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NOV 1 7 2003

PSEG Nuclear LLC

LRN-03-0410
LCR H02-002

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

**REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS
DEACTIVATE THE REACTOR VESSEL HEAD SPRAY PORTION OF THE
RESIDUAL HEAT REMOVAL (RHR) SYSTEM
HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE NPF-57
DOCKET NO. 50-354**

Reference: 1. Letter LR-N02-0003, *Request For Change To Technical Specifications To Deactivate The Reactor Vessel Head Spray Portion Of The Residual Heat Removal (RHR) System*, dated April 16, 2002.

2. Letter LR-N03-0079, *Withdrawal of Request For Change To Technical Specifications To Deactivate The Reactor Vessel Head Spray Portion Of The Residual Heat Removal (RHR) System*, dated March 19, 2003.

Pursuant to 10 CFR 50.90, PSEG Nuclear LLC (PSEG) hereby requests a revision to the Technical Specifications (TS) for the Hope Creek Generating Station. In accordance with 10CFR50.91(b)(1), a copy of this submittal has been sent to the State of New Jersey. This request is a re-submittal of our April 16, 2002 letter (reference 1) that was withdrawn on March 19, 2003 (reference 2).

The proposed change would revise the Technical Specifications to delete the primary containment isolation valves and instrumentation associated with the permanent removal of the reactor vessel head spray piping.

A001

PSEG Nuclear LLC has evaluated the proposed changes in accordance with 10CFR50.91(a)(1), using the criteria in 10CFR50.92(c) and has determined that this request involves no significant hazards considerations. An evaluation of the requested changes are provided in Attachment 1 to this letter. In addition, there is no significant increase in the amounts or types of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure. Consequently, the proposed amendment satisfies the criteria of 10CFR51.22 (c)(9) for categorical exclusion from the requirement for an environmental assessment. The marked up Technical Specification pages affected by the proposed changes are provided in Attachment 2. Retyped Technical Specification pages are provided in Attachment 3.

Approval of this proposed change is being requested by June 30, 2004 to support Refueling Outage 12 (RFO12) currently scheduled for October 2004.

If you have any questions or require additional information, please contact Mr. Michael Mosier at (856) 339-5434.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 11-17-03

A. Christopher Bakken III
Sr. Vice President – Site Operations

Attachments (3)

C: Mr. H. Miller, Administrator – Region I
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U. S. Nuclear Regulatory Commission
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USNRC Senior Resident Inspector – Hope Creek (X24)

Mr. K. Tosch, Manager IV
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REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS DEACTIVATE THE REACTOR VESSEL HEAD SPRAY PORTION OF THE RESIDUAL HEAT REMOVAL (RHR) SYSTEM.

REQUEST FOR CHANGE TO TECHNICAL SPECIFICATIONS DEACTIVATE THE REACTOR VESSEL HEAD SPRAY PORTION OF THE RESIDUAL HEAT REMOVAL (RHR) SYSTEM

1. DESCRIPTION

This letter is a request to amend Facility Operating License NPF-57 for the Hope Creek Generating Station. The proposed change would revise Technical Specifications to delete the primary containment isolation valves and instrumentation associated with the permanent removal of the reactor vessel head spray system.

Approval of this proposed change is being requested by June 30, 2004 to support RFO12 currently scheduled for October 2004.

2. PROPOSED CHANGE

The Reactor Head Spray line at Hope Creek (from the RHR System) runs from outside the drywell through the Primary Containment boundary & reactor cavity seal plate and is connected to the Reactor Pressure Vessel (RPV) Head. This line is not expected to be used in the future. Each refueling outage when the RPV Head is removed, the RHR Head Spray line has to be disconnected and then at the end of the outage it is reinstalled and tested. The removal/reinstallation adds 12 hours to the critical path for the refueling outage and additional personnel exposure without a commensurate increase in safety. Permanent removal of the Head Spray line will save refueling outage time and cost, reduce personnel exposure, and eliminate containment penetration associated Local Leak Rate Testing (LLRT) and Motor Operated Valve (MOV) testing.

The proposed changes to the Technical Specifications are included in Attachment 2 of this submittal. In summary, it is requested that:

- Valves HV-F022 and HV-F023 are removed from Table 3.3.2-1, Isolation Actuation Instrumentation and added the system designator for the remaining valves.

- Valves 1BC-HV-F022 and 1BC-HV-F023 are removed from Table 3.3.7.4-2, Remote Shutdown Systems Controls.

- Valves BC-V021 and BC-V020 are removed from Table 3.4.3.2-1, Reactor Coolant System Pressure Isolation Valves.

- Item 3. (d) is removed from Group 3 of Table 3.6.3-1, Primary Containment Isolation Valves. Item 3. (e) is re-numbered 3. (d).

3. BACKGROUND

The RHR system at Hope Creek Generating Station is designed with five operating modes: Low Pressure Coolant Injection (LPCI), Suppression Pool Cooling (SPC), Containment Spray, Shutdown Cooling (SDC) and Fuel Pool Cooling (FPC) Assist.

The Shutdown Cooling (SDC) mode is designed to cool down the reactor during a normal reactor shutdown. In this mode, the reactor water is drawn from the Reactor Recirculation system suction line, cooled by passing through the RHR heat exchanger, and discharged back to the reactor via the Reactor Recirculation system discharge line. If desired, a small portion of the discharge flow can be directed to the head spray nozzle in the reactor vessel head to condense steam as the reactor vessel is being flooded.

The head spray has no active safety-related function and no credit has been taken for its use in current safety analyses or emergency operating procedures. Removal of the head spray line is beneficial in that it removes a potential location for a primary system pipe break. Also, a potential for accumulation of hydrogen and oxygen gases from the radiolytic decomposition of water and possibility for detonation is eliminated (reference 7.1). This has been seen in Japan and Germany. However, this has not been experienced at any GE BWRs.

Removal of the head spray pipe connected to the reactor vessel will reduce radiation exposure since personnel will no longer remove and install the head spray piping during reactor disassembly/reassembly.

Removal of the head spray system involves: (1) removal of approximately 70 feet of 6 inch pipe and the inboard isolation valve (F022) inside the drywell, (2) removal of approximately 40 feet of 6 inch head spray pipe, the outboard isolation valve (F023) outside the drywell, and (3) removal of approximately 60 feet of 4 inch condensate transfer pipe outside the drywell. A new bolted RPV head blank flange, a welded reactor cavity seal plate cover, and welded pipe caps on the abandoned primary containment (PC) penetration will be installed. The Reactor Head Insulation Package will be restored after removal of the 6-inch pipe, pipe supports, and check valve. The modification includes removing valve power, controls, and flow instrumentation, sparing MCC cubicles, de-terminating wiring and removing controls from the Main Control Room and Remote Shutdown Panels.

The NRC issued Amendment No. 115 to Vermont Yankee Nuclear Power Station, Docket 50-271 on September 7, 1989 and Amendment 119 to Quad Cities Nuclear Power Station, Unit 2, Docket 50-265 on April 3, 1990.

4. TECHNICAL ANALYSIS

An analysis performed by General Electric addressed the following areas with respect to removal of the head spray system (reference 7.2).

4.1. Head Spray

During the initial phase of the shutdown-cooling mode, a small portion (1000 gpm) of the discharge flow can be directed to the head spray nozzle in the reactor vessel head. The head spray flow condenses steam generated from the reactor vessel walls while it is being flooded, thereby keeping reactor pressure down during initial phases of shutdown cooling mode. It also prevents temperature stratification in the reactor vessel. Its design objective is to assure that the vessel head cools in parallel with the remainder of the vessel metal below the waterline during the reactor flooding. The only safety related function of the head spray piping and components are to maintain in reactor coolant pressure boundary integrity and containment isolation when required.

The head spray design was provided in the original residual heat removal system design, because it was anticipated that vessel cooldown and head removal would be critical path activities and that rapid head cooldown would reduce outage time. Operating experience at many BWR plants has indicated that vessel head cooldown is not on the critical path since the critical path is devoted to parallel activities such as shield block removal and main steamline isolation valve leak rate testing. Although the head spray provides the intended function, the incentive for its inclusion in the RHR design may not be realized where head cooldown is not on the critical path. As a result, many utilities do not use the head spray during the SDC mode.

4.2. Plant Safety and Operations

Head spray has no active safety-related function and no credit has been taken for its use in current safety analyses or emergency operating procedures. Removal of the head spray line is beneficial in that it removes a potential location for a primary system pipe break. Consequently, head spray removal has no negative impact on plant safety.

The functions of venting the head and removal of radioactive gases in the vessel head are performed by the head vent system, which in some

plants, is also connected to the head spray line. For the Hope Creek Generating Station, the head spray is entirely separate from the head vent, so that head spray removal has no impact on the head venting function.

4.3. Vessel Thermal Duty

The loads on the vessel head flange and studs depend on the cooldown rate of the reactor vessel flange and head. Use of head spray can promote rapid cooling of the vessel head, which may result in an increased thermal duty on the vessel flange and head. However, the use of head spray has been considered in the thermal duty design of the vessel and the vessel has been analyzed for a cooldown rate conservatively bounding the maximum shutdown cooling rate of 100° F/hr with or without the head spray.

The removal of head spray eliminates the potential for rapid cooling of the vessel head, which will reduce the thermal duty on the vessel flange and head during a normal shutdown cooling evolution.

4.4. Plant Availability/Capacity Factor

Removal of the head spray pipe connected to the reactor vessel head will reduce critical path outage time by eliminating the time needed to unbolt/bolt up and remove/replace the section of piping between the vessel head and the reactor cavity bulkhead. Removal of the head spray line also decreases the possibility of a leak at the flange faces of the removable portion of the line or damage due to installation errors, both of which can increase outage time for repairs.

4.5. Maintenance/Maintainability

Removal of the head spray pipe and components will decrease system maintenance requirements and reduce in-service inspection work. In addition, it is no longer necessary to conduct isolation valve surveillance tests or maintain the valves. Plant maintainability will be enhanced since removal of equipment, particularly in the drywell, will enhance the maintainability of the other components in their immediate vicinity.

4.6. Plant Personnel Radiation Exposure

Removal of the head spray pipe connected to the reactor vessel will reduce radiation exposure since personnel will no longer remove and install the head spray pipe. Additional exposure reduction is expected

because removal of the head spray pipe and components will result in the reduction in the required in-service inspection of the head spray line and the elimination of surveillance testing and maintenance on the isolation valves.

5. REGULATORY SAFETY ANALYSIS

5.1. No Significant Hazards Consideration

PSEG Nuclear LLC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

1. **Does not involve a significant increase in the probability or consequences of an accident previously analyzed?**

   Response: No

   The proposed changes to Technical Specification Tables 3.3.2-1, 3.3.7.4-2, 3.4.3.2-1, and 3.6.3-1 do not involve a change in structures, systems, or components that would affect the probability or consequences of any accident previously evaluated in the Hope Creek Updated Final Safety Analysis Report.

   The proposed changes involve eliminating piping and valves associated with the reactor head spray. The reactor head spray system was initially provided to cool down the steam dryer and separator during shutdown. The head spray system is not credited for the prevention or mitigation of any accident. Therefore, neither the offsite or control room radiological consequences are affected. The head spray piping removal and addition of a bolted flange on the reactor coolant pressure boundary enhances plant safety by eliminating a source of pipe whip and potential leakage. In addition, the drywell penetration will be capped and welded closed. This will maintain primary containment integrity and will be periodically tested in conjunction with the containment integrated leak rate test.

   Therefore, as discussed above, this modification does not involve a significant increase in the probability or consequences from any accident previously analyzed.

2. **Does not create the possibility of a new or different kind of accident from any accident previously analyzed?**

   Response: No

   The proposed changes to Technical Specification Tables 3.3.2-1, 3.3.7.4-2, 3.4.3.2-1, and 3.6.3-1 do not involve a change in structures, systems, or components that would create a new or different kind of accident from any

accident previously evaluated in the Hope Creek Updated Final Safety Analysis Report.

The proposed change to eliminate the head spray piping and the addition of a bolted flange on the reactor coolant pressure boundary enhances plant safety by eliminating a source of pipe whip and potential leakage. In addition, the drywell penetration will be capped and welded closed. This will maintain primary containment integrity and will be tested in conjunction with the containment integrated leak rate test.

Therefore, as discussed above, this modification does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. **Does not involve a significant reduction in the margin of safety?**

   Response: No

   The proposed change to delete the head spray valves from Tables 3.3.2-1, 3.3.7.4-2, 3.4.3.2-1, and 3.6.3-1 does not reduce any margin of safety as defined in the Technical Specifications or Bases. The bolted flange that will be installed on the head spray penetration will maintain the integrity of the reactor coolant pressure boundary. This flange would then be tested as part of the reactor pressure vessel hydrostatic test. In addition, the drywell penetration will be capped and welded closed. This will maintain primary containment integrity and will be tested as part of the containment integrated leak rate test.

   Accordingly, based on the above, the proposed change does not involve a significant reduction in the margin of safety.

5.2 Applicable Regulatory Requirements/Criteria

The reactor head spray system is part of the reactor coolant pressure boundary and penetrates primary containment. Therefore, as defined by 10CFR50 Appendix A, Criteria 14, Reactor coolant pressure boundary and 55, Reactor coolant pressure boundary penetrating containment are applicable to the design of the system. The deletion of head spray system involves the removal of reactor coolant pressure boundary piping, and isolation valves. The reactor coolant pressure boundary and secondary containment by the addition of a blank flange and welded cap, respectively, ensure the structural integrity of both systems.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6. ENVIRONMENTAL CONSIDERATION

PSEG has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7. REFERENCES

7.1. NRC Information Notice 2002-15, supplement 1, Potential Hydrogen Combustion Events in BWR Piping, May 6, 2003

7.2. GE-NE-0000-0000-3985-01, Revision 0, Class III, Hope Creek Generating Station Head Spray Removal Evaluation, September 30, 2001.

7.3. Hope Creek Updated Final Safety Analysis Report (HCUFSAR).

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS (TS)

The following are marked-up Technical Specifications for Facility Operating License NPF-57 affected by this change request:

Technical Specification	Page
3/4 3.2	3/4 3-21
3/4 3.7	3/4 3-78
3/4 4.3	3/4 4-13
3/4 6.3	3/4 6-21

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TABLE NOTATION

TRIP FUNCTION	VALVES CLOSED BY SIGNAL
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION	
a. Reactor Vessel Water Level Low, Level 3	3 (HV-F008, HV-F009, HV-F015A & B, ~~HV-F022, HV-F023~~) 1 BC
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	3 (HV-F008, HV-F009, HV-F015A & B, ~~HV-F022, HV-F023~~) 1 BC
c. Manual Initiation	3 (HV-F008, HV-F009, HV-F015A & B, ~~HV-F022, HV-F023~~) 1 BC

Amendment No.

TABLE 3.3.7.4-2 (Continued)

REMOTE SHUTDOWN SYSTEMS CONTROLS

RHR SYSTEM - RSP (Cont.)

1BC-HV-F007B	Control -	RHR Pump BP202 Minimum Flow Valve to Suppression Pool
1BC-HV-F048B	Control -	RHR Loop B Heat Exchanger Bypass Valve
1BC-HV-F015B	Control -	RHR Loop B Shutdown Cooling Return Valve
1BC-HV-F022	Control -	RHR Reactor Head Spray Inboard Isolation Valve
1BC-HV-F023	Control -	RHR Reactor Head Spray Outboard Isolation Valve
1BC-HV-F009	Control -	RHR Shutdown Cooling Suction From Recirc Line Inboard Isolation Valve
1BC-HV-F008	Control -	RHR Shutdown Cooling Suction From Recirc Line Outboard Isolation Valve
1BC-HV-F122B	Control -	RHR Loop B Shutdown Cooling Injection Check Valve Bypass Valve
1BC-HV-4439	Control -	RHR Discharge to Liquid Radwaste Reactor Building Isolation Valve
1BC-HV-F024B	Control -	RHR Pump BP202 Test Return Valve to Suppression Pool
1BC-HV-F047B	Control -	RHR Loop B Heat Exchanger Shell Side Inlet Valve
1BC-HV-F003B	Control -	RHR Loop B Heat Exchanger Shell Side Outlet Valve
1BC-HV-F049	Control -	RHR Discharge to Liquid Radwaste Inboard Isolation Valve
1BC-HV-F040	Control -	RHR Discharge to Liquid Radwaste Outboard Isolation Valve
1BC-HV-F006A(3)	Indication-	RHR Pump AP202 Suction From Recirc Line Valve
1BC-HV-F010B(3)	Indication -	RHR Pump DP202 Test Return Valve to Suppression Pool
1BC-HV-F016B(3)	Indication -	RHR Loop B Containment Spray Outboard Isolation Valve
1BC-HV-F027B(3)	Indication -	RHR Loop B Suppression Pool Spray Line Isolation Valve
1BC-HV-F017B(3)	Indication -	RHR Low Pressure Coolant Injection Loop B Injection Valve
1BC-HV-F004D(2)	Indication -	RHR Pump DP202 Suction From Suppression Pool Valve
1BC-HV-F021A(3)	Indication -	RHR Loop A Containment Spray Inboard Isolation Valve
1BC-HV-F021B(3)	Indication -	RHR Loop B Containment Spray Inboard Isolation Valve
1BC-BP202	Control -	RHR Pump BP202
1BC-HSS-4416B	Control -	Transfer Switch For RHR Pump BP202
1BC-DP228(4)	Indication -	ECCS (RHR B) Jockey Pump DP228

Amendment No.

TABLE 3.4.3.2-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

1ST ISOLATION VALVE(S) NUMBERS(S)	2ND ISOLATION VALVE(S) NUMBER(S)	PRESSURE INDICATION	SERVICE
BE-V006 BE-V071	BE-V007	1-BE-PISH-N654A	'A' Core Spray/ HPCI Injection
BE-V002 BE-V072	BE-V003	1-BE-PISH-N654B	'B' Core Spray Injection
BC-V114 BC-V119	BC-V113	1-BC-PISH-N653A	'A' LPCI Injection
BC-V017 BC-V120	BC-V016	1-BC-PISH-N653B	'B' LPCI Injection
BC-V102 BC-V121	BC-V101	1-BC-PISH-N653C	'C' LPCI Injection
BC-V005 BC-V122	BC-V004	1-BC-PISH-N653D	'D' LPCI Injection
~~BC-V021~~	~~BC-V020~~	~~1-BC-PISH-N653B~~	~~Head Spray~~
BC-V111 BC-V117	BC-V110	1-BC-PISH-N653A	'A' Shutdown Cooling Return to 'A' Recirc Loop
BC-V014 BC-V118	BC-V013	1-BC-PISH-N653B	'B' Shutdown Cooling Return to 'B' Recirc Loop
BC-V071	BC-V164	1-BC-PISH-N657	Shutdown Cooling Supply From 'B' Recirc Loop

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
(c) RHR Shutdown Cooling Suction Isolation Valve				M-51-1
Outside: HV-F008 (BC-V164)	P3	45	3	
(d) RHR Head Spray Isolation Valve				M-51-1
Outside: HV-F023 (BC-V020)	P10	60	3	
(d) ~~(e)~~ RHR Shutdown Cooling Return Isolation Valves				M-51-1
Outside:				
Loop A: HV-F015A (BC-V110)	P4B	45	3	
Loop B: HV-F015B (BC-V013)	P4A	45	3	
4. Group 4 - Core Spray System				
Outside:				
(a) Core Spray Test to Suppression Pool Isolation Valves				M-52-1
Loop A: HV-F015A (BE-V025)	P217B	80	11	
Loop B: HV-F015B (BE-V026)	P217A	80	11	
5. Group 5 - High Pressure Coolant Injection (HPCI) System				
(a) HPCI Turbine Steam Supply Isolation Valves				M-55-1
Inside: HV-F002 (FD-V001)	P7	NA	3	
HV-F100 (FD-V051)	P7	NA	3	
Outside: HV-F003 (FD-V002)	P7	NA	3	
(b) HPCI Pump Suction Isolation Valve				M-55-1
Outside:				
HV-F042 (BJ-V009)	P202	NA	11	

HOPE CREEK GENERATING STATION
FACILITY OPERATING LICENSE
DOCKET NO. 50-354
REVISIONS TO THE TECHNICAL SPECIFICATIONS (TS)

The following are retyped Technical Specifications for Facility Operating License NPF-57 affected by this change request:

Technical Specification	Page
3/4 3.2	3/4 3-21
3/4 3.7	3/4 3-78
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3/4 6.3	3/4 6-21

TABLE 3.3.2-1 (Continued)

ISOLATION ACTUATION INSTRUMENTATION

TABLE NOTATION

TRIP FUNCTION	VALVES CLOSED BY SIGNAL
7. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION	
a. Reactor Vessel Water Level Low, Level 3	3 (1BC-HV-F008, 1BC-HV-F009, 1BC-HV-F015A & B)
b. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	3 (1BC-HV-F008, 1BC-HV-F009, 1BC-HV-F015A & B)
c. Manual Initiation Low, Level 3	3 (1BC-HV-F008, 1BC-HV-F009, 1BC-HV-F015A & B)

TABLE 3.3.7.4-2 (Continued)

REMOTE SHUTDOWN SYSTEMS CONTROLS

RHR SYSTEM - RSP (Cont.)

1BC-HV-F007B	Control -	RHR Pump BP202 Minimum Flow Valve to Suppression Pool
1BC-HV-F048B	Control -	RHR Loop B Heat Exchanger Bypass Valve
1BC-HV-F015B	Control -	RHR Loop B Shutdown Cooling Return Valve
1BC-HV-F009	Control -	RHR Shutdown Cooling Suction From Recirc Line Inboard Isolation Valve
1BC-HV-F008	Control -	RHR Shutdown Cooling Suction From Recirc Line Outboard Isolation Valve
1BC-HV-F122B	Control -	RHR Loop B Shutdown Cooling Injection Check Valve Bypass Valve
1BC-HV-4439	Control -	RHR Discharge to Liquid Radwaste Reactor Building Isolation Valve
1BC-HV-F024B	Control -	RHR Pump BP202 Test Return Valve to Suppression Pool
1BC-HV-F047B	Control -	RHR Loop B Heat Exchanger Shell Side Inlet Valve
1BC-HV-F003B	Control -	RHR Loop B Heat Exchanger Shell Side Outlet Valve
1BC-HV-F049	Control -	RHR Discharge to Liquid Radwaste Inboard Isolation Valve
1BC-HV-F040	Control -	RHR Discharge to Liquid Radwaste Outboard Isolation Valve
1BC-HV-F006A(3)	Indication-	RHR Pump AP202 Suction From Recirc Line Valve
1BC-HV-F010B(3)	Indication -	RHR Pump DP202 Test Return Valve to Suppression Pool
1BC-HV-F016B(3)	Indication -	RHR Loop B Containment Spray Outboard Isolation Valve
1BC-HV-F027B(3)	Indication -	RHR Loop B Suppression Pool Spray Line Isolation Valve
1BC-HV-F017B(3)	Indication -	RHR Low Pressure Coolant Injection Loop B Injection Valve
1BC-HV-F004D(2)	Indication -	RHR Pump DP202 Suction From Suppression Pool Valve
1BC-HV-F021A(3)	Indication -	RHR Loop A Containment Spray Inboard Isolation Valve
1BC-HV-F021B(3)	Indication -	RHR Loop B Containment Spray Inboard Isolation Valve
1BC-BP202	Control -	RHR Pump BP202
1BC-HSS-4416B	Control -	Transfer Switch For RHR Pump BP202
1BC-DP228(4)	Indication -	ECCS (RHR B) Jockey Pump DP228

TABLE 3.4.3.2-1

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVES

1ST ISOLATION VALVE(S) NUMBERS(S)	2ND ISOLATION VALVE(S) NUMBER(S)	PRESSURE INDICATION	SERVICE
BE-V006 BE-V071	BE-V007	1-BE-PISH-N654A	'A' Core Spray/ HPCI Injection
BE-V002 BE-V072	BE-V003	1-BE-PISH-N654B	'B' Core Spray Injection
BC-V114 BC-V119	BC-V113	1-BC-PISH-N653A	'A' LPCI Injection
BC-V017 BC-V120	BC-V016	1-BC-PISH-N653B	'B' LPCI Injection
BC-V102 BC-V121	BC-V101	1-BC-PISH-N653C	'C' LPCI Injection
BC-V005 BC-V122	BC-V004	1-BC-PISH-N653D	'D' LPCI Injection
BC-V111 BC-V117	BC-V110	1-BC-PISH-N653A	'A' Shutdown Cooling Return to 'A' Recirc Loop
BC-V014 BC-V118	BC-V013	1-BC-PISH-N653B	'B' Shutdown Cooling Return to 'B' Recirc Loop
BC-V071	BC-V164	1-BC-PISH-N657	Shutdown Cooling Supply From 'B' Recirc Loop

TABLE 3.6.3-1 (Continued)

PRIMARY CONTAINMENT ISOLATION VALVES

VALVE FUNCTION AND NUMBER	PENETRATION NUMBER	MAXIMUM ISOLATION TIME (Seconds)	NOTE(S)	P&ID
(c) RHR Shutdown Cooling Suction Isolation Valve				M-51-1
Outside: HV-F008 (BC-V164)	P3	45	3	
(d) RHR Shutdown Cooling Return Isolation Valves				M-51-1
Outside:				
Loop A: HV-F015A (BC-V110)	P4B	45	3	
Loop B: HV-F015B (BC-V013)	P4A	45	3	
4. Group 4 - Core Spray System				
Outside:				
(a) Core Spray Test to Suppression Pool Isolation Valves				M-52-1
Loop A: HV-F015A (BE-V025)	P217B	80	11	
Loop B: HV-F015B (BE-V026)	P217A	80	11	
5. Group 5 - High Pressure Coolant Injection (HPCI) System				
(a) HPCI Turbine Steam Supply Isolation Valves				M-55-1
Inside: HV-F002 (FD-V001)	P7	NA	3	
HV-F100 (FD-V051)	P7	NA	3	
Outside: HV-F003 (FD-V002)	P7	NA	3	
(b) HPCI Pump Suction Isolation Valve				M-55-1
Outside:				
HV-F042 (BJ-V009)	P202	NA	11	