

SAFETY EVALUATIONQUAD CIITES UNITS 1 AND 2OVERRIDE OF CONTAINMENT PURGE ISOLATIONIntroduction

Instances have been reported at nuclear power plants where the intended automatic closure of the containment purge/ventilation valves during a postulated accident would not have occurred because the safety actuation signals were inadvertently overridden and/or blocked, due to design deficiencies. These instances were determined to constitute an Abnormal Occurrence (#78-5). As a follow-up action, NRR issued a generic letter requesting each licensee to take certain actions.

Evaluation

The enclosed report "Electrical, Instrumentation and Control Aspects of the Override of Containment Purge Valve Isolation," (EGG 1183-4172) was prepared for us by EG&G, San Ramon as part of our technical assistance contract program. The report provides their technical evaluation of the design compliance with NRC provided criteria. The report is applicable to Quad Cities Units 1 and 2 because they are similar plants.

The report identifies two NRC staff criteria that have not been met. One criterion identified as not having been met is that under certain conditions the Primary Containment Isolation System valves could automatically reopen. However, the evaluation and acceptability of this design was performed by the Lessons Learned Task Force in a separate review (Reference 1). As a result of this review, the licensee has made modifications to prevent inadvertent re-opening of those isolation valves that were considered as non-essential. This subject was also reviewed as part of the response to IE Bulletin 80-06 (Reference 2). Thus it is concluded that the licensee has satisfied this criterion.

The other criterion identified as not having been met is that the automatic containment isolation actuation signal does not include actuation on containment high radiation. However, the licensee has completed modifications (Reference 3) to provide for a Group II Primary Containment Isolation on drywell high radiation. The containment vent and purge valves are included in Group II. The licensee has stated that the design of the containment high radiation signal has been implemented in accordance with similar protection systems requirements as those followed in the design of other signals provided to initiate isolation of the containment ventilation system, specifically high drywell pressure and low reactor water level.

Conclusion

Based on our review of the contractor's technical report and our evaluation of additional information stated in the reference section, we conclude that the electrical, instrumentation and control design aspects of the override of containment purge valve isolation are acceptable subject to the satisfactory implementation of the design of the high radiation signal in accordance with protection system requirements.

This safety evaluation was prepared by T. Alexion and J. Calvo of the Operating Reactors Assessment Branch, Division of Licensing.

References

1. Letter from Dennis Ziemann to Mr. D. Louis Peoples dated March 5, 1980, SUBJECT: Evaluation of Licensees Compliance with Category "A" Items of NRC Recommendations Resulting from TMI-2 Lessons Learned.
2. Memorandum from Themis P. Speis to Thomas M. Novak dated February 25, 1982, SUBJECT: Quad Cities Nuclear Power Station, Units 1 and 2 - Engineered Safety Features Reset Controls.
3. Letter from E. Douglas Swartz to Darrell G. Eisenhut dated April 15, 1982, SUBJECT: Response to Generic Letter 82-05 Concerning Various NUREG-0737 Items.