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The Applied Radiant Energy Corporation

Gammapar

January 30, 1997

Mr. Earl Wright
Senior License Reviewer
Division of Nuclear Materials Safety
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W., Suite 2900
Atlanta, GA 30323-0199

Dear Mr. Wright:

This communication is to advise you of a proposed change in our operations that would involve a small change in the temperature of the water contained in our irradiator pool.

Our irradiator is used almost exclusively to manufacture acrylic wood flooring by polymerizing a monomer that is impregnated into the flooring pieces. The rate of this polymerization reaction is dependent on several parameters including the temperature of the pool water in which the wood-containing canisters are positioned during irradiation.

When ARECO possessed approximately 1 million curies of Cesium-137, enough energy was liberated to the pool water to maintain its temperature between 110°F and 120°F. After a time a chilling unit was installed in the pool water circulating line to bring the temperature in the 100°F to 110°F range, a condition that helped afford satisfactory production rates for the acrylic wood flooring. Since the removal of the Cesium-137 in August and September of 1996, our radioactive source material consists of approximately 10,000 curies of Cobalt-60 and the temperature of the pool water has dropped approximately 30°F causing an unacceptable increase in the polymerization time. This is especially true during the winter months when cold outside temperatures eventually cause still lower pool temperatures.

For this reason, we wish to install an electric heating unit in the water circulating loop to raise the pool water temperature to 100°F-110°F. The portion of the heater through which water passes will be of stainless steel construction and the entire unit will be positioned outside the pool so that water chemistry should not be affected. The rate at which this heater can raise the temperature of the pool at the water flow rates and heater wattage to be employed will necessarily be slow. This fact, combined with daily pool water temperature checks, will ensure that overly warm temperatures with attendant increased evaporation and electrochemical reaction rates will be avoided. Pool temperatures will be no higher than were extant when the Cesium-137 was present.

A siphon breaker will be provided so that pool water levels will not inadvertently be lowered by any mis-operations of the heating system.

ARECO thought it would be appropriate that we appraise you of our intentions concerning this matter despite the fact it is our conclusion that introduction of such modifications will not significantly influence radiation levels, water chemistry or the integrity of the radiation sources residing in the pool. Therefore, we request you regard this addition as a non-radiation safety related measure not requiring any modification of our Materials License. As we plan to install the heater as soon as possible, we respectfully seek a prompt reply from your office.

If you have any questions regarding this matter, please call me at 804/385-5300.

Yours truly,

THE APPLIED RADIANT ENERGY CORPORATION

James J. Myron Ph.D.

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Vice President
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