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Manpower Education,  
 Research and Training  
 Division

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 50-124*

August 10, 1987

Mr. Charles Hosey  
 Nuclear Regulatory Commission  
 Region II  
 Suite 2900  
 101 Marietta St.  
 Atlanta, GA 30323

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Subject: CONFIRMATORY RADIOLOGICAL SURVEY OF THE ARGONAUT REACTOR FACILITY,  
 VIRGINIA POLYTECHNIC INSTITUTE, BLACKSBURG, VIRGINIA

Dear Mr. Hosey:

During the period of July 27 - 31, 1987, Oak Ridge Associated Universities (ORAU) performed a confirmatory radiological survey of the Argonaut Reactor Facility, Virginia Polytechnic Institute (VPI), Blacksburg, Virginia. The purpose of the survey was to confirm that the site had been decontaminated to guidelines established by the Nuclear Regulatory Commission (NRC) for release for unrestricted use. The survey was conducted in accordance with a proposed survey plan submitted to NRC Region II for review and concurrence. The areas surveyed included rooms 6, 6A, 8, 8A, 10, and 108.

The survey identified one small area of contamination exceeding the beta-gamma surface contamination guidelines. The area was remediated, resurveyed, and found to be within the beta-gamma surface contamination guidelines (15,000 dpm/100 cm<sup>2</sup> maximum and 5,000 dpm/100 cm<sup>2</sup> average). All data generated during the survey support the licensee's final close-out survey report, that the residual contamination levels are within the guidelines for release for unrestricted use.

Based on these results, it is ORAU's opinion that the licensee's report accurately and adequately represents the radiological conditions of the VPI Reactor Facility, and that the facility complies with NRC guidelines for release for unrestricted use.

ORAU was also asked to address the issue of disposal of materials related to the decommissioning effort at the VPI landfill. Concrete shield material and soil excavated from beneath the reactor floor were surveyed for direct gamma exposure rate levels at one meter, and released to the landfill. During our survey, we found an area within the concrete blocks with elevated gamma radiation levels. The exposure rate measurements at one meter could not be performed due to inaccessibility. VPI agreed to remove the blocks and perform additional surveys; then leave the blocks in a separated array to allow ORAU to survey the area at a later date. Additionally, a soil sample collected from the area had detectable radionuclide concentrations as follows: Co-60 (10.6 ± 0.7 pCi/g),

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Mr. Hosey

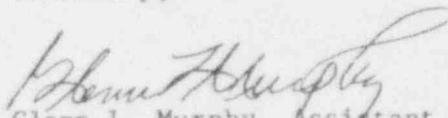
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Co-57 ( $11.2 \pm 0.4$  pCi/g), Eu-152 ( $30.7 \pm 1.6$  pCi/g), and Eu-154 ( $23.3 \pm 0.8$  pCi/g). The NRC has released other sites with Co-60 soil concentrations ranging from 8 to 10 pCi/g, based on a direct exposure pathway of 10  $\mu$ R/h. ORAU recommends that further radiological characterization of the landfill be conducted at a later date.

If you have any questions or comments, please give me a call at (FTS) 626-0048 or commercial (615) 576-0048.

Sincerely,



Glenn L. Murphy, Assistant Manager  
Radiological Site Assessment Program

GLM/sjf

cc: Mr. B. Revson, NRC/Region II  
✓ Mr. D. Sly, NRC/I&E