

**Indiana Michigan
Power Company**
500 Circle Drive
Buchanan, MI 49107 1373



April 3, 2000

C0400-08
10 CFR 50.54(f)

Docket Nos. 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555

Donald C. Cook Nuclear Plant Units 1 and 2
REVISED RESPONSE TO GENERIC LETTER (GL) 95-07, "PRESSURE
LOCKING AND THERMAL BINDING OF SAFETY-RELATED POWER-
OPERATED GATE VALVES"

Indiana Michigan Power Company (I&M), is providing a revised response to GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves." I&M's previous responses to GL 95-07 were provided by letters dated February 16, 1996, and July 22, 1996. This revision is the result of a re-evaluation of I&M's response to GL 95-07 performed as a result of a Motor-Operated Valve (MOV) Program assessment completed in 1999. Based on this re-evaluation, I&M determined that additional modifications and analyses were required to address the pressure locking/thermal binding issues identified in GL 95-07. Accordingly, this letter supersedes I&M's previous responses.

Attachment 1 provides a brief background of this issue for the Donald C. Cook Nuclear Plant (CNP), describes the re-evaluation completed, and identifies the activities remaining to achieve GL 95-07 closure. Attachment 2 provides a tabular summary of the results of this re-evaluation by valve identification number. Attachment 3 identifies the commitments made in this correspondence.

The evaluation results described in the attachments have been finalized for CNP Unit 2. However, additional work remains to validate that the area temperatures used in the evaluation are acceptable for CNP Unit 1. I&M will complete this validation and resolve other issues as required as part of CNP MOV Program activities prior to restart of CNP Unit 1.

A056

Should you have any questions, please contact Mr. Robert C. Godley, Director of Regulatory Affairs, at (616) 466-2698.

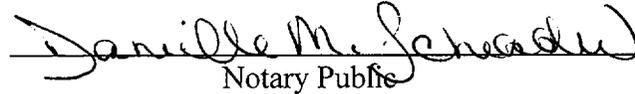
Sincerely,



M. W. Rencheck
Vice President Nuclear Engineering

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 3 DAY OF April, 2000


Notary Public

DANIELLE M. SCHRADER
Notary Public, Berrien County, MI
My Commission Expires Apr 4, 2004

My Commission Expires 4-4-04

\dms

Attachments

c: J. E. Dyer
MDEQ - DW & RPD, w/o attachments
NRC Resident Inspector
R. Whale, w/o attachments

ATTACHMENT 1 TO C0400-08

REVISED RESPONSE TO GENERIC LETTER (GL) 95-07, "PRESSURE LOCKING AND THERMAL BINDING OF SAFETY-RELATED POWER-OPERATED GATE VALVES"

I. INTRODUCTION

Indiana Michigan Power Company (I&M) is providing a revised response to GL 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," (Reference 1). I&M's previous response to GL 95-07 was provided in References 2 and 4. Subsequently, I&M determined that additional modifications and analyses were required to address the pressure locking and thermal binding issues identified in GL 95-07.

II. BACKGROUND

On August 17, 1995, the Nuclear Regulatory Commission (NRC) issued GL 95-07 (Reference 1). GL 95-07 requested addressees to perform the following actions within 180 days:

1. Evaluate the operational configurations of safety-related power-operated (i.e., motor-operated, air-operated, and hydraulically operated) gate valves in its plant to identify valves that are susceptible to pressure locking or thermal binding; and
2. Perform further analyses as appropriate, and take needed corrective actions (or justify longer schedules), to ensure that the susceptible valves identified in 1 are capable of performing their intended safety function(s) under all modes of plant operation, including test configuration.

Further, GL 95-07 required that addressees submit a written response within 180 days providing a summary description of the following:

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

By letter dated February 16, 1996, (Reference 2), I&M submitted its 180-day response to GL 95-07. That submittal described the pressure locking and thermal binding susceptibility evaluation performed and provided the results of the evaluation. I&M concluded that four valves (Unit 1 and 2 recirculation sump suction valves 1/2-ICM-305 and 306) were susceptible to pressure locking and committed to modify these valves to eliminate the potential for pressure locking.

By letter dated June 12, 1996, (Reference 3), the NRC requested additional information concerning I&M's response to GL 95-07. I&M responded to this request for information by letter dated July 22, 1996, (Reference 4). In that response, I&M provided further basis for the interim acceptability of 1/2-ICM-305 and 306 and for screening out pressurizer power-operated relief valve (PORV) block valves 1/2-NMO-151, 152, and 153 in the pressure locking and thermal binding susceptibility evaluation.

During a self-assessment of Donald C. Cook Nuclear Plant's (CNP's) Motor-Operated Valve Program completed in March 1999, I&M's evaluation and response to GL 95-07 were reviewed. The self-assessment team challenged I&M's basis for screening out the pressurizer PORV block valves and recommended review of I&M's response to GL 95-07 for technical adequacy. In response to this self-assessment, I&M re-performed the CNP GL 95-07 pressure locking and thermal binding evaluation. As a result of this re-evaluation, I&M determined that several valves require further evaluation and/or modification to ensure valve operability. These remaining activities are described below.

III. GL 95-07 RE-EVALUATION METHODOLOGY

I&M's re-evaluation of safety-related, power-operated gate valves for CNP included consideration of pressure locking, thermal binding, and disc pinching. The failure mechanisms associated with pressure locking and thermal binding are described in GL 95-07. Disc pinching has been identified as an additional potential valve failure mechanism in industry forums subsequent to the NRC's issuance of GL 95-07.

Disc pinching is characterized by expansion of a valve body subsequent to valve closure due to an increase in system (and valve body) pressure followed by a subsequent reduction in system (and valve body) pressure. An increase in valve body pressure and corresponding valve body expansion can cause the valve disc to drive deeper into the valve seat due to valve stem compressive forces. A subsequent reduction in system (and valve body) pressure results in contraction of the valve body, causing "pinching" of the valve disc in the seat, requiring additional thrust to open the valve.

The following methodology was used in the re-evaluation of the susceptibility of CNP safety-related, power-operated gate valves to pressure locking, thermal binding, and disc pinching.

Population Identification

The re-evaluation included a review of the CNP gate valve population which confirmed that the population (126 valves) identified in I&M's previous response to GL 95-07 (Reference 2) was accurate. However, a design change is being implemented during the current outage to replace two globe valves in the CNP Unit 2 Auxiliary Feedwater System with gate valves. Therefore, these two valves (2-MCM-221 and 231) were added to the scope of valves evaluated. The list of the 128 valves, along with their disc type, is provided in Attachment 2 to this letter.

Initial Screening

For the safety function of a gate valve to be impacted by pressure locking, thermal binding, or disc pinching, the gate valve must have a safety function to open and the normal or occasional position of the valve must be closed. Therefore, gate valves with a safety function to open were identified for further evaluation.

One exception to this screening criterion was the inclusion of the pressurizer PORV isolation valves (1/2-NMO-151, 152 and 153). Although the CNP pressurizer PORV isolation valves do not have a safety function to open, these valves were included in the population as requested by GL 95-07 based on their importance to safety, and evaluated further.

Normally open valves were evaluated further to address the potential for pressure locking, thermal binding, or disc pinching during surveillance testing. The details of this evaluation are contained in the associated evaluation report available for NRC inspection.

Pressure Locking Potential

Susceptibility to pressure locking was considered for double disc (parallel slide), ball and socket (split wedge), and flexible wedge gate valves. Solid wedge gate valves were not considered susceptible to pressure locking. For pressure locking to occur, the gate valve bonnet must be capable of sustaining pressure in excess of the attached upstream or downstream piping. Therefore, gate valves with pressure relieving devices, e.g., pressure equalizing lines routed from the valve bonnet to upstream or downstream of the valve disc, were not considered susceptible to pressure locking.

For gate valves not screened out based on the above criteria, the design conditions for each valve were examined to determine if:

- The valve is located within a high pressure piping boundary that could cause pressurization of the gate valve bonnet over time, followed by a decrease in system pressure prior to being required to open to perform a safety function; or
- The valve body is subject to heat absorption from the environment or adjacent system piping.

If either of the above two conditions are possible, the gate valve was determined to be susceptible to pressure locking and further evaluation or modification was required.

Thermal Binding

Susceptibility to thermal binding was considered for ball and socket (split wedge), flexible wedge, and solid wedge gate valves. As thermal binding is a result of differential expansion between a valve disc and stem in relation to its body and yoke, the thermal binding susceptibility screening identified whether the valve could experience a temperature change following closure. This evaluation considered temperature changes due to:

- Heat absorption or loss due to ambient temperature changes;
- Heat absorption or loss due to nearby process flow; and
- Heat absorption (or loss) from a nearby heat source (or heat sink).

If one of these criteria were determined to be applicable, the gate valve was determined to be susceptible to thermal binding and further evaluation was required.

Double disc (parallel slide) gate valves were not considered susceptible to thermal binding. The double disc design allows movement and relaxation with expansion/contraction. Where a wedge device is used between the discs, the discs tend to collapse inwards with the removal of stem compressive force during an opening stroke, such that the discs are not constrained.

Disc Pinching

Susceptibility to disc pinching was considered for ball and socket (split wedge), flexible wedge, and solid wedge gate valves. These valves were considered susceptible to disc pinching if the valve could experience a temporary increase in the upstream or downstream pressure following valve closure, with the valve having a retained seating force. Gate valves that could experience such conditions were considered susceptible to disc pinching and further evaluation was required.

Double disc (parallel slide) gate valves were not considered susceptible to disc pinching. The double disc design allows movement and relaxation with expansion/contraction. Where a wedge device is used between the discs, the discs tend to collapse inwards with the removal of stem compressive force during an opening stroke, such that the discs are not constrained.

IV. GL 95-07 RE-EVALUATION RESULTS

The results of I&M's re-evaluation of the susceptibility of gate valves to pressure locking and thermal binding in accordance with the requirements of GL 95-07 are contained in an evaluation report available for NRC inspection. A summary of the results for the complete population of safety-related, power-operated gate valves is provided in Attachment 2.

Re-evaluation of the valve population determined that I&M's previous response to GL 95-07 (Reference 2) incorrectly identified several gate valves as having a safety function to open. These are corrected in Attachment 2 and explained in the comments column. The re-evaluation also determined that the following valves require modification or further evaluation to ensure capability to open.

1/2-ICM-305 and 306 – Recirculation Sump to RHR/CTS Suction Containment Isolation

Re-evaluation of 1/2-ICM-305 and 306 confirmed that these valves are susceptible to pressure locking. Modifications are being implemented to 1/2-ICM-305 and 306 to address pressure locking. I&M will complete these modifications prior to restart of each respective unit from its current outage.

1/2-IMO-210, 211, 220 and 221 – Containment Spray Pump Discharge Isolation

Re-evaluation of 1/2-IMO-210, 211, 220 and 221 has determined that these valves are susceptible to disc pinching.

Preliminary calculations indicate that 2-IMO-210, 211, 220, and 221 have sufficient capability and structural margin to operate under the postulated disc pinching conditions. I&M will finalize these calculations prior to restart CNP Unit 2.

I&M has not yet completed calculations for 1-IMO-210, 211, 220 and 221, but anticipates that these valves will have sufficient capability and structural margin to operate under the postulated disc pinching conditions. I&M will complete these calculations prior to restart of CNP Unit 1.

1/2-IMO-315 and 325 – RHR/Safety Injection to Reactor Coolant System Hot Leg Isolation

Re-evaluation of 1/2-IMO-315 and 325 has determined that these valves are susceptible to thermal binding and disc pinching. Equalizing lines are installed to address pressure locking.

Calculations have been completed confirming that 2-IMO-315 and 325 have sufficient capability and structural margin to operate under the postulated thermal binding and disc pinching conditions.

I&M has not yet completed calculations for 1-IMO-315 and 325, but anticipates that these valves will have sufficient capability and structural margin to operate under the postulated thermal binding and disc pinching conditions. I&M will complete these calculations prior to restart of CNP Unit 1.

1/2-IMO-330 and 331 – RHR to Upper Containment Spray Isolation

Re-evaluation of 1/2-IMO-330 and 331 has determined that these valves are susceptible to pressure locking and disc pinching.

A subsequent calculation concluded that modifications are required to ensure 1/2-IMO-330 and 331 will open under the postulated pressure locking conditions. Modifications are being implemented to 1/2-IMO-330 and 331 to address pressure locking. I&M will complete these modifications prior to restart of each respective unit from its current outage.

Calculations have been completed confirming that 2-IMO-330 and 331 have sufficient capability and structural margin to operate under the postulated disc pinching conditions.

I&M has not yet completed calculations for 1-IMO-330 and 331, but anticipates that these valves will have sufficient capability and structural margin to operate under the postulated disc pinching conditions. I&M will complete these calculations prior to restart of CNP Unit 1.

1/2-IMO-910 and 911 – Refueling Water Storage Tank to Chemical and Volume Control System Charging Pumps Suction Header Isolation

Re-evaluation of 1/2-IMO-910 and 911 has determined that these valves are susceptible to pressure locking.

Calculations have been completed confirming that 2-IMO-910 and 911 have sufficient capability and structural margin to open under the postulated pressure locking conditions.

I&M has not yet completed calculations for 1-IMO-910 and 911, but anticipates that these valves will have sufficient capability and structural margin to operate under the postulated pressure locking conditions. I&M will complete these calculations prior to restart of CNP Unit 1.

1/2-NMO-151, 152 and 153 – Pressurizer PORV Isolation

Although 1/2-NMO-151, 152, and 153 do not have a safety function to open, these valves were included in the evaluation scope due to their importance to safety. Re-evaluation of 1/2-NMO-151, 152, and 153 has determined that these valves are susceptible to pressure locking and disc pinching.

Modifications are being implemented to 1/2-NMO-151, 152 and 153 to address pressure locking. I&M will complete these modifications prior to restart of each respective unit from its current outage.

Calculations have been completed confirming that 2-NMO-151, 152 and 153 have sufficient capability and structural margin to operate under the postulated disc pinching conditions.

I&M has not yet completed calculations for 1-NMO-151, 152 and 153, but anticipates that these valves will have sufficient capability and structural margin to operate under the postulated disc pinching conditions. I&M will complete these calculations prior to restart of CNP Unit 1.

V. CONCLUSION

I&M has completed a re-evaluation of the susceptibility of safety-related, power operated gate valves to pressure locking and thermal binding as requested by GL 95-07, and has evaluated these valves for susceptibility to disc pinching. This re-evaluation concluded that several valves require further evaluation and/or modification to ensure valve operability. I&M will complete the remaining activities identified in this letter prior to restart of each CNP unit from its current outage.

REFERENCES

1. Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," dated August 17, 1995.
2. Letter from E. E. Fitzpatrick (I&M) to NRC, "GL 95-07, Pressure Locking and Thermal Binding 180 Day Response," dated February 16, 1996.
3. Letter from J. B. Hickman (NRC) to E. E. Fitzpatrick (I&M), "Request for Additional Information – Generic Letter 95-07, 'Pressure Locking and Thermal Binding of Safety Related Power Operated Gate Valves,' Donald C. Cook Nuclear Plant, Units 1 and 2 (TAC Nos. M93451 and M93452)," dated June 12, 1996.
4. Letter from E. E. Fitzpatrick (I&M) to NRC, "Donald C. Cook Nuclear Plant, Units 1 and 2, Generic Letter 95-07 'Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves,' Request for Additional Information," dated July 22, 1996.

ATTACHMENT 2 TO C0400-08

REVISED PRESSURE LOCKING/THERMAL BINDING
SUSCEPTIBILITY EVALUATION RESULTS

The following table summarizes the results, by valve identification number, of Indiana Michigan Power Company's re-evaluation of the susceptibility of safety-related, power-operated gate valves to pressure locking, thermal binding, and disc pinching.

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
Unit 1						
1-FMO-201	FW	NO				
1-FMO-202	FW	NO				
1-FMO-203	FW	NO				
1-FMO-204	FW	NO				
1-ICM-111	FW	NO				
1-ICM-129	DD	NO				
1-ICM-250	DD	YES				Equalizing line is installed.
1-ICM-251	DD	YES				Equalizing line is installed.
1-ICM-260	DD	NO				North Safety Injection (SI) Pump PP-26N Discharge Containment Isolation Valve; valve is normally open and not required to open to perform safety function.
1-ICM-265	DD	NO				South SI Pump PP-26S Discharge Containment Isolation Valve; valve is normally open and not required to open to perform safety function.
1-ICM-305	DD	YES	X			Modification required to be implemented prior to restart from current outage.
1-ICM-306	DD	YES	X			Modification required to be implemented prior to restart from current outage.
1-ICM-311	FW	NO				
1-ICM-321	FW	NO				
1-IMO-110	FW	NO				
1-IMO-120	FW	NO				
1-IMO-128	DD	NO				
1-IMO-130	FW	NO				
1-IMO-140	FW	NO				
1-IMO-202	BS	YES				No credible pressure locking, thermal binding, or disc pinching scenario identified.
1-IMO-204	BS	YES				No credible pressure locking, thermal binding, or disc pinching scenario identified.
1-IMO-210	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.

Notes:

BS – double disc, ball and socket type gate valve
 FW – flexible wedge gate valve
 DD – double disc gate valve
 SW – solid wedge gate valve

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
1-IMO-211	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-IMO-212	BS	NO				
1-IMO-215	SW	NO				Refueling Water Storage Tank (RWST) to East Containment Spray (CTS) Pump PP-9E Suction Shutoff Valve; normally open; during containment spray operation, valve closes during switchover to recirculation.
1-IMO-220	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-IMO-221	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-IMO-222	BS	NO				
1-IMO-225	SW	NO				RWST to West CTS PP-9W Suction Shutoff Valve; normally open; during containment spray operation, valve closes during switchover to recirculation.
1-IMO-255	DD	YES				Equalizing line is installed.
1-IMO-256	DD	YES				Equalizing line is installed.
1-IMO-261	FW	NO				RWST to SI Pumps Shutoff Valve; normally open, valve closes during switchover to recirculation.
1-IMO-270	FW	NO				SI Pumps Discharge Crosstie Train "A" Shutoff Valve; valve is normally open and closes during switchover to recirculation.
1-IMO-275	FW	NO				SI Pumps Discharge Crosstie Train "B" Shutoff Valve; valve is normally open and closes during switchover to recirculation.
1-IMO-310	DD	NO				
1-IMO-314	DD	YES				Equalizing line is installed.
1-IMO-315	FW	YES		X	X	Equalizing line is installed; calculations confirming sufficient valve capability and structural margin to address disc pinching and thermal binding required prior to restart from the current outage.
1-IMO-316	FW	NO				East Residual Heat Removal (RHR) and North SI to Reactor Coolant Loops #1 and #4 Cold Legs Shutoff Valve; valve is normally open and closes during switchover to hot leg recirculation.

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
1-IMO-320	DD	NO				
1-IMO-324	DD	YES				Equalizing line is installed.
1-IMO-325	FW	YES		X	X	Equalizing line is installed; calculations confirming sufficient valve capability and structural margin to address disc pinching and thermal binding required prior to restart from the current outage.
1-IMO-326	FW	NO				West RHR and South SI to Reactor Coolant Loops #2 and #3 Cold Legs Shutoff Valve; valve is normally open and closes during switchover to hot leg recirculation.
1-IMO-330	BS	YES	X	X		Modification required to be implemented prior to restart from current outage to address pressure locking. Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-IMO-331	BS	YES	X	X		Modification required to be implemented prior to restart from current outage to address pressure locking. Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-IMO-340	DD	YES				Equalizing line is installed.
1-IMO-350	DD	YES				Equalizing line is installed.
1-IMO-360	FW	NO				SI Pumps to Chemical and Volume Control System (CVCS) Charging Pumps Suction Header Crosstie Shutoff Valve; valve is normally open, and remains open to perform its safety function.
1-IMO-361	FW	YES				No credible pressure locking, thermal binding or disc pinching scenario.
1-IMO-362	FW	YES				No credible pressure locking, thermal binding or disc pinching scenario.
1-IMO-390	DD	NO				
1-IMO-910	FW	YES	X			Calculations confirming sufficient valve capability and structural margin to address pressure locking required prior to restart from the current outage.
1-IMO-911	FW	YES	X			Calculations confirming sufficient valve capability and structural margin to address pressure locking required prior to restart from the current outage.
1-MRV-210	DD	NO				
1-MRV-220	DD	NO				
1-MRV-230	DD	NO				

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
1-MRV-240	DD	NO				
1-NMO-151	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-NMO-152	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-NMO-153	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirming sufficient valve capability and structural margin to address disc pinching required prior to restart from the current outage.
1-QCM-250	FW	NO				
1-QCM-350	FW	NO				
1-QMO-451	FW	NO				
1-QMO-452	FW	NO				
Unit 2						
2-FMO-201	FW	NO				
2-FMO-202	FW	NO				
2-FMO-203	FW	NO				
2-FMO-204	FW	NO				
2-ICM-111	FW	NO				
2-ICM-129	DD	NO				
2-ICM-250	DD	YES				Equalizing line is installed.
2-ICM-251	DD	YES				Equalizing line is installed.

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
2-ICM-260	FW	NO				North SI Pump PP-26N Discharge Containment Isolation Valve; valve is normally open and not required to open to perform safety function.
2-ICM-265	FW	NO				South SI Pump PP-26S Discharge Containment Isolation Valve; valve is normally open and not required to open to perform safety function.
2-ICM-305	DD	YES	X			Modification required to be implemented prior to restart from current outage.
2-ICM-306	DD	YES	X			Modification required to be implemented prior to restart from current outage.
2-ICM-311	FW	NO				
2-ICM-321	FW	NO				
2-IMO-110	FW	NO				
2-IMO-120	FW	NO				
2-IMO-128	DD	NO				
2-IMO-130	FW	NO				
2-IMO-140	FW	NO				
2-IMO-202	BS	YES				No credible pressure locking, thermal binding, or disc pinching scenario identified.
2-IMO-204	BS	YES				No credible pressure locking, thermal binding, or disc pinching scenario identified.
2-IMO-210	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching require approval prior to restart from the current outage.
2-IMO-211	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching require approval prior to restart from the current outage.
2-IMO-212	BS	NO				
2-IMO-215	SW	NO				RWST to East CTS PP-9E Suction Shutoff Valve; normally open; during Containment Spray operation, valve closes during switchover to recirculation.
2-IMO-220	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching require approval prior to restart from the current outage.
2-IMO-221	SW	YES		X		Calculations confirming sufficient valve capability and structural margin to address disc pinching require approval prior to restart from the current outage.
2-IMO-222	BS	NO				

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
2-IMO-225	SW	NO				RWST to West CTS Pump PP-9W Suction Shutoff Valve; normally open; during Containment Spray operation, valve closes during switchover to recirculation.
2-IMO-255	DD	YES				Equalizing line installed.
2-IMO-256	DD	YES				Equalizing line installed.
2-IMO-261	FW	NO				RWST to SI Pumps Shutoff Valve; normally open, valve closes during switchover to recirculation.
2-IMO-270	FW	NO				SI Pumps Discharge Crosstie Train "A" Shutoff Valve; valve is normally open and closes during switchover to recirculation.
2-IMO-275	FW	NO				SI Pumps Discharge Crosstie Train "B" Shutoff Valve; valve is normally open and closes during switchover to recirculation.
2-IMO-310	DD	NO				
2-IMO-314	DD	YES				Equalizing line is installed.
2-IMO-315	FW	YES		X	X	Equalizing line is installed; calculations confirm that this valve has sufficient capability and structural margin to address the postulated disc pinching and thermal binding conditions.
2-IMO-316	FW	NO				East RHR and North SI to Reactor Coolant Loops #1 and #4 Cold Legs Shutoff Valve; valve is normally open and closes during switchover to hot leg recirculation.
2-IMO-320	DD	NO				
2-IMO-324	DD	YES				Equalizing line is installed.
2-IMO-325	FW	YES		X	X	Equalizing line is installed; calculations confirm that this valve has sufficient capability and structural margin to address the postulated disc pinching and thermal binding conditions.
2-IMO-326	FW	NO				West RHR and South SI to Reactor Coolant Loops #2 and #3 Cold Legs Shutoff Valve; valve is normally open and closes during switchover to hot leg recirculation.
2-IMO-330	BS	YES	X	X		Modification required to be implemented prior to restart from current outage to address pressure locking. Calculations confirm that this valve has sufficient capability and structural margin to address disc pinching.

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
2-IMO-331	BS	YES	X	X		Modification required to be implemented prior to restart from current outage to address pressure locking. Calculations confirm that this valve has sufficient capability and structural margin to address disc pinching.
2-IMO-340	DD	YES				Equalizing line is installed.
2-IMO-350	DD	YES				Equalizing line is installed.
2-IMO-360	FW	NO				SI Pumps to CVCS Charging Pumps Suction Header Crosstie Shutoff Valve; valve is normally open and remains open to perform its safety function.
2-IMO-361	FW	YES				No credible pressure locking, thermal binding or disc pinching scenario.
2-IMO-362	FW	YES				No credible pressure locking, thermal binding or disc pinching scenario.
2-IMO-390	DD	NO				
2-IMO-910	FW	YES	X			Calculations confirm that this valve has sufficient capability and structural margin to address the postulated pressure locking conditions.
2-IMO-911	FW	YES	X			Calculations confirm that this valve has sufficient capability and structural margin to address the postulated pressure locking conditions.
2-MCM-221	FW	NO				
2-MCM-231	FW	NO				
2-MRV-210	DD	NO				
2-MRV-220	DD	NO				
2-MRV-230	DD	NO				
2-MRV-240	DD	NO				
2-NMO-151	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirm that this valve has sufficient capability and structural margin to address the postulated disc pinching conditions.

Donald C. Cook Nuclear Plant Generic Letter 95-07 Pressure Locking/Thermal Binding Evaluation Results						
Valve ID	Disc Type	Safety Function to Open	Susceptibility Evaluation Results			Comments
			Pressure Locking	Disc Pinching	Thermal Binding	
2-NMO-152	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirm that this valve has sufficient capability and structural margin to address the postulated disc pinching conditions.
2-NMO-153	FW	NO	X	X		While this valve does not have an open safety function, pressure locking, thermal binding, and disc pinching effects have been considered due to its importance to safety. A modification is required prior to restart from current outage to address pressure locking. Calculations confirm that this valve has sufficient capability and structural margin to address the postulated disc pinching conditions.
2-QCM-250	FW	NO				
2-QCM-350	FW	NO				
2-QMO-451	FW	NO				
2-QMO-452	FW	NO				

ATTACHMENT 3 TO C0400-08

COMMITMENTS

The following table identifies those actions committed to by Indiana Michigan Power Company (I&M) in this document. Any other actions discussed in the submittal represent intended or planned actions by I&M. They are described to the NRC for the NRC's information and are not regulatory commitments.

Commitment	Date
I&M will validate that the area temperatures used in the evaluation are acceptable for Donald C. Cook Nuclear Plant (CNP) Unit 1 and resolve other issues as required as part of CNP motor-operated valve (MOV) Program activities prior to restart of CNP Unit 1.	Prior to restart of CNP Unit 1.
I&M will complete modification of 1/2-ICM-305 and 306 to address pressure locking prior to restart of each respective unit from its current outage.	Prior to restart of each respective unit.
I&M will complete calculations to confirm that 1/2-IMO-210, 211, 220, and 221 have sufficient capability and structural margin to operate under the postulated disc pinching conditions prior to restart of each respective unit from its current outage.	Prior to restart of each respective unit.
I&M will complete calculations to confirm that 1-IMO-315 and 325 have sufficient capability and structural margin to operate under the postulated disc pinching and thermal binding conditions prior to restart of CNP Unit 1.	Prior to restart of CNP Unit 1.
I&M will complete modification of 1/2-IMO-330 and 331 to address pressure locking prior to restart of each respective unit from its current outage.	Prior to restart of each respective unit.
I&M will complete calculations to confirm that 1-IMO-330 and 331 have sufficient capability and structural margin to operate under the postulated disc pinching conditions prior to restart CNP Unit 1.	Prior to restart of CNP Unit 1.
I&M will complete calculations to confirm that 1-IMO-910 and 911 have sufficient capability and structural margin to open under the postulated pressure locking conditions prior to restart of CNP Unit 1.	Prior to restart of CNP Unit 1.
I&M will complete modification of 1/2-NMO-151, 152, and 153 to address pressure locking prior to restart of each respective unit from its current outage.	Prior to restart of each respective unit.
I&M will complete calculations to confirm that 1-NMO-151, 152, and 153 have sufficient capability and structural margin to operate under the postulated disc pinching conditions prior to restart of CNP Unit 1.	Prior to restart of CNP Unit 1.