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J. D. Woodard  
Senior Vice President

the southern electric system

October 21, 1996

Docket No. 50-321  
50-366

HL-5240

TAC Nos. M88736  
M88737

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

Edwin I. Hatch Nuclear Plant  
*Scope Expansion for Generic Letter 89-10 Program*  
*and*  
*Generic Letter 95-07 Supplemental Information*

Gentlemen:

By letter dated October 16, 1995, the Nuclear Regulatory Commission (NRC) issued the Safety Evaluation Report (SER) relative to the scope of the Plant Hatch Generic Letter (GL) 89-10 program. The purpose of this letter is to inform you of the GL 89-10 scope expansions discussed below and also supplement the information provided to the NRC in Georgia Power Company's (GPC's) 180-day response to GL-95-07, dated February 12, 1996.

Based upon GPC's review of the NRC's SER, the following additions were incorporated into Plant Hatch's GL 89-10 program:

1. All motor-operated valves (MOV's) listed by Master Parts List number in the SER were added to the program scope.
2. Several containment isolation valves with the active safety function to close were also added to the program. (Reference paragraph "p" of the SER.)
3. Of the MOV's added to the program, the gate valves with the active safety function to open were evaluated to assess their potential to experience pressure locking and thermal binding, per the requirements of GL 95-07, "Pressure Locking and Thermal Binding of Safety Related Power Operated Gate Valves," dated August 17, 1995. Of the valves evaluated against the criteria of GL 95-07, none were found susceptible to thermal binding. However, residual heat removal minimum flow

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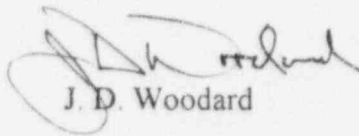
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October 21, 1996

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valves 2E11-F007A&B were found susceptible to pressure locking under certain conditions. Because the scenario under which pressure locking can occur is beyond any design bases event, the valves' ability to perform their safety function during a design basis event is not affected. Accordingly, the valves can be considered operable. However, as a conservative measure, GPC plans to modify the valve disks during the next refueling outage. The enclosure provides the evaluation sheets for each of the valves evaluated per the guidance of GL 95-07.

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

Sincerely,

  
J. D. Woodard

OCV/sp

Enclosure: Generic Letter 95-07 Evaluation Sheets

cc: Georgia Power Company

Mr. H. L. Sumner, Jr., 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. El neter, Regional Administrator  
Mr. B. L. Folbrook, Senior Resident Inspector - Hatch

Enclosure

Edwin I. Hatch Nuclear Plant  
*Scope Expansion for Generic Letter 89-10 Program*  
*and*  
*Generic Letter 95-07 Supplemental Information*

**Evaluation Sheets**  
**for**  
**Pressure Locking and Thermal Binding Assessment**  
**of**  
**Safety-Related Motor-Operated Gate Valves**

# GL 95-07 EVALUATION SHEET

System: 1E11 Residual Heat Removal / RHR Valves: 1E11-F007A/B

Valve Function: RHR Minimum Flow Bypass

Valve Manufacturer: Walworth

Valve Type: Solid Wedge/Gate

Normal Position: Open Post Accident Position: Both

Does valve need to open to perform safety function? Yes ☒ No ☐  
If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                                |              |           |        |               |             |
|--------------------------------|--------------|-----------|--------|---------------|-------------|
| Normal Fluid Temp:             | <u>260</u>   | <u>°F</u> | Press: | <u>20</u>     | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>260</u>   | <u>°F</u> | Press: | <u>20</u>     | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>358</u>   | <u>°F</u> | Press: | <u>450</u>    | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>100</u>   | <u>°F</u> | Press: | <u>14.7</u>   | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>100</u>   | <u>°F</u> | Press: | <u>14.7</u>   | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>A:148</u> | <u>°F</u> | Press: | <u>A:14.7</u> | <u>PSIG</u> |
|                                | <u>B:215</u> |           |        | <u>B:15.9</u> |             |

Location: A:Southeast Diagonal - RLR13, B:Northeast Diagonal - RLR02, El. 93'

Normal distance from heat source: NA

Post accident distance form heat sources: NA

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

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-001, 004, 005-1S

Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months.

References: P&ID A: H-16330 Physical/ISO: A: H-16113 / H-16848

B: H-16229

Valve Drawing: S-11472 Physical/ISO: B: H-16113 / H-16849

Other Information: \_\_\_\_\_

Valve susceptible to thermal binding: Yes ☐ NO ☒ Accept. Criteria TB-4  
Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR

J. W. Dailey  
REVIEWER

7/9/96  
DATE

7/16/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 1E11 Residual Heat Removal / RHR Valves: 1E11-F021A/B

Valve Function: RHR Containment Spray Inboard 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 ☒ No ☐

If Yes, what mode(s): Containment Spray

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>50</u>   | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>120</u> | <u>°F</u> | Press: | <u>170</u>  | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>205</u> | <u>°F</u> | Press: | <u>210</u>  | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>210</u> | <u>°F</u> | Press: | <u>15.4</u> | <u>PSIG</u> |

Location: A: Reactor Bldg. SE, El. 160', RHR09. B: Reactor Bldg NE, El. 146', RHR07.

Normal distance from heat source: NA

Post accident distance form heat sources: NA

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

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-002-1S

Frequency of Functional Test: Once each fuel cycle, not to exceed 18 months.

References: P&ID H-16329, H-16330 Physical/ISO: H-16116 / H-16834

Valve Drawing: S-11475 Physical/ISO: H-16117 / H-16833

Other Information: \_\_\_\_\_

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Barr  
ORIGINATOR

J. W. Daily  
REVIEWER

7/2/96  
DATE

7/16/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 1E21 Core Spray Valves: 1E21-F031A

Valve Function: Core Spray Pump Minimum Flow

Valve Manufacturer: Walworth

Valve Type: Flex Wedge / Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>50</u>   | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>95</u>  | <u>°F</u> | Press: | <u>50</u>   | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>210</u> | <u>°F</u> | Press: | <u>300</u>  | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>148</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |

Location: Southeast Diagonal, El. 100', RLR13.

Normal distance from heat source: Over 66' from the Torus.

Post accident distance form heat sources: Same as normal.

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

Frequency of IST: Quarterly

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

Frequency of Functional Test: Once each fuel cycle, not to exceed 18 months.

References: P&ID H-16331 Physical/ISO: H-16121 / H-16864

Valve Drawing: S-27563 Physical/ISO:

Other Information: Post accident fluid and atmosphere temperatures can potentially reach 210 and 148 degrees F, respectively. However, pressure locking due to boiler effect is not a concern as follows:

Prior to the event, the core spray pump minimum flow valve is in the open position. The core spray pumps will automatically start on high drywell pressure or low reactor water level. The pumps will operate on minimum flow bypass until the reactor is depressurized to the point where the injection valves open and injection is possible. The bypass valve will close on high flow.

Accident analyses and the core spray system operating procedures assume that once the pumps are started, they will not be shut down until they are no longer needed. Operating procedures require that the system not be shut down until adequate core cooling is assured. The system will not be shut down unless other systems are available to provide core cooling. The core spray pumps will not be required to be re-started and the minimum flow valve will not be required to operate. Therefore, pressure locking is not a concern.

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-5

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Bar  
ORIGINATOR  
J. W. Hawley

7/23/96  
DATE  
7/26/96

# GL 95-07 EVALUATION SHEET

System: 1E21 Core Spray Valves: 1E21-F031B

Valve Function: Core Spray Pump Minimum Flow

Valve Manufacturer: Walworth

Valve Type: Solid Wedge / Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                           |            |           |        |            |             |
|---------------------------|------------|-----------|--------|------------|-------------|
| Normal Fluid Temp:        | <u>95</u>  | <u>°F</u> | Press: | <u>50</u>  | <u>PSIG</u> |
| Operating Fluid Temp:     | <u>95</u>  | <u>°F</u> | Press: | <u>50</u>  | <u>PSIG</u> |
| Post Accident Fluid Temp: | <u>210</u> | <u>°F</u> | Press: | <u>300</u> | <u>PSIG</u> |

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Atmosphere Temp:        | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>100</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>215</u> | <u>°F</u> | Press: | <u>15.7</u> | <u>PSIG</u> |

Location: Northeast Diagonal, El. 100', RLR02.

Normal distance from heat source: Over 67' from the Torus.

Post accident distance from heat sources: Same as normal.

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

Frequency of IST: Quarterly

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

Frequency of Functional Test: Once each fuel cycle, not to exceed 18 months.

References: P&ID H-16331 Physical/ISO: H-16121 / H-16863

Valve Drawing: S-11471 Physical/ISO:

Other Information:

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-1

Condition under which valve is susceptible: None

Proposed fixes: None

W.T. Bam  
ORIGINATOR

J W Daily  
REVIEWER

7/2/96  
DATE

7/16/96  
DATE



# GL 95-07 EVALUATION SHEET

System: 2E11 Residual Heat Removal / RHR Valves: 2E11-F007A

Valve Function: RHR Minimum Flow Bypass

Valve Manufacturer: Walworth

Valve Type: Flex Wedge/Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>70</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>70</u>  | <u>°F</u> | Press: | <u>5</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>209</u> | <u>°F</u> | Press: | <u>10</u>   | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>145</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |

Location: Northeast Diagonal - RLR14, El. 98'

Normal distance from heat source: The connection to the pump discharge line is approximately 17 feet from the valve.

Post accident distance form heat sources: Same

Valve Inservice Testing: 34SV-E11-002-2S

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-001, 004, 005-2S

Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months.

References: P&ID H-26015 Physical/ISO: H-26112 / H-26829

Valve Drawing: S-27507 Physical/ISO:

Other Information: The valve is only 17' from the RHR pump discharge line, which would be the heat source in an accident. It is also over 4' above the heat source.

The valve is normally open. The RHR pumps will start in the LPCI mode on high drywell pressure or low reactor water level. The valve will close on a high flow signal, trapping relatively cool torus water in the bonnet. As LPCI continues to operate, the fluid temperature and the atmosphere temperature can potential y increase to 209 and 145 degrees F, respectively. The potential exists to increase the bonnet temperature. LPCI operation will be terminated when it is no longer required. If the pumps are restarted in another mode of RHR, pressure locking due to boiler effect could occur.

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

Valve susceptible to pressure lock: Yes ☒ NO ☐ Accept. Criteria

Condition under which valve is susceptible: The RHR pumps are required to be restarted after the initial run is terminated.

Proposed fixes: Drill a hole in the disc on the downstream side.

W. T. Bar  
ORIGINATOR

J. W. Dailey  
REVIEWER

7/23/96  
DATE

8/7/96  
DATE



# GL 95-07 EVALUATION SHEET

System: 2E11 Residual Heat Removal / RHR Valves: 2E11-F007B

Valve Function: RHR Minimum Flow Bypass

Valve Manufacturer: Anchor / Darling

Valve Type: Flex Wedge/Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>70</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>70</u>  | <u>°F</u> | Press: | <u>5</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>209</u> | <u>°F</u> | Press: | <u>10</u>   | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>145</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |

Location: Southeast Diagonal - RLR24, El. 98'

Normal distance from heat source: The connection to the pump discharge line is approximately 17 feet from the valve.

Post accident distance form heat sources: Same

Valve Inservice Testing: 34SV-E11-002-2S

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-001, 004, 005-2S

Frequency of Functional Test: Once every fuel cycle, not to exceed 18 months.

References: P&ID H-26014 Physical/ISO: H-26112 / H-26829

Valve Drawing: S-61509 Physical/ISO:

Other Information: The valve is only 17' from the RHR pump discharge line, which would be the heat source in an accident. It is also over 4' above the heat source.

The valve is normally open. The RHR pumps will start in the LPCI mode on high drywell pressure or low reactor water level. The valve will close on a high flow signal, trapping relatively cool torus water in the bonnet. As LPCI continues to operate, the fluid temperature and the atmosphere temperature can potentially increase to 209 and 145 degrees F, respectively. The potential exists to increase the bonnet temperature. LPCI operation will be terminated when it is no longer required. If the pumps are restarted in another mode of RHR, pressure locking due to boiler effect could occur.

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

Valve susceptible to pressure lock: Yes ☒ NO ☐ Accept. Criteria

Condition under which valve is susceptible: The RHR pumps are required to be restarted after the initial run is terminated.

Proposed fixes: Drill a hole in the disc on the downstream side.

W. T. Bass  
ORIGINATOR

J. W. Dailey  
REVIEWER

7/23/96  
DATE

8/7/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2E11 Residual Heat Removal / RHR Valves: 2E11-F021A

Valve Function: RHR Containment Spray Inboard 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 ☒ No ☐

If Yes, what mode(s): Containment Spray

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>205</u> | <u>°F</u> | Press: | <u>240</u>  | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>215</u> | <u>°F</u> | Press: | <u>16.5</u> | <u>PSIG</u> |

Location: Personnel Access Room, El. 139', RJR20.

Normal distance from heat source: NA

Post accident distance form heat sources: NA

Valve Inservice Testing: 34SV-E11-002-2S

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-002-2S

Frequency of Functional Test: Once each fuel cycle, not to exceed 18 months.

References: P&ID H-26015 Physical/ISO: H-26111, / H-26821

Valve Drawing: S-27501 Physical/ISO:

Other Information: The distance from the torus is excessively large upstream of the valve. The containment spray header is downstream of the valve and is not a heat source. Fluid temperature will not cause boiler effect.

Containment spray is manually initiated to condense steam in the drywell in the event of a break inside containment. The post accident temperature in the personnel access room could potentially reach 215 degrees F. However, this temperature is the result of a break outside containment. In the event of a break outside containment, containment spray would not be required. Therefore, pressure locking due to boiler effect is not a concern.

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-3

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR  
J. W. Daily  
REVIEWER

7/18/96  
DATE  
7/26/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2E11 Residual Heat Removal / RHR Valves: 2E11-F021B

Valve Function: RHR Containment Spray Inboard 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 ☒ No ☐

If Yes, what mode(s): Containment Spray

|                                |              |           |        |              |             |
|--------------------------------|--------------|-----------|--------|--------------|-------------|
| Normal Fluid Temp:             | <u>40-90</u> | <u>°F</u> | Press: | <u>0</u>     | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>40-90</u> | <u>°F</u> | Press: | <u>0</u>     | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>177</u>   | <u>°F</u> | Press: | <u>340</u>   | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>90</u>    | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>90</u>    | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>217</u>   | <u>°F</u> | Press: | <u>15.06</u> | <u>PSIG</u> |

Location: RWCU Heat Exchanger Room, El. 166', RHR22.

Normal distance from heat source: NA

Post accident distance from heat sources: NA

Valve Inservice Testing: 34SV-E11-002-2S

Frequency of IST: Quarterly

System Functional Testing: 42SV-E11-002-2S

Frequency of Functional Test: Once each fuel cycle, not to exceed 18 months.

References: P&ID H-26014 Physical/ISO: H-26114, / H-26827

Valve Drawing: S-27501 Physical/ISO:

Other Information: The distance from the torus is excessively large upstream of the valve. The containment spray header is downstream of the valve and is not a heat source. Fluid temperature will not cause boiler effect.

Containment spray is manually initiated to condense steam in the drywell in the event of a break inside containment. The post accident temperature in the RWCU heat exchanger room could potentially reach 217 degrees F. However, this temperature is the result of a break outside containment. In the event of a break outside containment, containment spray would not be required. Therefore, pressure locking due to boiler effect is not a concern.

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-3

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR

J. M. Dailey  
REVIEWER

7/26/96  
DATE

7/26/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2E21 Core Spray Valves: 2E21-F031A

Valve Function: Core Spray Pump Minimum Flow

Valve Manufacturer: Powell

Valve Type: Flex Wedge / Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

Normal Fluid Temp: 95 °F Press: 0 PSIG

Operating Fluid Temp: 95 °F Press: 0 PSIG

Post Accident Fluid Temp: 195 °F Press: 300 PSIG

Normal Atmosphere Temp: 104 °F Press: 14.7 PSIG

Operating Atmosphere Temp: 104 °F Press: 14.7 PSIG

Post Accident Atmosphere Temp: 145 °F Press: 14.7 PSIG

Location: Northeast Diagonal, El. 92', RLR14

Normal distance from heat source: Over 78' from the Torus

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 each fuel cycle, Not to exceed 18 months.

References: P&ID H-26018

Physical/ISO: H-26118 / H-26836

Valve Drawing: S-43006

Physical/ISO:

Other Information: Post accident fluid and atmosphere temperatures can potentially reach 195 and 145 degrees F, respectively. However, pressure locking due to boiler effect is not a concern as follows:

Prior to the event, the core spray pump minimum flow valve is in the open position. The core spray pumps will automatically start on high drywell pressure or low reactor water level. The pumps will operate on minimum flow bypass until the reactor is depressurized to the point where the injection valves open and injection is possible. The bypass valve will close on high flow.

Accident analyses and the core spray system operating procedure assume that once the pumps are started, they will not be shut down until they are no longer needed. Operating procedures require that the system not be shut down until adequate core cooling is assured. The system will not be shut down unless other systems are available to provide core cooling. The core spray pumps will not be required to be re-started and the minimum flow valve will not be required to operate. Therefore, pressure locking is not a concern.

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-5

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Bass  
ORIGINATOR  
J. W. Dasky  
REVIEWER

7/23/96  
DATE  
7/26/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2E21 Core Spray Valves: 2E21-F031B

Valve Function: Core Spray Pump Minimum Flow

Valve Manufacturer: Walworth

Valve Type: Flex Wedge / Gate

Normal Position: Open Post Accident Position: Both

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

If Yes, what mode(s): Open if closed to provide pump bypass flow. All modes.

|                                |            |           |        |             |             |
|--------------------------------|------------|-----------|--------|-------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>195</u> | <u>°F</u> | Press: | <u>300</u>  | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>104</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>145</u> | <u>°F</u> | Press: | <u>14.7</u> | <u>PSIG</u> |

Location: Southeast Diagonal, El. 92', RLR24

Normal distance from heat source: Over 78' from the Torus

Post accident distance form 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 each fuel cycle, Not to exceed 18 months.

References: P&ID H-26018 Physical/ISO: H-26118 / H-26837

Valve Drawing: S-27563 Physical/ISO:

Other Information: Post accident fluid and atmosphere temperatures can potentially reach 195 and 145 degrees F, respectively. However, pressure locking due to boiler effect is not a concern as follows:

Prior to the event, the core spray pump minimum flow valve is in the open position. The core spray pumps will automatically start on high drywell pressure or low reactor water level. The pumps will operate on minimum flow bypass until the reactor is depressurized to the point where the injection valves open and injection is possible. The bypass valve will close on high flow.

Accident analyses and the core spray system operating procedure assume that once the pumps are started, they will not be shut down until they are no longer needed. Operating procedures require that the system not be shut down until adequate core cooling is assured. The system will not be shut down unless other systems are available to provide core cooling. The core spray pumps will not be required to be re-started and the minimum flow valve will not be required to operate. Therefore, pressure locking is not a concern.

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

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria PL-5

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR  
J. W. Bailey

2/23/96  
DATE  
7/26/96



# GL 95-07 EVALUATION SHEET

System: 2T49 Post LOCA Hydrogen Recombiner Valves: 2T49-F001A/B

Valve Function: Open for operation of the Hydrogen Recombiner in Post LOCA conditions.

Valve Manufacturer: Powell

Valve Type: Flex Wedge / Gate

Normal Position: Closed Pos: Accident Position: Open

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

If Yes, what mode(s): Hydrogen Recombiner operation in post LOCA conditions.

|                                |            |           |        |              |             |
|--------------------------------|------------|-----------|--------|--------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>     | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>215</u> | <u>°F</u> | Press: | <u>15</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>310</u> | <u>°F</u> | Press: | <u>62</u>    | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>90</u>  | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>90</u>  | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>205</u> | <u>°F</u> | Press: | <u>15.04</u> | <u>PSIG</u> |

Location: Reactor Building, El. 193', RHR19

Normal distance from heat source: N/A

Post accident distance form heat sources: N/A

Valve Inservice Testing: 34SV-T49-003-2S

Frequency of IST: Once / 92 days

System Functional Testing: 34SV-T49-001-2S 34SV-T49-002-2S

Frequency of Functional Test: Once / 18 months Once / 6 months

References: P&ID H-26068 Physical/ISO: H-26270 / H-26933

Valve Drawing: S-31049 Physical/ISO:

Other Information:

Valve susceptible to thermal binding: Yes ☐ NO ☒ Accept. Criteria B-1

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria B-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR

J. W. Daily  
REVIEWER

7/29/96  
DATE

8/2/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2T49 Post LOCA Hydrogen Recombiner Valves: 2T49-F002A/B

Valve Function: Open for operation of the Hydrogen Recombiner in Post LOCA conditions.

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 ☒ No ☐

If Yes, what mode(s): Hydrogen Recombiner operation in post LOCA conditions.

Normal Fluid Temp: 95 °F Press: 0 PSIG

Operating Fluid Temp: 215 °F Press: 15 PSIG

Post Accident Fluid Temp: 310 °F Press: 62 PSIG

Normal Atmosphere Temp: 90 °F Press: 14.7 PSIG

Operating Atmosphere Temp: 90 °F Press: 14.7 PSIG

Post Accident Atmosphere Temp: 205 °F Press: 15.04 PSIG

Location: Reactor Building, El. 193', RHR19

Normal distance from heat source: N/A

Post accident distance form heat sources: N/A

Valve Inservice Testing: 34SV-T49-003-2S

Frequency of IST: Once / 92 days

System Functional Testing: 34SV-T49-001-2S 34SV-T49-002-2S

Frequency of Functional Test: Once / 18 months Once / 6 months

References: P&ID H-26068 Physical/ISO: H-26270 / H-26933

Valve Drawing: S-31049 Physical/ISO:

Other information:

Valve susceptible to thermal binding: Yes ☐ NO ☒ Accept. Criteria B-1

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria B-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
ORIGINATOR

J. W. Dailey  
REVIEWER

7/29/96  
DATE

8/2/96  
DATE



# GL 95-07 EVALUATION SHEET

System: 2T49 Post LOCA Hydrogen Recombiner Valves: 2T49-F004A/B

Valve Function: Open for operation of the Hydrogen Recombiner in Post LOCA conditions.

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 ☒ No ☐

If Yes, what mode(s): Hydrogen Recombiner operation in post LOCA conditions.

|                           |            |           |        |           |             |
|---------------------------|------------|-----------|--------|-----------|-------------|
| Normal Fluid Temp:        | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>  | <u>PSIG</u> |
| Operating Fluid Temp:     | <u>215</u> | <u>°F</u> | Press: | <u>15</u> | <u>PSIG</u> |
| Post Accident Fluid Temp: | <u>310</u> | <u>°F</u> | Press: | <u>62</u> | <u>PSIG</u> |

|                                |            |           |        |              |             |
|--------------------------------|------------|-----------|--------|--------------|-------------|
| Normal Atmosphere Temp:        | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>216</u> | <u>°F</u> | Press: | <u>16.74</u> | <u>PSIG</u> |

Location: Torus Room, El. 122', A: RFR14, B: RFR24

Normal distance from heat source: N/A

Post accident distance form heat sources: N/A

Valve Inservice Testing: 34SV-T49-003-2S

Frequency of IST: Once / 92 days

System Functional Testing: 34SV-T49-001-2S 34SV-T49-002-2S

Frequency of Functional Test: Once / 18 months Once / 6 months

References: P&ID H-26068 Physical/ISO: A: H-26268 / H-26931

Valve Drawing: S-31049 Physical/ISO: B: H-26268 / H-26932

Other Information: \_\_\_\_\_

Valve susceptible to thermal binding: Yes ☐ NO ☒ Accept. Criteria B-1

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria B-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Barr  
ORIGINATOR

J. W. Dailey  
REVIEWER

7/29/96  
DATE

8/2/96  
DATE

# GL 95-07 EVALUATION SHEET

System: 2T49 Post LOCA Hydrogen Recombiner Valves: 2T49-F005A/B

Valve Function: Open for operation of the Hydrogen Recombiner in Post LOCA conditions.

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 ☒ No ☐

If Yes, what mode(s): Hydrogen Recombiner operation in post LOCA conditions.

|                                |            |           |        |              |             |
|--------------------------------|------------|-----------|--------|--------------|-------------|
| Normal Fluid Temp:             | <u>95</u>  | <u>°F</u> | Press: | <u>0</u>     | <u>PSIG</u> |
| Operating Fluid Temp:          | <u>215</u> | <u>°F</u> | Press: | <u>15</u>    | <u>PSIG</u> |
| Post Accident Fluid Temp:      | <u>310</u> | <u>°F</u> | Press: | <u>62</u>    | <u>PSIG</u> |
| Normal Atmosphere Temp:        | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Operating Atmosphere Temp:     | <u>105</u> | <u>°F</u> | Press: | <u>14.7</u>  | <u>PSIG</u> |
| Post Accident Atmosphere Temp: | <u>216</u> | <u>°F</u> | Press: | <u>16.74</u> | <u>PSIG</u> |

Location: Torus Room, El. 122', A: RFR14, B: RFR24

Normal distance from heat source: N/A

Post accident distance from heat sources: N/A

Valve Inservice Testing: 34SV-T49-003-2S

Frequency of IST: Once / 92 days

System Functional Testing: 34SV-T49-001-2S 34SV-T49-002-2S

Frequency of Functional Test: Once / 18 months Once / 6 months

References: P&ID H-26068 Physical/ISO: A: H-26268 / H-26931

Valve Drawing: S-31049 Physical/ISO: B: H-26268 / H-26932

Other Information: \_\_\_\_\_

Valve susceptible to thermal binding: Yes ☐ NO ☒ Accept. Criteria B-1

Valve susceptible to pressure lock: Yes ☐ NO ☒ Accept. Criteria B-1

Condition under which valve is susceptible: None

Proposed fixes: None

W. T. Ban  
\_\_\_\_\_  
CALIBRATOR  
J. W. Daily  
\_\_\_\_\_  
REVIEWER

7/29/96  
\_\_\_\_\_  
DATE  
8/2/96  
\_\_\_\_\_  
DATE