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

SEP 20 1979

The Honorable Robert S. Walker  
United States House of Representatives  
Washington, D. C. 20515

Dear Congressman Walker:

We apologize for the delay in responding to your letters of May 10, 1979 and July 18, 1979 regarding an inquiry received from Mr. Robert Bressler concerning dumping of Three Mile Island radioactive water into the Susquehanna River. Our specific response to each question is enclosed.

If we can be of any further assistance, please let us know.

Sincerely,

Original signed by R. G. Smith

Lee V. Gossick  
Executive Director  
for Operations

Enclosure:  
Responses to Questions

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RESPONSE TO LETTERS FROM CONGRESSMAN WALKER  
CONCERNING DUMPING OF TMI RADIOACTIVE WATER INTO THE SUSQUEHANNA RIVER

QUESTION #1

Why must the water be removed at all?

RESPONSE

As a result of the March 28, 1979 accident at the Three Mile Island (TMI) Unit 2 facility, a significant amount of radioactively contaminated water has been generated. Currently this water is contained in tanks in the Unit 2 auxiliary building, in the lower level of the reactor building, and in the reactor coolant system. Although these buildings are of high integrity such that the contaminated water can be positively controlled for an indefinite period, there are several reasons why decontamination of the water is essential.

The waste water in the auxiliary building continues to be a source of release of gaseous radioactivity to the auxiliary building and subsequently to the environment because of out-gassing. The waste water is also a direct source of exposure to operations and construction personnel who need access to the auxiliary building. The continued safe shutdown of TMI Unit 2 depends upon the operability of original plant equipment located in the auxiliary building and the use of additional equipment being installed in the course of completing modifications in progress. The level of personnel exposure associated with required surveillance and maintenance of this equipment is adversely affected by radiation levels associated with stored liquid. The surveillance and maintenance of this equipment and personnel exposures associated with these actions, which are necessary to assure maximum reliability, are adversely affected by radiation levels associated with stored liquid. In addition, available capacity of the tanks in the auxiliary building is necessary to protect the operability of reactor building components and systems which maintain continued safe shutdown of the facility. Eventual processing of water in the reactor building is also considered necessary in order to immobilize the entrained radioactivity into a manageable form and to preclude any possible leakage into the environment.

QUESTION #2

Is fission still occurring in the water containing radioactive waste and is the amount of waste water, therefore, continuing to increase? If the amount of water is not increasing, can the level of the waste water be considered stable?

RESPONSE

There is no evidence that fission has ever taken place in the contaminated water from TMI Unit 2. Fissionable material is located in the reactor core fuel assemblies and has not been detected in system water. Levels of waste are considered stable in the reactor building but not in the auxiliary building. Approximately 1000 gallons of water per day, due to system inleakage, is being collected in the auxiliary building sump in Unit 2. This water is being pumped to and stored in tanks in the auxiliary building until it can be processed.

QUESTION #3

What other options have been considered? Specifically, has the option of storing the waste water in stainless steel tanks or pumping it into the containment facility at Three Mile Island Number 1 been considered?

RESPONSE

There are two basic alternatives for handling the TMI Unit 2 liquid radioactive waste. One is continued storage of liquid in TMI Unit 2 auxiliary building tanks and the reactor building and the other is processing to clean the water for ultimate disposition. We did not consider the shipment of contaminated waste directly off-site to be an alternative because the staff does not consider packaged liquid wastes to be an acceptable form for shipment due to the potential hazard of spillage following a transportation accident. In addition, the low level waste burial grounds will not accept free liquid wastes for burial.

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RESPONSE (Continued)

We do not consider pumping Unit 2 waste water into the Unit 1 containment a potential alternative for the disposition of that water. This would only serve to contaminate the Unit 1 reactor building and would not provide a greater assurance than already exists, that the radioactive material can be kept isolated from the environment.

Of the two alternatives considered, the NRC staff believes that processing radioactively contaminated water now contained in the Unit 2 auxiliary and reactor buildings is necessary for the reasons identified in our response to question number 1.

QUESTION #4

How do NRC experts know that they are conducting tests for the right isotopes? Are all radioactive isotopes being tested for and especially are tests being conducted for plutonium contamination?

RESPONSE

State of the art gamma isotopic analyses for all nuclides has been and is continuing to be used prior to any release of liquids from TMI. Gross beta analysis is also being performed before any release is made to the Susquehanna. Plutonium contamination has not been detected from sample analyses performed at TMI.

QUESTION #5

What isotopes are being taken out of the water and what procedure is being employed to remove them?

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RESPONSE

The principal isotopes which will be removed by the processing of water generated from the March 28, 1979 accident include Cs-137, Cs-136, Cs-134, I-131, Ba-140, Sr-89 and Sr-90. The system designed to process water contained in the auxiliary building utilizes ion exchange resin and filters. A system for processing water in the reactor building has not yet been designed.

QUESTION #6

What kind of continuing monitoring device or procedures will be installed to ensure that any water put into the Susquehanna is safe?

RESPONSE

Current operating and administrative procedures specify conditions which must be met prior to any liquid discharge from TMI. Specifically, these procedures require sample collection and analyses and NRC notification prior to discharge, monitoring and isolation capability during discharge and periodic environmental sample collection and analysis as a post discharge confirmation of safe releases.