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SUBJECT: Forwards addl info re masonry wall reanalysis & results of masonry wall test program, per IE Bulletin 80-11.

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Operating Reactors Branch 2

SUBJECT: Forwards addl info re masonry wall reanalysis & results of masonry wall test are covered IE Bulletin 80-11.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

June 21, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Dear Mr. Vassallo:

As requested by members of your staff, find attached additional information regarding our masonry wall reanalysis and the results of our masonry wall test program.

Sincerely,

NIAGARA MOHAWK POWER CORPORATION

T. E. Lempges
Vice President
Nuclear Generation

PBG/jab
Attachment

A001
1/1

Attachment

ADDITIONAL INFORMATION
MASONRY WALL PROGRAM

DUROWAL

In response to Nuclear Regulatory Commission Inspection and Enforcement Bulletin 80-11, safety related masonry walls at Nine Mile Point Unit 1 were analyzed to ensure their structural integrity. In this original analysis, Durowal was utilized as a structural resisting element. Subsequent to that analysis, the Nuclear Regulatory Commission established a technical position on the use of Durowal as horizontal reinforcement which differed from the methodology used in the original analysis. As a result, Niagara Mohawk reanalyzed the safety related masonry walls, where necessary, neglecting the presence of Durowal. This reanalysis utilized the criteria outlined in Niagara Mohawk's 1983 document entitled, "Design Criteria for Reanalysis of Safety Related Masonry Walls, Nine Mile Point Unit 1".

In this reanalysis, internal forces developed as a result of the applied loads were resisted by vertical reinforcing (where applicable), mortar, grout, and block. The actual stresses calculated were compared with the allowable values. This resulted in the need to structurally modify three masonry walls to ensure compliance with the design criteria. One modification added structural angles at the top of the masonry wall to ensure a pin connection. The other two modifications added beam and column supports at the masonry walls to reduce the span length. The masonry walls were then reanalyzed with the modifications in place to verify that the resultant stresses were in conformance with the design criteria. These modifications were completed during the 1984 refueling and maintenance outage at Nine Mile Point Unit 1.

MASONRY WALL TEST PROGRAM

A testing program was performed as outlined in the above referenced document to determine prism and mortar strengths. The results of this program were incorporated in the reanalysis. The following is a summary of the results:

	Minimum	Maximum	Average
Net Compressive Strength of Block (psi)	2560	3350	2920
Prism Strength Based on Net Mortar Area (fm),(psi)	1660	2290	2060

Deduced Mortar Strength (mo) 1800 psi

SEISMIC CALCULATIONS

The reanalysis was performed in accordance with the Final Safety Analysis Report for Nine Mile Point Unit 1. The acceleration values used in this reanalysis are noted in the above referenced document. The Final Safety Analysis Report for Nine Mile Point Unit 1 does not address frequency calculations for masonry walls. However, sample frequency calculations have been performed. These are summarized below:

NATURAL FREQUENCY CALCULATIONS SUMMARY

EXAMPLE	WALL HEIGHT (FT)	WALL WIDTH (FT)	NOMINAL THICKNESS (IN)	BOUNDARY CONDITIONS	NATURAL FREQUENCY (HZ)
1	20	13	8	4 sides pinned	27.3
2	20	13	8	3 sides pinned 1 side fixed	29.8
3	20	13	12	4 sides pinned	40.7
4	20	13	12	3 sides pinned 1 side fixed	44.4