U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-263/81-13

Docket No. 50-263 License No. DPR-22

Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Facility: Monticello Nuclear Generating Plant

Inspection At: Monticello, MN

Inspector: for K R Baker R. B. Landsman 8/21/81

Approved By: for K R Baker C. C. Williams, Chief 8/21/81
Plant Systems Section

Inspection Summary

Inspection on April 22 and July 14, 1981 (Report No. 50-263/81-13)
Areas Inspected: Licensee action relative to Bulletin No. 80-11, "Masonry Wall Design." The inspection involved a total of 16 inspector-hours onsite by one NRC inspector.
Results: No items of noncompliance or deviations were identified.

DETAILS

Persons Contacted

Licensee (NSP)

G. Goering, General Superintendent, Nuclear Technical Services
B. D. Day, Superintendent, Nuclear Technical Services
S. J. Hammer, Associate Production Engineer, Nuclear Technical Services

Bechtel

C. Hogg, Project Engineer
R. S. Good, Resident Engineer

Computech

R. Mayes, Principal

U.S. N.R.C., Region III

C. Brown, Senior Resident Inspector
A. Madison, Resident Inspector

Licensee Action on IE Bulletin No. 80-11

The NSP response to IE Bulletin No. 80-11, "Masonry Wall Design," which required a re-evaluation of constructed masonry block walls, was reviewed as follows:

1. Identification

   All areas were surveyed to identify masonry walls which were in proximity to or have attachments from safety-related piping or equipment such that wall failure could have affected a safety-related system. The survey team consisted of one member from each of the Civil, Electrical and Mechanical disciplines, along with a site engineer. This investigation indicated that 93 walls were subject to Bulletin requirements. The team prepared detailed "wall maps" which identified the locations of systems or components which contribute loads to the masonry walls. The team also prepared drawings, indicating component support locations, to aid in load calculations.

   The licensee's July 7, 1980 submittal, which tabulated all walls and attachments was reviewed. It was found to be inaccurate, in that component piping descriptions were in error and certain components were left off the lists. It was subsequently determined by the Region III inspector that the "wall maps" used by the design engineer for the required re-evaluations were accurate. The subject lists were prelimenary and had no impact on the re-evaluation performance. The licensee indicated that either revised lists or the "wall maps" would be submitted to provide the NRC with accurate documentation. This item remains open pending the licensee's submittal (263/81-13-01).

2. Re-evaluation Priority

The licensee set up an appropriate priority program as follows:

1st. Walls which affect a reactor coolant or primary containment boundary.

2nd. Walls which affect systems required to achieve and maintain safe shutdown (including fire barriers).

3rd. Walls which affect other safety related equipment.

4th. Walls which serve as shield walls but do not affect safety-related equipment.

Within each of these categories, walls were also prioritized in the following order:

1st. Walls with highest operating loads.

2nd. Walls with highest overall design loads.

3rd. Walls in proximity to safety-related equipment with no support loads.

3. Engineering Re-evaluation

a. The re-evaluation determined that six walls had the potential to become overstressed under certain postulated loads and load combinations. The walls and the modifications for each are as follows:

(1) Wall 222 - pinned at three points along the top
(2) Wall 212 - pinned on free side with a vertical truss
(3) Wall T 125 - removed 10 inch pipe hanger load
(4) Wall T 137 - removed wall
(5) Wall T 311 and T 322 - removed load from walls by adding jet impingement plates.

b. Each wall has been modified and the effected repairs were observed to be installed accordingly. The repairs were accomplished under Design Change Package No. 80M084. Each package consisted of:

(1) List of affected drawings
(2) Detailed design description
(3) Safety evaluation
(4) Installation (work) procedures
(5) Fire protection

(6) Radiation exposure
(7) Work request authorization

All documentation was appropriately signed off by the required parties.

4. Calculations

The design criteria used for the block walls is subject to NRR's review and is not within the scope of this inspection. However, the methodology used for calculations was reviewed. The inspector determined that all walls were re-evaluated assuming them as non-reinforced. The re-evaluation design boundary conditions of the walls were assumed to be pinned (i.e., had capability of transferring shear force only) provided they met the re-evaluation criteria. The calculations were done by Computech by using their own computer code. All walls were analysed as a single wythe.

Three calculation methods were used in the analysis: beam, plate and arching action. If overstressing occurred in all three, the walls were modified. This resulted in the modification of the six walls listed in Section 3 of this report.

During the inspectors review, it was determined that twelve additional walls (not listed in the licensee's response) were being modified. The inspector determined that this was due to the implementation of an additional acceptance criteria.

This additional re-evaluation criteria is more conservative. It required walls to be modified if potential to overstress occurred in two of the calculation methods, not three, as the original re-evaluation criteria required. The twelve walls which failed to meet this more conservative criteria were: 206, 243, 305, 549, 512, 516, 543, 616, J-103, T-133, T-135, and T-350. These walls only passed the plate analysis. This was because the re-evaluation criteria concerning the allowable shear across the vertical joints of the walls was assumed conservatively low.

To achieve additional conservatism (increase the factor of safety), NSP decided to insure the vertical pinned boundary condition of the walls. They are in the process of assuring a pinned joint by the addition of vertical clip angles to all the previously identified twelve walls except J-103. The modification of J-103 involved the removal of portions of the wall which impacted safety related systems.

5. Operability

Through discussions with licensee representatives and based on a review of the licensee's response to the bulletin, the inspector determined that the licensee had not performed an analysis of system operability. Even though the wall modifications are complete, licensee representatives committed to document their reasoning for not performing the operability study. This item is considered unresolved pending review of the licensee's response by the Region III resident inspector (263/81-13-02).

Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 1 and 5.

Exit Meeting

The inspector met with licensee representatives (denoted under Persons Contacted) at the conclusion of the inspection on July 14, 1981. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.