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FROM: NIAGARA MOHAWK POWER CORP
SYRACUSE, NY
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DESCRIPTION
LTR REF OUR 1-7-76 LTR REQUESTING INFO REGARDING MARK-I-CONTAINMENT EVAL SHORT TERM PROGRAM AND PROPOSED LONG TERM PGROGRAM..... TRANS THE FOLLOWING.....

ENCLOSURE
RESPONSES TO QUESTIONS ON MARK I CONTAINMENT EVALUATION MECHANICAL ENGINEERING BRANCH.....

ACKNOWLEDGED

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PLANT NAME: Nine Mile Point

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NRC FORM 195 (2-76)

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

300 ERIE BOULEVARD WEST
SYRACUSE, N.Y. 13202

September 3, 1976

Director of Nuclear Reactor Regulation
Attn: Mr. George Lear, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Regulatory File Cy

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

Dear Mr. Lear:

Your letter of January 7, 1976 requested information regarding the Mark I Containment Evaluation Short Term Program and Proposed Long Term Program. My May 19, 1976 letter referenced an April 30, 1976 letter from Mr. E. A. Hughes (General Electric) to Mr. V. Stello (Commission) transmitting responses to a portion of those questions.

Subsequent to the above, additional letters dated May 24, 1976 and June 18, 1976 from Mr. E. A. Hughes (General Electric) to Mr. V. Stello (Commission) transmitted the responses to the remainder of the questions. This letter is to inform you that the information contained in the above transmittals apply to Nine Mile Point Unit 1. However, responses to certain questions, or portions thereof, indicated that we would supply plant unique information. This information is attached.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

R. R. SCHNEIDER
Vice President-Electric Production

/sz

Attachment

9150

RESPONSES TO QUESTIONS ON

MARK I CONTAINMENT EVALUATION

MECHANICAL ENGINEERING BRANCH

Question No. 4

Assess the functional operability of the section of ECCS piping near the torus penetration if the torus supports fail to hold torus in place during pool swell.

Response

The "Plant Unique Analysis Report for Torus Support System and Attached Piping for Nine Mile Point Nuclear Power Station" shows through detailed analysis, that the torus supports and tie-down restraints can successfully withstand the combined Loss of Coolant Accident and earthquake loads. Sections 7.2 and 8.2 of the report also show that all piping attached to the torus can withstand the local motions of the torus structure without loss of function; i.e., all piping both vital and non-vital, meet the requirements presently established for the torus analysis program.

Question No. 7

Provide original design criteria for the section of MSRV line inside the torus. As a minimum, the criteria should include the quality group classification in terms of ASME Code class and/or ANS Safety Class, and stress limits for design and operational conditions.

Response

The original design criteria for the section of Main Steam Relief Valve discharge lines inside the torus was ASA B31.1. At the time that these were designed, there were no quality group classifications.

RESPONSES TO QUESTIONS ON

MARK I CONTAINMENT EVALUATION

CONTAINMENT SYSTEMS BRANCH

Question No. 8

The screening of structural elements was discussed in Section 4 of Volume III. However, the screening analysis did not include instrument air lines in the torus. One utility with a Mark I containment has examined the possibility of modifying these lines to protect them from pool swell. This was discussed during the December 4, 1975 meeting. Describe the type and location of instrument air lines found in the Mark I containment. Provide a screening analysis similar to that performed for other components in Volume III for instrument air lines in the torus.

Response

There are no instrument air lines inside of the torus at Nine Mile Point Unit 1.

Question No. 9

The failure of baffling screening in the torus is discussed on Page 34 of Volume III. In addition, on Page 6-7 of Volume IV, it is stated that the catwalk system in plants with solid deck plates could suffer extensive damage during the pool swell event. The potential for both baffles and solid deck plates to act as potential missiles is suggested in the STP reports. Damage to the torus walls and vacuum breakers due to these potential missiles has been evaluated. Discuss potential damage to other critical structures in the torus due to missiles including the vent-ring header-down comer system, vent bellows, instrument air lines and the vent drain lines.

Response

See our August 27, 1976 letter from Mr. R. R. Schneider to Mr. George Lear.

Question No. 19

Provide the following information related to the analyses used to determine torus uplift.

a. *A detailed description of the methods of analysis used to predict torus lift, with and without consideration of ring header column reaction loads.*

b. *Results of torus lift analyses, with and without consideration of ring header column reaction loads.*

Response

A detailed description of the method and results of the torus uplift evaluation is included in Section 5.4 of "Plant Unique Analysis Report for Torus Support and Attached Piping for Nine Mile Point Nuclear Power Station." The report discusses analyses which include ring header column reaction loads; no analyses are reported without ring header column reaction loads. This is in line with the guidelines established for the program after accurate plant specific ring header column reaction loads became available. Only combined actual load cases were evaluated. As a part of the development of the report, load cases without ring header column reaction loads were evaluated and in all cases, uplift was decreased.

Question No. 20

Provide the following information regarding torus support design for upward and downward loads.

a. *A description and sketches of typical supports currently in use.*

b. *Upward and downward loads originally considered in the design of the supports.*

c. *A table showing the types of torus supports for both upward and downward loads for each of the Mark I plants.*

d. *A description of the types of structural modifications under consideration for torus supports for froth upward and downward loads.*

Response

a. *A complete description of the torus support system for Nine Mile Point Unit 1 is included in Section 3.1 of "Plant Unique Analysis Report for Torus Support and Attached Piping for Nine Mile Point Nuclear Power Station." This section provides a verbal description, illustrations, and a tabulation of the important physical characteristics of the support system.*

b. *The original downward loads used in the design of the torus support columns are taken from CB&I Dwg. 9-1370, F-1, Rev. 3.*

Maximum Loads Per Column (lbs)

Description	*Outside*	*Inside*
Dead Load and Water	*197,000*	*163,000*
Pressure	*20,800*	*20,800*
Vertical Earthquake (5½%)	*10,850*	*10,850*
Horizontal Earthquake (15%)	*13,400*	*-*
TOTAL - lbs	*242,050*	*194,650*
Horizontal Shear	*109,000*	*2,100*
Flooded Condition (Water and Steel)	*442,900*	*375,900*

b. *Continued*

It appears that no upward loads in excess of deadweight were considered.

c. *See response a. of this question.*

d. *The results reported in "Plant Unique Analysis Report for Torus Support and Attached Piping for Nine Mile Point Nuclear Power Station" show that all structure and tie-down restraints meet the present program requirements and therefore no modifications are being considered at this time.*

RESPONSES TO QUESTIONS ON

MARK I CONTAINMENT EVALUATION

STRUCTURAL ENGINEERING BRANCH

Question No. 4

According to this report, several components, structural elements or connections would fail if subjected to the "most probable" LOCA induced pool swell loads. No short term repairs have been proposed to prevent or mitigate such failures. Describe your conceptual plans for short term repairs, if it is determined that such repairs are necessary.

Response

Our August 27, 1976 letter from Mr. R. R. Schneider to Mr. George Lear described plans for replacement of our solid catwalk with a grating catwalk during the scheduled Spring, 1977 refueling outage.

Question No. 5

Describe your plan, if any, for in-service surveillance prior to long term repairs of critical structural elements determined to be near yield due to pool swell loads.

Response

The following in-service surveillance program will be conducted during the duration of the Mark I Containment Long Term Program. This inspection will be conducted at each refueling outage. Dimensional verifications will be performed on a one-time basis at the next refueling outage.

	Element	Inspection
1.	Catwalk	Verify proper hold-down
2.	Torus Supports	
	a. Connection to Shell	Verify plate thickness of attachment to shell, gauge attachment welds, Magnetic Particle Test attachment welds
	b. Columns	Verify section dimensions
	c. Pin Connectors	Verify pin size and keepers
	d. Anchor Bolts	Verify proper number and that nuts are properly installed

Question No. 7

The Addendum which should address the torus and its supports (see foot note on page 1-2 of Volume I) has not been received. Indicate the expected dates when the NRC staff could be briefed on this topic and when Addendum 2 would be submitted for NRC staff review. Provide information on the adequacy of the torus and its supports in as much detail as that provided for other structures, with particular attention to the combined effects of LOCA-induced loads and seismic loads, and the effectiveness of current or proposed tie down assemblies.

Response

The "Plant Unique Analysis Report for Torus Support and Attached Piping for Nine Mile Point Nuclear Power Station" fully addresses this question. The torus and its support structure have been analyzed relative to the accepted guidelines for the short-term phase of the torus program. The safety margins of all components of the structure are listed in Tables 9 and 10 of the report. The loads used for this evaluation include both Loss of Coolant Accident induced loads as well as plant specific seismic loads developed for the Nine Mile Point Unit 1 torus from the appropriate ground accelerations.

Question No. 8

In item (h) of page 1-3 of Volume I and in Section 6.1.3 of Volume IV, it is indicated that catwalks and platforms with solid floor decking "may potentially fail" due to bulk pool swell loads and may subsequently generate missiles. Provide the basis for concluding that such missiles will not hinder the function of any safety related equipment, electrical lines, instrument lines, piping or structures located above the catwalk or elsewhere within the torus. Describe the missile impact analysis and provide a summary of the results for the plate impacting on the torus or a vent pipe. In view of this potential hazard, provide justification why the solid checkered plate platforms should not be replaced with grating, where appropriate, as a short term safety measure. Furthermore, it is also indicated that local yielding will occur at the torus/beam connections. Indicate if this yielding will occur in the torus shell itself and, if so, provide the expected strain and deformation and discuss the potential effect on leaktight integrity. Also, discuss the possibility of torus compressive loads causing buckling at these locations, expecially when subjected to seismic loads.

Response

See our August 27, 1976 letter from Mr. R. R. Schneider to Mr. George Lear.

Question No. 30

Describe your plans for increased in-service surveillance during the long-term program for structural elements found to be critical during the short-term program.

Response

See the response to Question No. 5 of this section.