UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Mr. Albert G. Daniels
P. O. Box 415
Winnsboro, South Carolina 21980

Dear Mr. Daniels:

Your letter dated December 19, 1979 to Chairman Ahearne has been referred to this office for reply. In your letter you discuss the configuration of the surge line that connects the pressurizer to the reactor coolant system in a reactor designed by Westinghouse, and the effect of this configuration on the course of an accident of the type that occurred at Unit 2 of the Three Mile Island Nuclear Station (TMI-2). You also asked some specific questions. The discussion in your letter is relevant and is basically correct. Presented below are responses to your specific questions.

As your letter points out during the accident at TMI-2 a situation developed where there was water in the pressurizer while the water level in the reactor was below the top of the core. As you can see from the enclosed drawing (Enclosure) the arrangement of the TMI-2 reactor coolant system can result in a loop seal being formed between the pressurizer and the reactor vessel. The arrangement at TMI-2 is typical of other Babcock and Wilcox reactors which are in operation. Changing the pressurizer surge line arrangement and the elevation of the pressurizer would require major modification to the plant.

At the Virgil C. Summer Nuclear Station, the plant you discussed in your letter, the pressurizer surge line always increases in elevation as it runs from the hot leg to the pressurizer. While the exact geometry of the pressurizer surge line varies from one Westinghouse reactor to another, the surge lines generally increase in elevation in this piping run.

The top of the core in Babcock and Wilcox designed reactor is well below the reactor vessel nozzles. This is standard practice for all of the nuclear manufacturers in the United States. At TMI-2, the top of the uranium dioxide fuel is about five feet below the top of the hot leg nozzles.

You will probably be interested to know that as a result of NRC's study of the accident at TMI-2, several steps have been taken to preclude a similar accident. One of the first steps was to instruct power plant operators to not only monitor pressurizer level indication, but also to monitor reactor coolant system pressure and the amount of subcooling of the coolant in the reactor vessel and hot leg piping. Another step that the NRC has taken is to require that instruments that measure water level in the reactor vessel be developed and implemented in pressurized water reactors by January 1, 1981. Such an instrument would provide information on the level of water in the reactor vessel during postulated accidents where

the pressurizer was emptied or where steam and/or noncondensable gases accumulated in the upper head of the reactor vessel.

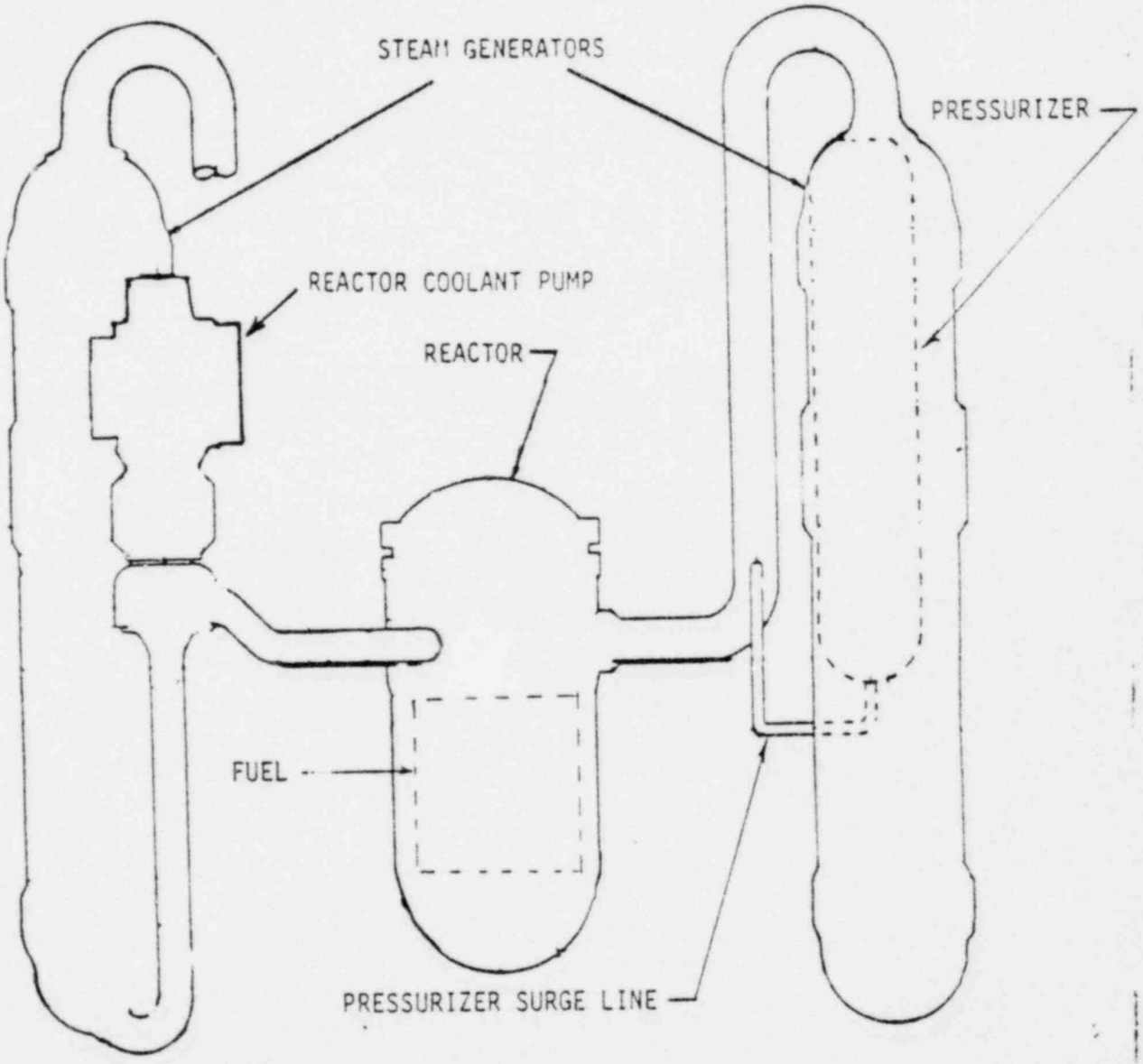
We trust that you find this information responsive to your request.

Sincerely,

Harold Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosure:
Figure of Babcock and Wilcox
Reactor Coolant System



TMI-2 REACTOR COOLANT SYSTEM