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New York Power Authority

Harry P. Salmon, Jr.
Site Executive Officer

February 13, 1996
JAFP-96-0064

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket 50-333
Evaluation Results for Generic Letter 95-07
Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves

Reference: 1. NRC Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves", dated August 17, 1995

Dear Sir:

The Power Authority has completed a screening review of safety-related power-operated gate valves and has evaluated those found potentially susceptible to pressure locking or thermal binding (PLTB), as requested in Generic Letter 95-07 (Reference 1). The screening criteria and evaluation results are summarized in Attachment I.

The screening review identified two safety-related gate valves with pneumatic actuators. The evaluation concluded that PLTB is not a concern for these valves. A review of safety-related motor-operated gate valves, previously evaluated as part of our Generic Letter 89-10 Program, was also performed. Attachment I includes the results of the updated screening review and evaluation. The basis for operability for each of these valves was documented and the evaluation concludes that these valves are capable of performing their intended safety function.

The Authority will modify five (5) additional valves to reduce or eliminate the potential for PLTB. Our goal will be to complete these modifications during the next refueling outage. However, because of the limited amount of time for engineering and scheduling, two of the five modifications may have to be deferred to the following outage. At least three of the five valves will be modified during the next refueling outage currently scheduled for the Fall of 1996.

RCIC turbine steam isolation inlet valve (13MOV-131), currently a gate valve, will be replaced with a globe valve. Seating thrust on the core spray inboard isolation valves (14MOV-12A and 12B) will be re-evaluated and adjusted to further reduce the potential for thermal binding. These three modifications will be completed during the Fall 1996 outage.

Bonnet venting will be installed on the RCIC pump discharge to reactor inboard isolation valve (13MOV-21) and the HPCI pump discharge to reactor inboard isolation valve (23MOV-19) to eliminate the potential for pressure locking no later than the 1998 refuel outage.

Motor-operated safety-related gate valves susceptible to PLTB were previously evaluated by the Authority in response to Generic Letter 89-10, Supplement 6, and numerous valves have been modified with a bonnet vent path to prevent pressure locking.

Attachment II contains the commitments made by the Authority in this letter. If you have any questions, please contact Mr. Arthur Zaremba at (315) 349-6365.

Very truly yours,

Harry P. Salmon, Jr.
Site Executive Officer

HPS:RAP:las

cc: Next Page

STATE OF NEW YORK
COUNTY OF OSWEGO
Subscribed and sworn to before me
this 13 day of February 1996

Nancy B. Czerow
Notary Public

NANCY B. CZEROW
Notary Public, State of New York
Certified in Oswego County No. 4634011
My Commission Expires 1-26-97

Attachments:

I - Evaluation of Safety-Related Power-Operated Gate Valves for Pressure Locking and Thermal Binding

II - List of Commitments

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ATTACHMENT I

New York Power Authority
James A. FitzPatrick Nuclear Power Plant

Evaluation of Safety-Related Power-Operated Gate Valves for Pressure Locking and Thermal Binding

1.0 PURPOSE AND SCOPE

This document includes the evaluations and actions implemented at the FitzPatrick Plant to address Generic Letter 95-07 (Reference 1). A comprehensive review of safety-related power-operated gate valves installed at the FitzPatrick Plant has been performed to determine if any are susceptible to pressure locking or thermal binding (PLTB) phenomena. The scope of valves evaluated for pressure locking are listed in Table 1 and the valves evaluated for thermal binding are listed in Table 2. For valves identified as susceptible, recommended corrective actions have been made. With the completion of this evaluation and any corrective actions, the requirements of Generic Letter 95-07 will be met.

2.0 INITIAL SCREENING

The following assumptions were conservatively applied to both pressure locking and thermal binding:

1. Power-operated gate valves are assumed to be susceptible to Pressure Locking/ Thermal Binding (PL/TB).

2. Check valves are assumed to allow back leakage.

3. For pressure locking only, fluid is assumed to become entrapped in the bonnet cavity of flexible wedge and double disc gate valves in two ways. Fluid either leaks into the bonnet while the valve is closed, or becomes entrapped during closing. The bonnet cavity is assumed to be leak tight, precluding gradual depressurization.

Pressure Locking

The following methodology was used to identify power-operated gate valves potentially susceptible to pressure locking:

a. Flexible wedge and parallel double disc gate valves are considered potentially susceptible to pressure locking. Solid wedge gate valves are not susceptible to pressure locking.

b. Valves with bleed holes or bonnet vent lines which equalize bonnet pressure to upstream or downstream conditions are not susceptible.

c. Valves with no open safety function are excluded from potentially susceptible valves.

Thermal Binding

The following methodology was used to identify power-operated gate valves potentially susceptible to Thermal Binding:

a. Flexible and solid wedge gate valves are considered potentially susceptible to thermal binding.

b. Valves whose maximum fluid temperature does not exceed 200°F (threshold temperature) are excluded from the scope of potentially susceptible (see Reference 3).

c. Valves whose temperature change (ΔT) is less than 100°F for flexible wedge and 50°F for solid wedge may be excluded from the scope of potentially susceptible (see Reference 3).

d. Valves with no open safety function are excluded from potentially susceptible valves.

3.0 DETAILED EVALUATION

After the valves were screened using the criteria in Section 2.0, the valves requiring additional evaluation were examined individually for PLTB susceptibility.

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Evaluation of Safety-Related Power-Operated Gate Valves for Pressure Locking and Thermal Binding

3.1 *Pressure Locking Evaluation*

As discussed in NUREG-1275, Vol. 9 (Reference 2) pressure locking may be caused by two different phenomena. High pressure fluid may be trapped in a valve bonnet from an external source such as pump shut-off. This is referred to as pressure transient pressure locking. Low pressure water trapped in a valve bonnet and then heated by system or external heat sources causes expansion and increased pressure. This is referred to as thermally induced pressure locking.

1. **10MOV-16A and 10MOV-16B** **RHR Loop A and B Minimum Flow Isolation Valves**

PRA Rank: **Low**

These normally open MOVs automatically open to ensure that RHR pump minimum flow is available. There is no potential for pressure transient pressure locking because the RHR pump would be running, providing an upstream pressure greater than, or equal to, any potentially trapped bonnet pressure. Thermally induced pressure locking from heat conduction will not occur because of the relatively long length of small diameter (2" and 3") pipe from the RHR pump discharge piping (possible heat source). Thermally induced pressure locking from external heating will not occur because these valves are normally open. Their safety function to re-open only occurs when RHR flow reduces to the minimum flow setpoint (when minimum flow required for pump protection). The limiting environmental qualification (EQ) accident event (RCIC HELB) has a relatively low peak accident temperature (~139 °F) and short duration (temperature less than 125 °F within 100 seconds). Thus heating of the fluid in the bonnet will not occur because there is not sufficient time and temperature difference and RCIC HELB coincident with RHR pump operation would be unlikely.

2. **10MOV-89A and 10MOV-89B** **RHR Heat Exchanger A and B Service Water Outlet Isolation Valves**

PRA Rank: **High**

These normally closed MOVs open to place RHR Service Water in the Containment Cooling Mode. There is no potential for pressure transient pressure locking because plant procedures require the RHR Service Water pump be started prior to throttle opening this valve. As a result, upstream pressure would be equal or greater than any potentially trapped bonnet pressure. A potential for thermally induced pressure locking could exist because of the accident temperature profile for 10MOV-89A&B. This accident temperature profile is based upon a high energy line break (HELB) of the RHR steam condensing line. Operability Assessment JSEM-94-024 (Reference 4), showed that 10MOV-89B is not required to be manipulated during, or in response to, the analyzed HELB event, eliminating the possibility of thermally induced pressure locking. This is also true for 10MOV-89A.

3. **13MOV-21** **RCIC Pump Discharge to Reactor Inboard Isolation Valve**

PRA Rank: **Medium**

Calculation JAF-CALC-RCIC-02190 (Reference 5), showed that 13MOV-21 has sufficient torque and thrust capability to overcome pressure transient induced pressure locking conditions. A proposed modification to install bonnet pressure relief is being planned, with completion no later than Refuel Outage 13 (scheduled for fall 1998). The accident temperature profile for 13MOV-21 shows a maximum temperature approximating normal operating conditions. The lack of elevated temperature conditions precludes thermally induced pressure locking.

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4. **13MOV-131** **RCIC Turbine Steam Inlet Isolation Valve**

PRA Rank: **Medium**

Calculation JAF-CALC-RCIC-02193 (Reference 6), showed that 13MOV-131 has sufficient torque and thrust capability to overcome pressure transient induced pressure locking conditions. Due to the presence of a drain pot on the upstream side of 13MOV-131, there is no potential for water (due to condensed steam) to collect and become trapped in the valve bonnet. Therefore, the entrapment, and subsequent heatup, of water in the bonnet of 13MOV-131 need not be considered. This prevents thermally induced pressure locking.

Modification M1-94-031 (currently planned for Refuel Outage 12, fall 1996) will replace the gate valve installed for 13MOV-131 with a globe valve which will eliminate the potential for pressure locking.

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Evaluation of Safety-Related Power-Operated Gate Valves for Pressure Locking and Thermal Binding

5. **14MOV-5A** **Core Spray Pump A Minimum Flow Isolation Valve**

PRA Rank: **Low**

This normally open MOV automatically opens to ensure that core spray pump minimum flow is available. There is no potential for pressure transient pressure locking because the core spray pump would be running, providing an upstream pressure greater than, or equal to, any potentially trapped bonnet pressure. Thermally induced pressure locking from heat conduction will not occur because of the relatively long length of small diameter (3") pipe from the core spray pump discharge piping (possible heat source). Thermally induced pressure locking from external heating will not occur because this valve is normally open. Its safety function to re-open only occurs when core spray flow reduces to the minimum flow setpoint (when minimum flow required for pump protection). The limiting environmental qualification (EQ) accident event (RCIC HELB) has a relatively low peak accident temperature (~139 °F) and short duration (temperature less than 125 °F within 100 seconds). Thus heating of the fluid in the bonnet will not occur because there is not sufficient time and temperature difference and RCIC HELB coincident with core spray pump operation would be unlikely.

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6. **23MOV-19** **HPCI Pump Discharge to Reactor Inboard Isolation Valve**

PRA Rank: **High**

Calculation JAF-CALC-RCIC-02194 (Reference 7), showed that 23MOV-19 has sufficient torque and thrust capability to overcome pressure transient induced pressure locking conditions. A proposed modification to install bonnet pressure relief is being planned, with completion no later than Refuel Outage 13 (scheduled for fall 1998).

Thermally induced pressure locking due to post-accident ambient temperature increases (which could transfer heat to the water entrapped in the bonnet) need not be considered for the following reasons:

a. Design Basis LOCA---the Torus Room EQ accident temperature profile for 23MOV-19 shows a maximum long term EQ temperature of ~209 °F for a design basis LOCA. However, thermally induced pressure locking would not be of concern because the HPCI system would not be available due to low reactor pressure.

b. RCIC HELB---the next limiting Torus Room EQ temperature profile specifies a maximum temperature of ~163 °F for a RCIC steam line HELB. The HPCI System does not have a safety-related function in response to a RCIC HELB.

c. HPCI HELB---the next limiting Torus Room EQ temperature profile specifies a maximum temperature of ~120 °F for a HPCI steam line HELB, in which case HPCI would not be available.

d. Small Break LOCA---No Torus Room EQ temperature profile exists for a small break LOCA since they are all bounded by the design basis LOCA. However, GE Report GE-NE-T23-00725-01 (Reference 8), addresses 0.01 ft^2, 0.1 ft^2 and 0.75 ft^2 small break LOCAs of the main steamline. For these three breaks, the HPCI system starts within 30 seconds, 8 seconds, and 1 second, respectively, of the initiating event. For the 0.01 ft^2 break, the corresponding wetwell air sample temperature (at 30 seconds) is approximately 110°F. Therefore, for all cases, HPCI initiates before heat can transfer from the wetwell, to the torus room, to the valve bonnet.

7. **46MOV-101A and 46MOV-101B** — **Emergency Service Water Loop A and B Supply Header Isolation Valves**

PRA Rank: **Low**

These normally closed MOVs open to provide backup cooling water to the safety-related Service Water cooled components downstream. There is no potential for pressure transient pressure locking because plant procedures require the pump to be running prior to opening the MOV, providing an upstream pressure greater than, or equal to, any potentially trapped bonnet pressure. All analyses show that 46MOV-101A&B are not subject to elevated ambient temperatures. Therefore, thermally induced pressure locking is precluded.

3.2 *Thermal Binding Evaluation*

1. **10MOV-25A and 10MOV-25B** **RHR A and B LPCI Inboard Injection Valves**

PRA Rank: **High**

10MOV-25A&B may be excluded from the list of valves potentially susceptible to thermal binding for the following reasons:

a. As part of his presentation for the NRC *Workshop on Gate Valve Pressure Locking and Thermal Binding* (2/4/94) (Reference 9), D. W. Wright (Research Engineer) of A/D Valve Co. stated, "[t]hermal binding occurs as a result of differential contraction between the valve body and the valve disc as the system cools. The differential contraction can cause the disc to become tightly pinched in the valve seats, rendering the valve inoperable". Mr. Wright's criteria for identifying MOVs potentially susceptible to thermal binding included the identification of "wedge-type gate valves having dissimilar body and disc base materials (i.e. carbon steel vs. stainless steel)". The body and disc materials of 10MOV-25A(B) are both the same material.

b. The assumed temperature (250°F) for 10MOV-25A(B) comes from the line designation table maximum operating temperature for line 24"-W20-902-14A(B). During normal operation 10MOV-25A(B) is closed with a dead water leg downstream to the recirculation pump discharge line. Heating of 10MOV-25A(B) may occur due to conduction along this dead leg and from slight leakage or pressure equalization flow during surveillance testing. Whatever heating and temperature change which may occur during normal surveillance testing would be essentially the same as for design basis operation (valve would not cool appreciably between accident depressurization and when signalled to open). Thus if thermal binding does not occur for surveillance it will not occur for design basis conditions.

c. A review of maintenance history data has identified no previous thermal binding events for 10MOV-25A or 10MOV-25B.

2. **10MOV-39A** **RHR A Torus Cooling Isolation Valve**

PRA Rank: **High**

10MOV-39A may be excluded from the list of valves potentially susceptible to thermal binding for the following reasons:

a. The body and disc materials of 10MOV-39A are both the same material.

b. The assumed temperature (250°F) for 10MOV-39A comes from the line designation table maximum operating temperature for line 16"-W20-302-15A. 10MOV-39A is normally closed and opened to provide a return path to the suppression pool for test, torus cooling and containment cooling. The maximum EQ temperature is 139°F (Reference 10) which is effectively the maximum temperature to open. The Generic Letter 89-10 evaluation noted that the required close function occurs with realignment for LPCI from torus cooling (torus water temperature <110°F). Thus for both opening and closing that maximum valve temperature will be less than the 200°F threshold temperature for thermal binding (Reference 3).

c. A review of maintenance history data has identified no previous thermal binding events for 10MOV-39A.

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3. **13MOV-131** **RCIC Turbine Steam Inlet Isolation Valve**

PRA Rank: **Medium**

This normally closed MOV automatically opens for RCIC initiation. The body and disc of 13MOV-131 are comprised of different materials. However, the RCIC steam supply containment isolation valves are normally open, providing steam pressure and temperature to the upstream side of 13MOV-131. 13MOV-131 is never opened cold to initiate RCIC and, therefore, may be excluded from the list of MOVs potentially susceptible to thermal binding. In addition, a review of maintenance history data has identified no previous thermal binding events for 13MOV-131.

Modification M1-94-031 (currently planned for RO12, fall 1996) will replace the gate valve installed for 13MOV-131 with a globe valve which will eliminate the potential for thermal binding.

4. **14MOV-12A and 14MOV-12B** **Core Spray Loop A and B Inboard Isolation Valves**

PRA Rank: **Low**

14MOV-12A&B may be excluded from the list of valves potentially susceptible to thermal binding for the following reason:

Although the body and disc of 14MOV-12A(B) are comprised of different materials, the following provides the basis that the MOV is not susceptible to thermal binding:

a. 14MOV12A(B) is normally closed, and has a safety function to open to initiate Core Spray. Under normal operating conditions, with the assumption of leakage past inboard check valve 14AOV-13A(B), the temperature of 14MOV-12A(B) is potentially subject to increased operating temperature. This MOV may be closed while at full power (during surveillance testing), and then be required to open to provide Core Spray injection following a DBA LOCA. Under this scenario,

the temperature of 14MOV-12A(B) achieves a relatively steady state thermal equilibrium due to Core Spray system water on the outboard side of the valve, and temperature conduction against the inboard side of the valve. JAF-CALC-CSP-02264 (Reference 11) calculated the conduction heating potential and showed with conservative modeling that the steady state temperature decays to the assumed drywell ambient temperature (165°F) well before reaching 14MOV-12A(B). Therefore the valve temperature does not exceed the threshold temperature of 200°F.

b. Memorandum JTS-94-0601, Rev. 1, dated 10/20/94 (Reference 12), evaluated a 9/12/94 pressure increase in the Core Spray "A" header, and concluded that inboard check valve 14AOV-13A was "leaking by". Therefore, 14MOV-12A was subjected to, and closed against (during surveillance testing), an increased operating temperature resulting from the 14AOV-13A leakage. After the start of the 1995 refuel outage, 14MOV-12A was successfully stroked open on 1/27/95 during as-found LLRT. Therefore, 14MOV-12A successfully stroked open after having cooled down (while in the closed position) from the increased operating temperature, to a temperature approaching ambient. Therefore, there is reasonable assurance that 14MOV-12A is capable of opening under conditions conducive to thermal binding. Because of the design similarities between 14MOV-12A and 14MOV-12B, the same conclusion can be drawn for both MOVs.

c. The assumed temperature (560°F) for 14MOV-12A(B) comes from the line designation table maximum operating temperature for line 10"-W23-902-5A(B). During normal operation 14MOV-12A(B) is closed with a dead water leg downstream to the recirculation pump discharge line. Heating of 14MOV-12A(B) may occur due to conduction along this dead leg and from slight leakage or pressure equalization flow during surveillance testing. Whatever heating and temperature change which may occur during normal surveillance testing would be essentially the same as for design basis operation (valve would not cool appreciably between accident depressurization and when signalled to open). Thus if thermal binding does not occur for surveillance it will not occur during design basis conditions.

d. A review of maintenance history data has identified no previous thermal binding events for 14MOV-12A or 14MOV-12B.

Although available evidence indicates that 14MOV-12A(B) are not susceptible to thermal binding, the following actions will be performed during Refueling Outage 12 to provide additional assurance that thermal binding of 14MOV-12A and 14MOV-12B will not occur:

a. 14MOV-12A Perform baseline in order to obtain improved pullout thrust data, and reduce seating thrust in order to minimize pullout thrust.

b. 14MOV-12B Perform baseline in order to obtain improved pullout thrust data, and reduce seating thrust in order to minimize pullout thrust.

New York Power Authority
James A. FitzPatrick Nuclear Power Plant

Evaluation of Safety-Related Power-Operated Gate Valves for Pressure Locking and Thermal Binding

4.0 CONCLUSION

The Authority has determined that the safety-related power-operated gate valves at FitzPatrick are not susceptible to PLTB which would prevent the valves from performing their safety-related function. However, to provide additional operating margin 4 corrective actions are planned during Refueling Outage 12 and 13 as detailed in Attachment II.

5.0 REFERENCES

1. Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves", August 17, 1995.

2. NUREG-1275, Vol. 9, "Operating Experience Feedback Report - Pressure Locking and Thermal Binding of Gate Valves", March 1993.

3. Westinghouse Owners' Group letter ESBU/WOG-95-387, Generic Temperature and Pressure Screening Criteria for Valves Susceptible to PLTB (MUHP-6050), dated Dec. 6, 1995.

4. JSEM-94-024, "Operability Assessment of AC Powered MOVs Under Elevated Ambient Temperature Conditions".

5. JAF-CALC-RCIC-02190, Rev. 1, "Pressure Locking Analysis for 13MOV-21".

6. JAF-CALC-RCIC-02193, Rev. 0, "Pressure Locking Analysis for 13MOV-131".

7. JAF-CALC-HPCI-02194, Rev. 0, "Pressure Locking Analysis for 23MOV-19".

8. GE Report GE-NE-T23-00725-01, "LOCA Drywell Temperature Analysis at Power Uprate Conditions", March 1995.

9. NUREG/CP-0146, "Workshop on Gate Valve Pressure Locking and Thermal Binding", July 1995.

10. EQ Temperature Profiles of 10MOV-39A(OP), 10MOV-89A(OP), 10MOV-89B(OP), 13MOV-21(OP), and 23MOV-19(OP).

11. JAF-CALC-CSP-02264, Rev. 0, "Conduction Temperature Analysis for 14MOV-12A and 14MOV-12B".

12. JTS-94-0601 Rev. 1, dated 10/20/94, from T. Dewees to WR 94-07851-00, "Pressure Increase in Core Spray Header 'A'".

Table 1 - Pressure Locking Screen Evaluation

Valve No.	Valve Gate Type	Open Safety Function?	Hole or Vent?	Subject to PL?	Additional Actions Req'd?	Comments
02MOV-53A	Double Disc	N	N	N	N	
02MOV-53B	Double Disc	N	N	N	N	
02-2AOV-39	Double Disc	N	Y	N	N	
02-2AOV-40	Double Disc	N	Y	N	N	
10MOV-13A	Solid Wedge	N	N	N	N	
10MOV-13B	Solid Wedge	N	N	N	N	
10MOV-13C	Solid Wedge	N	N	N	N	
10MOV-13D	Solid Wedge	N	N	N	N	
10MOV-16A	Double Disc	Y	N	Y	N	See Section 3.1
10MOV-16B	Double Disc	Y	N	Y	N	See Section 3.1
10MOV-17	Double Disc	N	Y	N	N	Vent installed.
10MOV-18	Double Disc	N	Y	N	N	Vent installed.
10MOV-25A	Flex Wedge	Y	Y	N	N	Vent installed.
10MOV-25B	Flex Wedge	Y	Y	N	N	Vent installed.
10MOV-26A	Double Disc	Y	Y	N	N	Hole drilled in disc.
10MOV-26B	Double Disc	Y	Y	N	N	Hole drilled in disc.

Table 1 - Pressure Locking Screen Evaluation

Valve No.	Valve Gate Type	Open Safety Function?	Hole or Vent?	Subject to PL?	Additional Actions Req'd?	Comments
10MOV-39A	Solid Wedge	Y	N	N	N	
10MOV-39B	Double Disc	Y	Y	N	N	Vent installed.
10MOV-89A	Flex Wedge	Y	N	Y	N	See Section 3.1
10MOV-89B	Flex Wedge	Y	N	Y	N	See Section 3.1
12MOV-15	Double Disc	N	Y	N	N	Vent installed.
12MOV-18	Double Disc	N	Y	N	N	Vent installed.
12MOV-69	Double Disc	N	Y	N	N	Vent installed.
13MOV-15	Double Disc	N	Y	N	N	Vent installed.
13MOV-16	Double Disc	N	Y	N	N	Vent installed.
13MOV-18	Solid Wedge	N	N	N	N	
13MOV-21	Flex Wedge	Y	N	Y	Y	See Section 3.1 and calculation JAF-CALC-RCIC-02190. Bonnet vent mod. planned for RO12 to be completed no later than RO13.
13MOV-39	Solid Wedge	Y	N	N	N	
13MOV-41	Solid Wedge	Y	N	N	N	
13MOV-131	Flex Wedge	Y	N	Y	Y	See Section 3.1 and calculation JAF-CALC-RCIC-02193. Mod. M1-94-031 to replace with globe, planned for RO12.
14MOV-5A	Flex Wedge	Y	N	Y	N	See Section 3.1
14MOV-5B	Solid Wedge	Y	N	N	N	
14MOV-7A	Solid Wedge	N	N	N	N	

Table 1 - Pressure Locking Screen Evaluation

Valve No.	Valve Gate Type	Open Safety Function?	Hole or Vent?	Subject to PL?	Additional Actions Req'd?	Comments
14MOV-7B	Solid Wedge	N	N	N	N	
14MOV-11A	Flex Wedge	N	N	N	N	
14MOV-11B	Flex Wedge	N	N	N	N	
14MOV-12A	Flex Wedge	Y	Y	N	N	Vent installed.
14MOV-12B	Flex Wedge	Y	Y	N	N	Vent installed.
20MOV-82	Double Disc	N	Y	N	N	Vent installed.
20MOV-94	Double Disc	N	N	N	N	
23MOV-14	Double Disc	Y	Y	N	N	Hole drilled in disc.
23MOV-15	Double Disc	N	Y	N	N	Vent installed.
23MOV-16	Double Disc	Y	Y	N	N	Hole drilled in disc.
23MOV-17	Solid Wedge	N	N	N	N	
23MOV-19	Flex Wedge	Y	N	Y	Y	See Section 3.1 and calculation JAF-CALC-HPCI-02194. Bonnet vent mod. planned for RO12 to be completed no later than RO13.
23MOV-57	Solid Wedge	Y	N	N	N	
23MOV-58	Solid Wedge	Y	N	N	N	
29MOV-74	Double Disc	N	Y	N	N	Vent installed.
29MOV-77	Double Disc	N	Y	N	N	Hole drilled in disc.
46MOV-101A	Flex Wedge	Y	N	Y	N	See Section 3.1

Table 1 - Pressure Locking Screen Evaluation

Valve No.	Valve Gate Type	Open Safety Function?	Hole or Vent?	Subject to PL?	Additional Actions Req'd?	Comments
46MOV-101B	Flex Wedge	Y	N	Y	N	See Section 3.1
46MOV-102A	Flex Wedge	N	N	N	N	
46MOV-102B	Flex Wedge	N	N	N	N	

Table 2 - Thermal Binding Screen Evaluation

MOV No.	Valve Gate Type	Max Line Fluid Temp (F)	Open Safety Function?	Max Fluid Temp > 200 F?	Subject to TB?	Additional Actions Req'd?	Comments
02MOV-53A	Double Disc	525	N	Y	N	N	
02MOV-53B	Double Disc	525	N	Y	N	N	
02-2AOV-39	Double Disc	525	N	Y	N	N	
02-2AOV-40	Double Disc	525	N	Y	N	N	
10MOV-13A	Solid Wedge	280	N	Y	N	N	
10MOV-13B	Solid Wedge	280	N	Y	N	N	
10MOV-13C	Solid Wedge	280	N	Y	N	N	
10MOV-13D	Solid Wedge	280	N	Y	N	N	
10MOV-16A	Double Disc	280	Y	Y	N	N	
10MOV-16B	Double Disc	280	Y	Y	N	N	
10MOV-17	Double Disc	545	N	Y	N	N	
10MOV-18	Double Disc	545	N	Y	N	N	
10MOV-25A	Flex Wedge	250	Y	Y	Y	N	See Section 3.2
10MOV-25B	Flex Wedge	250	Y	Y	Y	N	See Section 3.2
10MOV-26A	Double Disc	160	Y	N	N	N	
10MOV-26B	Double Disc	160	Y	N	N	N	
10MOV-39A	Solid Wedge	250	Y	Y	Y	N	See Section 3.2

Table 2 - Thermal Binding Screen Evaluation

MOV No.	Valve Gate Type	Max Line Fluid Temp (F)	Open Safety Function?	Max Fluid Temp > 200 F?	Subject to TB?	Additional Actions Req'd?	Comments
10MOV-39B	Double Disc	250	Y	Y	N	N	
10MOV-89A	Flex Wedge	89	Y	N	N	N	
10MOV-89B	Flex Wedge	89	Y	N	N	N	
12MOV-15	Double Disc	532	N	Y	N	N	
12MOV-18	Double Disc	532	N	Y	N	N	
12MOV-39	Double Disc	435	N	Y	N	N	
13MOV-15	Double Disc	560	N	Y	N	N	
13MOV-16	Double Disc	560	N	Y	N	N	
13MOV-18	Solid Wedge	100	N	N	N	N	
13MOV-21	Flex Wedge	140	Y	N	N	N	
13MOV-39	Solid Wedge	140	Y	N	N	N	
13MOV-41	Solid Wedge	140	Y	N	N	N	
13MOV-131	Flex Wedge	560	Y	Y	Y	Y	See Section 3.2; Mod. M1-94-031 to replace with globe, planned for RO12.
14MOV-5A	Flex Wedge	150	Y	N	N	N	
14MOV-5B	Solid Wedge	150	Y	N	N	N	
14MOV-7A	Solid Wedge	150	N	N	N	N	
14MOV-7B	Solid Wedge	150	N	N	N	N	

Table 2 - Thermal Binding Screen Evaluation

MOV No.	Valve Gate Type	Max Line Fluid Temp (F)	Open Safety Function?	Max Fluid Temp > 200 F?	Subject to TB?	Additional Actions Req'd?	Comments
14MOV-11A	Flex Wedge	560	N	Y	N	N	
14MOV-11B	Flex Wedge	560	N	Y	N	N	
14MOV-12A	Flex Wedge	560	Y	Y	Y	N	See Section 3.2; Although additional actions are not required, seating thrust will be lowered during the 96RFO in order to provide additional assurance that thermal binding will not occur. Conduction heated temp. calculated as <200°F.
14MOV-12B	Flex Wedge	560	Y	Y	Y	N	See Section 3.2; Although additional actions are not required, seating thrust will be lowered during the 96RFO in order to provide additional assurance that thermal binding will not occur. Conduction heated temp. calculated as <200°F.
20MOV-82	Double Disc	140	N	N	N	N	
20MOV-94	Double Disc	180	N	N	N	N	
23MOV-14	Double Disc	560	Y	Y	N	N	
23MOV-15	Double Disc	560	N	Y	N	N	
23MOV-16	Double Disc	560	Y	Y	N	N	
23MOV-17	Solid Wedge	100	N	N	N	N	
23MOV-19	Flex Wedge	100	Y	N	N	N	
23MOV-57	Solid Wedge	140	Y	N	N	N	
23MOV-58	Solid Wedge	140	Y	N	N	N	
29MOV-74	Double Disc	545	N	Y	N	N	
29MOV-77	Double Disc	545	N	Y	N	N	

Table 2 - Thermal Binding Screen Evaluation

MOV No.	Valve Gate Type	Max Line Fluid Temp (F)	Open Safety Function?	Max Fluid Temp > 200 F?	Subject to TB?	Additional Actions Req'd?	Comments
46MOV-101A	Flex Wedge	77	Y	N	N	N	
46MOV-101B	Flex Wedge	77	Y	N	N	N	
46MOV-102A	Flex Wedge	77	N	N	N	N	
46MOV-102B	Flex Wedge	77	N	N	N	N	

ATTACHMENT II

New York Power Authority
James A. FitzPatrick Nuclear Power Plant

List of Commitments

Commitment #	Commitment	Due Date
JAFP-96-0064-01	Replace 13MOV-131 with a Globe Valve (Mod. M1-94-031)	Refuel Outage 12 Scheduled for Fall 1996
JAFP-96-0064-02	Lower Seating Thrust for 14MOV-12A (12B) (Work Requests 95-05322 and 95-01319)	Refuel Outage 12 Scheduled for Fall 1996
JAFP-96-0064-03	Provide Bonnet Venting for 13MOV-21	No Later Than Refuel Outage 13 Scheduled for Fall 1998
JAFP-96-0064-04	Provide Bonnet Venting for 23MOV-19	No Later Than Refuel Outage 13 Scheduled for Fall 1998