LAWRENCE LIVERMORE LABORATORY

Operating Reactor - TMI Lessons Learned NUREG-0737 Response Evaluations (Program II)

Project 1 - Reactor Coolant System Vents (Item II.B.1)
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FINAL TECHNICAL EVALUATION REPORT FOR MONTICELLO

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TECHNICAL EVALUATION REPORT ON REACTOR COOLANT SYSTEM VENTS FOR MONTICELLO

INTRODUCTION

The requirements for Reactor Coolant System High Point Vents are stated in paragraph (C)(3)(iii) of 10 CFR 50.44, "Standards for Combustible Gas Control System in Light Water Cooled Power Reactors," and are further described in Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements." In response to these and previous requirements, the Northern States Power Company has submitted information in References 1 through 3 in support of the vent system on the Monticello Nuclear Generating Plant.

EVALUATION

The function of the reactor coolant system (RCS) vent system is to vent noncondensible gases from the high points of the RCS to assure that core cooling during natural circulation will not be inhibited. The Boiling Water Reactor (BWR) Owners' Group has submitted documentation (References 4 through 7) on how the RCS venting requirements are met in General Electric (GE) BWRs. The BWR Owners' Group position has been endorsed by the licensee.

In accordance with the BWR Owners' Group position, the primary means of venting noncondensible gases from the reactor pressure vessel at Monticello are four power-operated, safety-grade automatic depressurization system (ADS) safety/relief valves which alone provide adequate venting.

We have reviewed design information on the valves associated with the above system that will serve as RCS vents and confirmed that they are operable from the main control room. We have also determined that the valves are provided with emergency power and that a degree of redundancy in the RCS vent system is provided by powering different vent paths from different emergency buses. NRC has previously verified that the safety/relief valves are provided with positive position indication in the main control room (Reference 8). Additional RCS venting occurs at the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) system turbine exhausts. The licensee has also verified that no protection system that is necessary to maintain adequate core cooling requires remote venting since none are susceptible to the buildup of a large amount of noncondensible gas that could cause a loss of function of these systems.

CONCLUSION

We conclude, based on the applicability of the BWR Owners' Group position to Monticello and our specific review of the Monticello design, that the existing systems at Monticello are sufficient to effectively vent noncondensible gases from the RCS and meet the requirements of NUREG-0737 Item II.B.1 and paragraph (c)(3)(iii) of 10 CFR 50.44. We therefore recommend that the Monticello RCS venting capability be found acceptable by NRC contingent on NRC review and approval of the existing operating procedures and technical specifications for use of the existing systems as RCS vents.

REFERENCES

1. Letter, L.O. Mayer (Northern States Power Company) to Director of Nuclear Reactor Regulation (NRC), "Follow-up Actions Resulting from the NRC Staff Reviews Regarding the Three Mile Island Unit 2 Accident," dated October 17, 1979.

2. Letter, L.O. Mayer (Northern States Power Company) to Director of Nuclear Reactor Regulation (NRC), "Information Submitted in Response to TMI Action Plan Items II.B.1, II.D.1, and II.K.3.25," dated July 6, 1981.

3. Letter, L.O. Mayer (Northern States Power Company) to Director, Office of Nuclear Reactor Regulation (NRC), "Response to Request for Additional Information Related to Reactor Coolant System Vents," dated April 29, 1982.

4. Letter, T.D. Keenan (BWR Owners' Group) to D.G. Eisenhut (NRC), "BWR Owners' Group Positions on NUREG-0578," dated October 17, 1979.

5. Letter, D.B. Waters (BWR Owners' Group) to NRC (Attn: D.G. Eisenhut), "Preliminary Clarification of TMI Action Plan Requirements -- BWR Owners' Group Comments," dated October 8, 1980.

6. General Electric Report NEDO-24708A, Revision 1, "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors," dated December 1980.

7. Letter, D.B. Waters (BWR Owners' Group) to NRC (Attn: D.G. Eisenhut), "NUREG-0660/0737 Requirement II.B.1: Reactor Coolant System Vents," dated April 24, 1981.

8. NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.D.3, "Direct Indication of Relief- and Safety- Valve Position," dated November 1980.