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SUBJECT: Responds to NRC Bulletin 88-008 & Suppls 1 & 2 re unisolable sections of piping connected to RCS.

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TITLE: Bulletin Response 88-08 - Thermal Stress in Piping to RCS.

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NIAGARA MOHAWK POWER CORPORATION/301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/TELEPHONE (315) 474-1511

September 29, 1988
NMP1L 0309

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

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

Gentlemen:

This letter is in response to Nuclear Regulatory Commission Bulletin 88-08 and Supplements 1 and 2. This bulletin requested Niagara Mohawk to review the Reactor Coolant System to determine whether unisolable sections of piping connected to the Reactor Coolant System can be subjected to stresses from temperature stratification or oscillations that could be induced by leaking valves and which were not evaluated in the original plant design. The bulletin requires corrective actions if this condition exists.

The Niagara Mohawk review considered the potential for the type of thermal cycling described in Bulletin 88-08 as well as other conditions (e.g., mixing of flow streams with different temperatures) which could result in thermal fatigue. The results of this review are summarized below.

The Emergency Cooling System, under normal plant operating conditions, is maintained in the standby state. The isolation valves in the lines from the reactor vessel to the emergency condensers are open. The isolation valves in the two return lines from the emergency condensers to two reactor recirculation pump suction lines (No. 11 and No. 15) are closed so that these return lines are filled with water above the isolation valves. The differential pressure across the isolation valves is approximately 12 psi due to the head of water above the valves. In each return line, between the closed isolation valve and the recirculation pipe, is a check valve and a normally open, manually operated gate valve. This configuration is similar to the piping configuration described in the bulletin, except that the differential pressure across the isolation valve is smaller. Nevertheless, leakage through the isolation valve could cause thermal cycling. As required by Bulletin Action Item 2, Niagara Mohawk will perform a non-destructive examination of the unisolable piping welds, heat-affected zones and high stress locations. This will be completed during the current outage. Our June 23, 1988 letter (NMP1L 0274) requested schedular exemption from Appendix J testing of the Emergency Cooling return line valves. Niagara

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Mohawk stated that major system Emergency Cooling modifications would be required to permit Appendix J testing. Since modifications may also resolve the potential for thermal cycling, no other action is proposed at this time. This piping will be re-evaluated after the modifications to the Emergency Cooling System condensate return line isolation valves has been implemented.

The reactor head spray line has a closed isolation valve and lock closed gate valve to prevent leakage. (The line upstream of the locked closed valve is pressurized by the control rod drive pumps.) The reactor spray is not used for any plant operation. The portion of this line connected to the reactor vessel is included in the Inservice Inspection Program Plan. Welds in this piping from the inside isolation valve to the reactor vessel were surface inspected during the current outage in accordance with our ASME Section XI Inservice Inspection Program. No reportable indications were detected. This inspection and the Type C leak rate test performed on the isolation valve confirms that there is no significant leakage through the closed valves which would be a necessary condition for thermal cycling to occur.

The Feedwater System is normally in operation and continuously injects comparatively cold water into the Reactor Coolant System during plant operation. The Reactor Coolant System piping is designed for this, and no abnormal temperature transients that could contribute to thermal cycling fatigue have been observed except during reactor startup conditions. The Reactor Water Cleanup System is introduced into the colder feedwater piping through a mixing tee located in the primary containment. This is a design condition accounted for in the piping stress analysis. However, thermal cycling may occur under conditions of steady Reactor Water Cleanup System flow and cyclic feedwater demand, which can occur during reactor startup or shutdown when there is no turbine steam flow to heat the feedwater. Niagara Mohawk installed the feedwater low flow control system in response to NUREG 0619 to improve feedwater flow control and minimize thermal cycling at the reactor feedwater nozzles. However, leakage through the feedwater flow control valve has been observed during past startups. This condition has required partial use of the feedwater recirculation valve, a mode of operation that can contribute to thermal cycling. Consequently, Niagara Mohawk is processing a Technical Specification change to eliminate the requirement that the High Pressure Coolant Injection mode of the feedwater system be operable in other than the reactor mode switch in RUN. This will allow closing the feedwater pump blocking valve, thus assuring feedwater flow being controlled by the low flow control valve during startup or shutdown. In addition, the feedwater flow control valves are being rebuilt to minimize the leakage. We have decided to perform an inspection of the potentially highest stressed regions which include the portion of feedwater piping in the vicinity of the mixing tee. The inspection will be completed during the current plant outage.

The Liquid Poison System, when tested to satisfy surveillance requirements, is at a higher pressure than the Reactor Coolant System. The SQUIB fired injection valves provide a tight seal and prevent leakage to the Reactor Coolant System. Even if leakage should occur, the configuration is such that high thermal stresses in unisolable piping exterior to the vessel will not occur, and the bulletin concern does not apply to this system.

The Control Rod Drive Hydraulic System, while at a higher pressure than the Reactor Coolant System, is not operated in a configuration that could cause thermal stresses from leaking valves (except those connected to the head spray discussed above).

Although three potential piping configurations have been identified as having the potential to cause thermal cycling, there is no evidence that thermal cycling is a problem at Nine Mile Point Unit 1. We believe that the corrective actions identified above satisfactorily address the condition identified in the bulletin.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

C. D. Terry
Vice President
Nuclear Engineering and Licensing

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5671G

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	]	
	]	
Niagara Mohawk Power Corporation	]	Docket No. 50-220
	]	
(Nine Mile Point Unit 1)	]	

AFFIDAVIT

C. D. Terry, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

C D Terry

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 29th day of September, 1988.

Diane R. Kimball
Notary Public in and for
Onondaga County, New York

DIANE R. KIMBALL
Notary Public in the State of New York
Qualified in Onondaga County No. 4933503
My Commission Expires May 31, 1990

My Commission expires:

May 31, 1990