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AUTH NAME: CONWAY, J.T. AUTHOR AFFILIATION: Niagara Mohawk Power Corp.
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SUBJECT: Discusses GL 95-07, "Pressure Locking & Thermal Binding of Safety-Related Power-Operated Gate Valves."

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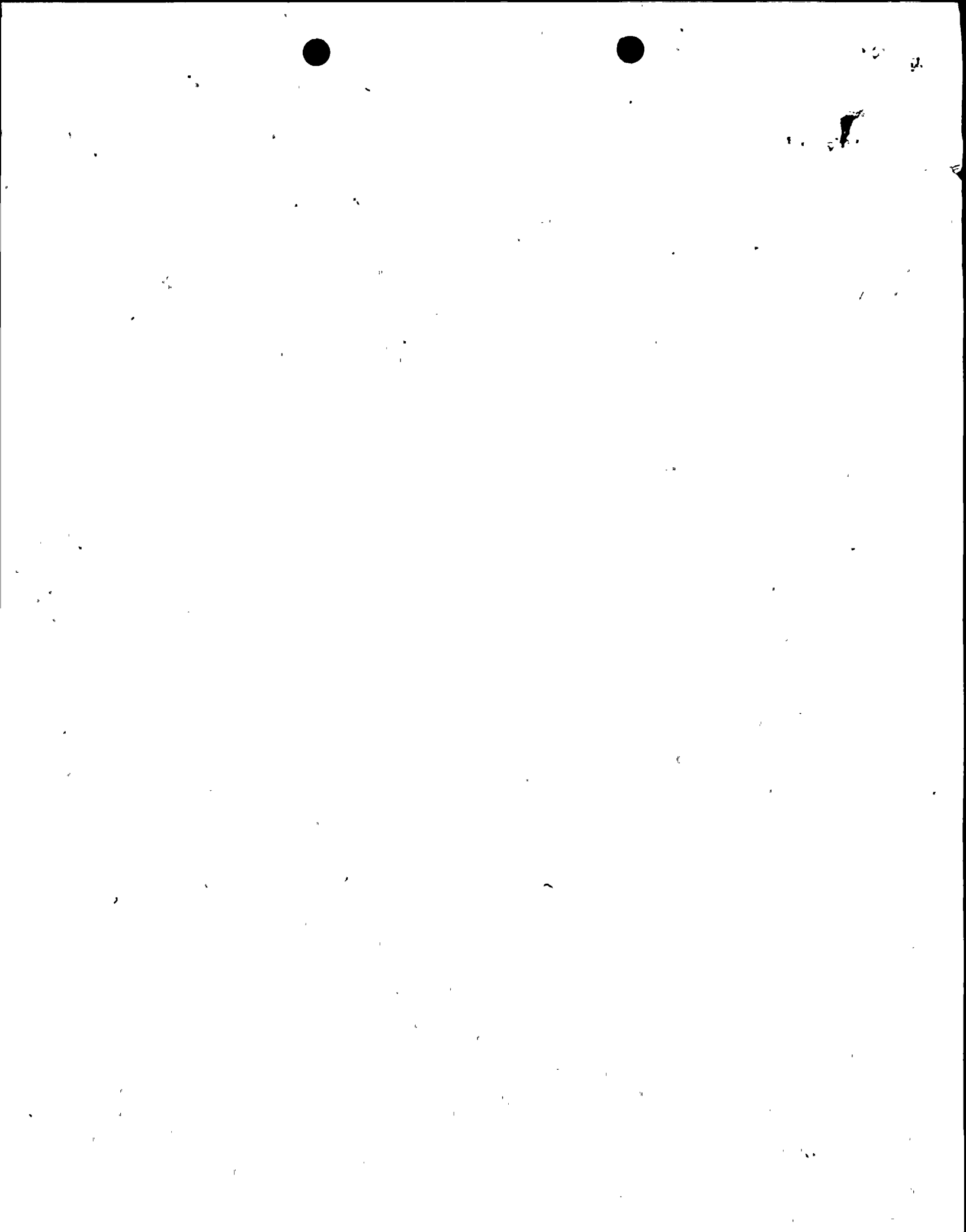
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NIAGARA MOHAWK

GENERATION
BUSINESS GROUP

NINE MILE POINT NUCLEAR STATION/LAKE ROAD, P.O. BOX 63, LYCOMING, NEW YORK 13093/TELEPHONE (315) 349-4213
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JOHN T. CONWAY
Vice President
Nuclear Engineering

August 29, 1997
NMP1L 1248

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

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

Subject: Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves"

Gentlemen:

The Commission issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that addressees perform or confirm that they previously performed: (1) evaluations of operational configurations of safety-related, power-operated (including motor, air, and hydraulically operated) gate valves for susceptibility to pressure locking and thermal binding; and (2) further analyses and any needed corrective actions to ensure that safety-related, power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions within the current licensing bases of the facility.

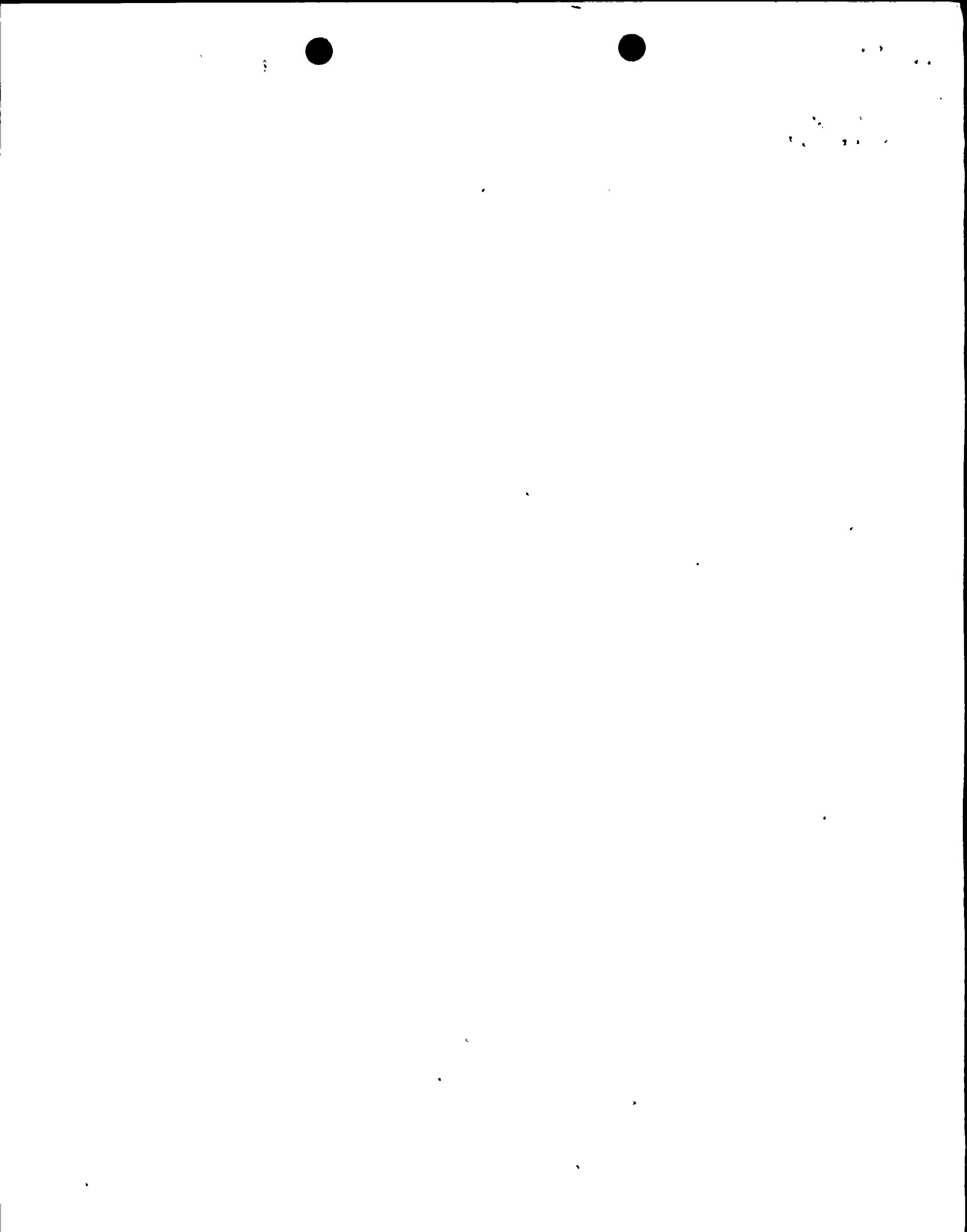
Required Response No. 1 required licensees to submit information within 60 days indicating whether or not the requested actions would be implemented and a schedule for completing implementation. Niagara Mohawk's letter dated October 16, 1995, provided the Commission the requested information. Required Response No. 2 required licensees to submit information within 180 days to provide the evaluations used to determine susceptibility to pressure locking or thermal binding, the results of these evaluations (including a list of susceptible valves) and the corrective actions, if any, for the valves identified. Attachment A to Niagara Mohawk's February 13, 1996, letter provided the Nine Mile Point Unit 1 Required Response No. 2.

On May 21, 1996, the Commission issued a Request for Additional Information to assist in their review of our previous response to GL 95-07. Niagara Mohawk's letter dated June 20, 1996, responded to that request. Attachment A to that letter contained the specific response for Nine Mile Point Unit 1.

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Upon further review of our methodology for evaluating pressure locking susceptibility, it has been determined that our responses to GL 95-07 and the Commission's Request for Additional Information must be revised. The reason for this revision is that after further review, Niagara Mohawk has determined that non-conservative assumptions were used in the calculations of actuator capability for pressure locking of valves which are closed for surveillance testing. This resulted in the identification of six additional valves which are susceptible to pressure locking during surveillance testing of which two required modification, and four required administrative changes to enter the appropriate Technical Specification action statement during surveillance testing activities. This error was discovered during our review of design documents associated with closure of the NMP1 program for GL 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance", and reported in NMP1 Licensee Event Report (LER 97-05, dated July 14, 1997).

Based upon the preceding, Attachment A (originally Attachment A to our February 13, 1996, letter) contains the revised 180 day response for Nine Mile Point Unit 1. Attachment B (originally Attachment A to our June 20, 1996, letter) contains a revised response to the Commission's Request for Additional Information. Marginal markings indicate changes to the original responses.

Sincerely,



John T. Conway
Vice President - Nuclear Engineering

CDT/GJG/lmc
Attachment

xc: Mr. H. J. Miller, Regional Administrator, Region I
Mr. B. S. Norris, Senior Resident Inspector
Mr. A. W. Dromerick, Acting Director, Project Directorate I-1, NRR
Mr. D. S. Hood, Senior Project Manager, NRR
Records Management



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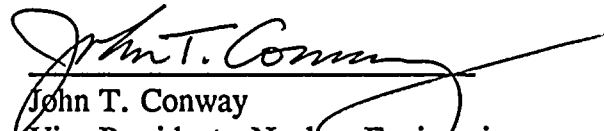
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UNITED STATES NUCLEAR REGULATORY COMMISSION

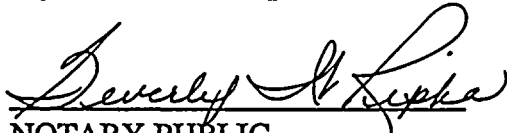
In the Matter of)	
)	
Niagara Mohawk Power Corporation)	Docket No. 50-220
)	
Nine Mile Point Unit 1)	

J. T. Conway, being duly sworn, states that he is Vice President - Nuclear Engineering 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 document attached hereto; and that the document is true and correct to the best of his knowledge, information and belief.


 John T. Conway
 Vice President - Nuclear Engineering

Subscribed and sworn before me,
in and for the State of New York
and the County of Oswego,
this 29 day of August, 1997

My Commission expires: 2/28/98


 NOTARY PUBLIC

BEVERLY W. RIPKA
 Notary Public State of New York
 Qual. in Oswego Co. No. 4644879
 My Commission Exp. ~~Mar 31, 1997~~
2/25/98



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ATTACHMENT A
REVISED

NINE MILE POINT UNIT 1

All addressees, including those who have already satisfactorily addressed pressure locking and thermal binding for MOVs by implementing the guidance in Supplement 6 to Generic Letter (GL) 89-10 (or equivalent industry methods), are requested to provide a summary description of the following:

Requested Information #1

The susceptibility evaluation of operational configurations performed in response to (or consistent with) 180-day Requested Action 1, and the further analyses performed in response to (or consistent with) 180-day Requested Action 2, including the bases or criteria for determining that valves are or are not susceptible to pressure locking or thermal binding;

Response #1

Summary Description of Susceptibility Evaluation

An initial screening of all safety-related gate valves installed at Nine Mile Point Unit 1 (NMP1) was performed to select the population of valves that may be susceptible to pressure locking or thermal binding. Initially, a list was developed from the Master Equipment List database to select the active, safety-related, power-operated valves at NMP1. This list was then validated utilizing alternate sources such as the NMP1 Inservice Testing Program, GL 89-10 program and safety class determinations as a basis for identifying those valves with an opening safety-related function. The valves that remained on the list were then screened for potential susceptibility based on valve type. The final list indicated ten air-operated gate valves (AOVs) as potentially susceptible to thermal binding and 34 motor-operated gate valves (MOVs) as potentially susceptible to pressure locking.

The ten AOVs selected during the initial screening were further evaluated to determine if they were susceptible to thermal binding. The evaluation considered the environmental and process conditions that would be present during normal, accident and test modes of operation. Various sources were used in each evaluation, including Operating Procedures, Test Procedures, System Design Basis Documents, Environmental Qualification data, NMP1 Final Safety Analysis Report and Emergency Operating Procedures. Valve design and materials of construction were also considered in the evaluation. The 34 MOVs were evaluated for pressure locking using similar guidance and under the GL 89-10 program.

Requested Information #2

The results of the susceptibility evaluation and the further analyses referred to in 1 above, including a listing of the susceptible valves identified.



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Response #2

Results of Susceptibility Evaluation/List of Susceptible Valves

The susceptibility evaluations indicated that all ten AOVs initially determined to be potentially susceptible (to thermal binding) are not subjected to the operational conditions that would result in thermal binding.

The susceptibility evaluations indicated that 12 of the 34 MOVs initially determined to be potentially susceptible (to pressure locking) are susceptible to pressure locking. These valves are listed below.

List of Susceptible Valves

Valve Number	System	Type	Mfg/Size	Act. Type	ANSI Class	Safety Direction
40-01	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
40-05	Core Spray	Gate (FW)	Crane / 6	MOV	900	Both
40-06	Core Spray	Gate (FW)	Crane / 6	MOV	900	Both
40-09	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
40-10	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
40-11	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
40-02	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
40-12	Core Spray	Gate (FW)	Crane / 12	MOV	900	Open
39-07R	Emergency Cooling	Gate (Equi - Wedge)	Rockwell / 8	MOV	900	Close*
39-08R	Emergency Cooling	Gate (Equi - Wedge)	Rockwell / 8	MOV	900	Close*
39-09R	Emergency Cooling	Gate (Equi - Wedge)	Rockwell / 8	MOV	900	Close*
39-10R	Emergency Cooling	Gate (Equi - Wedge)	Rockwell / 8	MOV	900	Close*

*Open only if closed for surveillance testing which is not an automatic function and now requires entry into the appropriate Technical Specification action statement.



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Requested Information #3

The corrective actions, or other dispositioning, for the valves identified as susceptible to pressure locking or thermal binding, including: (a) equipment or procedural modifications completed and planned (including the completion schedule for such actions); and (b) justification for any determination that particular safety-related power-operated gate valves susceptible to pressure locking or thermal binding are acceptable as is.

Response #3

Corrective Actions for Valves Susceptible to Pressure Locking or Thermal Binding

No modifications are required to address thermal binding. Six MOVs determined to be susceptible to pressure locking were modified during Refuel Outage 13 in 1995 and two MOVs were modified during forced outage 97-04 in June 1997. The modifications included adding a bypass line or drilling a hole in the valve disc. The two valves modified in June 1997 are the core spray outboard isolation valves which are designed to automatically reopen upon receipt of a core spray initiation signal while closed for testing. The four remaining MOVs are only susceptible when closed during surveillance testing. Therefore, the appropriate Technical Specifications action statement is entered, so that modifications are not required.



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ATTACHMENT A
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REQUEST FOR ADDITIONAL INFORMATION

Information Request No. 1

*Your February submittal states that valves 2CSH*MOV107, HPCS Pump Injection Isolation, and 2ICS*MOV126, RCIC Injection Isolation, have been evaluated as having adequate actuator capacity to overcome the applicable pressure locking scenarios at the specific point of operation during an accident and following the guidance of GL 95-07. Please provide these evaluations for our review. Also, please include any thrust requirement and actuator capability calculations that were performed.*

Response No. 1

Information Request No. 1 is applicable only to Nine Mile Point Unit 2 and is addressed in Attachment B to this letter.

Information Request No. 2

In Attachment 1 to GL 95-07, the NRC staff requested that licensees include consideration of the potential for gate valves to undergo pressure locking or thermal binding during surveillance testing. During workshops on GL 95-07 in each Region, the NRC staff stated that, if closing a safety-related power-operated gate valve for test or surveillance defeats the capability of the safety system or train, the licensee should perform one of the following within the scope of GL 95-07:

- 1. Verify that the valve is not susceptible to pressure locking or thermal binding while closed,*
- 2. Follow plant technical specifications for the train/system while the valve is closed,*
- 3. Demonstrate that the actuator has sufficient capacity to overcome these phenomena, or*
- 4. Make appropriate hardware and/or procedural modifications to prevent pressure locking and thermal binding.*

The staff stated that normally-open, safety-related power-operated gate valves that are closed for test or surveillance but must return to the open position should be evaluated within the scope of GL 95-07. Please state whether valves that meet this criteria were included in your review, and discuss how potential pressure locking or thermal binding concerns were addressed.



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Response No. 2

As indicated in Nine Mile Point Unit 1's response to Generic Letter (GL) 95-07, dated February 13, 1996, safety-related power-operated gate valves with an active safety function to open were evaluated within the scope of GL 95-07. Accordingly, the scope of valves evaluated included normally-open valves that could be closed but must return to the open position to perform its function. The method by which the valves could be closed (i.e., test, surveillance, etc.) had no influence on the decision whether to evaluate the valves. As stated in our February 13, 1996 letter, no modifications were required to address thermal binding. Six MOVs determined to be susceptible to pressure locking were modified during Refuel Outage 13 in 1995 and two MOVs were modified during forced outage 97-04 in June 1997. The modifications included adding a bypass line or drilling a hole in the valve disc. The four remaining valves are susceptible during surveillance testing which now requires entry into the appropriate Technical Specification action statement, so that modifications are not required.

Information Request No. 3

From its review of operational experience feedback, the NRC staff is aware of instances in which licensees have completed design or procedural modifications to preclude pressure locking or thermal binding that may have had an adverse impact upon plant safety due to incomplete or incorrect evaluation of the potential effects of these modifications. Please describe the evaluations and training of plant personnel that you have conducted or plan for each design or procedural modification completed to address potential pressure locking or thermal binding concerns.

Response No. 3

At NMP1, design or procedural modifications to preclude pressure locking or thermal binding were evaluated for any adverse impact to plant safety in accordance with plant design change procedures and 10CFR50.59. Also, operational feedback information was taken into account prior to selecting the type of change to each valve. These changes received technical review per procedure and Station Operations Review Committee (SORC) review. Also, these plant modifications were reviewed for incorporation into the plant simulator programming and into Licensed Operator requal training. In addition, SOER 84-7, Pressure Locking and Thermal Binding of Gate Valves, was previously discussed with plant technical staff during continued training. NMPC submitted NMP1 LER 97-05 on July 14, 1997 which describes a discrepancy found during closure reviews for the NMP1 GL 89-10 Program. The corrective actions for that LER include sharing the lesson learned from that event with Nuclear Engineering personnel and incorporating review of the event into Technical Staff Training by December 31, 1997.



10-22-68