

SEP 23 1984

Docket No. 50-293

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Mr. William D. Harrington  
 Senior Vice President, Nuclear  
 Boston Edison Company  
 800 Boylston Street  
 Boston, Massachusetts 02199

Dear Mr. Harrington:

SUBJECT: UPDATED EVALUATION FOR NUREG-0737, ITEM II.E.4.2.7

RE: Pilgrim Nuclear Power Station

Our evaluation of the BWR Owners Group position on TMI Action Plan Item II.E.4.2.7, "Primary Containment High Radiation to close Vent and Purge Valves", requires clarification as to which line sizes need isolation for a postulated LOCA. We have, therefore, updated the evaluation provided to the BWR Owners Group in our letters dated October 14, 1981 and May 31, 1983. A copy of our updated Evaluation is enclosed.

The Evaluation includes the NRC staff position on the use of radiation signals to isolate lines that can be used for containment vent and purge during startup, normal operation, and shutdown of the plant. Our intention is that each of the "containment purge and vent isolation valves must close on a high radiation signal". Refer to position (7) on page 3-90 of NUREG-0737.

We have reviewed your October 25, 1983 submittal on this subject and we find it does not meet position (7). Your action is, therefore, required to achieve compliance as soon as practicable. Please reply within 30 days after receipt of this letter, stating your plans to achieve such compliance.

Sincerely,

Original signed by:  
 Domenic B. Vassallo, Chief  
 Operating Reactors Branch #2  
 Division of Licensing

Enclosure:  
 As stated

cc: w/enclosure

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Mr. William D. Harrington  
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Pilgrim Nuclear Power Station

cc:

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OFFICE OF NUCLEAR REACTOR REGULATION  
UPDATED EVALUATION OF BWR OWNERS GROUP POSITION ON  
ITEM II.E.4.2.(7) OF NUREG-0737

In NUREG-0737, Item II.E.4.2.(7), we state that containment purge and vent isolation valves must close on a high radiation signal. The BWR Owners Group has performed an assessment to determine the benefits of providing automatic closure of the containment vent and purge valves on a containment high radiation signal. This assessment, contained in a letter from T. J. Dente to D. G. Eisenhut, dated June 29, 1981, concludes that this automatic closure on a high radiation signal will not appreciably alter the probability for significant releases of radioactivity through these lines. The bases for the BWR Owners Group conclusion relies on the following points:

1. Automatic isolation is already achieved through diverse inputs (high dry-well pressure and low reactor water level);
2. The containment vent and purge valves are normally closed;
3. Several diverse methods exist for detection of primary coolant boundary leakage that could indicate to the operator that a high radiation condition in the containment may exist; and
4. Pipe breaks leading to leakage rates less than the Technical Specification limits that are not immediately isolated by the operator result in offsite doses less than 10 CFR Part 100 dose limits.

It is the staff's position that the above arguments for not having a high radiation isolation signal for the containment vent and purge valves are inadequate. The staff strongly believes that these valves should be isolated on the bases of a direct measurement of the parameter that the containment isolation system is designed to protect the public from, i.e., radiation. This view is based on the potentially greater impact on offsite doses relative to releases through other lines penetrating the containment, since the vent and purge lines provide a direct path from the containment atmosphere to the environs. The staff's view is that having only indirect parameters as isolation signals, such as high drywell pressure or low reactor water level, is insufficient for assuring that these valves will close in a timely manner.

The argument that containment vent and purge valves are normally closed and, therefore, do not require a high radiation isolation signal is insufficient because these valves are normally open during startup and shutdown. Since these are transient conditions, we would expect at least as high a likelihood of a release occurring during these periods as during steady state periods. Moreover, since it is essential for the containment vent and purge valves to receive timely isolation signals under these circumstances, the staff's position is that a high radiation isolation signal is needed to accomplish this function.

Reliance on operator action to close the containment vent and purge valves is not acceptable because of the delays that could occur while the operator is handling matters more directly related to the initiating event.

In response to the argument that leakages less than the Technical Specification limits produce low offsite doses, the staff feels that the purpose of adding a high radiation isolation signal to the containment vent and purge valves is to protect against substantial releases of radiation (10 CFR Part 100 dose limits) for accident conditions while for normal conditions (e.g., leakages less than Technical Specification limits), the purpose of these valves is to close before 10 CFR Part 20 dose limits are exceeded.

In summary, it is the staff's position that all containment vent and purge valves in lines that are used during startup, normal operation, and shutdown of the plant be provided with a high radiation isolation signal. The range and sensitivity of the radiation monitors used for this purpose shall be sufficient to assure timely closure of the vent and purge valves under both accident conditions (limiting offsite doses to less than 10 CFR Part 100 guidelines) and normal operating conditions (limiting offsite doses to less than 10 CFR Part 20 limits). The high radiation signal may be either safety grade equipment or non-safety grade equipment. Our aim is to have a high radiation isolation signal operable at the earliest possible time. Technical Specifications are needed consistent with your installation.