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Writer's Direct Dial Number

April 30, 1980  
TLL 172

Director of Nuclear Reactor Regulation  
Attn: R. W. Reid, Chief  
Operating Reactors Branch No. 4  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

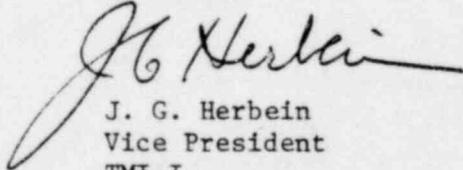
Three Mile Island Nuclear Station, Unit I (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
Purge Valves

On April 3, 1980, responses to question numbers 2, 3 and 4 of your letter dated January 9, 1980 were sent to your office. Unfortunately, there was a clerical omission in the response to your question number 2. The last sentence in the response should read: 'In addition, they will be closed by non-safety grade high radiation signals.' It is to be noted that the high radiation signals are neither safety grade nor redundant.

Furthermore, the detailed drawings of the design in response to your question numbers 3b and 4 will be provided, not as an amendment to the TMI-I Restart Report, but as a separate submittal.

Finally, enclosed please find a copy of our response to question 1 of your letter of January 9, 1980 which supplements our responses of April 3, 1980 (TLL 157).

Sincerely,

  
J. G. Herbein  
Vice President  
TMI-I

JGH:LWH:hah

Enclosure

cc: J. T. Collins

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## Question 1:

With regard to the containment purge and venting system, provide the following information:

- a. Discuss the provisions made to ensure that isolation valve closure will not be prevented by debris which could potentially become entrained in the escaping air and steam.
- b. Discuss the provisions made for testing and availability of the isolation function and the leakage rate of the isolation valves, individually, during reactor operation.
- c. Provide an analysis to demonstrate the acceptability of the provisions made to protect structures and safety-related equipment, e.g., fans, filters and ductwork, located beyond the purge system isolation valves against loss of function from the environment created by the escaping air and steam.
- d. For the containment purge isolation valves, specify the differential pressure across the valves at which the maximum leakage rate occurs. Provide test results which support your conclusion (e.g., from vendor tests of leakage rate vs. valve differential pressures).

## Response to Question 1a:

The containment purge and vent valves will receive a closure signal when the reactor trips. This closure signal is anticipatory of containment high pressure and/or radiation build-up and will ensure that the valves are closed prior to these conditions. Since the valves close before any pressure build-up for a small break LOCA (>1.99 sq. ft.) there will be no entrained debris or escaping air and steam.

However, due to the operation of valves being limited to 90 hours per year during operation and the small probability of a large break LOCA, the possibility of the debris reaching the containment purge and vent valves during normal operations is highly unlikely since the valves are located off of the floor and few objects could reach the valves before closure.

## Response to Question 1b:

The valves cannot be leak rate tested individually. The present leak rate test procedure requires that the ductwork between the valves be pressurized and the pressure drop recorded. This pressure drop is the sum of the pressure drops of each valve. To leak rate test the valves individually would require extensive modifications to the 48" ductwork to pressurize each valve individually.

The actual functioning of the valves will be demonstrated by observing valve indicating lights each time the valves operate. Purge during operating modes is limited to 90 hours of operation per year. This will be intermittent operation and, therefore, the operability will be demonstrated several times a year.

## Response to Question 1c:

The valves will receive a closure signal on reactor trip. The inside containment valves are motor operated and will close in 5 seconds maximum. The outside containment valves are pneumatically operated and will close in 2 seconds maximum. These valves will close before any escaping air or steam, and this will protect the structures downstream of the valves (small break LOCA). For large break LOCA, see paragraph 2 of response to question 1a.

## Response to Question 1d:

These valves were specified to be bubble tight for the maximum differential pressure that the valves would see in service. The manufacturer also tested these valves for bubble tightness. These valves are not of a design where the upstream pressure will assist the valve seating and, therefore, be more leak tight at higher differential pressures. The design of these valves is such that the disc and seat will fully seal at any differential pressure.