

AUG 12 1982

DCS MS-016

Docket Nos. 50-282
and 50-306

Mr. D. M. Musolf
Nuclear Support Services Department
Northern States Power Company
414 Nicollet Mall - 8th Floor
Minneapolis, Minnesota 55401

Dear Mr. Musolf:

Subject: Masonry Walls, I&E Bulletin No. 80-11, Request for Additional Information

DISTRIBUTION:

- ✓ Docket File
- NRC PDR
- L PDR
- NSIC
- ORB#3 Rdg
- DEisenhut
- JHeltemes
- I&E
- OELD
- ACRS-10
- PMKreutzer-3
- RAClark
- DDiIanni
- Gray File
- CTrammell

We have completed a preliminary review of your response to I&E Bulletin 80-11 on masonry walls transmitted by letter dated November 30, 1981. The additional information identified in the enclosure is required by our contractor, Franklin Research Center, to complete our review for your facility. Please supply this information within 30 days of the date of receipt of this letter.

The information requested in this letter affects fewer than 10 respondents; therefore OMB clearance is not required under P.L. 96-511.

Sincerely,

Original signed by

C M Trammell for
Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosure:
As stated

cc: See next page

8208240037,9

OFFICE	ORB#3:DL	ORB#3:DL				
SURNAME	DCDiIanni/pn	RAClark				
DATE	8/11/82	8/11/82				

Northern States Power Company

cc:

Gerald Charnoff, Esquire
Shaw, Pittman, Potts and Trowbridge
1800 M Street, N.W.
Washington, D. C. 20036

Mr. Louis J. Breimhurst
Executive Director
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

The Environmental Conservation Library
Minneapolis Public Library
300 Nicollet Mall
Minneapolis, Minnesota 55401

Mr. E. L. Watzl, Plant Manager
Prairie Island Nuclear Generating Plant
Northern States Power Company
Route 2
Welch, Minnesota 55089

Jocelyn F. Olson, Esquire
Special Assistant Attorney General
Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, Minnesota 55113

U.S. Nuclear Regulatory Commission
Resident Inspectors Office
Route #2, Box 500A
Welch, Minnesota 55089

Regional Administrator
Nuclear Regulatory Commission, Region III
Office of Executive Director for Operations
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Mr. R. L. Tanner
County Auditor
Red Wing, Minnesota 55066

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: Regional Radiation
Representative
230 South Dearborn Street
Chicago, Illinois 60604

REQUEST FOR ADDITIONAL INFORMATION
FOR PRAIRIE ISLAND UNIT NOS. 1&2
(NORTHERN STATES POWER COMPANY'S
RESPONSE TO BULLETIN 80-11)

TECHNICAL EVALUATION

Based on the Licensee's response to IE Bulletin 80-11, a technical evaluation was conducted. In general, the Licensee's response was satisfactory; however, additional information is required to permit a proper final technical evaluation. More details and sample calculations are necessary to clarify how higher modes of vibration and multiple-wythe walls were considered in the Licensee's reevaluation analysis. Before a final technical evaluation report can be issued, the Licensee is requested to provide the following information:

1. Indicate whether the walls are stack bond or running bond. If any stack bond wall exists, provide sample calculations to obtain moment and shear stress of a typical wall.
2. According to Attachment A, Section 2.5 of Reference 3, the masonry walls in the hydrogen room and those around the elevator shaft were designed as shear walls. Indicate whether these shear walls are safety-related. If yes, have they been analyzed?
3. Provide test results of the compressive strength of masonry block, mortar, and grout.
4. Indicate how earthquake forces in three directions were considered in the analysis.
5. Regulatory Guide 1.61 allows 4% damping for the OBE and 7% damping for the safe shutdown earthquake (SSE). Section 3.2.2 of Reference 3 specifies a damping value of 5% for both OBE and SSE conditions. Justify this value for the OBE condition.
6. Provide sample calculations to indicate how the effects of higher modes of vibration are considered in the analysis.
7. Indicate whether load combinations not involving loads due to thermal gradient, wind, operating pressure, accident pressure, pipe rupture, etc., are according to FSAR specifications. Also justify the use of a factor of 2/3 for the load combination in Section 7.3.2 of Reference 3.
8. Provide sample calculations for block pullout analysis.

9. According to Section 7.4.4.3, Attachment A of Reference 3, a limit of 25 psi has been used for tension between wythes of multi-wythe walls in composite action. Justify this value by any existing test data. Also, provide and justify by any existing test data the value for allowable collar joint shear stress. Provide sample calculations illustrating the analysis of multi-wythe walls in composite action.
10. Provide any increase factors that may have been used for allowable stresses under abnormal conditions. If they are higher than those factors listed in the SEB criteria [4], provide justification. The SEB factors are listed below by type of stress.

Axial or flexural compression	2.5
Bearing	2.5
Reinforcement stress except shear	2.0, but not to exceed 0.9 fy
Shear reinforcement and/or bolts	1.5
Masonry tension parallel to the bed joint	1.5
Shear carried by masonry	1.3
Masonry tension perpendicular to the bed joint	
Reinforced masonry	0
Unreinforced masonry	1.3

11. Indicate whether the walls are subject to impulsive or impactive loads such as missile or jet impingement loads. If so, provide sample calculations showing how they were considered in the analysis.
12. Indicate the current status of the modifications and provide detailed drawings of some sample modifications.

REFERENCES

1. IE Bulletin 80-11
"Masonry Wall Design"
NRC, 08-May-81
2. D. E. Gilberts
Letter to J. G. Keppler, NRC. Subject: Prairie Island Nuclear
Generating Plant - Response to IE Bulletin 80-11, Items 1, 2a, and 3
Northern States Power Co., 08-Jul-80
3. D. E. Gilberts
Letter to J. G. Keppler, NRC. Subject: Prairie Island Nuclear
Generating Plant - Response to IE Bulletin 80-11, Item 2b
Northern States Power Co., 04-Nov-80
4. Criteria for Safety-Related Masonry Wall Evaluation
SRP 3.8.4, Appendix A
NRC, 00-Jul-81
5. Uniform Building Code
International Conference of Building Officials, 1979
6. Building Code Requirements for Concrete Masonry Structures
Detroit: American Concrete Institute, 1979
ACI 531-79 and ACI 531-R-79