) Means employed to test each operator's understanding of the Commission's regulations and licensing requirements and the irradiator operating and emergency procedures, and
 - (5) Minimum training and experience of personnel who may provide training.
 - B. Training for Other Individuals Who Must Respond to Alarms

A description of the training and testing to be given to individuals who must be prepared to respond to alarms as described in 10 CFR 36.51(g). You should identify who (by category of worker) will be given the training.
5. General Description of the Facility and Site
 - A. Provide a sketch of the layout of the facility showing locations of safety-related equipment and features mentioned in 10 CFR 36. In addition, you should provide a sketch of property adjacent to the facility and describe its use.

Tell whether the facility is in a seismic area as defined in 10 CFR 36.2. (See enclosure 3)

B. Access Control

A description of the access control system and how it works with respect to the requirements of 10 CFR 36.23.

C. Fire Protection

A description of the type and location of the heat and smoke detectors to be used to detect a fire in the building containing the pool irradiator and the sample preparation area.

D. Radiation Monitors

A description of the location and type of monitors used to meet the requirements of 10 CFR 36.29 and 36.59(b). The location and types of alarms should also be described. The alarm set-points or the methods for establishing the alarm set-points should be discussed.

E. Irradiator Pool

A description of your pool lining. If a stainless steel liner is not used, describe why the pool has a low likelihood of substantial leakage; also describe how decontamination could be accomplished if necessary. If the pool has outlets more than 0.5 meters below the surface, describe the means of preventing inadequate loss of excessive pool water. Describe the means to replenish pool water. Describe the high and low water level indicator. Describe the purification system for the pool; explain why the purification is considered capable of maintaining pool water conductivity less than 20 microsiemens per centimeter. Describe the barrier used during normal operation to prevent personnel from falling into the pool. Describe how long-handled tools or poles will avoid doses at handling areas.

F. Source Rack Protection

A description of the source rack protection to be provided. The source rack protection should be adequate to prevent products and product carriers from hitting the source rack, but solid shrouds are not required or expected.

G. RADIATION SAFETY PROGRAM

(1) provide an outline of your operating and emergency procedures to include such factors as:

(a) Access control

- (b) Use of personnel dosimeters. The description should include what categories of personnel must wear dosimeters, where in the facility they must be worn, and how the requirements of 10 CFR 36.55, "Personnel monitoring," will be met. Use of personnel dosimeters should begin prior to opening the shipping casks containing sources.
 - (c) Surveying the area around the pool irradiator. The description should include how the surveys required by 10 CFR 36.57(a) will be done, including the types of instruments to be used.
 - (d) Monitoring pool water for contamination while the water is in the pool and before release of pool water to unrestricted areas. The description should include the types of instruments to be used, the estimated sensitivities, and how the requirements of 10 CFR 36.57(d), 36.57(e), and 36.59(b) will be met.
 - (e) Leak testing of sources. The description should show how the testing will be done. For dry-source-storage testing, the wipe should be on the nearest accessible surface, to the source, not a wipe of the source itself. The values of 200 becquerels (0.005 microcuries) applies to each source individually, and is an action level that means that the contamination should be investigated, not that there necessarily is a leaking source. In general, the sensitivity required can be obtained with a thin window G-M probe; iodine detectors are generally not necessary.
- (2) Provide an outline of your Emergency or Abnormal Event Procedures to include:
- (a) Sources stuck in the unshielded position.
 - (b) Personnel overexposures.
 - (c) A radiation alarm from the product exit portal monitor or pool monitor.
 - (d) Detection of leaking sources, pool contamination, or alarm caused by contamination of pool water. The description should include who will be notified and how the requirements of 10 CFR 36.59(c) will be met.
 - (e) A low or high water level indicator, an abnormal water loss, or leakage from the source storage pool.
 - (f) A prolonged loss of electrical power.

- (g) A fire alarm or explosion in the radiation room.
- (h) An alarm indicating unauthorized entry into the radiation room, area around pool, or another alarmed area.
- (i) Natural phenomena, including an earthquake, a tornado, flooding, or other phenomena as appropriate for the geographical location of the facility.

H. Inspection and Maintenance (Applicable Regulations § 36.13(h), § 36.53(a)(6), and § 36.61)

A description of your inspection and maintenance checks required by 10 CFR 36.61, including the frequency of the checks. The required checks are:

- (1) Operability of each aspect of the access control system required by § 36.23.
- (2) Operability of the radiation monitor for radioactive contamination in pool water required by § 36.59(b) using a radiation check source, if applicable.
- (3) Operability of the over-pool radiation monitor at underwater irradiators as required by § 36.29(b).
- (4) Leak-tightness of systems through which pool water circulates (visual inspection).
- (5) Operability of the heat and smoke detectors and extinguisher system required by § 36.27 (but without turning extinguishers on).
- (6) Operability of the means of pool water replenishment required by § 36.33(c).
- (7) Operability of the indicators of high and low pool water levels required by § 36.33(d).
- (8) Operability of the intrusion alarm required by § 36.23(i), if applicable.
- (9) Functioning and wear of the system, mechanisms, and cables used to raise and lower sources.
- (10) Condition of the barrier to prevent products from hitting the sources or source mechanism as required by § 36.35.
- (11) Amount of water added to the pool to determine if the pool is leaking.
- (12) Electrical wiring on required safety systems for radiation damage.
- (13) Pool water conductivity measurements and analysis as required by § 36.63(b).

I. Detection of Leaking Sources

- (1) For pool irradiators, describe the method and frequency for checking the pool water for contamination, including: (1) instruments to be used; (2) methods of performing the analysis; and (3) the pertinent experience of the individual who analyzes the samples.

J. Radiation Detection Instrument Calibrations

K. Pool Water Purity

Describe the equipment to maintain pool water purity, the frequency of operation of the equipment, the criteria to be used for acceptable purity (20 microsiemens per centimeter or equivalent). If conductivity meters are to be used, describe how they will be calibrated.

L. WASTE MANAGEMENT

The general requirements for disposal of licensed radioactive material, are contained in 10 CFR 20.2001 through 20.2007. Because of the nature of the licensed material contained in irradiators, your only option for disposal is to transfer the material to an authorized recipient as specified in 10 CFR 20.2001(a)(1). You should state, "Sealed sources will be shipped only to authorized recipients, transfer will be done as soon as practical after there is no further use for the source, and transport will be done in accordance with 10 CFR Part 71."

Authorized recipients are the original supplier of the irradiator sealed sources, a commercial firm licensed by the NRC or by an Agreement State to accept radioactive waste from other persons, or another specific licensee authorized to possess the licensed material. No one else is authorized to dispose of your licensed material.

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