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Georgia Power
the southern electric system

February 12, 1996

Docket Nos. 50-321
50-366

HL-5108

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Edwin I. Hatch Nuclear Plant
180 Day Response to Generic Letter 95-07

Gentlemen:

By letter dated August 17, 1995, the Nuclear Regulatory Commission (NRC) staff issued Generic Letter 95-07 entitled, "Pressure Locking and Thermal Binding of Safety Related Power-Operated Gate Valves." The generic letter requested a 60-day response indicating the licensee's intent relative to the implementation of certain actions. Additionally, the generic letter requested a 180-day response providing a summary description of the evaluations performed to identify safety-related valves susceptible to pressure locking or thermal binding and further analyses to ensure susceptible valves are capable of performing their intended safety function.

By letter dated October 13, 1995, Georgia Power Company (GPC) provided the initial 60-day response and stated the intent to implement the actions requested in Generic Letter 95-07. The enclosure provides the requested 180-day response for the Edwin I. Hatch Nuclear Plant.

In summary, active safety-related power operated gate valves on both Unit 1 and Unit 2 that may potentially be susceptible to pressure locking and thermal binding have been evaluated. Valves that, for all practical purposes, are being treated as GL 89-10 valves (see Inspection Report 95-25) are not included in this evaluation. The valves were evaluated using a screening criteria followed by further individual analysis, as appropriate. The results of the evaluations identified 6 valves on Unit 1 as potentially susceptible to pressure locking. No valves on Unit 1 were identified as susceptible to thermal binding. Modifications to preclude pressure locking were previously implemented on 8 valves on Unit 2 during the 1995 Fall refueling outage. Subsequent evaluations have not identified any additional modifications to resolve pressure locking or thermal binding concerns on Unit 2, and no additional actions are required for Unit 2.

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Modifications to the 6 valves on Unit 1 will be implemented during the Spring 1996 refueling outage. Calculational methods for predicting the thrust required to open the subject valves, assuming pressure locked conditions, show that the current valve and actuator capabilities are sufficient and the valves are capable of performing their required safety functions. The enclosure provides the requested summary description.

Should you have any questions in this regard, please contact this office.

Sincerely,

J. T. Beckham, Jr.

Sworn to and subscribed before me this 12th *day of* February, *1996.*

Notary Public

My commission expires: 11/3/97.

OCV/eb

Enclosure: 180-Day Response to Generic Letter 95-07

Attachments:
1. Screening Evaluation
2. Power Operated Gate Valves with an Active Safety Function to Open and Screening Results
3. Evaluation Sheets

cc: (See next page.)

cc: *Georgia Power Company*
Mr. H. L. Sumner, Nuclear Plant General Manager
NORMS

U. S. Nuclear Regulatory Commission, Washington, D.C.
Mr. K. Jabbour, Licensing Project Manager - Hatch

U. S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebneter, Regional Administrator
Mr. B. L. Holbrook, Senior Resident Inspector - Hatch

Enclosure

Edwin I. Hatch Nuclear Plant
180 Day Response to Generic Letter 95-07

NRC Requirement Information

1. Provide a summary description of the susceptibility evaluation of the operational configurations of safety-related power-operated (i.e., motor-operated, air-operated, and hydraulically operated) gate valves to identify valves that are susceptible to pressure locking or thermal binding. Also, provide a summary of further analyses and needed corrective actions to ensure that valves identified as susceptible are capable of performing their intended safety functions(s) under all modes of plant operation, including test configuration(s). Provide the bases or criteria for determining that valves are or are not susceptible to pressure locking or thermal binding.

2. Provide a summary description of the results of the susceptibility evaluation and further analyses including a listing of the susceptible valves identified.

3. Provide 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.

GPC Response

The methodology to identify safety-related power operated gate valves susceptible to pressure locking or thermal binding used a screening criteria approach followed by individual analyses, as appropriate, of valves identified as being susceptible to pressure locking or thermal binding. The individual analyses either confirmed the valve was susceptible or dispositioned the valve as acceptable as is. For valves confirmed as susceptible, operability evaluations were performed and modifications were identified to resolve the concern.

The screening criteria were developed to initially evaluate valves for the potential for pressure locking or thermal binding conditions. The screening criteria used are consistent with the screening criteria developed by the Boiling Water Reactor Owners Group and the Westinghouse Owners Group. Guidance provided in the public workshop on Generic Letter 95-07 held at the Nuclear Regulatory Commission (NRC) Region II offices on October 24, 1995, was also used in developing the screening criteria. The screening criteria are provided as Attachment 1. The attachment also provides an explanation of each individual criterion, including many of the associated bases and assumptions, and the application of the criterion.

The list of safety related power actuated gate valves (i.e., motor-operated, air operated, and hydraulically operated) was developed using the safety-related components list contained in the System Evaluation Document. Eighty-three safety-related power operated gate valves are installed on Unit 1 and ninety-five on Unit 2.

Subsequently, those valves required to open from a closed position to perform a safety-related function, and with a flex, solid, split, or double disc wedge were identified. This review reduced the scope to 13 valves on Unit 1 and 15 valves on Unit 2. The review against the screening criteria was then completed for these 28 valves for operational configurations. Attachment 2 provides a list of the 28 valves along with the screening results. An evaluation sheet for each of these valves describing the valve location, the normal, and accident temperatures and pressures, and other information is provided as Attachment 3. The completion of the screening review showed 6 of the 13 valves on Unit 1 were susceptible to pressure locking. None of the 13 valves were susceptible to thermal binding. Of the 15 Unit 2 valves, none were determined to be susceptible to pressure locking, subsequent to the modifications previously implemented. No additional actions or modifications are required for Unit 2. The Unit 1 valves determined to be susceptible to pressure locking are as follows:

- 1E41-F006, High Pressure Coolant Injection System Injection valve - This valve was found potentially susceptible to pressure locking following a rapid depressurization of the reactor following, for example, a large break Loss of Coolant Accident (LOCA) or an Automatic Depressurization system (ADS) initiation. It was found not susceptible to thermal binding.

- 1E51-F013, Reactor Core Isolation Cooling System Injection valve - This valve was also found to be potentially susceptible to pressure locking following a rapid depressurization of the reactor vessel. The valve was found not to be susceptible to thermal binding.

- 1E21-F005A and B, Core Spray System Injection valves - These valves were found to be potentially susceptible to pressure locking following a rapid depressurization of the reactor vessel. The valves were found not to be susceptible to thermal binding.

- 1E11-F015A and B, Residual Heat Removal System Injection valves - Again these valves were found potentially susceptible to pressure locking following a rapid reactor vessel depressurization. They were found not to be susceptible to thermal binding.

An operability assessment of the above valves has been completed which determined all 6 valves are capable of performing their required safety function. The assessment used a calculational method for predicting the thrust to open the valve assuming pressure locked conditions. The predicted thrust required to open the valves was then compared to the current valve and actuator thrust capabilities. All 6 valves were shown to have a sufficient

capability to open. These 6 Unit 1 valves will be modified to preclude the potential for pressure locking by drilling a small hole on the high pressure side of the disc. The modifications will be completed during the Unit 1 spring refueling outage currently scheduled to begin on March 23, 1996.

For Unit 2, the completion of the screening evaluation showed no additional valves were susceptible to pressure locking. Modifications were previously completed on 8 Unit 2 valves during the Fall 1995 refueling outage to preclude pressure locking. The Unit 2 valves modified correspond to the Unit 1 valves previously listed. Additionally, the plant service water supply valves to the Low Pressure Coolant Injection (LPCI) inverter room coolers, 2P41-F115A and B, were also modified.

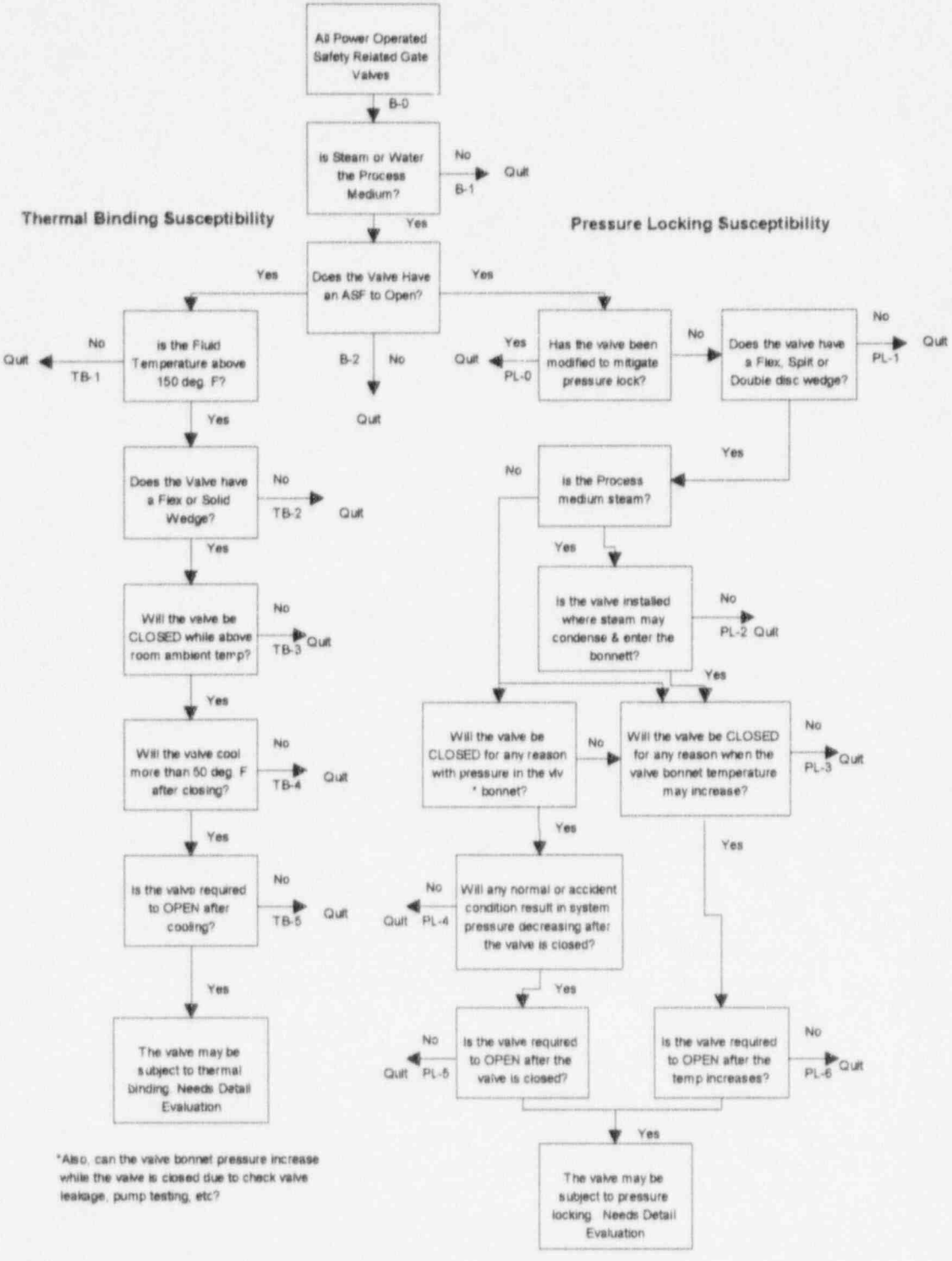
The screening criteria identified one Unit 2 valve as potentially susceptible to thermal binding. The High Pressure Coolant Injection System steam admission valve, 2E41-F001, was of concern if it is operated at high pressure and is subsequently required to be re-opened following a depressurization, controlled or otherwise. However, a further analysis (included in attachment 3) determined the valve was not susceptible to thermal binding. Consequently, no further actions or modifications are required on Unit 2.

Attachment 1

Edwin I. Hatch Nuclear Plant
180 Day Response to Generic Letter 95-07

Screening Evaluation

GL 95-07 SCREENING EVALUATION



GL 95-07 Screening Evaluation Criteria

B-0 All Power Operated Safety Related Gate Valves

This is the scope as defined by Generic Letter 95-07 for Pressure Locking and Thermal Binding (PLTB) evaluation. It includes motor-, air-, and hydraulically-operated gate valves.

B-1 Is Steam Or Water The Process Medium?

Pressure locking is not a concern in air or gas service valves because the heat capacities and heat transfer coefficients of the process are not significant when compared to water or steam, and the "boiler effect" is not possible without liquid in the bonnet.

Thermal binding is also of lesser concern because high temperature gasses are not used. Thus, there is no mechanism to heat a valve body to a significant degree.

B-2 Does The Valve Have An Active Safety Function (ASF) To Open?

The Generic Letter states in multiple places that licenses are to ensure that valves susceptible to pressure locking or thermal binding are capable of performing their required safety functions. Pressure locking and thermal binding only prevents closed valves from being opened. Thus to meet the requirements of the GL, only those valves that are required to open from a closed position to perform a safety related function are in the scope of this review.

Valves that are not in the GL scope of review because of this criteria, but may be susceptible to PLTB should still be evaluated for commercial considerations. There may be valves that could become pressure locked or thermally bound as part of a test, surveillance, or normal operational sequence. Even though these events would have no safety significance, (because the valve would not be performing a safety function) they could be on critical path, or result in equipment damage.

TB-1 Is The Fluid Temperature Above 150°F?

The 150°F cut off was chosen as a lower limit for the process temperature, below which thermal binding would not be expected. For thermal binding to occur, the valve body and disc must expand or contract at different rates, or by different amounts. The coefficient of thermal expansion for all steels is lower at lower temperatures[1], and the amount of valve heat-up and cool down that can occur for a process temperature at 150°F or below is limited to relatively insignificant amounts.

TB-2 Does The Valve Have A Flex Or Solid Wedge?

Only solid wedge and flex wedge gate valves are identified as being susceptible to thermal binding in GL 95-07. Solid wedge gate valves are most susceptible, but flexible wedge gate valves with significant temperature changes are also potentially susceptible.

TB-3 Will The Valve Be Closed While Above Room Ambient Temperature?

In order for thermal binding to occur, the valve and disc must change dimensions by different amounts. If the valve is not closed above room temperature, it would not be expected to cool as the room ambient temperature would tend to heat the valve.

TB-4 Will The Valve Cool More Than 50°F After Closing

A relatively small temperature decrease would not be expected to cause thermal binding or pressure locking. A 50°F differential decrease in temperature between the valve and the disc would result in much less than 1 thousandth of an inch in interference[1]. Check for dissimilar wedge and body materials that have different coefficients of expansion as these would be more susceptible to thermal binding.

[1] ASME Section III, Division 1 - Appendices Table I-5.0, "Coefficients of Thermal Expansion."

TB-5 Is The Valve Required To Open After Cooling?

If the valve is not required to open, then there is no concern even if thermal binding exists. For this screening, "required to open" means the valve must open for the system to perform its safety function.

PL-0 Has the valve been modified to mitigate pressure lock?

Valves that have been modified by drilling a hole in the high pressure disc or by venting the bonnet are not susceptible to pressure locking.

PL-1 Does The Valve Have A Flex, Split, Or Double Disc Wedge?

Pressure locking is much more significant for valves that can be pressurized between the discs. These valves may see twice the friction force with a pressurized bonnet and no line pressure as they might only considering a differential pressure. Heating the water in a water solid bonnet can make the friction forces even more significant as the pressure could be many times the original line pressure.

PL-2 Is The Valve Installed Where Steam May Condense & Enter The Bonnet?

Steam valves are only affected when there is water in the bonnet. Otherwise, the pressure in the bonnet could be no higher than the steam pressure in the line. The water can collect when the valve is mounted in a vertical line, when the valve is in the system low point, or when the valve bonnet is not mounted up.

PL-3 Will The Valve Be Closed For Any Reason When The Valve Bonnet Temperature May Increase?

Different studies have shown that the pressure increase in a water solid bonnet may be as much as 100 PSI per °F increase in bonnet temperature. Lower pressure increases per degree temperature increase occur at lower temperatures (on the order of 33 PSI per °F). In fact, NUREG -1275 Vol. 9 states that the lowest pressure locking event occurred at slightly below 200°F. This effect has been referred to as the "Boiler Effect."

Bonnet temperature increase may be due to accident room temperatures (high energy line breaks, flow through piping in the same room, or loss of room cooling), cold water heated up to normal room temperature, conduction and convection through the connected piping, or leakage through check valves connected to a higher temperature system.

PL-4 Will Any Normal Or Accident Condition Result In System Pressure Decreasing After The Valve Is Closed?

With pressure in the bonnet, a decrease in the line pressure will cause the bonnet pressure to force the disc against both seats and increase the friction force resisting disc movement. The "Entergy" method has been used to calculate this increased force in some cases.

PL-5 Is The Valve Required To Open After The Valve Is Closed?

If the valve is not required to open, then there is no concern even if pressure locking exists. Given enough time, it is expected that the high pressure in the bonnet would decrease to the highest line pressure at the disc. For this screening, "required to open" means the valve must open for the system to perform its safety function.

PL-6 Is The Valve Required To Open After The Temperature Increases?

If the valve is not required to open, then there is no concern even if pressure locking exists. Given enough time, it is expected that the high pressure in the bonnet would decrease to the highest line pressure at the disc. For this screening, "required to open" means the valve must open for the system to perform its safety function.

Attachment 2

Edwin I. Hatch Nuclear Plant
180 Day Response to Generic Letter 95-07

Power Operated Gate Valves
With an Active Safety Function to Open
and Screening Results

Power Actuated Gate Valves
With an Active Safety Function To Open

MPL Number	MPL Number
1E11F015A,B	2E11F015A,B
1E11F028A,B	2E11F028A,B
1E21F005A,B	2E21F005A,B
1E41F001	2E41F001
1E411F006	2E41F006
1E41F041	2E41F041
1E41F042	2E41F042
1E51F013	2E51F013
1E51F029	2E51F013
1E51F031	2E51F031
	2P41F115A,B

GL 95-07 SCREENING RESULTS

Valve	Thermal Binding/	Acceptance Criteria	Pressure Locking/	Acceptance Criteria	Operability Evaluation Required
1E11-F015A	NO	TB-4	YES		YES
1E11-F015B	NO	TB-4	YES		YES
1E11-F028A	NO	TB-4	NO	PL-1	NO
1E11-F028B	NO	TB-4	NO	PL-1	NO
1E21-F005A	NO	TB-4	YES		YES
1E21-F005B	NO	TB-4	YES		YES
1E41-F001	NO	TB-2	NO	PL-2	NO
1E41-F006	NO	TB-4	YES		YES
1E41-F041	NO	TB-4	NO	PL-3/PL-4	NO
1E41-F042	NO	TB-4	NO	PL-3/PL-4	NO
1E51-F013	NO	TB-4	YES		YES
1E51-F029	NO	TB-1	NO	PL-3/PL-4	NO
1E51-F031	NO	TB-1	NO	PL-3/PL-4	NO
2E11-F015A	NO	TB-4	NO	PL-0	NO
2E11-F015B	NO	TB-4	NO	PL-0	NO
2E11-F028A	NO	TB-4	NO	PL-4/PL-3	NO
2E11-F028B	NO	TB-4	NO	PL-4/PL-3	NO
2E21-F005A	NO	TB-4	NO	PL-0	NO
2E21-F005B	NO	TB-4	NO	PL-0	NO
2E41-F001	YES	Note 1	NO	PL-2	NO
2E41-F006	NO	TB-4	NO	PL-0	NO
2E41-F041	NO	TB-4	NO	PL-3/PL-4	NO
2E41-F042	NO	TB-4	NO	PL-3/PL-4	NO
2E51-F013	NO	TB-4	NO	PL-0	NO
2E51-F029	NO	TB-1	NO	PL-3/PL-4	NO
2E51-F031	NO	TB-1	NO	PL-3/PL-4	NO
2P41-F115A	NO	TB-1	NO	PL-0	NO
2P41-F115B	NO	TB-1	NO	PL-0	NO

Note 1 Initial screen found valve potentially susceptible to Thermal Binding. Detailed evaluation; however, determined the valve not to be susceptible to Thermal Binding.

Attachment 3

Edwin I. Hatch Nuclear Plant
180 Day Response to Generic Letter 95-07

Evaluation Sheets

GL 95-07 EVALUATION SHEET

System: E11 Residual Heat Removal/RHR **Valves:** 1E11 F015A/B

Valve Function: LPCI injection/isolation

Valve Manufacturer: Crane

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐

If Yes, what mode(s): LPCI injection

Normal Fluid Temp: (Note 2)	125	°F	**Press:** 1030	**PSIG**	(Note 1)
Operating Fluid Temp:	125	°F	**Press:** 1030	**PSIG**	(Note 1)
Post Accident Fluid Temp:	205	°F	**Press:** 449	**PSIG**	(Note 1)
Normal Atmosphere Temp:	120	°F	**Press:** 14.7	**PSIA**	
Operating Atmosphere Temp:	120	°F	**Press:** 14.7	**PSIA**	
Post Accident Atmosphere Temp:	223	°F	**Press:** 19.1	**PSIA**	

Location: Personnel Access Room. A/ EL 130 RHR08 B/ EL 147 RHR06

Normal distance from heat source: The "A" valve is over 47' and "B" is over 59' from the connection to the recirculation loop piping.

Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E11-002-1S

Frequency of IST: Cold shutdown frequency

System Functional Testing: 42SV-E11-001-1S; 42SV-E11-004-1S

Frequency of Functional Test: Once every refuel cycle, not to exceed 18 month

References: P&ID H 16329, H16330 **Physical/ISO:** H 16830, H16846

Valve Drawing: S 11421 **Physical/ISO:** H 16116

Other Information: The personnel access room temperature could potentially increase to 223° F after a DBA. However, the valve and line have 3" of insulation and the valve will open 20 to 30 seconds into the DBA. Therefore the liquid in the bonnet will not have time to heat up, thus pressure locking due to boiler effect due to the increase in room temperature is not of concern.

Even though the valve is connected to the recirculation loop piping which has 532° F fluid, boiler effect pressure lock is not considered credible. This is because the connection is over 47' from the "A" valve and over 59' from the "B" valve and both valves are isolated from the connection by check valves. The "A" valve is over 30' from the check valve and the "B" valve is over 44'. Also both valves are located 2'-3" below the connections.

The installed location of the Unit 2 valves are similar to the Unit 1 valves. The Unit 2 LPCI injection valves were modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4

Valve susceptible to pressure lock: Yes X NO **Accept. Criteria** _____

Condition under which valve is susceptible: Due to rapid depressurization on the reactor side of the valve due to a large break LOCA or use of ADS.

Proposed fixes: Drill hole through the disc on the high pressure side.

Note 1 Pressure per SNC memo, see calculation SMNH 95020.

Note 2 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the RPV connection to a low at the valve (1E11F015).

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles L. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E11 Residual Heat Removal/RHR **Valves:** 1E11 F028A/B

Valve Function: RHR torus spray outboard isolation

Valve Manufacturer: Walworth

Valve Type: Solid wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐

If Yes, what mode(s): Torus spray cooling

Normal Fluid Temp:	95	°F	**Press:**	50	PSIG
Operating Fluid Temp:	120	°F	**Press:**	170	PSIG
Post Accident Fluid Temp:	205	°F	**Press:**	210	PSIG
Normal Atmosphere Temp:	120	°F	**Press:**	14.7	PSIA
Operating Atmosphere Temp:	120	°F	**Press:**	14.7	PSIA
Post Accident Atmosphere Temp:	218	°F	**Press:**	16.7	PSIA

Location: Torus Room A/ EL. 119 RLR10 B/ EL. 119 RLR05

Normal distance from heat source: N/A

Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-E11-002-1S

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-005-1S

Frequency of Functional Test: Once every refuel cycle, not to exceed 18 month

References: P&ID H 16329, H16330 **Physical/ISO:** H 16835, H 16837

Valve Drawing: S 11476 **Physical/ISO:** H 16115

Other Information:

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4

Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-1

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 DATE

Charles R. Lynch — REVIEWER — 2/13/96 DATE

GL 95-07 EVALUATION SHEET

System: E 21 Core Spray **Valves:** 1E21 F005A/B

Valve Function: Core spray injection/isolation

Valve Manufacturer: Crane

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐

If Yes, what mode(s): Core Spray injection

Normal Fluid Temp: (Note 2)	560	°F	**Press:** 1015	**PSIG**	(Note 1)
Operating Fluid Temp:	560	°F	**Press:** 1015	**PSIG**	(Note 1)
Post Accident Fluid Temp:	205	°F	**Press:** 449	**PSIG**	(Note 1)
Normal Atmosphere Temp:	110	°F	**Press:** 14.7	**PSIA**	
Operating Atmosphere Temp:	110	°F	**Press:** 14.7	**PSIA**	
Post Accident Atmosphere Temp:	217	°F	**Press:** 17.3	**PSIA**	

Location: A/ Reactor Bldg EL. 158 RFR10 B/ RWCU HX Room EL. 158 RFR04

Normal distance from heat source: The "A" valve is over 43' and "B" is over 40' from the connection to the reactor

Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E21-002-1S

Frequency of IST: Cold shutdown frequency

System Functional Testing: 42SV-E21-001-1S

Frequency of Functional Test: Once every refuel cycle, not to exceed 18 month

References: P&ID H 16331 **Physical/ISO:** H 16860, H 16861

Valve Drawing: S 11605 **Physical/ISO:** H 16123

Other Information: The Post Accident fluid temperature is 205° F which is below the potential operating fluid temperature. The 205° F temperature is assuming flow has been established from the Torus. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valves until after flow is established; due to the valves' physical distance from the torus and the length of piping between the valves and the torus.

Even though the valves are connected to the reactor which has 560° F fluid, boiler effect pressure lock is not considered credible. This is because with no flow through this pipe during normal plant operations the pipe will see a temperature gradient. Since the connection to the reactor is over 43' from the "A" valve and over 40' from the "B" valve and both valves are isolated from the connection by check valves, it is concluded that this temperature will not have a significant effect on the valves. The "A" valve is over 20' from the check valve and the "B" valve is over 21'. Also both valves are located 9'-6" below the connections. Therefore the temperature at the valves will be about the ambient temperature of the rooms in which the valves are located. A temperature reading taken on the Unit 1 valves during powered operation using an infrared gun determined the valves to be at ambient room temperature.

The installed location of the Unit 2 valves are similar to the Unit 1 valves. The Unit 2 Core Spray injection valves were modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

Valve susceptible to thermal binding: Yes ☐ NO X **Accept. Criteria** TB-4

Valve susceptible to pressure lock: Yes X NO **Accept. Criteria**

Condition under which valve is susceptible: Pressure locking could exist after rapid depressurization of the reactor due to a large break LOCA or use of ADS.

Proposed fixes: Drill a hole through the disc on the high pressure side.

Note 1 Pressure per SNC memo, see calculation SMNH 95020.

Note 2 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the RPV connection to a low at the valve (1E21F005).

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Sprock — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 1E41 F001

Valve Function: HPCI turbine steam inlet/isolation

Valve Manufacturer: Anchor Darling

Valve Type: Double disc/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	546	°F	**Press:**	1000	**PSIG**
Operating Fluid Temp:	546	°F	**Press:**	1000	**PSIG**
Post Accident Fluid Temp:	95	°F	**Press:**	0	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:**	14.7	**PSIA**

Location: HPCI ROOM EL. 96 RJR01
Normal distance from heat source: N/A
Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-E41-001-1S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-1S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 16332 **Physical/ISO:** H 16865
Valve Drawing: S 51025 **Physical/ISO:**
Other Information: The valve is installed with the bonnet vertical. A drain pot with level controls is located in the upstream piping to collect any condensation.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-2
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-2

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/13/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 1E41 F006

Valve Function: HPCI injection/pump discharge

Valve Manufacturer: Crane

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp: (Note 1)	392	°F	**Press:**	1065	**PSIG**
Operating Fluid Temp:	40-170	°F	**Press:**	1250	**PSIG**
Post Accident Fluid Temp:	392	°F	**Press:**	0	**PSIG**
Normal Atmosphere Temp:	120	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	120	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	218	°F	**Press:**	16.7	**PSIA**

Location: Torus EL. 123 RAR07
Normal distance from heat source: The feedwater connection is over 42 feet from the valve.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-1S
Frequency of IST: Every 92 days

System Functional Testing: 42SV-E41-002-1S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 16332 **Physical/ISO:** H 16869
Valve Drawing: S 11423 **Physical/ISO:**
Other Information: Even though the valve is maintained closed against 392° F, 1065 PSIG feed water; boiler effect pressure locking is not considered credible. This is because the feedwater connection is over 42 feet from the valve. Also, the valve is located below the feedwater connection by 16 1/2 feet.

The Unit 2 valve prior to its being relocated during the Spring'94 Refueling Outage was located only 19 feet from the feedwater connection (much closer than the Unit 1 valve), but also 16 1/2 feet below the connection. The valve is now located similar to the Unit 1 valve. The Unit 2 HPCI injection valve was modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

A temperature reading taken on the Unit 1 valve during powered operation using an infrared gun determined the valve to be at ambient room temperature.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** X **NO** **Accept. Criteria**

Condition under which valve is susceptible: Pressure locking could exist after rapid depressurization of the reactor due to a large break LOCA or use of ADS.

Proposed fixes: Drill a hole through the disc on the high pressure side.

Note 1 During plant operation their is no flow through this line. This line will have a temperature gradient from a high at the Feedwater connection to a low at the valve (1E41F006).

James M Dailey — ORIGINATOR — 2/6/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 1E41 F041

Valve Function: HPCI pump suction from suppression pool isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	100	°F	**Press:** 10	**PSIG**
Operating Fluid Temp:	100-140	°F	**Press:** 10	**PSIG**
Post Accident Fluid Temp:	100-210	°F	**Press:** 25	**PSIG**
Normal Atmosphere Temp:	100	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	100-148	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:** 14.7	**PSIA**

Location: HPCI ROOM EL. 90 RHR02
Normal distance from heat source: The valve is physically over 40 feet from the Torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-1S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-1S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 16332 **Physical/ISO:** H 16868
Valve Drawing: S 11372 **Physical/ISO:**
Other Information: The valve is required to open to allow HPCI pump suction from the suppression pool (torus). The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a effect on the valve due to it physical distance from the torus (over 40 feet) and the over 60 feet of piping between the valve and the torus connection. Also valve 1E41 F042 is between valve 1E41 F041 and the torus. Valve 1E41 F042 is closed as is 1E41 F041 unless suction is required from the torus. HPCI suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 1E41 F041 should not see fluid temperatures greater than 140°F

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/6/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 1E41 F042

Valve Function: HPCI pump suction from suppression pool isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	100	°F	**Press:** 10	**PSIG**
Operating Fluid Temp:	100-140	°F	**Press:** 10	**PSIG**
Post Accident Fluid Temp:	100-210	°F	**Press:** 25	**PSIG**
Normal Atmosphere Temp:	100	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	100-148	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:** 14.7	**PSIA**

Location: HPCI ROOM EL. 90 RHR02
Normal distance from heat source: The valve is physically over 46 feet from the Torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-1S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-1S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 16332 **Physical/ISO:** H 16868
Valve Drawing: S 11372 **Physical/ISO:**
Other Information: The valve is required to open to allow HPCI pump suction from the suppression pool (torus). The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valve due to it physical distance from the torus (over 46 feet) and the over 66 feet of piping between the valve and the torus connection. Also valve 1E41 F042 is closed unless suction is required from the torus. HPCI suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 1E41 F042 should not see fluid temperatures greater than 140°F when it is required to open.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 1E51 F013

Valve Function: RCIC injection/isolation

Valve Manufacturer: Crane

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection

Normal Fluid Temp: (Note 1)	436	°F	**Press:** 1020	**PSIG**	
Operating Fluid Temp:	40-170	°F	**Press:** 1250	**PSIG**	
Post Accident Fluid Temp:	40-170	°F	**Press:** 1250	**PSIG**	(Note 2)
Normal Atmosphere Temp:	100	°F	**Press:** 14.7	**PSIA**	
Operating Atmosphere Temp:	218	°F	**Press:** 16.7	**PSIA**	
Post Accident Atmosphere Temp:	218	°F	**Press:** 16.7	**PSIA**	

Location: Torus Room EL. 124 RBR07
Normal distance from heat source: The feedwater connection is over 19 feet from the valve.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E51-001-1S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E51-002-1S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 16334 **Physical/ISO:** H 16874
Valve Drawing: SX 14006 **Physical/ISO:** H 16108
Other Information: Even though the valve is maintained closed against 436° F, 1020 PSIG feed water; boiler effect pressure locking is not considered credible. This is because the feedwater connection is 19 1/3 feet from the valve. Also, the valve is located below the feedwater connection by 16 1/6 feet.

The Unit 2 valve is located similar to the Unit 1 valve (19 3/4 feet from the feedwater connection , and a comparable 17 1/12 feet below the connection). The Unit 2 RCIC injection valve was modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

A temperature reading taken on the Unit 1 valve during powered operation using an infrared gun determined the valve to be at ambient room temperature.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** X **NO** **Accept. Criteria**

Condition under which valve is susceptible: Due to rapid depressurization on the reactor side of the valve due to a LOCA or use of ADS

Proposed fixes: Drill hole through the disc on the high pressure side

Note 1 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the Feedwater connection to a low at the valve (1E51F013).

Note 2 The pressure will decrease as the reactor is depressurized due to a LOCA or use of the ADS.

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Sipek — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 1E51 F029

Valve Function: RCIC pump suction from torus/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection/with torus suction

Normal Fluid Temp:	100	°F	**Press:**	10	**PSIG**
Operating Fluid Temp:	100-140	°F	**Press:**	10	**PSIG**
Post Accident Fluid Temp:	100-210	°F	**Press:**	25	**PSIG**
Normal Atmosphere Temp:	100	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	100	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	311	°F	**Press:**	16.2	**PSIA**

Location: RCIC (SW) Corner Room EL. 90 RAR11
Normal distance from heat source: The valve is physically over 10 feet from the Torus.
Post accident distance from heat sources: Same as normal.

Valve Inservice Testing: 34SV-E51-001-1S
Frequency of IST: Quarterly

System Functional Testing: 34SV-E51-004-2S (Pump Operability); 42SV-E51-002-1S
Frequency of Functional Test: Every 18 months; Once every fuel cycle, not to exceed 18 months

References: P&ID H 16334 **Physical/ISO:** H 16873
Valve Drawing: S 11373 **Physical/ISO:** H 16108
Other Information: The post accident room temperature is 311° F; however, that temperature is caused by a break in the RCIC steam supply line in the room. RCIC would not have to operate with a break in its steam supply line.

The valve is required to open to allow RCIC pump suction from the torus. The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have an effect on the valve, due to the valve's physical distance of over 10 feet from the torus and the over 38 feet of piping between the torus and the valve. Also per RCIC system operating procedure 34SO-E51-001-1S, there is a caution to place RHR in suppression pool cooling mode for RCIC operation if the suppression pool temperature reaches 95° F.

Also valve 1E51 F031 is between valve 1E51 F029 and the torus. Valve 1E51 F031 is closed as is 1E51 F029 unless suction is required from the torus. RCIC suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 1E51 F029 should not see fluid temperatures greater than 140°F

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-1
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 1E51 F031

Valve Function: RCIC pump suction from torus/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection/with torus suction

Normal Fluid Temp:	100	°F	**Press:**	10	PSIG
Operating Fluid Temp:	100-140	°F	**Press:**	10	PSIG
Post Accident Fluid Temp:	100-210	°F	**Press:**	25	PSIG
Normal Atmosphere Temp:	100	°F	**Press:**	14.7	PSIA
Operating Atmosphere Temp:	100	°F	**Press:**	14.7	PSIA
Post Accident Atmosphere Temp:	311	°F	**Press:**	16.2	PSIA

Location: RCIC (SW) Corner Room EL. 89'-8" RAR11
Normal distance from heat source: The valve is physically over 10 feet from the Torus.
Post accident distance from heat sources: Same as normal.

Valve Inservice Testing: 34SV-E51-001-1S
Frequency of IST: quarterly

System Functional Testing: 34SV-E51-004-2S (Pump Operability); 42SV-E51-002-1S
Frequency of Functional Test: Once every refuel cycle, not to exceed 18 months

References: P&ID H 16334 **Physical/ISO:** H 16873
Valve Drawing: S 11373 **Physical/ISO:** H 16108
Other Information: The post accident room temperature is 311° F; however, that temperature is caused by a break in the RCIC steam supply line in the room. RCIC would not have to operate with a break in its steam supply line.

The valve is required to open to allow RCIC pump suction from the torus. The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have an effect on the valve until after flow is established, due to the valve's physical distance of over 12 feet from the torus and the over 34 feet of piping between the torus and the valve. Also per RCIC system operating procedure 34SO-E51-001-1S, there is a caution to place RHR in suppression pool cooling mode for RCIC operation if the suppression pool temperature reaches 95° F.

Also valve 1E51 F031 is closed unless suction is required from the torus. RCIC suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 1E51 F031 should not see fluid temperatures greater than 140°F when it is required to open.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-1
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James W Dailey — ORIGINATOR — 2/6/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E11 Residual Heat Removal/RHR **Valves:** 2E11 F015A/B

Valve Function: LPCI injection/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): LPCI injection

Normal Fluid Temp:	125	°F	**Press:** 1030	**PSIG**	(Note 1)
Operating Fluid Temp:	125	°F	**Press:** 1030	**PSIG**	(Note 1)
Post Accident Fluid Temp:	205	°F	**Press:** 425	**PSIG**	(Note 1)
Normal Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**	
Operating Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**	
Post Accident Atmosphere Temp:	215	°F	**Press:** 16.5	**PSIA**	

Location: Personnel Access ROOM EL. 130 A/ RJR18 B/ RJR21
Normal distance from heat source: N/A
Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-E11-002-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-001-2S; 42SV-E11-004-2S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 26014, H26015 **Physical/ISO:** H 26821
Valve Drawing: S 27367 **Physical/ISO:** H 28000
Other Information: A hole has been drilled through the disc on the high pressure side.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-0

Condition under which valve is susceptible: None

Proposed fixes: N/A

Note 1 Pressure per SNC memo, see calculation SMNH 95020.

James W. Bailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E11 Residual Heat Removal/RHR **Valves:** 2E11 F028A/B

Valve Function: RHR torus spray outboard isolation

Valve Manufacturer: Walworth

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): Torus spray cooling

Normal Fluid Temp:	95	°F	**Press:** 50	**PSIG**
Operating Fluid Temp:	120	°F	**Press:** 190	**PSIG**
Post Accident Fluid Temp:	205	°F	**Press:** 240	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	216	°F	**Press:** 16.74	**PSIA**

Location: Torus Room A/ EL. 119 RHR14 B/ EL. 87 RHR24
Normal distance from heat source: N/A
Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-E11-602-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-001-2S; 42SV-E11-004-2S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 26014, H26015 **Physical/ISO:** H 26821
Valve Drawing: S 27139 **Physical/ISO:** H 28000

Other Information: The torus room temperature increases to 216° F after a HELBA. The HPCI steam line break outside of the containment causes the room temperature to go to 216° F. Torus spray cooling would not be required to respond to a LOCA outside the containment. A HELBA and a LOCA inside the containment is beyond our design basis. During a LOCA torus spray is assumed to be initiated 600 seconds into the accident for all cases (FSAR Sections 6.2.1.4.3 & 6.2.1.4.5). Per Bechtel Mechanical Calculation 342 Attachment 5, the torus room temperature increases less than 17° F in the first 750 seconds after the LOCA. Thus the ambient temperature would be less than 122°F, which is only 2°F high than the fluid temperature. Therefore, pressure locking due to boiler effect is not a concern.

The post accident fluid temperature of 205° F is the result of using torus spray with suction taken from the torus after the LOCA event has heated the torus water up to 205° F. However, at the time the valve (2E11 F028) opens there is a dead leg of water from the valve to the torus. That dead leg should be no greater than 95° F before the LOCA event from the 24" tees that go to the LPCI injection valves (2E11 F015) and to the torus spray valves (2E11 F028). Between the 24" tee and the torus spray "A" valve is over 60 feet of piping and over 50 feet to the "B" valve. The temperature at the tee during LPCI injection will increase as the torus water temperature increases to possibly 205° F. However due to the distance from the torus spray valves to the tee and the short

time after a LOCA event until the torus spray valves would open (600 Seconds), heating of the valve bonnet due to process fluid temperature is not a concern for pressure locking.

Valve susceptible to thermal binding: Yes ☐ NO X **Accept. Criteria** TB-4

Valve susceptible to pressure lock: Yes NO X **Accept. Criteria** PL-4/PL-3

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/13/96 — DATE

GL 95-07 EVALUATION SHEET

System: E 21 Core Spray **Valves:** 2E21 F005A/B

Valve Function: Core spray injection/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): Core Spray injection

Normal Fluid Temp: (Note 2)	546	°F	**Press:** 1015	**PSIG** (Note 1)	
Operating Fluid Temp:	546	°F	**Press:** 1015	**PSIG** (Note 1)	
Post Accident Fluid Temp:	195	°F	**Press:** 425	**PSIG** (Note 1)	
Normal Atmosphere Temp:	110	°F	**Press:** 14.7	**PSIA**	
Operating Atmosphere Temp:	110	°F	**Press:** 14.7	**PSIA**	
Post Accident Atmosphere Temp:	A/210 B/217	°F	**Press:**	A/15.6 B/16.4	**PSIA**

Location: A/ Reactor Bldg EL. 171 RFR10 B/ RWCU HX Room EL. 171 RFR04

Normal distance from heat source: The "A" valve is over 45' and "B" is over 43' from the connection to the reactor

Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E21-002-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E21-001-2S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 26018 **Physical/ISO:** H 26836, H 26837
Valve Drawing: S 26976 **Physical/ISO:** H 26119
Other Information: Disc has hole drilled through the high pressure side.

The Post Accident fluid temperature is 195° F which is below the potential operating fluid temperature. The 195°F temperature is assuming flow has been established from the torus. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valves until after flow is established; due to the valves' physical distance from the torus and the length of piping between the valves and the torus.

Also, even though the valves are connected to the reactor which has 560° F fluid, the valves never reach that temperature. This is because with no flow through this pipe during normal plant operations the pipe will see a temperature gradient. Since the connection to the reactor is over 45' from the "A" valve and over 43' from the "B" valve and both valves are isolated from the connection by check valves, it is concluded that this temperature will not have a significant effect on the valves. The "A" valve is over 19' from the check valve and the "B" valve is over 16'. Also both valves are located 11'-0" below the connections. Therefore the temperature at the valves will be about the ambient temperature of the rooms in which the valves are located. The Unit 2 valves are located similar to the Unit 1 valves ("A" is 43 feet and "B" is 40 feet from the reactor connection , and a comparable 9 1/2 feet below the connection). A temperature reading taken on the Unit 1 valves during powered operation using an infrared gun determined the valve to be at ambient room temperature.

The Unit 2 Core Spray injection valves were modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

Valve susceptible to thermal binding: Yes ☐ NO X **Accept. Criteria** TB-4

Valve susceptible to pressure lock: Yes ☐ NO X **Accept. Criteria** PL-0

Condition under which valve is susceptible: None

Proposed fixes: N/A

Note 1 Pressure per SNC memo, see calculation SMNH 95020.

Note 2 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the RPV connection to a low at the valve (2E21F005).

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Pyrek — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 2E41 F001

Valve Function: HPCI turbine steam inlet/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	546	°F	**Press:**	1000	**PSIG**
Operating Fluid Temp:	546	°F	**Press:**	1000	**PSIG**
Post Accident Fluid Temp:	95	°F	**Press:**	0	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:**	14.7	**PSIA**

Location: HPCI ROOM EL. 87 RGR25
Normal distance from heat source: N/A
Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-E41-001-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-2S; 34SV-E41-005-02S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months; Once per operating cycle

References: P&ID H 26020 **Physical/ISO:** H 26841
Valve Drawing: S 27035 **Physical/ISO:**
Other Information: The valve is installed with the bonnet vertical. A drain pot with level controls is located in the upstream piping to collect any condensation.

Valve susceptible to thermal binding: **Yes** X **NO** **Accept. Criteria**
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-2

Condition under which valve is susceptible: If the valve was closed at a fluid temperature of 560°F and not reopened until the RPV pressure was down to 150 PSI (the minimum pressure for HPCI operation) with a fluid temperature of 350°F, the valve would potentially be susceptible to thermal binding.

Proposed fixes: The valve needs a more detailed evaluation.

James W Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/13/96 — DATE

DETAIL EVALUATION

BACKGROUND: The valve, 2E41 F001, is normally closed during power operation. It opens automatically in response to a HPCI initiation signal to permit steam flow to the HPCI turbine. It may also be opened manually when performing a manual start of the HPCI turbine. The valve is stroke tested quarterly during powered operation per procedure 34SV-E41-001-2S. This stroke testing would be performed at fluid conditions of approximately 546°F and 1000 PSIG. The valve is also stroked during the HPCI Logic System Functional Test (LSFT) which is performed per procedure 42SV-E41-002-2S every refueling outage. During the LSFT the valve would be at ambient temperature and pressure. Procedure 34SV-E41-005-02S, the low pressure pump operability test also strokes the valve. This test is performed once per operating cycle while the reactor is coming up in power. The fluid for this test would be at approximately 350°F and between 150 and 165 PSIG.

The valve, 2E41 F001, could be closed hot and then required to open to perform its safety function after it has potentially cooled more than 50°F (thus per the screening criteria making the valve potentially susceptible to thermal binding). Such a situation could occur if the valve were to be opened automatically in response to a HPCI initiation during a design basis event, and then if shortly into the event the operator were to secure HPCI from operation and close the valve. Finally, later in the event with the reactor depressurized to close to the lower limit of steam pressure for HPCI operation (150 PSIG), the operator restarts HPCI. Therefore, in this scenario, the valve would have been closed at approximately 546°F and reopened at approximately 350°F.

EVALUATION: The valve is a 10" Powell flex wedge gate figure 19023WE. SCS's response to SOER 84-7 evaluated a similar scenario for 2E41 F006 and 2E51 F013 which are both Powell flex wedge gate figure 19023WE. Information obtained from Powell at that time was that for this type Powell flex wedge gate valve thermal binding does not occur at temperatures less than 700°F. Recent conversation with Powell indicates that they have not had any reports of thermal binding occurring with this type valve unless the valve is closed at temperatures in excess of 700°F.

The LSFT testing, MOV testing, or maintenance, which ever activity is performed first during an outage, would normally stroke this valve at ambient conditions. The stroking of this valve during one of these outage activities would be opening a valve that was closed hot during the last quarterly stroke testing performed during powered operation. Thus, the valve has been closed hot and opened after cooling considerably more than in the proposed scenario. Thermal binding conditions identified would normally have been documented through the Deficiency Card process. Review of records indicates that Plant Hatch has not experienced any thermal binding of this valve.

CONCLUSION: Based on the Plant Hatch's experience with this type valve and the fact that Plant Hatch has opened the valve under conditions that approximate those of the scenario that could potentially cause thermal binding and have never experienced any thermal binding problems with this valve, it is concluded that thermal binding of this valve is not a concern.

REQUIRED ACTION: None

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 2E41 F006

Valve Function: HPCI injection/pump discharge

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp: (Note 1)	420	°F	**Press:**	1065	**PSIG**
Operating Fluid Temp:	40-170	°F	**Press:**	1220	**PSIG**
Post Accident Fluid Temp:	420	°F	**Press:**	0	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	216	°F	**Press:**	16.74	**PSIA**

Location: Torus EL. 109 RBR19
Normal distance from heat source: The valve is over 64 feet from the feedwater connection.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-2S
Frequency of Functional Test: Once every refuel outage, not to exceed 18 months

References: P&ID H 26020 **Physical/ISO:** H 26840
Valve Drawing: S 27131 **Physical/ISO:**
Other Information: Elementary H 51689
Disc has hole drilled through the high pressure side.

Even though the valve is connected to the feedwater which has 420° F fluid, the valve never reaches that temperature. This is because with no flow through this pipe during normal plant operations the pipe will see a temperature gradient. Since the connection to the feedwater is over 64' from the valve, it is concluded that this temperature will not have a significant effect on the valve. The valve is located 30'-7" below the connection. Therefore the temperature at the valves will be about the ambient temperature of the room in which the valve is located.

The valve was modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

The Unit 2 valve is located similar to the Unit 1 valve (which is 42 feet from the feedwater connection , and a comparable 16 1/2 feet below the connection). A temperature reading taken on the Unit 1 valve during powered operation using an infrared gun determined the valve to be at ambient room temperature.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-0

Condition under which valve is susceptible: None

Proposed fixes: N/A

Note 1 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the Feedwater connection to a low at the valve (2E41F006).

James W Dailey — ORIGINATOR — 2/6/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 2E41 F041

Valve Function: HPCI pump suction from suppression pool isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	110	°F	**Press:** 35	**PSIG**
Operating Fluid Temp:	110-140	°F	**Press:** 50	**PSIG**
Post Accident Fluid Temp:	110-140	°F	**Press:** 35	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:** 14.7	**PSIA**

Location: HPCI ROOM EL. 87 RLR25
Normal distance from heat source: The valve is over 42 feet from the torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-2S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 26020 **Physical/ISO:** H 26839
Valve Drawing: S 26971 **Physical/ISO:**
Other Information: The valve is required to open to allow HPCI pump suction from the suppression pool (torus). The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valve due to it physical distance from the torus (over 42 feet) and the over 88 feet of piping between the valve and the torus. Also valve 2E41 F042 is between valve 2E41 F041 and the torus. Valve 2E41 F042 is closed as is 2E41 F041 unless suction is required from the torus. HPCI suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 2E41 F041 should not see fluid temperatures greater than 140°F.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James W Darley — ORIGINATOR — DATE 2/5/96

Charles L. Lynch — REVIEWER — DATE 2/8/96

GL 95-07 EVALUATION SHEET

System: E41 High Pressure Coolant Injection/HPCI **Valves:** 2E41 F042

Valve Function: HPCI pump suction from suppression pool isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): HPCI injection on low water/high drywell pressure

Normal Fluid Temp:	110	°F	**Press:** 35	**PSIG**
Operating Fluid Temp:	110-140	°F	**Press:** 50	**PSIG**
Post Accident Fluid Temp:	110-210	°F	**Press:** 35	**PSIG**
Normal Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	105	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	148	°F	**Press:** 14.7	**PSIA**

Location: HPCI ROOM EL. 87 RGR25
Normal distance from heat source: Over 23 feet from the torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E41-001-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E41-002-2S
Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months

References: P&ID H 26020 **Physical/ISO:** H 26839
Valve Drawing: S 26971 **Physical/ISO:**
Other Information: The valve is required to open to allow HPCI pump suction from the suppression pool (torus). The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a effect on the valve until after flow is established; due to it physical distance from the torus (over 23 feet) and the over 36 feet of piping between the valve and the torus. Also valve 2E41 F042 is closed unless suction is required from the torus. HPCI suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 2E41 F042 should not see fluid temperatures greater than 140°F when it is required to open.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/13/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 2E51 F013

Valve Function: RCIC injection/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection

Normal Fluid Temp: (Note 1)	436	°F	**Press:**	1065	**PSIG**	
Operating Fluid Temp:	40-170	°F	**Press:**	1250	**PSIG**	
Post Accident Fluid Temp:	40-170	°F	**Press:**	1220	**PSIG**	(Note 2)
Normal Atmosphere Temp:	105	°F	**Press:**	14.7	**PSIA**	
Operating Atmosphere Temp:	216	°F	**Press:**	16.74	**PSIA**	
Post Accident Atmosphere Temp:	216	°F	**Press:**	16.74	**PSIA**	

Location: Torus Room EL. 123 RBR19
Normal distance from heat source: Over 19 feet from the feedwater connection.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E51-001-2S
Frequency of IST: Quarterly

System Functional Testing: 42SV-E51-002-2S
Frequency of Functional Test: Once every refueling outage, not to exceed 18 months

References: P&ID H 26023 **Physical/ISO:** H 26845
Valve Drawing: S 27028 **Physical/ISO:** H 26279
Other Information: A hole has been drilled through the disc on the high pressure side.

Even though the valve is maintained closed against 436° F, 1020 PSIG feed water; this temperature is not considered to have a significant effect on the valve. This is because the feedwater connection is 19 3/4 feet from the valve. Also, the valve is located below the feedwater connection by 17 1/2 feet.

The Unit 2 RCIC injection valve was modified during the Fall'95 Refueling Outage. While disassembled no damage was observed that could be attributed to pressure locking or thermal binding.

The Unit 2 valve is located similar to the Unit 1 valve (19 1/3 feet from the feedwater connection , and a comparable 16 1/6 feet below the connection). A temperature reading taken on the Unit 1 valve during powered operation using an infrared gun determined the valve to be at ambient room temperature.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-4
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-0

Condition under which valve is susceptible: None

Proposed fixes: N/A

Note 1 During plant operation there is no flow through this line. This line will have a temperature gradient from a high at the Feedwater connection to a low at the valve (2E51F013).

Note 2 The pressure will decrease as the reactor is depressurized due to a LOCA or use of the ADS.

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynd — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 2E51 F029

Valve Function: RCIC pump suction from torus/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection/with torus suction

Normal Fluid Temp:	95	°F	**Press:** 0	**PSIG**
Operating Fluid Temp:	95-140	°F	**Press:** 10	**PSIG**
Post Accident Fluid Temp:	95-205	°F	**Press:** 0	**PSIG**
Normal Atmosphere Temp:	100	°F	**Press:** 14.7	**PSIA**
Operating Atmosphere Temp:	100	°F	**Press:** 14.7	**PSIA**
Post Accident Atmosphere Temp:	311	°F	**Press:** 16.2	**PSIA**

Location: RCIC (NW) Corner Room EL. 87 RAR14
Normal distance from heat source: Over 31 feet from the torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E51-001-2S
Frequency of IST: Quarterly

System Functional Testing: 34SV-E51-004-2S (Pump Operability); 42SV-E51-002-2S
Frequency of Functional Test: Once every refueling outage, not to exceed 18 months

References: P&ID H 26023 **Physical/ISO:** H 26844
Valve Drawing: S 26970 **Physical/ISO:** H 26279
Other Information: The post accident room temperature is 311°F; however, that temperature is caused by a break in the RCIC steam supply line in the room. RCIC would not have to operate with a break in its steam supply line.

The valve is required to open to allow RCIC pump suction from the torus. The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valve; due to the valve's physical distance from the torus and the over 31 feet of piping between the torus and the valve. Also per RCIC system operating procedure 34SO-E51-001-2S, there is a caution to place RHR in suppression pool cooling mode for RCIC operation if the suppression pool temperature reaches 95° F.

Also valve 2E51 F031 is between valve 2E51 F029 and the torus. Valve 2E51 F031 is closed as is 2E51 F029 unless suction is required from the torus. RCIC suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 2E51 F029 should not see fluid temperatures greater than 140°F.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-1
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: E51 Reactor Core Isolation Cooling/RCIC **Valves:** 2E51 F031

Valve Function: RCIC pump suction from torus/isolation

Valve Manufacturer: Powell

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): RCIC injection/with torus suction

Normal Fluid Temp:	95	°F	**Press:**	0	PSIG
Operating Fluid Temp:	100-140	°F	**Press:**	10	PSIG
Post Accident Fluid Temp:	95-205	°F	**Press:**	0	PSIG
Normal Atmosphere Temp:	100	°F	**Press:**	14.7	PSIA
Operating Atmosphere Temp:	100	°F	**Press:**	14.7	PSIA
Post Accident Atmosphere Temp:	311	°F	**Press:**	16.2	PSIA

Location: RCIC (NW) Corner Room EL. 89 RBR16
Normal distance from heat source: Over 31 feet from the torus.
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-E51-001-2S
Frequency of IST: Quarterly

System Functional Testing: 34SV-E51-004-2S (Pump Operability); 42SV-51-002-2S
Frequency of Functional Test: Once every refueling outage, not to exceed 18 months

References: P&ID H 26023 **Physical/ISO:** H 26844
Valve Drawing: S 26970 **Physical/ISO:** H 26279
Other Information: The post accident room temperature is 311° F; however, that temperature is caused by a break in the RCIC steam supply line in the room. RCIC would not have to operate with a break in its steam supply line.

The valve is required to open to allow RCIC pump suction from the torus. The normal suction source is the CST. Although the torus water temperature could go to over 200° F after an accident, it is concluded that this temperature will not have a significant effect on the valve until after flow is established; due to the valve's physical distance from the torus and the over 31 feet of piping between the torus and the valve. Also per RCIC system operating procedure 34SO-E51-001-2S, there is a caution to place RHR in suppression pool cooling mode for RCIC operation if the suppression pool temperature reaches 95° F.

Also valve 2E51 F031 is closed unless suction is required from the torus. RCIC suction from the torus is limited to a maximum torus water temperature of 140° F. Thus 2E51 F031 should not see fluid temperatures greater than 140°F when it is required to open.

Valve susceptible to thermal binding: Yes ☐ NO X **Accept. Criteria** TB-1
Valve susceptible to pressure lock: Yes NO X **Accept. Criteria** PL-3/PL-4

Condition under which valve is susceptible: None

Proposed fixes: N/A

James W Dailey — ORIGINATOR — 2/8/96 — DATE

Charles R. Lynch — REVIEWER — 2/8/96 — DATE

GL 95-07 EVALUATION SHEET

System: P41 Plant Service Water/PSW **Valves:** 2P41 F115A/B

Valve Function: PSW supply LPCI inverter room coolers

Valve Manufacturer: Pacific

Valve Type: Flex wedge/gate

Normal Position: Closed **Post Accident Position:** Open

Does valve need to open to perform safety function? **Yes** X **No** ☐
If Yes, what mode(s): High LPCI inverter room temperature automatically opens the valve at 102° F

Normal Fluid Temp:	30-95	°F	**Press:**	18-119	**PSIG**
Operating Fluid Temp:	30-95	°F	**Press:**	18-119	**PSIG**
Post Accident Fluid Temp:	30-95	°F	**Press:**	18-119	**PSIG**
Normal Atmosphere Temp:	102	°F	**Press:**	14.7	**PSIA**
Operating Atmosphere Temp:	102	°F	**Press:**	14.7	**PSIA**
Post Accident Atmosphere Temp:	102	°F	**Press:**	16.5	**PSIA**

Location: Control Building EL 164 TBT13
Normal distance from heat source: 10 feet from 24" steam line
Post accident distance from heat sources: Same as normal

Valve Inservice Testing: 34SV-SUV-012-2S
Frequency of IST: Quarterly

System Functional Testing: N/A
Frequency of Functional Test: N/A

References: P&ID H 26050, H26051 **Physical/ISO:** H 26904
Valve Drawing: S 30391 **Physical/ISO:**
Other Information: HELB of the 24" steam line could cause a significant rise in the temperature of the water in the valve bonnet. A hole has been drilled through the disc on the high pressure side.

Valve susceptible to thermal binding: **Yes** ☐ **NO** X **Accept. Criteria** TB-1
Valve susceptible to pressure lock: **Yes** **NO** X **Accept. Criteria** PL-0

Condition under which valve is susceptible: None

Proposed fixes: N/A

James M Dailey — ORIGINATOR — 2/8/96 — DATE
Charles L. Ligon — REVIEWER — 2/8/96 — DATE