COLLEGE OF ENGINEERING

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, Virginia 24061

NUCLEAR REACTOR LABORATORY

November 3, 1982

Dr. Cecil O. Thomas, Chief
Standardization & Special Projects Branch
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Docket No. 50-124, License No. R-62

Dear Dr. Thomas:

This letter is being written to request a change to our technical specifications. Section 5.0 page 3 of technical specifications deals with the secondary coolant system. Presently, we utilize the municipal water supply for removal of heat from the reactor. The Reactor staff proposes the following:

1. Removal of the existing heat exchanger supplied by city water and replacement with a new heat exchanger

2. Connection of the primary system to a new secondary heat removal system consisting of a cooling tower and a new heat exchanger

Obviously, removal of the city water heat removal system will greatly reduce the chance of contaminating the city water supply. City water will still be used for evaporation makeup and for the cooling of primary water entering the deionizer; however the flow through the deionizer loop is only 1 GPM.

Another item in technical specifications that needs to be addressed is section 4.3 on page 3. Section 4.3 states that the entire primary coolant system (with the exception of the core tanks and connecting pipes) shall be located in the process pit. However, due to its size, it will be impossible to locate the heat exchanger in the process pit. The reactor staff proposes to employ a concrete "trough", or spill way, to direct potential leakage from the exposed primary pipe run to the process pit. Additionally, provisions will be made to allow for extra shielding to these exposed pipes should N-16 radiation pose a problem now or during the proposed future power upgrade.

An addition is also needed to Table I - Safety System Functions. This will entail the addition of a loss of secondary flow condition. You will note that a bypass provision has been made for operation below 1 kilowatt. The reason for this is that heat-up of the system is not observed until this power level is reached since the piping itself is an adequate heat sink.

Lastly, the potential for contamination of the proposed new secondary system is practically nonexistent. Due to the height of the cooling tower, the static head alone is equivalent to approximately 50 PSI. Since the VPI reactor operates at atmospheric pressure, any heat exchanger failure will result in leakage being contained in the reactor room. The reactor staff has not identified any safety problems associated with the proposed modifications.

You will note that earlier in this correspondence a reference was made to a proposed power upgrade. This was originally planned several years ago but funding problems were encountered and the upgrade was delayed. Recently, however, funds have become available to complete the upgrade. This technical specification change will also serve as a first step in attaining this goal. In the future you will receive a proposal for temporarily raising the maximun power level of the VPI reactor to 500 kWt for flow, thermal, physics, and shielding tests. Nevertheless, changing over to this new secondary system should greatly improve the safety of the VPI reactor.

The VPI reactor staff wishes to extend their thanks for your prompt attention to this matter.

Sincerely,

Peter D. Holian

Peter D. Holian
Reactor Supervisor

PDH/smw

cc: T. F. Parkinson, Director, Nuclear Reactor Laboratory
VPI Reactor Safety Committee
VPI Reactor Staff

enclosures: existing technical specifications
proposed technical specifications changes
old and proposed piping diagrams
heat exchanger specifications
diagram of instrument panel addition