ENCLOSURE 4

SUPPLEMENT 1
NINE MILE POINT 1
SEISMIC ANALYSIS, CORE SHROUD REPAIR MODIFICATION

NON-PROPRIETARY VERSION

GE Nuclear Energy

GENE B13-01739-03
Supplement 1
Class III
August 1996

~~GE Proprietary Information~~

Supplement 1
Nine Mile Point 1
Seismic Analysis, Core Shroud Repair Modification

Prepared for:

Niagara Mohawk Power Corporation
Nine Mile Point Unit 1

Prepared by:

GE Nuclear Energy
Reactor Modification Services
175 Curtner Avenue, M/C 571
San Jose, California 95125

GE Nuclear
Energy

GENE B13-01739-03
Supplement 1
Class III
August 1996

~~GE Proprietary Information~~

Supplement 1
Nine Mile Point 1
Seismic Analysis, Core Shroud Repair Modification

Prepared by: [signature] 8/8/96
A. Mahadevan, Senior Engineer
Reactor Modification Services

Reviewed by: T.E. Gleason 8-8-96
T.E. Gleason, Principal Engineer
Reactor Modification Services

Approved by: S Ranganath 8/13/96
S. Ranganath, Engineering Fellow
GE Nuclear Engineering

REVISION STATUS SHEET

Revision	Approval	Date	Description
0	P. Walier	Dec. 1994	Initial issue.
Suppl. 1	S. Ranganath	August, 1996	Evaluate revised lower spring spacing.

PROPRIETARY INFORMATION NOTICE

This document contains proprietary information of the General Electric Company (GE) and is furnished to the Niagara Mohawk Power Corporation (NMPC) in confidence solely for the purpose or purposes stated in the transmittal letter. No other use, direct or indirect, of the document or the information it contains is authorized. NMPC shall not publish or otherwise disclose this document or the information it contains to others without the written consent of GE, and shall return the document at the request of GE.

The proprietary information contained in this report is designated by "bars" located in the right hand margin.

IMPORTANT NOTICE REGARDING

CONTENTS OF THIS REPORT

Please read carefully

This report was prepared by General Electric solely for the use of the Niagara Mohawk Power Corporation. The information contained in this report is believed by General Electric to be an accurate and true representation of the facts known, obtained or provided to General Electric at the time this report was prepared.

The only undertakings of the General Electric Company respecting the information in this document are contained in the contract governing this work, and nothing contained in this document shall be construed as changing said contract. The use of this information except as defined by said contract, or for any purpose other than that for which it is intended, is not authorized; and with respect to any such unauthorized use, neither General Electric Company not any of the contributors to this document makes any representation or warranty (express or implied) as to the completeness, accuracy, or usefulness of the information contained in this document or that such use of such information may not infringe upon privately owned rights; nor do they assume any responsibility for liability or damage of any kind which may result from such use of such information.

CONTENTS

1. INTRODUCTION

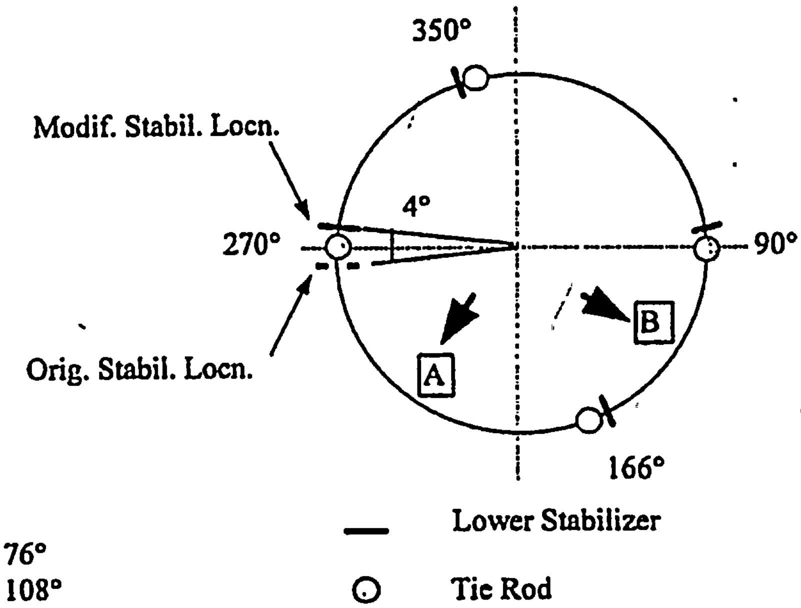
The purpose of this supplement to the seismic analysis is to address the change in the spacing between lower spring on the shroud repair hardware. Lower springs located at 90° intervals have the same equivalent spring constant in any direction of the applied load. Spacing greater than 90° between two adjacent springs tends to decrease the equivalent spring constant for loads applied between the two. Spring spacing less than 90° tends to increase the equivalent spring constant for loads applied between the two. Relocating the 270° lower spring to the opposite side of the tie rod, along with changes made previoulsy, result in the maximum spring spacing increasing to108° and the minimum spacing between springs decreasing to 76°.

2. SUMMARY AND CONCLUSIONS

3. ANALYSIS

The as-built locations of the tie rods are at azimuths 90°, 166°, 270°, and 350°. The lower stabilizer is attached to one side of the tie rod assembly (consistent side) at all four tie rod locations. The lower stabilizer at the 270° tie rod location, however, was found to be contacting the RPV at the bend radius of the reciculation pipe nozzle, resulting in partial bearing against the RPV. In order to remedy this, the lower stabilizer spring at this tie rod location is proposed to be removed and re-attached to the 'other' side of the tie rod assembly. This would result in the lower stabilizers being apart as follows:

90° ~ 166°	= 76°
166° ~ 274°	= 108°
274° ~ 350°	= 76°
350° ~ 90°	= 100°



Minimum Angle Spread	=	76°
Maximum Angle Spread	=	108°

The nominal lower stabilizer stiffness used in seismic analysis is based on 90° spread. The minimum angle spread of 76° (Load direction B) results in upper bound net stabilizer stiffness and the maximum angle spread of 108° (Load direction A) results in lower bound net stabilizer stiffness. Analysis was performed to assess the impact of the variation of the lower stabilizer stiffness (bounded by these upper and lower bound stabilizer stiffnesses) on the hardware seismic loads and displacements.

3.1 Lower Stabilizer Stiffness

4. RESULTS

The resulting hardware loads, displacements, loads in key internal components, and shroud frequencies are summarized in Table 1.

The displacements are within the allowables specified in the design specification (Reference 2). The hardware loads will be reconciled separately by comparing against the design loads/margins. The loads on key internal components are also summarized and are less than or equal to the loads based on uncracked, unmodified shroud.The shroud frequency shifts due to the stiffness changes are very small and moreover, they are in the frequency range where the spectral amplitudes are almost flat or mildly ramping, thus resulting in the above insignificant effects.

(ii)

5. REFERENCES

5.1. Nine Mile Point 1: Seismic Analysis -Core Shroud Repair Modification, Report Number GENE-B13-01739-03, Revision 0.

5.2. Design Specification - Shroud Repair, GE Document No. 25A5583.

Table 1
NMP1 Shroud Repair : Seismic Analysis - Lower Stabilizer Stiffness Parametric Study

7