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VPNPD-96-011

February 9, 1996

Document Control Desk  
US NUCLEAR REGULATORY COMMISSION  
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Washington, DC 20555-0001

Ladies/Gentlemen:

DOCKETS 50-266 AND 50-301  
RESPONSE TO GENERIC LETTER 95-07  
PRESSURE LOCKING AND THERMAL BINDING OF  
SAFETY-RELATED POWER-OPERATED GATE VALVES  
POINT BEACH NUCLEAR PLANT, UNIT 1 AND 2

On August 17, 1995, the NRC issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves." The GL requested that licensees perform, or confirm previous performance, of:

Within 90 days:

1. Perform a screening evaluation to identify valves which are potentially susceptible to pressure locking and/or thermal binding.
2. Document a basis for operability of potentially susceptible valves, or take actions in accordance with Technical Specifications.

Within 180 days:

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.
2. Further analysis, and any needed corrective actions, to ensure that identified potentially susceptible valves are capable of performing their current licensing basis safety functions.

The GL also requested that a summary description of the actions taken in response to the above 90-day and 180-day requested actions, be submitted within 180 days of the date of the Generic Letter.

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Wisconsin Electric Power Company has performed all of the requested actions discussed within the Generic Letter. The following provides a summary description of the information requested for the 180-day GL response.

The susceptibility evaluation began by developing a list of all air operated, motor operated, and hydraulically operated valves within the plant. From this list, 110 valves were identified as being safety-related, power operated gate valves. An additional four (4) gate valves were identified as being safety-related, but manually operated. Four (4) other power-operated gate valves were identified as non-safety-related, but required to meet 10 CFR 50, Appendix R requirements for hot shutdown. These 118 gate valves were screened for GL 95-07 susceptibility and are listed in Attachment 1.

The "Pressure Locking and Thermal Binding Workshop" held by NRC Region III on November 7, 1995, provided the screening methodology utilized to identify which of the 118 gate valves are susceptible to pressure locking or thermal binding. The screening criteria used are listed in Attachment 2, while the valves identified as potentially susceptible are included in Attachment 3.

The screening of the 118 gate valves identified 42 as being potentially susceptible to thermal binding or pressure locking. These valves have been identified with "yes" in the GL 95-07 column of Attachment 3. Further evaluations of these 42 valves, identified as EVAL 1-6 on Attachment 3, revealed that only the SI-860 A-D (Containment Spray Pump Discharge Redundant Isolation Valves) valves on each unit (eight (8) total valves) required long term corrective actions to ensure they could perform their safety functions. All other safety-related, power operated gate valves were shown to be unaffected by pressure locking or thermal binding through one of the evaluations listed in Attachment 3.

In addition to the eight (8) valves identified above, fourteen (14) gate valves, both manual and power operated, outside the scope of GL 95-07 were identified as susceptible to thermal binding or pressure locking while achieving cold shutdown.

The SI-860 A-D valves (eight (8) safety-related valves identified above) were noted to be susceptible to pressure locking during the performance of Inservice Tests (ITs) 05A and 06A, "Containment Spray Pumps and Valves (Monthly)" Unit 1 and Unit 2 respectively. The long-term, permanent corrective action for the SI-860 valves was to revise the IT-05A and IT-06A to include cycling of the associated valve after each containment spray pump is secured. This would eliminate any valve bonnet pressure buildup that the tests may have caused. These revisions were implemented with the issuance of IT-05A, Revision 5 and IT-06A, Revision 5, dated January 8, 1996. With these changes, the IT TEST POS entry on Attachment 1 becomes "NI", and the valves are placed in a condition which mitigates the susceptibility to pressure locking.

In addition, PBNP Calculation 96-0062 contains the evaluation for operability of the SI-860 valves when the bonnets have been pressurized as a result of performing IT-05A and IT-06A. The calculation shows that with the bonnets of the SI-860 valves pressurized to the maximum available pressure, the valves remain operable. Therefore, based on the evaluations and IT procedure revisions, the susceptibility of the SI-860 valves to pressure locking has been adequately addressed.

The manually operated, low head, safety injection (low head SI to high head SI) suction cross-connect valves (SI-857 A and B for each unit), are susceptible to pressure locking after stopping the Residual Heat Removal (RHR) pumps, and attempting to open them to provide suction to the high head SI pumps. PBNP Calculation 96-0062 indicates that, while they remain operable, opening of the valves may be difficult and require some form of mechanical assistance. While they are manual valves, and not specifically a subject of GL 95-07 issues, we chose to consider them in our analysis and resolution efforts. Thus, evaluations are being initiated for possible bonnet relief installation on these valves. In addition, the SI-857 valves are not susceptible to thermally-induced bonnet pressure rises since there is a 130 foot piping run between the hot RHR piping and the SI-857 valves, located at the suction of the high head SI pumps.

The power operated gate valves RH-700, RH-701 and RH-720 on each unit, (six (6) valves total), provide RHR suction and return from the reactor coolant system. Since this function is not necessary to maintain hot shutdown per the PBNP safety analysis, they do not fall within the requirements of GL 95-07. However, to place the plant in a cold shutdown condition, such as for a normal refueling, these valves would be required to open. For this reason, evaluations have been initiated to investigate potential modifications which would enhance valve reliability. These evaluations will also be completed in the near future.

The Containment Spray Pump suction valves from the RHR heat exchanger HX-11, (Valves SI-871 A and B for each unit), were also identified as being potentially susceptible to pressure locking while proceeding to cold shutdown. The operation of these valves is not necessary to achieve hot shutdown conditions and would only be required for actions beyond the Emergency Operating Procedures (EOPs). These valves are no longer used for lining-up low head SI to containment spray. We have performed analyses to show that the valves would open with bonnet pressurization due to IT testing, and that any thermally induced bonnet pressurization would occur slowly, allowing sufficient time for pressure to decay. Therefore, no further action will be taken for these valves.

The Power Operated Relief Valves (PORV) block valves, (RC-515 and RC-516 on each unit), were identified as being susceptible to thermal binding and pressure locking. The operation of the PORV block valves is not necessary to achieve a hot shutdown condition following a plant accident. PBNP Memo 95-0430 contains the resolution of the potential thermal binding of these PORV block valves. It concludes that the thermal binding of these valves will not result in a safety problem, and that sufficient

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guidance exists for plant operators in the event thermal binding does occur. To address the potential of pressure locking of the block valves, PBNP Calculation 96-0062 shows that sufficient valve operator thrust margin exists such that the valves will open with the bonnet pressurized.

In summary, all safety-related, power operated gate valves have been screened and evaluated for susceptibility to the affects of pressure locking and thermal binding. All corrective actions identified for the safety-related gate valves have been completed, and several actions to enhance non-safety-related and manually operated gate valve reliability are currently in progress. Based on the actions we have taken on this issue, we believe that with the submittal of this letter, all requirements of Generic Letter 95-07 have been satisfactorily completed.

Please contact us if you have any questions or require any additional information.

Sincerely,

*A. L. Reimer for*

Bob Link  
Vice President  
Nuclear Power

MDR/jg

cc: NRC Resident Inspector  
NRC Regional Administrator, Region III

Subscribed and sworn to before me  
this 9<sup>th</sup> day of February 1996.

*Jacqueline Douch*  
\_\_\_\_\_  
Notary Public, State of Wisconsin

My commission expires: 10/27/96

## ATTACHMENT 1

The following provides a description of the fields used in this attachment:

Unit:	Operating unit associated with the valve.
Number:	Valve identification number.
Safety Function:	Valve position required to perform its safety function.  Open/Close - Valve cycled during safety response.  Close/(Open) - Valve remains closed to put unit into hot shutdown. Valve opened in some cases to reach cold shutdown.
Normal Position:	Valve position maintained during normal plant operation.
IT Test Pos:	This column is equivalent to the test or surveillance position. This position did not matter in most cases due to valve design, normal position, and system configuration. (Note: Equipment out of service during IT testing.)  NA - Position "not applicable", valve normally maintained open or maintained closed and not required to open.  NI - "No Impact" would result from the IT testing that would be more severe than the normal operating position.  NIVD - "No Impact Due to Valve Design", since solid wedge gate valves are not susceptible to pressure locking.  NIBV - No Impact created by IT testing since valve has a bonnet vent.  NIMA - No impact on valve operation since valve is manually operated.  Closed - Valve is closed during IT testing and bonnet pressurization can occur.

## ATTACHMENT 1

Bonnet vent: The valves were reviewed to determine if a vent path for the bonnet is present.

Safety-related: Safety-related status of the valve.

Type: The type of gate valve.

Delta Temp.: Temperature transient that the valve will be exposed to. Either the piping fluid temperature change or the valve environment.



ATTACHMENT 1  
MOV.XLS

Unit	NUMBER	Safety Function	Normal Position	IT Test Pos	Bonnet Vent	Safety Related	TYPE	Delta Temp
PB1	AF-04006	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB2	AF-04006	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04009	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04016	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04020	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04021	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04022	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	AF-04023	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB1	CC-00719	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	CC-00719	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	CC-00738A	open	closed	NI	no	Yes	Flexible Wedge GATE VALVE	ambient
PB2	CC-00738A	open	closed	NI	no	Yes	Flexible Wedge GATE VALVE	ambient
PB1	CC-00738B	open	closed	NI	no	Yes	Flexible Wedge GATE VALVE	ambient
PB2	CC-00738B	open	closed	NI	no	Yes	Flexible Wedge GATE VALVE	ambient
PB1	CC-00754A	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB2	CC-00754A	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	CC-00754B	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB2	CC-00754B	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	CC-00759A	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB2	CC-00759A	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	CC-00759B	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB2	CC-00759B	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	CV-00112B	open	closed	NI	no	No	Double Disc Flexible Wedge GATE VALVE	ambient
PB2	CV-00112B	open	closed	NI	no	No	Double Disc Flexible Wedge GATE VALVE	ambient
PB1	CV-00112C	close	open	NA	no	No	Double Disc Flexible Wedge GATE VALVE	
	CV-00112C	close	open	NA	no	No	Double Disc Flexible Wedge GATE VALVE	
	CV-00270A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	CV-00270A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	CV-00270B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	CV-00270B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	CV-00313	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	CV-00313	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	CV-01298	close	open	NA	no	Yes	Flexible Wedge GATE VALVE	
PB2	CV-01298	close	open	NA	no	Yes	Flexible Wedge GATE VALVE	
PB1	CV-01299	close	closed	NA	no	Yes	Flexible Wedge GATE VALVE	
PB2	CV-01299	close	closed	NA	no	Yes	Flexible Wedge GATE VALVE	
PB0	FO-03930	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB0	FO-03931	open	closed	NIVD	no	Yes	Solid Wedge GATE VALVE	ambient
PB1	RC-00427	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	RC-00427	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	RC-00515	open/close	open/closed	NI	no	Yes	Flexible Wedge GATE VALVE	400 F
PB2	RC-00515	open/close	open/closed	NI	no	Yes	Flexible Wedge GATE VALVE	400 F
PB1	RC-00516	open/close	open/closed	NI	no	Yes	Flexible Wedge GATE VALVE	400 F
PB2	RC-00516	open/close	open/closed	NI	no	Yes	Flexible Wedge GATE VALVE	400 F
PB1	RC-00598	close	closed	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	RC-00598	close	closed	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	

ATTACHMENT 1  
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Unit	NUMBER	Safety Function	Normal Position	IT Test Pos	Bonnet Vent	Safety Related	TYPE	Delta Temp
PB1	RC-00599	close	closed	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	RC-00599	close	closed	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	RH-00700	close/open	closed	NA/(NI)	no	Yes	Parallel Seat Double Wedge GATE VALVE	250 F
PB2	RH-00700	close/open	closed	NA/(NI)	no	Yes	Parallel Seat Double Wedge GATE VALVE	250 F
PB1	RH-00701	close/open	closed	NA/(NI)	no	Yes	Flexible Wedge GATE VALVE	140 F
PB2	RH-00701	close/open	closed	NA/(NI)	no	Yes	Flexible Wedge GATE VALVE	140 F
PB1	RH-00720	close/open	closed	NA/(NI)	no	Yes	Flexible Wedge GATE VALVE	140 F
PB2	RH-00720	close/open	closed	NA/(NI)	no	Yes	Flexible Wedge GATE VALVE	140 F
PB0	RS-SA-00009	close	open	NA	no	Yes	Flexible Wedge GATE VALVE	540 F
PB0	RS-SA-00010	close	open	NA	no	Yes	Flexible Wedge GATE VALVE	540 F
PB1	SI-00825A	open	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00825A	open	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00825B	open	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00825B	open	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00826A	open	closed	NIBV	yes	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB2	SI-00826A	open	closed	NIBV	yes	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB1	SI-00826B	open	open	NA	yes	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00826B	open	open	NA	yes	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00826C	open	open	NA	yes	Yes	Flexible Wedge GATE VALVE	
PB2	SI-00826C	open	open	NA	yes	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00841A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00841A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00841B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00841B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00851A	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	150 F
PB2	SI-00851A	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	150 F
PB1	SI-00851B	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	150 F
PB2	SI-00851B	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	150 F
PB1	SI-00852A	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	200 F
PB2	SI-00852A	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	200 F
PB1	SI-00852B	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	200 F
PB2	SI-00852B	open	closed	NIBV	yes	Yes	Parallel Seat Double Wedge GATE VALVE	200 F
PB1	SI-00856A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00856A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00856B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00856B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00857A	open	closed	NIMA	no	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB2	SI-00857A	open	closed	NIMA	no	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB1	SI-00857B	open	closed	NIMA	no	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB2	SI-00857B	open	closed	NIMA	no	Yes	Double Disc Flexible Wedge GATE VALVE	ambient
PB1	SI-00860A	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB2	SI-00860A	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB1	SI-00860B	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB2	SI-00860B	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB1	SI-00860C	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB2	SI-00860C	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient



ATTACHMENT 1  
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Unit	NUMBER	Safety Function	Normal Position	IT Test Pos	Bonnet Vent	Safety Related	TYPE	Deha Temp
PB1	SI-00860D	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB2	SI-00860D	open	closed	NI	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient
PB1	SI-00866A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00866A	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00866B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB2	SI-00866B	close	open	NA	no	Yes	Parallel Seat Double Wedge GATE VALVE	
PB1	SI-00870A	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00870A	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00870B	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00870B	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00871A	close/(open)	closed	NA/(closed)	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient (300)
PB2	SI-00871A	close/(open)	closed	NA/(closed)	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient (300)
PB1	SI-00871B	close/(open)	closed	NA/(closed)	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient (300)
PB2	SI-00871B	close/(open)	closed	NA/(closed)	no	Yes	Parallel Seat Double Wedge GATE VALVE	ambient (300)
PB1	SI-00896A	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00896A	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB1	SI-00896B	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB2	SI-00896B	close	open	NA	no	Yes	Double Disc Flexible Wedge GATE VALVE	
PB0	SW-02816	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB0	SW-02817	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	SW-02880	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB2	SW-02880	close	open	NA	no	Yes	Solid Wedge GATE VALVE	
PB1	SW-02907	open	closed	NI	no	Yes	Solid Wedge GATE VALVE	ambient
PB2	SW-02907	open	closed	NI	no	Yes	Solid Wedge GATE VALVE	ambient
PB1	SW-02908	open	closed	NI	no	Yes	Solid Wedge GATE VALVE	ambient
PB2	SW-02908	open	closed	NI	no	Yes	Solid Wedge GATE VALVE	ambient

ATTACHMENT 2

SAFETY RELATED POWER OPERATED GATE VALVE  
PRESSURE LOCKING AND THERMAL BINDING SUSCEPTIBILITY CRITERION

Valve Normal Position	Safety Position	Test or Surveillance Position	Evaluate Susceptible Within Scope of GL 95-07
Normally Closed	Open	Closed	Yes
Normally Closed	Open	Open	Yes
Normally Closed	Closed	Closed	No *
Normally Closed	Closed	Open	No *
Normally Open	Open	Closed	Yes
Normally Open	Open	Open	No
Normally Open	Closed	Closed	No *
Normally Open	Closed	Open	No *

\* Licensees should be aware of the potential for thermally-induced pressure transients resulting in bonnet over pressurization.

### ATTACHMENT 3

The following provides a description of the fields used in this attachment:

Unit:	Operating unit associated with the valve.
Number:	Valve identification number.
Sudden Pressure:	A review of the system design to determine if a sudden pressure drop could occur with the valve closed, trapping pressure in the bonnet.
Pressure:	Maximum expected differential pressure.
Flow:	Expected flow through valve when open.
Temperature:	Maximum expected temperature of fluid.
Valve Size:	Nominal valve size.
GL 95-07:	Valve is potentially susceptible using the screening method of the NRC. When a screening shows "no(yes)", this indicates the valve is not susceptible to achieve hot shutdown, but would be susceptible to achieve cold shutdown.
EVAL 1:	The valve is determined unaffected if the flexible wedge valve is supplied with a bonnet vent and no delta temp. occurs except that resulting from ambient changes.
EVAL 2:	The valve is determined unaffected since the parallel seat double wedge gate valve has a bonnet vent.
EVAL 3:	The valve is determined unaffected since the solid disc valve does not experience a delta temp. except that resulting from ambient changes.
EVAL 4:	The valve is determined unaffected since the flexible wedge valve does not experience a delta temp. except that resulting from ambient changes and does not experience a sudden depressurization.

### ATTACHMENT 3

- EVAL 5: PBNP Calculation 96-0062 contains the evaluation/calculations performed to ensure that the trapped bonnet pressurization does not cause an excessive opening load on the SI-857 and SI-860 valves.
- EVAL 6: PBNP Memo 95-0430 and PBNP Calculation 96-0062 describe the evaluations performed to ensure thermal binding will not occur, and actions taken to prevent thermal binding. The evaluation also describes that operating instructions exist to safely recover should a problem occur.

ATTACHMENT 3  
MOV.XLS

Unit	NUMBER	Sudden Pressure	Pressure	Flow	Temperature	Valve Size	GL 95-07	Eval 1	Eval 2	Eval 3	Eval 4	Eval 5	Eval 6
PB1	AF-04006	no	105	400	80	6	yes			ok			
PB2	AF-04006	no	105	400	80	6	yes			ok			
PB0	AF-04009	no	105	200	80	4	yes			ok			
PB0	AF-04016	no	105	200	80	4	yes			ok			
PB0	AF-04020	no	1405	200	100	3	yes			ok			
PB0	AF-04021	no	1405	200	100	3	yes			ok			
PB0	AF-04022	no	1405	200	100	3	yes			ok			
PB0	AF-04023	no	1405	200	100	3	yes			ok			
PB1	CC-00719	no	192	570	127	6	no						
PB2	CC-00719	no	192	570	127	6	no						
PB1	CC-00738A	no	160	2765	117	10	yes				ok		
PB2	CC-00738A	no	160	2765	117	10	yes				ok		
PB1	CC-00738B	no	160	2765	117	10	yes				ok		
PB2	CC-00738B	no	160	2765	117	10	yes				ok		
PB1	CC-00754A	no	145	230	127	4	no						
PB2	CC-00754A	no	145	230	127	4	no						
PB1	CC-00754B	no	145	230	127	4	no						
PB2	CC-00754B	no	145	230	127	4	no						
PB1	CC-00759A	no	145	230	127	4	no						
PB2	CC-00759A	no	145	230	127	4	no						
PB1	CC-00759B	no	145	230	127	4	no						
PB2	CC-00759B	no	145	230	127	4	no						
PB1	CV-00112B	no	87	120	127	4	yes				ok		
PB2	CV-00112B	no	87	120	127	4	yes				ok		
PB1	CV-00112C	no	80	120	127	4	no						
PB2	CV-00112C	no	80	120	127	4	no						
PB1	CV-00270A	no	1985	15	520	2	no						
PB2	CV-00270A	no	1985	15	520	2	no						
PB1	CV-00270B	no	1985	15	520	2	no						
PB2	CV-00270B	no	1985	15	520	2	no						
PB1	CV-00313	no	148	16	142	3	no						
PB2	CV-00313	no	148	16	142	3	no						
PB1	CV-01298	no	1985	120	520	3	no						
PB2	CV-01298	no	1985	120	520	3	no						
PB1	CV-01299	no	1985	30	520	2	no						
PB2	CV-01299	no	1985	30	520	2	no						
PB0	FO-03930	no	90	8	115	1	yes			ok			
PB0	FO-03931	no	90	8	115	1	yes			ok			
PB1	RC-00427	no	1985	50	520	2	no						
PB2	RC-00427	no	1985	50	520	2	no						
PB1	RC-00515	yes	2485	blowdown	653	3	no(yes)						ok
PB2	RC-00515	yes	2485	blowdown	653	3	no(yes)						ok
PB1	RC-00516	yes	2485	blowdown	653	3	no(yes)						ok
PB2	RC-00516	yes	2485	blowdown	653	3	no(yes)						ok
PB1	RC-00598	no	1985	0	520	2	no						
PB2	RC-00598	no	1985	0	520	2	no						



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Unit	NUMBER	Sudden Pressure	Pressure	Flow	Temperature	Valve Size	GL 95-07	Eval 1	Eval 2	Eval 3	Eval 4	Eval 5	Eval 6
PB1	RC-00599	no	1985	0	520	2	no						
PB2	RC-00599	no	1985	0	520	2	no						
PB1	RH-00700	yes	1982	3100	610	10	no(yes)						
PB2	RH-00700	yes	1982	3100	610	10	no(yes)						
PB1	RH-00701	no	1990	3100	610	10	no(yes)						
PB2	RH-00701	no	1990	3100	610	10	no(yes)						
PB1	RH-00720	yes	564	3100	553	10	no(yes)						
PB2	RH-00720	yes	564	3100	553	10	no(yes)						
PB0	RS-SA-00009	no	1050	blowdown	540	3	no						
PB0	RS-SA-00010	no	1050	blowdown	540	3	no						
PB1	SI-00825A	no	30	1230	95	12	no						
PB2	SI-00825A	no	30	1230	95	12	no						
PB1	SI-00825B	no	30	1230	95	12	no						
PB2	SI-00825B	no	30	1230	95	12	no						
PB1	SI-00826A	no	30	1230	145	8	yes	ok					
PB2	SI-00826A	no	30	1230	145	8	yes	ok					
PB1	SI-00826B	no	30	1230	145	8	no						
PB2	SI-00826B	no	30	1230	145	8	no						
PB1	SI-00826C	no	30	1230	145	8	no						
PB2	SI-00826C	no	30	1230	145	8	no						
PB1	SI-00841A	no	1990	8228	553	10	no						
PB2	SI-00841A	no	1990	8228	553	10	no						
PB1	SI-00841B	no	1990	8228	553	10	no						
PB2	SI-00841B	no	1990	8228	553	10	no						
PB1	SI-00851A	no	73	2200	340	10	yes		ok				
PB2	SI-00851A	no	73	2200	340	10	yes		ok				
PB1	SI-00851B	no	73	2200	340	10	yes		ok				
PB2	SI-00851B	no	73	2200	340	10	yes		ok				
PB1	SI-00852A	yes	1996	1560	615	4	yes		ok				
PB2	SI-00852A	yes	1996	1560	615	4	yes		ok				
PB1	SI-00852B	yes	2008	1560	615	4	yes		ok				
PB2	SI-00852B	yes	2008	1560	615	4	yes		ok				
PB1	SI-00856A	no	437	2200	100	10	no						
PB2	SI-00856A	no	437	2200	100	10	no						
PB1	SI-00856B	no	437	2200	100	10	no						
PB2	SI-00856B	no	437	2200	100	10	no						
PB1	SI-00857A	yes	207	1320	340	6	yes					ok	
PB2	SI-00857A	yes	207	1320	340	6	yes					ok	
PB1	SI-00857B	yes	207	1320	340	6	yes					ok	
PB2	SI-00857B	yes	207	1320	340	6	yes					ok	
PB1	SI-00860A	yes	458	1320	100	6	yes					ok	
PB2	SI-00860A	yes	458	1320	100	6	yes					ok	
PB1	SI-00860B	yes	458	1320	100	6	yes					ok	
PB2	SI-00860B	yes	458	1320	100	6	yes					ok	
PB1	SI-00860C	yes	458	1320	100	6	yes					ok	
PB2	SI-00860C	yes	458	1320	100	6	yes					ok	

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Unit	NUMBER	Sudden Pressure	Pressure	Flow	Temperature	Valve Size	GL 95-07	Eval 1	Eval 2	Eval 3	Eval 4	Eval 5	Eval 6
PB1	SI-00860D	yes	458	1320	100	6	yes					ok	
PB2	SI-00860D	yes	458	1320	100	6	yes					ok	
PB1	SI-00866A	no	1745	1230	100	4	no						
PB2	SI-00866A	no	1745	1230	100	4	no						
PB1	SI-00866B	no	1745	1230	100	4	no						
PB2	SI-00866B	no	1745	1230	100	4	no						
PB1	SI-00870A	no	130	1320	95	6	no						
PB2	SI-00870A	no	130	1320	95	6	no						
PB1	SI-00870B	no	130	1320	95	6	no						
PB2	SI-00870B	no	130	1320	95	6	no						
PB1	SI-00871A	no	207	1320	340	6	no(yes)						
PB2	SI-00871A	no	207	1320	340	6	no(yes)						
PB1	SI-00871B	no	207	1320	340	6	no(yes)						
PB2	SI-00871B	no	207	1320	340	6	no(yes)						
PB1	SI-00896A	no	130	1230	95	6	no						
PB2	SI-00896A	no	130	1230	95	3	no						
PB1	SI-00896B	no	130	1230	95	6	no						
PB2	SI-00896B	no	130	1230	95	6	no						
PB0	SW-02816	no	98	673	90	6	no						
PB0	SW-02817	no	105	276	90	6	no						
PB1	SW-02880	no	105	858	90	6	no						
PB2	SW-02880	no	105	791	90	6	no						
PB1	SW-02907	no	98	4800	90	12	yes			ok			
PB2	SW-02907	no	98	4800	90	12	yes			ok			
PB1	SW-02908	no	98	4800	90	12	yes			ok			
PB2	SW-02908	no	98	4800	90	12	yes			ok			