Stephen E. Quinn
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
Broadway & Bleakley Avenue
Buchanan, NY 10511
Telephone (914) 734-5340

September 8, 1997

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station PI-137
Washington, DC 20555

SUBJECT: Request for Additional Information - Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related, Power-Operated Gate Valves," Indian Point Station, Unit 2 (TAC No. M93473)

Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related, Power-Operated Gate Valves," dated August 17,1995, requests certain actions be taken by utilities regarding the susceptibility and evaluation of power-operated gate valves as set forth therein.

Pursuant to 10 CFR 50.54 (f), Consolidated Edison Company of New York, Inc. (Con Edison) provided written responses to GL 95-07 on October 16, 1995, November 15, 1995 and February 13, 1996. Further, on July 31, 1996, Con Edison provided a written response to the staff's request for additional information dated July 1, 1996 on GL 95-07.

This letter is in response to the staff's August 7, 1997 request for additional information concerning Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves Relative to Indian Point Station, Unit 2 (TAC No. M93473). This letter also summarizes the results of recent inspections and subsequent evaluations.

Inspections during the 1997 refueling outage (RFO) confirmed the presence of holes to achieve pressure equalization in the discs of several of the valves involved. As a result of these inspections and other programmatic changes, we have revised our evaluations covering pressure locking and thermal binding of power operated gate valves. A copy of the revised evaluation entitled: "Evaluation of IP2 Safety Related Power Operated Gate Valves for Pressure Locking and Thermal Binding Based Upon 97 RFO Modifications and Test Results," Calculation No. MEX-00131-02, is available for inspection at Con Edison's Indian Point Unit No. 2 Station.

A056

1/1

The attachment to this letter responds to your specific requests for additional information. Should you or your staff have any concerns regarding this matter, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety & Licensing.

Very truly yours,

Subscribed and sworn to
before me this 8th day
of September 1997

Karen L. Lancaster
KAREN L. LANCASTER
Notary Public, State of New York
No. 60-4643659
Qualified In Westchester County
Term Expires 9/30/97

Attachment

cc: Mr. Hubert J. Miller
Regional Administrator - Region I
US Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Jefferey Harold, Project Manager
Project Directorate I-1
Division of Reactor Projects I/II
US Nuclear Regulatory Commission
Mail Stop 14B-2
Washington, DC 20555

Senior Resident Inspector
US Nuclear Regulatory Commission
PO Box 38
Buchanan, NY 10511

ATTACHMENT

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
RESPONSES TO GENERIC LETTER 95-07,
"PRESSURE LOCKING AND THERMAL BINDING
OF SAFETY-RELATED POWER-OPERATED GATE VALVES"

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
SEPTEMBER 1997

RESPONSE TO NRC AUGUST 7, 1997 REQUEST FOR ADDITIONAL INFORMATION INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 RESPONSES TO GENERIC LETTER 95-07, "PRESSURE LOCKING AND THERMAL BINDING OF SAFETY-RELATED POWER-OPERATED GATE VALVES"

Response 1a :

A report entitled "Assessment of Consolidated Edison Pressure Locking Evaluation Method for Parallel Double Disk and Flexible Wedge Gate Valves Tested by INEL" dated May 1997, prepared by MPR Associates is provided as reference 29 of Appendix B to Calculation No. MEX-00131-02. This report validates the methodology employed in our previous assessments.

Response 1b:

The report described in Response 1a above, assesses the extent to which Con Edison's previous methodology for predicting pressure locking loads bounds the INEL pressure locking tests of similar valves. As a result of that assessment, we have increased the valve factors used in predicting pressure locking loads to assure that our predictions conservatively bound the preliminary INEL results.

Response 1c:

The only valve required to be supported by calculations demonstrating that the actuator is capable of providing sufficient thrust to overcome the pressure locking loads is Valve 744. The valve factors used in this evaluation were obtained from the delta p testing near full design basis delta p conditions. This valve is on the discharge side of the RHR pumps, thus allowing for delta p testing near full design basis conditions. The valve factor obtained from these tests (0.37) was calculated using the system conditions, packing loads and stem thrust measurements obtained during the delta p test using the MOVATS torque/thrust cell. For purposes of this pressure locking analysis the valve factor obtained from the dynamic testing was increased by 25% (to 0.463) consistent with MPR's analysis to assure that the results of the INEL testing is bounded.

Subsequent to the February 13, 1996 submittal, many of the valves previously identified as susceptible to pressure locking were opened for inspection during the 1997 RFO (these valves are listed in Response 2 below). All of the valves opened did in fact have holes in

one of the discs. In certain instances we elected to replace the existing discs with a new discs drilled through at a location to enhance pressure equalization capability. Therefore the valves that were opened for inspection during the 1997 RFO are not susceptible to pressure locking. The remaining valves that were evaluated for pressure locking are discussed later in Response 2 below.

Response 1d:

A discussion of the valve factors used for the remaining susceptible valves is provided in Response 2 below.

Response 2:

The following valves were opened during the 1997 refueling outage and the presence of disc pressure equalization holes confirmed. Thus the valves listed below are not susceptible to pressure locking as previously assumed:

746, 747, 1802A, 1802B, 889A, 889B, 885B

Valve 885A will be opened during the 1999 refueling outage to confirm the presence of a disc pressure equalization hole, if no hole exists a hole will be drilled at that time (note that the companion valve 885B has a disc pressure equalization hole). In the interim, operating procedures have been revised to eliminate the source of and potential susceptibility to pressure induced pressure locking associated with this valve. A description of these administrative controls is provided in Section 6.6, of Calculation No. MEX-00131-02.

Based on system and component reviews, the following valves are not susceptible to pressure locking or thermal binding. A description of these reviews is provided in the sections of Calculation No. MEX-00131-02 referenced below:

730/731 - Section 6.9
333 - Section 6.8
866 A/B/C/D - Section 6.11
LCV-112C - Section 6.12

Valves 888A and B are considered susceptible to pressure locking. Due to the presence of an installed post-accident seal system for containment isolation valves, pressure equalization methods are not an alternative. Administrative measures have been incorporated to eliminate the source of pressure induced pressure locking for these valves. A description of these controls is contained in section 6.7 of Calculation No. MEX-00131-02.

Valve 744 is considered susceptible to pressure/temperature induced pressure locking. Due to the presence of an installed post-accident seal system for this containment isolation valve, pressure equalization is not an alternative. This valve is the only valve required to be supported by calculations demonstrating that the actuator is capable of providing sufficient thrust to overcome the pressure locking loads. These calculations are contained in section 6.5 of Calculation No. MEX-00131-02. The valve factors used in this evaluation were obtained from the delta p testing near full design basis delta p conditions. This valve is on the discharge side of the RHR pumps, thus allowing for delta p testing near full design basis conditions. The valve factor obtained from these tests (0.37) was calculated using the system conditions, packing loads and stem thrust measurements obtained during the delta p test using the MOVATS torque/thrust cell. For purposes of this pressure locking analysis the valve factor obtained from the dynamic testing was increased by 25% (to 0.463) consistent with MPR's analysis to assure that the results of the INEL testing is bounded.

Response 3:

The pressurizer PORV block valves are normally maintained in the closed position during normal operation. They receive an automatic open signal at an RCS temperature of 305 ^{0}F when cooling the plant down, thus arming the low temperature over pressure (LTOP) system. In this instance, the actual cool down experience is the design basis condition. These valves have responded to the open signal on every plant cool down since the system was first installed in the late 1970s with no evidence of thermal binding. The valves have pressure equalization holes and are not susceptible to pressure locking. The fact that these valves have actually opened as required, with no evidence of thermal binding, is justification that these valves are fully capable of performing their design basis function without regard to thermal binding temperature thresholds.

Section 6.1 of Calculation No. MEX-00131-02 provides additional discussion concerning these valves.

Response 4:

The only valve considered susceptible to pressure locking is valve 744. The worst case postulated motor control center voltage is used in evaluating the ability of this valve actuator to overcome the pressure locking load. The worst case postulated motor control center voltage is based on the degraded voltage relay set-point of 415 volts +/- 6 volts. Based on the degraded voltage set-point, motor terminal voltage is 87% of motor

nameplate voltage (section 6.5 of Calculation No. MEX-00131-02). This is the value used in the GL 89-10 evaluations.

Response 5:

Normally open MOVs that are required to close during a surveillance test and that could become susceptible to pressure locking or thermal binding when in the closed position are identified in table A-3, Appendix A, of Calculation No. MEX-00131-02. The first ten valves listed are the only valves stroked with the unit on-line and potentially susceptible to pressure induced pressure locking due to the absence of pressure equalization provisions.

Consistent with the note in table A-3, upon closure of any of these ten valves, the applicable technical specification action statement is entered until such time as the valve is reopened. Additional details are provided in Section 6 of Calculation No. MEX-00131-02.