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DEC 13 1972

Docket No. 50-263

Northern States Power Company
ATTN: Mr. Arthur V. Diemhart
Vice President of Engineering
414 Nicollet Mall
Minneapolis, Minnesota 55401

Gentlemen:

Further information is now available to supplement the Directorate of Regulatory Operations' Bulletin 72-1 which informed you of the failure of several hangers that supported the emergency core cooling system suction header at the Quad-Cities 2 reactor. Recent measurements at Quad-Cities 1 and 2 and calculations performed by the licensee have now been reported to the AEC. The cause of the failure was determined to be: (1) incorrect assumptions of the static loads in the design of the hanger support system; and (2) failure to consider in the hanger system design the effect of dynamic loads, including those resulting from operation of the automatic pressure relief valves.

At Quad-Cities 1 and 2, the measured support system static vertical hanger loads varied between 0 and 22,300 lbs. The original design maximum load for each hanger was approximately 8000 lbs. The measured average vertical hanger load was approximately 9400 lbs. The reason for this discrepancy is not known at this time; however, the measured vertical loads on the hangers were generally found to be the largest at locations where the Emergency Core Cooling System (ECCS) pump suction piping was connected to the suction header.

Measurements taken on the suction header and suppression chamber during operation of the automatic pressure relief valves have been analyzed and the results indicate that dynamic loads imposed on the hangers during relief valve operation also exceed design maximum loads. These dynamic loads were not considered in the original hanger design or in the design of the suppression chamber at this facility.

It is requested that you provide this office with the following information relating to Monticello Unit 1:

1. Provide a summary of a dynamic analysis of the torus ring header system subjected to blowdown forces resulting from operation of the automatic pressure relief valve. Include information on the mathematical model, natural frequency of the system, and the forcing function of blowdown forces.

2. Provide the basis for determination of forcing function as derived from either test data or analytical methods.

3. Provide a summary of (a) the stress analysis of the torus ring header system, including the interaction of torus wall and hanger supports under static and dynamic loads, and (b) fatigue analysis of the ring header, hangers, and component parts that are subjected to cyclic load during blowdown.

4. In the event the above analysis demonstrates stresses in excess of code allowable design values, provide your plans and schedules for corrective actions, and confirmatory tests.

5. Describe any provisions that may be available in the plant design which would allow the emergency core and containment cooling systems to function for long-term effectiveness in the event of failure of the suction header.

If all of the requested information is not currently available, please supply within thirty days the available information together with a description of your plans and schedule for supplying any missing information.

This information should be provided with one signed original and thirty-nine additional copies.

Sincerely,

/s/

Donald J. Skovholt
Assistant Director for
Operating Reactors
Directorate of Licensing

cc: Gerald Charnoff
Shaw, Pittman, Potts, Trowbridge & Madden
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