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MAY 31 1983

T. J. Dente, Chairman
BWR Owners' Group
P. O. Box 270
Hartford, Connecticut 06101

Dear Mr. Dente:

Subject: Containment Isolation on High Radiation Signal: NUREG-0737
Item II.E.4.2.(7)

Your letter dated June 14, 1982, transmitted a supplemental evaluation by the BWR Owners' Group on the subject item. Your technical position has been reviewed by the staff. We have concluded that your appeal to not isolate containment on a high radiation isolation signal as specified in NUREG-0737 is not acceptable.

The basis for our determination is contained in the enclosed evaluation, and the Safety Evaluation Report transmitted to the Owners' Group by a letter dated October 14, 1981, is still applicable to all plants involved.

Every effort should be made to expedite the implementation of this Action Plan Item. Each licensee who endorsed the Owners' Group position will be advised separately of the results of our review.

Sincerely,

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cc: bmu

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure:
Safety Evaluation Report

cc: BWR Owners' Group Members

XA Copy Has Been Sent to PDR

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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 high radiation signal. The BWR Owners' Group performed an assessment to determine the benefits of providing automatic closure of the containment purge and vent isolation valves on a containment high radiation signal. This assessment was submitted to the staff by a letter from Mr. T. J. Dente to Mr. D. G. Eisenhut dated June 29, 1981. The staff reviewed that submittal and transmitted an evaluation to the owners' group by a letter from Mr. D. G. Eisenhut to Mr. T. J. Dente dated October 14, 1981. In that evaluation, the staff concluded that the owners group' rational for not installing a high radiation isolation signal on purge and vent isolation valves was not acceptable.

Following a meeting between the staff and the BWR Owners' Group on November 19, 1981, the owners group submitted an additional evaluation by a letter from Mr. T. J. Dente to Mr. D. G. Eisenhut dated June 14, 1982. In this submittal the owners group provided an evaluation of the radiological consequences of a limiting reactor coolant system break which would not result in an automatic containment isolation in the current design of a typical plant. The owners group concluded that the calculated off-site doses from a limiting reactor coolant system break are acceptably small, and should be considered in lieu of installation of an automatic high radiation isolation signal on purge and vent isolation valves.

The staff has reviewed the evaluation provided by the owners group. The staff considers it to be optimistic and, furthermore, not consistent with the Commission's defense-in-depth policy on containment isolation. The staff's position is that the containment should be isolated, as required by the TMI Action Plan Item II.E.4.2.(7), by a high radiation signal. This eliminates reliance on operator action and on the indirect parameters such as high drywell pressure or low reactor vessel water level, for assuring the closure of purge and vent isolation valves in a timely manner. Furthermore, the isolation by high radiation signal provides a necessary margin for unknowns inherent in the transient conditions. This automatic radiation isolation signal to the containment purge and vent isolation valves need not originate from a safety grade radiation monitoring system. However, some reasonable provisions will be required in the Technical Specifications dealing with equipment operability and testability. This is acceptable because other isolation signals, that are diverse and safety grade, are available to perform the primary isolation function.

In summary, the staff's position is that the purge and vent isolation valves should be closed as quickly as possible, by diverse signals (including containment high radiation signal), to avoid the release of radiation from the containment during accident conditions. We consider that a high radiation isolation signal to the purge and vent isolation valves will provide the assurance necessary to protect the public against the release of radiation during most accident conditions without relying on the operator for manual actions, or automatic isolation based upon relatively slow responses to releases of radioactivity. Therefore, the staff concludes that purge and vent isolation valves should be closed as required by TMI Action Plan Item II.E.4.2.(7). The Safety Evaluation Report transmitted to the owners group by letter dated October 14, 1981 is still applicable to all plants involved.

The argument that large 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 a higher likelihood of an accident occurring during these periods than during steady state periods. Moreover, since it is essential for the large 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 large containment vent and purge valves is not desirable because of the delays that could occur while the operator is handling more pressing matters.

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 large containment vent and purge valves is to protect against substantial releases of radiation (10 CFR Part 100 dose limits) for accident conditions. The setpoint for the radiation isolation signal should be such that any release exceeding normal conditions, i.e. doses exceeding 10 CFR Part 20 levels at the site boundary, result in automatic containment isolation.

~~For containment vent and purge lines that are three inches or less in diameter and used for periodically relieving the pressure buildup inside the containment, no high radiation signal is required. This position is justified by the lower radiological consequences for these small lines and because the valves in these lines can be expected to close very reliably and quickly under accident conditions.~~

In summary, it is the staff's position that all containment vent and purge valves in lines ~~greater than three inches in diameter~~ 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 conditions ranging from large offsite doses on the order of 10 CFR Part 100 doses to releases just exceeding normal operating conditions (offsite doses on the order of less than 10 CFR 20 doses).