

August 23, 1983

Docket No. 50-220

Mr. G. K. Rhode
Senior Vice President
Niagara Mohawk Power Corporation
300 Erie Blvd., W.
Syracuse, NY 13202

Dear Mr. Rhode:

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

Re: Nine Mile Point Nuclear Station, Unit No. 1

Ref: Letter, T. Dente, Chairman, BWR Owners Group to NRC, dated June 29, 1981

Your letter dated June 30, 1981 endorsed the BWR Owners Group position that a radiation signal for isolation of containment purge valves is not necessary for the Nine Mile Point Station, Unit No. 1.

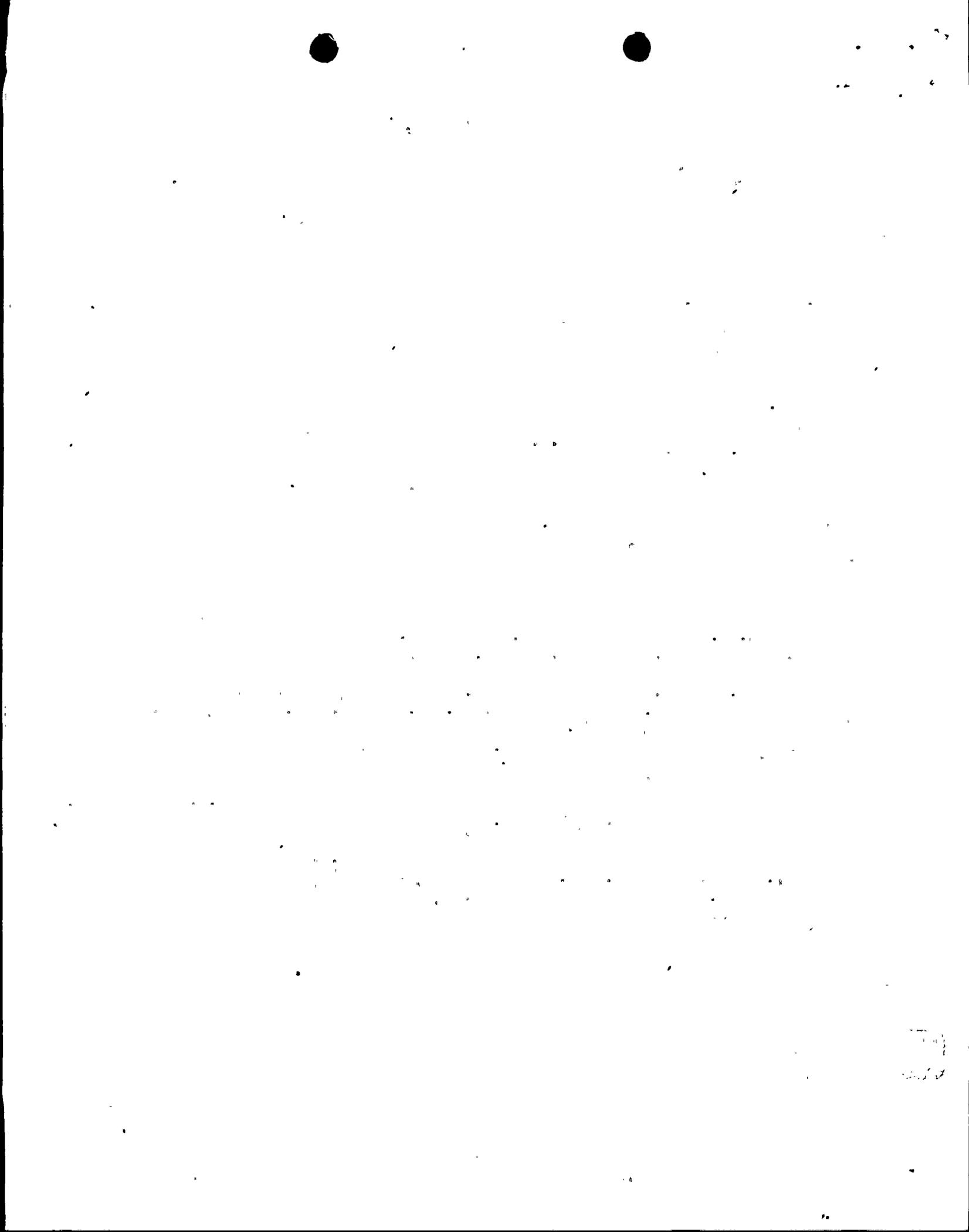
We have reviewed this report and determined that your position is not acceptable. The basis for our determination is contained in our evaluation transmitted to the BWR Owners Group by letters dated October 14, 1981 and May 31, 1983. Copies of the evaluations accompanying these letters are enclosed for your information.

In view of our evaluation we request that you re-evaluate your position and advise us of your reconsidered position.

We request that you provide us either additional justification for not installing a high radiation signal on purge valves, or your schedule for completing this action. Your response is requested within 45 days of your receipt of this letter.

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PDR ADOCK 05000220
P PDR

OFFICE
SURNAME
DATE



The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

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

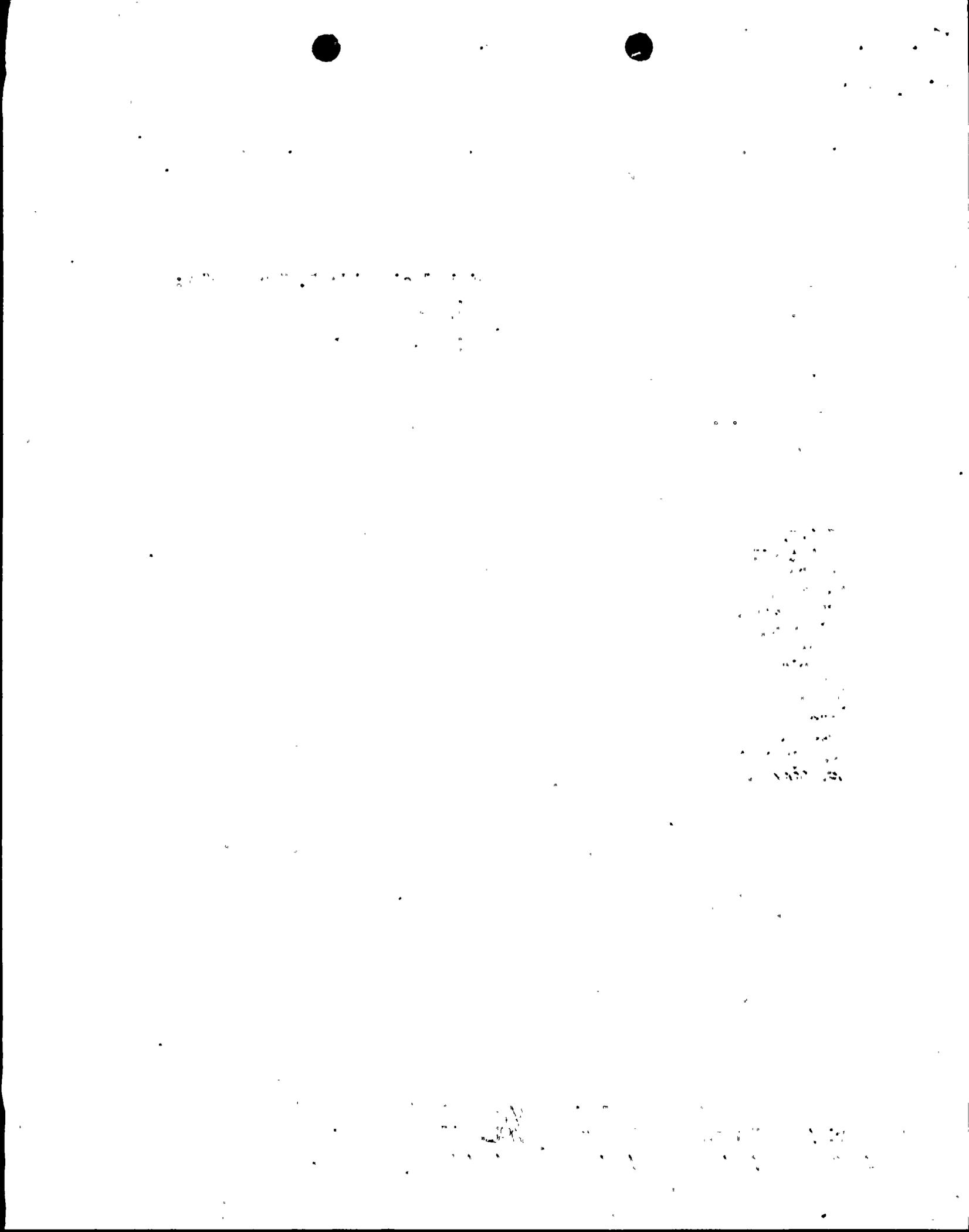
Enclosure:
SE on NUREG-0737
Item II.E.4.2(7)

cc w/enclosure:
See next page

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Mr. G. K. Rhode
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station, Unit No. 1

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

CONTAINMENT SYSTEMS BRANCH

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 J. T. 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 basis for the BWR Owners Group conclusion relies on the following points:

- 1) Automatic isolation is already achieved through diverse inputs (high drywell 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 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 large containment vent and purge valves (greater than 3" in diameter) are inadequate. The staff strongly believes that these valves should be isolated on the basis 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 thru 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 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.



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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 there 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.

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 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).



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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. Eisenhower dated June 29, 1981. The staff reviewed that submittal and transmitted an evaluation to the owners' group by a letter from Mr. D. G. Eisenhower to Mr. T. J. Dente dated October 14, 1981. In that evaluation, the staff concluded that the owners group' rationale 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. Eisenhower 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.

