Duke Power Company
P.O. Box 1006
Charlotte, NC 28201-1006

M. S. Tuckman
Senior Vice President
Nuclear Generation
(704)382-2200 Office
(704)382-4360 Fax

DUKE POWER

September 26, 1996

U. S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SUBJECT: Duke Power Company
Request for Relief from ASME Boiler and Pressure Vessel Code, Section III Requirements
Duke Power Request for Relief 95-GO-002
Additional Information
(TAC Nos. M92625, M92626, M92619, M92620

McGuire Nuclear Station
Docket Nos. 50-369, 370

Catawba Nuclear Station
Docket Nos. 50-413, 414

In a letter dated January 18, 1996 the NRC Staff requested additional information on the scope of Duke Power Request for Relief from ASME Section III Requirements (RR) No. 95-GO-002. This request for relief was initially submitted to the NRC in a letter dated June 15, 1995. The NRC Staff requested Duke to discuss the extent of manual block valves at McGuire and Catawba located in series with overpressure protection devices and subject to Article NC/ND-7153 of the ASME Code and the provisions of 10 CFR 50.55a. As originally submitted, RR 95-GO-002 only addressed manual block valves associated with the Volume Control Tank and the Regenerative Heat Exchangers that were specifically identified in Westinghouse Nuclear Safety Advisory Letter NSAL-94-009. Attachments 1, 2, and 3 provide Duke's response to the January 18 NRC request for additional information.

Included in Attachments 1 and 2 (for McGuire and Catawba respectively) are the additional components for which Duke is requesting relief under RR 95-GO-002, the proposed alternative to the applicable code requirements, and the failure consequences. Attachment 3, provides diagrams showing the various configurations of the additional relief valves/block valves for both McGuire and Catawba. The applicable code requirements, the code requirements from

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which relief is requested, and the principal bases for relief for these additional components remain the same as described in the original Duke submittal of June 15, 1995.

Questions on this request for relief should be directed to J. S. Warren at (704) 382-4986.

Very truly yours,

M. S. Tuckman

M. S. Tuckman

MST/JSW

ATTACHMENTS:

Attachment 1, Additional Information for McGuire
Attachment 2, Additional Information for Catawba
Attachment 3, Configuration Diagrams for McGuire and Catawba

xc: S. D. Ebneter
NRC Regional Administrator, Region II

V. Nerses
NRC Project Manager (McGuire)
ONRR

P. S. Tam
NRC Project Manager (Catawba)
ONRR

R. J. Freudenberger
NRC Senior Resident Inspector (Catawba)

S. M. Shaeffer
NRC Senior Resident Inspector (McGuire)

Attachment 1
McGuire Nuclear Station
Request for Relief 95-GO-002 - Additional Information

I ADDITIONAL COMPONENTS FOR WHICH RELIEF IS REQUESTED

Valve 1NB287

Relief previously requested for locked open block valves 1NB066 or 1NB084 is extended to include locked open block valve 1NB287 (See Configuration 1). Although shown in Figure 3 in the original 95-GO-002 Relief Request, locked open block valve 1NB287 was not specifically addressed in the June 15, 1995 letter. Relief valve 2NV170 provides pressure relief protection for the Unit 2 Volume Control Tank. It depends on locked open manual valve 1NB287 for a relief path to either Recycle Holdup Tank A or B (in addition to either of two locked open block valves 1NB066 or 1NB084 which were previously discussed in the relief request). Valve 1NB287 is an inter-unit isolation valve between McGuire Units 1 and 2 which is maintained in the locked open position.

Recycle Evaporator Supply Header

Relief previously requested for locked open block valves 1NB066 or 1NB084 is extended to include the potentially blocked flow path for relief valve 1NB003 (See Configuration 1). Although shown in Figure 3 in the original 95-GO-002 Relief Request, relief valve 1NB003 was not specifically addressed in the June 15, 1995 letter. Relief valve 1NB003 provides pressure relief protection for the supply header to the Recycle Evaporator Feed Demineralizers. It depends on either of two locked open block valves 1NB066 or 1NB084 for a relief path to Recycle Holdup Tank A or B respectively. Both of these block valves were previously discussed in the relief request. The parallel arrangement of these valves allows maintenance isolation of either Recycle Holdup Tank without isolating the opposite tank and thus maintain a relief discharge path.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Relief is requested for locked open block valve 1(2)NC060 (See Configuration 2). The Emergency Core Cooling System suction and discharge relief valves discharge back into containment because of the potential for post accident coolant discharge. This includes the Safety Injection (NI) System, the Residual Heat Removal (ND) System, the Containment Spray (NS) System, and the Centrifugal Charging (NV) System. The outlet of ECCS Pressure Relief valves 1(2)ND056, 061, 064, 1(2)NI102, 119, 151, 161, 1(2)NS002, 019 and 1(2)NV229 depend on locked open manual valve 1(2)NC060 for an open relief path to the Pressurizer Relief Tank (PRT). The components protected by these relief valves are the NI and ND System Pumps and discharge piping to Reactor Coolant (NC) System Cold Legs, and Hot Legs and NI, ND, NS, and NV System suction headers. Valve 1(2)NC060 is maintained open except for maintenance isolation of the Pressurizer Relief Tank during No Mode when ECCS systems are not required to be operable. Relief valves 1(2)NI102 and 1(2)NV229 also have block valves on their inlet piping which is discussed later.

Shutdown Tanks

Relief is requested for locked open isolation valves 1WG140 and 1WG142 (See Configuration 3). Pressure Relief Valves 1WG146 and 1WG153 depend on locked open block valves 1WG140 and 1WG142 for an open relief path to the Unit Vent. Components protected by these relief valves includes the shared A and B Shutdown Tanks.

CA & NV Pump Suction

Relief is requested for locked open block valves 1CA025, 1CA030, 1CA019, 1(2)NV224, 1(2)NV230, 1(2)NV498 and 1(2)NV499 (See Configuration 4).

The Unit 1 Auxiliary Feedwater (CA) System pump suction pressure relief valves 1CA167, 168, and 128 depend on locked open manual valves 1CA025, 030, and 019 (respectively) for an open relief path to the atmosphere. These manual valves are maintained locked open except for system maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked. The components protected by these relief valves includes: Motor Driven Auxiliary Feedwater Pumps 1A and 1B and Turbine Driven Auxiliary Feedwater Pump 1 respectively. (The Unit 2 relief valves are on the pump side of the respective block valve and therefore comply with the Code.)

The inlet of NV System Pump suction pressure relief valve 1(2)NV229 depends on locked open manual block valves 1(2)NV224 and 1(2)NV498 for an open relief path to the PRT for providing relief protection for NV Pump 1(2)A. Similarly relief valve 1(2)NV229 depends on locked open manual block valves 1(2)NV230 and 1(2)NV499 for an open relief path to the PRT for providing relief protection for NV Pump 1(2)B. These manual valves are maintained locked open except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

ND & NI Pump Suction

Relief is requested for normally open system isolation valves 1(2)ND004B, 1(2)ND019A, 1(2)NI103A, and 1(2)NI135B (See Configuration 5).

The inlet of NI System Pump suction pressure relief valve 1(2)NI102 depends on normally open motor operated valves 1(2)NI103A for an open relief path to the PRT for 1(2)A NI Pump. Similarly relief valve 1(2)NI102 depends on motor operated valve 1(2)NI135B for an open relief path to the PRT for providing relief protection for 1(2)B NI Pump. The normally open recirculation valves for each pump also provide relief protection for discharge check valve leakage. These motor operated valves are normally maintained open except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

The inlet of ND System Pump suction pressure relief valve 1(2)ND003 depends on normally open motor operated valve 1(2)ND019A for an open relief path to the PRT for providing relief protection for 1(2)A ND Pump. Similarly relief valve 1(2)ND003 depends on normally open motor operated valve 1(2)ND004B for an open relief path to the PRT for providing relief protection for 1(2)B ND Pump. These motor operated valves are normally maintained open except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

KC Equipment Thermal Relief Valves

Relief is requested for normally open containment isolation valves 1(2)KC429B and 1(2)KC430A, normally open block valves 1(2)KC427 and 1(2)KC432, locked open block valve 1KC103 and normally open flow control valves 1(2)KC149 and 1(2)KC156 (See Configurations 6, 7, and 8).

(Configuration 6) - The Component Cooling System thermal relief valves located inside the Reactor Building are subject to containment isolation which would close valves 1(2)KC429B and 1(2)KC430A and isolate all of the relief valve discharges from the KC Drain Tank. The relief valve discharges also depend on normally open manual valves 1(2)KC427, 1(2)KC432 and locked open manual valve 1KC103 for an open relief path to the tank. This includes the following relief valves: 1(2)KC313, 330, 355, 361, 374, 380, 386, 392, 404, 410, 490, 491, 492, and 493. The components protected by these thermal relief valves includes: 1(2)Excess Letdown and 1(2) Reactor Coolant Drain Tank Heat Exchangers, 1(2)A(B,C,D)Reactor Coolant Pump Motor Upper and Lower Bearing Coolers, and 1(2)A(B,C,D)1(2) Reactor Vessel Support Coolers.

(Configuration 7) - The Component Cooling System thermal relief valves located outside the Reactor Building depend on locked open manual valve 1KC103 for an open relief path to the shared KC Drain Tank. This includes the following relief valves: 1(2)KC061, 079, 086, 104, 138, 147, 154, 161, 187, 193, 199, 205, 211, 217, 223, and 1KC170, 234, 241, 248, 261, 268, 275, 458, 461, and 472. The components protected by these thermal relief valves includes: 1(2)A(B) Residual Heat Removal and Fuel Pool Heat Exchangers, 1(2) Letdown and Seal Water Heat Exchangers, 1(2)A(B,C,D) Steam Generator Blowdown Sample Heat Exchangers, 1(2) Pressurizer, Residual Heat Removal Loop, and Reactor Coolant Hot Leg Sample Heat Exchangers, 1A(B) Waste Gas Compressor and Waste Gas Hydrogen Recombiner Heat Exchangers, Waste, and Recycle Evaporator Condensers, and Distillate Coolers, and Waste, and Recycle Evaporator Vent Condensers.

(Configuration 8) - The Fuel Pool Heat Exchanger A and B thermal relief valves depend on normally open (Fail Open) air operated control valves 1(2)KC149 and 1(2)KC156 for an open relief path to the shared KC Drain Tank. Any time the KF (Fuel Pool Cooling) system is aligned to the heat exchanger, these valves are maintained at least partially open to provide cooling for the heat load maintained by these heat exchangers except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the heat exchanger inlet isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

II. PROPOSED ALTERNATIVE TO CODE REQUIREMENTS

As an alternate to ASME Code Section III requirements, Duke Power is proposing to maintain proper configuration of the affected components by means of the following administrative controls:

Valve 1NB287

Proposed alternative to code requirements for valve 1NB287 were previously addressed in the relief request submitted in our June 15, 1995 letter under heading "Volume Control Tank".

Recycle Evaporator Supply Header

Procedure OP/0/A/6200/03 Enclosure 4.3 lists the normal position for Recycle Holdup Tank inlet block valves 1NB066 and 1NB084 as "locked open". In addition, procedure PT/1(2)/B/4700/23 Enclosure 13.4 requires these valves to be verified locked open semi-annually.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Procedure OP/1(2)/A/6150/04 Enclosure 4.8 lists the normal position for ECCS Relief Header to Pressurizer Relief Tank inlet block valves 1(2)NC060 as "locked open". In addition, procedure PT/1(2)/B/4700/24 Enclosure 13.1 requires these valves to be verified locked open at each cold shutdown since they are located inside containment.

Shutdown Tanks

Procedure OP/0/B/6200/96 lists the normal position for the Waste Gas Discharge Monitor isolation valves 1WG140 and 1WG142 as "locked open". In addition, procedure PT/0/B/4700/19 requires these valves to be verified locked open periodically.

CA & NV Pump Suction

Procedure OP/1/A/6250/02 Enclosure 4.8 lists the normal position for CA Pump suction block valves 1CA019, 1CA025 and 1CA030 as "locked open". It also gives a limit and precaution to verify the appropriate recirculation valve opens prior to stopping a CA Pump to ensure suction piping is not overpressurized when stopping a pump. Procedures OP/1(2)/A/6200/01 Enclosure 4.16 list the normal position for NV Pump suction block valves 1(2)NV224, 230, 498, and 499 as "locked open". In addition, procedures PT/1(2)/B/4700/23 Enclosure 13.4 requires the position of these (CA & NV Pump suction block) valves to be verified semi-annually.

ND & NI Pump Suction

Procedures OP/1(2)/A/6200/04 Enclosure 4.11 list the normal position for ND Pump suction isolation valves 1(2)ND004B and 1(2)ND019A as "open". Procedures OP/1(2)/A/6200/06 Enclosure 4.1 list the normal position for NI Pump suction isolation valves 1(2)NI103A, and 1(2)NI135B as "open". In addition, each of these valves is included in the NRC Reg. Guide 1.47 alarm panel which gives a visual and audible alarm whenever these valves are closed. Since these valves do not receive an open (safety injection) signal, the associated pumps are considered to be out of service any time the associated suction valve is closed. These valves must be capable of closing to provide train separation to maintain an operable train of ECCS for certain failures of the redundant train.

KC Equipment Thermal Relief Valves

Procedure OP/1/A/6400/05A Enclosure 4.3 lists the normal position for Component Cooling Drain Tank inlet block valves 1KC103 as "locked open". In addition, procedure PT/1(2)/B/4700/23 Enclosure 13.4 requires this valve to be verified locked open semi-annually. Procedures OP/1(2)/A/6400/05A Enclosures 4.1 and 4.2 list the normal position for containment isolation valves 1(2)KC429B and 1(2)KC430A and block valves 1(2)KC427 and 1(2)KC432 as "open" and flow control valves 1(2)KC149 and 1(2)KC156 as "throttled".

III FAILURE CONSEQUENCES

Valve 1NB287

Failure consequences for valve 1NB287 were previously addressed in the relief request submitted in our June 15, 1995 letter under heading "Volume Control Tank".

Recycle Evaporator Supply Header

The parallel arrangement of these valves allows maintenance isolation of either Recycle Holdup Tank without isolating the opposite tank and thus maintain a relief discharge path. The alternate path would be available any time one valve might be closed for maintenance on the respective RHT. Therefore it is extremely unlikely that the relief header to at least one RHT would ever be unavailable when needed.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Relief valves 1(2)ND056,061,064, 1(2)NI119,151,and 161 provide protection for the ND, and NI discharge headers which might be subjected to pressure higher than design pressure due to primary isolation valve (PIV) leakage. Relief valves 1(2)NI102, 1(2)NS002, 019 and 1(2)NV229 provide protection for NI, NS, and NV suction headers which might be subjected to pressure higher than design pressure due to either PIV leakage, leakby from interfacing systems, or pump discharge check valve leakage.

Each of these pressurization paths is subjected to periodic leakage testing to verify sufficient isolation capability of valves that isolate high/low pressure interfaces. The NI, and NV systems are also protected from overpressurization by normally open pump minimum flow paths that will divert pump discharge check valve leakage to the FWST or VCT. While the ND system minimum flow branches do not afford such protection, the ND System discharge and suction pressure is monitored during and following operation of the pumps (when check valve seat leakage could change). If pressurization occurs in such operation, action is taken to vent the system pressure and re-establish the differential pressure on the check valves.

Shutdown Tanks

In addition to the administrative control for 1WG140 and 1WG142 (maintained locked open to assure WG system relief capability), the inherent design and operation of the WG system are sufficient to prevent an overpressurization event. The Shutdown Tanks are provided with high pressure alarms to provide warning of approach to relief valve setpoints. Shutdown Tank B is utilized infrequently during start-up and shutdown in support of primary degas operations. Only one Waste Gas Decay Tank (WGDT) or Shutdown Tank B can be in service at a time. The WGDTs individually relieve to Shutdown Tank A which is administratively maintained below 5 psig to ensure as adequate relief capacity for the inservice WGDT. If a WGDT relieved, Shutdown Tank A has suitable capacity to accommodate a single WGDT without lifting the relief valve on Shutdown Tank A. Therefore it is extremely unlikely that the relief header would ever discharge to the WG vent header

CA & NV Pump Suction

The only time these pumps are isolated from their respective suction relief valve is during maintenance on the affected pump. Since the pump discharge is isolated and a vent on the affected pump is opened as part of the valve tagout for such maintenance, the operator aligning

valves for the maintenance would observe any excessive or continuing vent flow and would take appropriate action to avert any situation which might lead to an overpressure event.

ND & NI Pump Suction

The system isolation valves on ND and NI pump suction are maintained open during normal operation so that both trains of each system will be available as required to perform their ECCS function. For short durations valves at a quarterly frequency 1(2)NI135B, 1(2)ND004B and 1(2)ND019A are stroke tested during normal operation since they only affect the associated train. It is highly unlikely that the pump suction would be overpressurized for the short duration that the suction valve would be closed for stroke testing. (1(2)NI103A is maintained open during Modes 1-3 to provide B train ECCS recirc to the NV system.) Also as mentioned in the ECCS section above, the NI pump minimum flow path would provide a pressure relief path for the short time 1(2)NI135B might be closed.

For longer out of service durations these pumps are isolated from their respective suction relief valve, the pump discharge is isolated and a vent on the affected pump is established as part of the valve tagout. The operator aligning valves for the maintenance would observe any excessive or continuing vent flow and would take appropriate action to avert any situation which might lead to an overpressure event.

KC Equipment Thermal Relief Valves

Although a considerable list of equipment is included in the KC system relief valves that potentially can be isolated, the relief discharge volume from thermal expansion is considered to be an insignificant volume compared to the available gas volume expected to reside in these drain headers since they are not vented to remove air. Heat exchangers needed to perform post accident functions (i.e. Residual Heat Removal Heat Exchangers) would not be expected to be isolated and thus would not require thermal relief. In service Fuel Pool Heat Exchangers likewise would not be isolated except for maintenance at which time a vent on the affected heat exchanger or cooler is established as part of the valve tagout. The operator aligning valves for the maintenance would observe any excessive or continuing vent flow and would take appropriate action to avert any situation which might lead to an overpressure event.

Attachment 2
Catawba Nuclear Station
Request for Relief 95-GO-002 - Additional Information

I ADDITIONAL COMPONENTS FOR WHICH RELIEF IS REQUESTED

Valve 1NB287

Relief previously requested for locked open block valves 1NB066 or 1NB084 is extended to include locked open block valve 1NB287 (See Configuration 9). Although shown in Figure 1 in the original 95-GO-002 Relief Request, locked open block valve 1NB287 was not specifically addressed in the June 15, 1995 letter. Relief valve 2NV223 provides pressure relief protection for the Unit 2 Volume Control Tank. It depends on locked open manual valve 1NB287 for a relief path to either Recycle Holdup Tank A or B (in addition to either of two locked open block valves 1NB066 or 1NB084 which were previously discussed in the relief request). Valve 1NB287 is an inter-unit isolation valve between Catawba Units 1 and 2 which is maintained in the locked open position.

Recycle Evaporator Supply Header

Relief previously requested for locked open block valves 1NB066 or 1NB084 is extended to include the potentially blocked flow path for relief valve 1NB003 (See Configuration 9). Although shown in Figure 3 in the original 95-GO-002 Relief Request, relief valve 1NB003 was not specifically addressed in the June 15, 1995 letter. Relief valve 1NB003 provides pressure relief protection for the supply header to the Recycle Evaporator Feed Demineralizers. It depends on either of two locked open block valves 1NB066 or 1NB084 for a relief path to Recycle Holdup Tank A or B respectively. Both of these block valves were previously discussed in the relief request. The parallel arrangement of these valves allows maintenance isolation of either Recycle Holdup Tank without isolating the opposite tank and thus maintain a relief discharge path.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Relief previously requested for locked open block valves 1NB066 or 1NB084 is extended to include potentially blocked flow paths for relief valves in the ECCS pump suction and discharge headers. For Unit 2 ECCS suction and discharge relief valves, relief is additionally requested for block valves 1NB287, 1NB378, and 1NB395 (See Configurations 9 and 10). The Emergency Core Cooling System suction and discharge relief valves discharge into the safety related Recycle Holdup Tanks (RHTs) because of the potential for post accident coolant discharge. This includes the Safety Injection (NI) System, the Residual Heat Removal (ND) System, the Containment Spray (NS) System, and the Centrifugal Charging (NV) System. The RHTs incorporate a flexible diaphragm which collects fission product gases.

The outlet of ECCS Pressure Relief valves 1(2)ND031, 035, 064, 1(2)NI102, 119, 151, 161, 1(2)NS002, 019 and 1(2)NV273 depend on either of two locked open block valves 1NB066 or 1NB084 for a relief path to Recycle Holdup Tank A or B respectively. Both of these block valves were previously discussed in the relief request. The parallel arrangement of these valves allows maintenance isolation of either Recycle Holdup Tank without isolating the opposite tank and thus maintain a relief discharge path. Unit 2 inputs to the Recycle Holdup Tank header include additional locked open valves, 1NB287, 1NB378, and 1NB395 which are available to provide a maintenance isolation boundary between the units.

The components protected by these relief valves are the NI and ND System Pumps and discharge piping to Reactor Coolant (NC) System Cold Legs, and Hot Legs, and NI. and NV System suction headers. Relief valves 1(2)NI102 and 1(2)NV273 also have block valves on their inlet piping which is discussed later.

NV Pump Suction

Relief is requested for locked open block valves 1(2)NV255, 2NV275(Unit 2 only), 1(2)NV483 and 1(2)NV486 (See Configuration 11).

The inlet of NV System Pump suction pressure relief valve 1(2)NV273 depends on locked open manual block valves 1(2)NV255 and 1(2)NV483 for an open relief path to the RHT for providing relief protection for NV Pump 1(2)A. Similarly relief valve 1(2)NV273 depends on locked open manual block valves 2NV275 and 1(2)NV486 for an open relief path to the RHT for providing relief protection for NV Pump 1(2)B. These manual valves are maintained locked open except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

NI Pump Suction

Relief is requested for normally open system isolation valves 1(2)NI103A, and 1(2)NI135B (See Configuration 12).

The inlet of Ni System Pump suction pressure relief valve 1(2)NI102 depends on normally open motor operated valves 1(2)NI103A for an open relief path to the RHT for 1(2)A NI Pump. Similarly relief valve 1(2)NI102 depends on motor operated valve 1(2)NI135B for an open relief path to the RHT for providing relief protection for 1(2)B NI Pump. The normally open recirculation valves for each pump also provide relief protection for discharge check valve leakage. These motor operated valves are normally maintained open except for maintenance at which time the affected train is declared inoperable. The maintenance valve tagout includes closure of the pump discharge isolation valve to isolate the discharge line pressure sources and opening of a system vent to provide overpressure protection when the relief valve path is blocked.

KC Equipment Thermal Relief Valves

Relief is requested for locked open block valves 1(2)KC103 (See Configuration 13).

The Component Cooling System thermal relief valves located outside the Reactor Building depend on locked open manual valve 1(2)KC103 for an open relief path to the unit specific KC Drain Sump. This includes the following relief valves: 1(2)KC061, 086, 138, 147,154,161, and 1KC 70, 158, 461, and 472. The components protected by these thermal relief valves includes: 1(2)A(B) Residual Heat Removal and Fuel Pool Heat Exchangers, 1(2) Letdown and Seal Water Heat Exchangers, 1A(B) Waste Gas Compressor and Waste Gas Hydrogen Recombiner Heat Exchangers.

II. PROPOSED ALTERNATIVE TO CODE REQUIREMENTS

As an alternate to ASME Code Section III requirements, Duke Power is proposing to maintain proper configuration of the affected components by means of the following administrative controls:

Valve 1NB287

Proposed alternative to code requirements for valve 1NB287 were previously addressed in the relief request submitted in our June 15, 1995 letter under heading "Volume Control Tank".

Recycle Evaporator Supply Header

Procedure OP/0/A/6200/03 Enclosure 4.6 lists the normal position for Recycle Holdup Tank inlet block valves 1NB066 and 1NB084 as "locked open". In addition, procedure PT/0/B/4700/40 Enclosure 13.1 requires these valves to be verified locked open annually.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Procedure OP/0/A/6200/03 Enclosure 4.6 lists the normal position for Recycle Holdup Tank inlet block valves 1NB066 and 1NB084 and Unit 2 isolation valves 1NB287, 1NB378, and 1NB395 as "locked open". In addition, procedure PT/0/B/4700/40 Enclosure 13.1 requires these valves to be verified locked open annually.

NV Pump Suction

Procedures OP/1(2)/A/6200/01 Enclosure 4.17 list the normal position for NV Pump suction block valves 1(2)NV255, 2NV275(Unit 2 only), 1(2)NV483 and 1(2)NV486 as "locked open". In addition, procedure PT/0/B/4700/40 Enclosure 13.1 requires the position of these NV Pump suction block) valves to be verified annually. Additionally, Operations Maintenance Procedure 1-5 requires independent verification of the position of these valves any time they are repositioned.

NI Pump Suction

Procedures OP/1(2)/A/6200/06 Enclosure 4.3 list the normal position for NI Pump suction isolation valves 1(2)NI103A, and 1(2)NI135B as "open". Additionally, Operations Maintenance Procedure 1-5 requires independent verification of the position of these valves any time they are repositioned. In addition, each of these valves is included in the NRC Reg. Guide 1.47 alarm panel which gives a visual and audible alarm whenever these valves are closed. Since these valves do not receive an open (safety injection) signal, the associated pumps are considered to be out of service any time the associated suction valve is closed. These valves must be capable of closing to provide train separation to maintain an operable train of ECCS for certain failures of the redundant train.

KC Equipment Thermal Relief Valves

Procedure OP/1(2)/A/6400/05 Enclosure 4.6 lists the normal position for Component Cooling Drain Sump inlet block valves 1(2)KC103 as "locked open". In addition, procedure PT/0/B/4700/40 Enclosure 13.1 requires the position of these valves to be verified annually. Procedures OP/1(2)/A/6400/05 Enclosures 4.12 additionally specifies the Locked open position of 1(2)KC103 and opening of 1KC433 when this procedure is used to pump the contents of the Unit 1(2) Component Cooling Drain Sump to Unit 2(1).

III FAILURE CONSEQUENCES

Valve 1NB287

Failure consequences for valve 1NB287 were previously addressed in the relief request submitted in our June 15, 1995 letter under heading "Volume Control Tank".

Recycle Evaporator Supply Header

The parallel arrangement of these valves allows maintenance isolation of either Recycle Holdup Tank without isolating the opposite tank and thus maintain a relief discharge path. The alternate path would be available any time one valve might be closed for maintenance on the respective RHT. Therefore it is extremely unlikely that the relief header to at least one RHT would ever be unavailable when needed.

Emergency Core Cooling System (ECCS) Suction and Discharge Headers

Relief valves 1(2) ND031, 035, 064, 1(2)NI119, 151,and 161 provide protection for the ND, and NI discharge headers which might be subjected to pressure higher than design pressure due to primary isolation valve (PIV) leakage. Relief valves 1(2)NI102, 1(2)NS002, 019 and 1(2)NV273 provide protection for NI, NS, and NV suction headers which might be subjected to pressure higher than design pressure due to either PIV leakage, leakby from interfacing systems, or pump discharge check valve leakage.

Each of these pressurization paths is subjected to periodic leakage testing to verify sufficient isolation capability of valves that isolate high/low pressure interfaces. The NI, and NV systems are also protected from overpressurization by normally open pump minimum flow paths that will divert pump discharge check valve leakage to the FWST or VCT. While the ND system minimum flow branches do not afford such protection, the ND System discharge and suction pressure is monitored during and following operation of the pumps (when check valve seat leakage could change). If pressurization occurs in such operation, action is taken to vent the system pressure and re-establish the differential pressure on the check valves.

NV Pump Suction

The only time these pumps are isolated from their respective suction relief valve is during maintenance on the affected pump. Since the pump discharge is isolated and a vent on the affected pump is opened as part of the valve tagout for such maintenance, the operator aligning valves for the maintenance would observe any excessive or continuing vent flow and would take appropriate action to avert any situation which might lead to an overpressure event.

NI Pump Suction

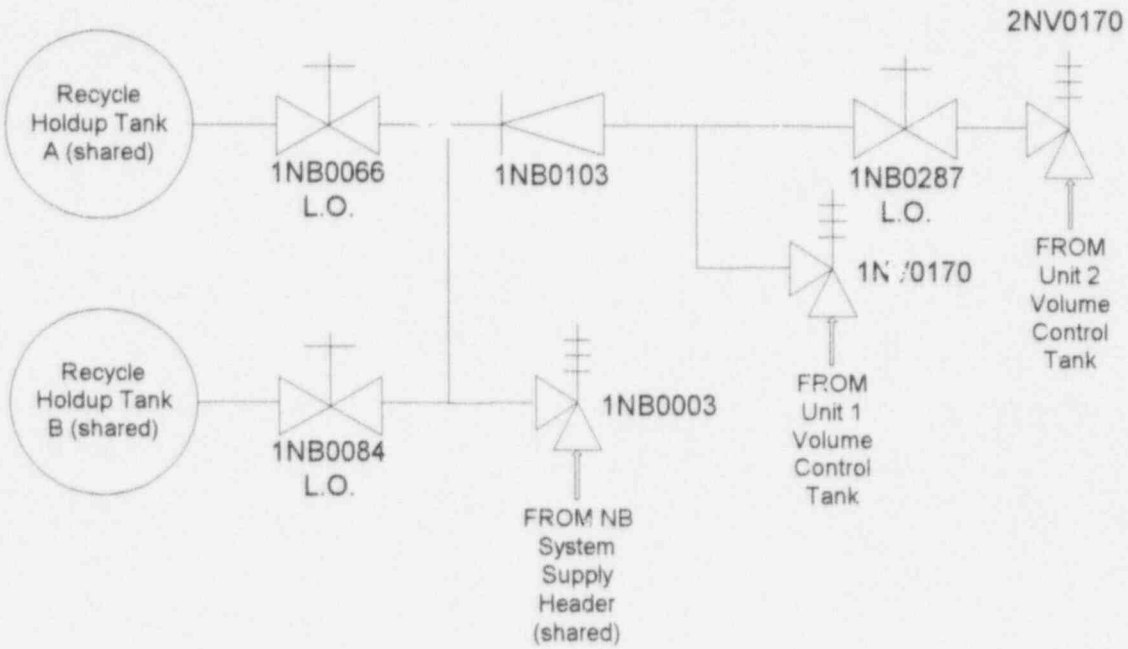
The system isolation valves on NI pump suction are maintained open during normal operation so that both trains of each system will be available as required to perform their ECCS function. For short durations at a quarterly frequency, valves 1(2)NI135B are stroke tested during normal operation since they only affect the associated train. It is highly unlikely that the pump suction would be overpressurized for the short duration that the suction valve would be closed for stroke testing. 1(2)NI103A is maintained open during Modes 1-3 to provide B train ECCS recirc to the NV system. Also as mentioned in the ECCS section above, the NI pump minimum flow path would provide a pressure relief path for the short time 1(2)NI135B might be closed.

For longer out of service durations these pumps are isolated from their respective suction relief valve, the pump discharge is isolated and a vent on the affected pump is established as part of the valve tagout. The operator aligning valves for the maintenance would observe any excessive or continuing vent flow and would take appropriate action to avert any situation which might lead to an overpressure event.

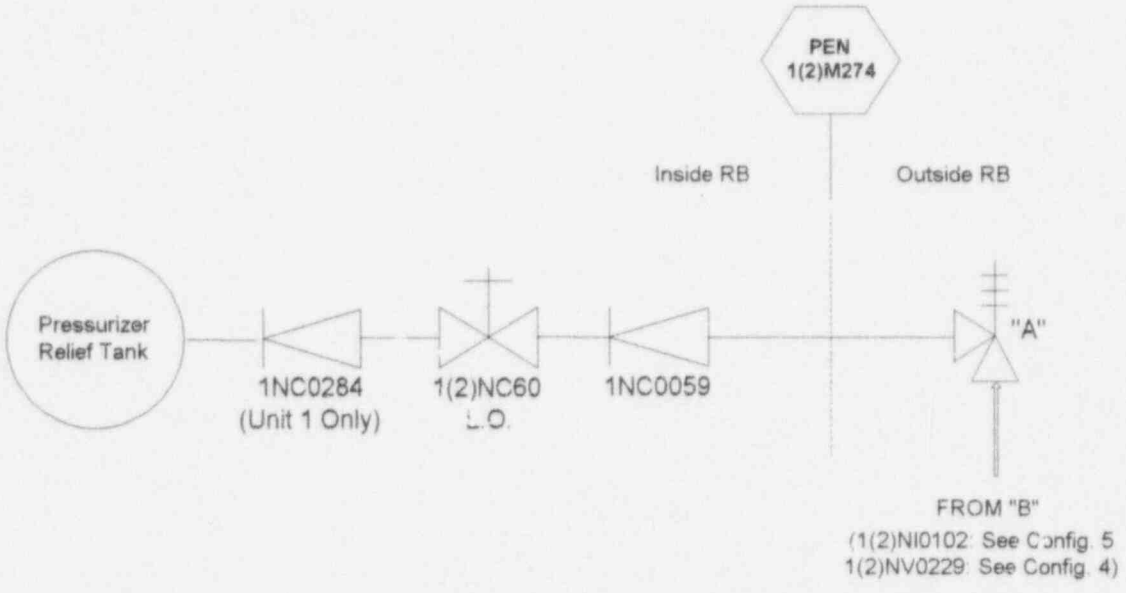
KC Equipment Thermal Relief Valves

Although a considerable list of equipment is included in the KC system relief valves that potentially can be isolated, the relief discharge volume from thermal expansion is considered to be an insignificant volume compared to the available gas volume expected to reside in these drain headers since they are not vented to remove air. The Auxiliary Building drain header is effectively vented via the KC Surge Tank overflow loop seals, so this acts as an additional flow path to atmosphere. Heat exchangers needed to perform post accident functions (i.e. Residual Heat Removal Heat Exchangers) would not be expected to be isolated and thus would not require thermal relief.

CONFIGURATION 1
RECYCLE HOLDUP TANKS

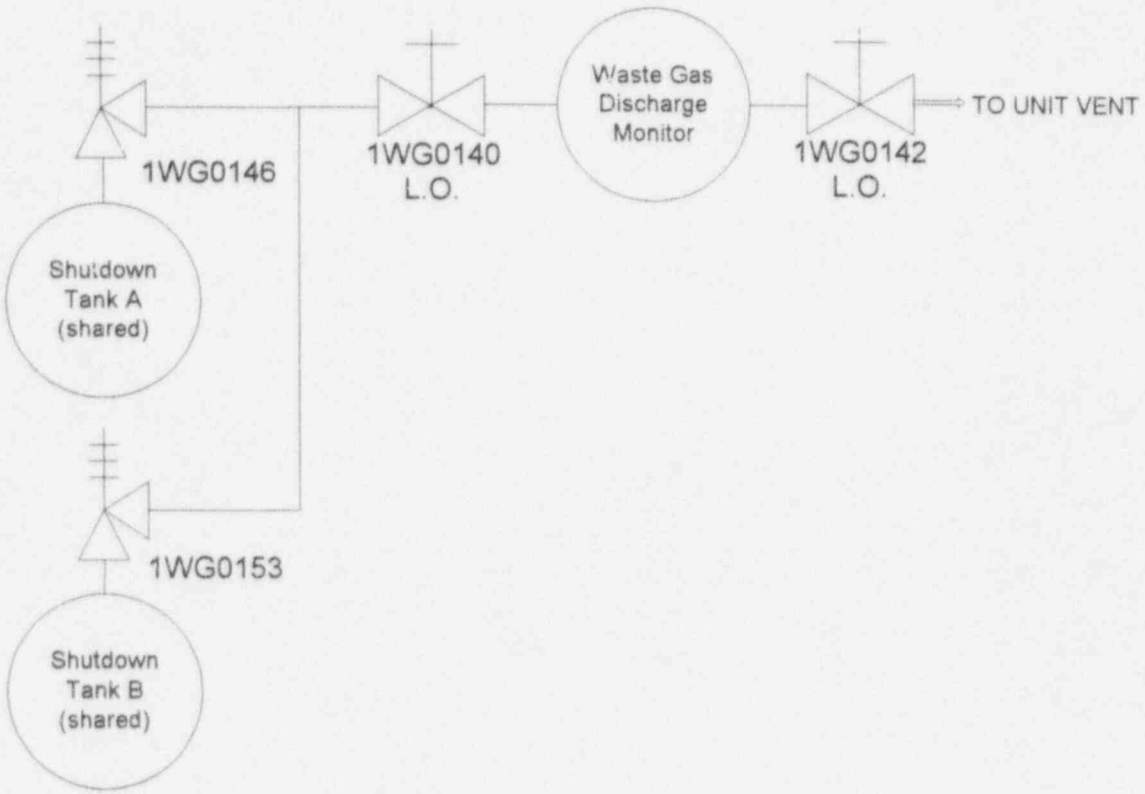


CONFIGURATION 2
ECCS SUCTION AND DISCHARGE

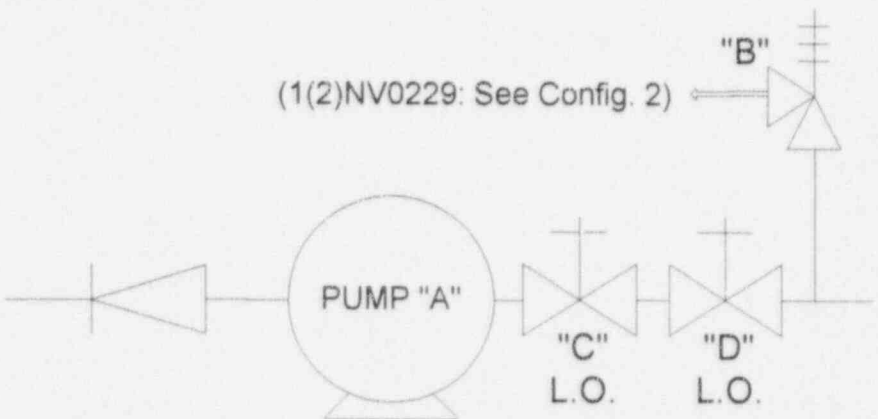


Valve "A"	Description "B"
1(2)ND0056	1(2)A Residual Heat Removal Pump Discharge to Cold Legs
1(2)ND0061	Unit 1(2) Residual Heat Removal Pump Discharge to Hot Legs
1(2)ND0064	1(2)B Residual Heat Removal Pump Discharge to Cold Legs
1(2)NI0102	Unit 1(2) Safety Injection Pump Suction Header
1(2)NI0119	1(2)A Safety Injection Pump Discharge to Hot Legs
1(2)NI0151	1(2)B Safety Injection Pump Discharge to Hot Legs
1(2)NI0161	Unit 1(2) Safety Injection Pump Discharge to Cold Legs
1(2)NS0002	1(2)A Containment Spray Pump Suction Header
1(2)NS0019	1(2)B Containment Spray Pump Suction Header
1(2)NV0229	Unit 1(2) Charging Pump Suction Header

CONFIGURATION 3
SHUTDOWN TANKS

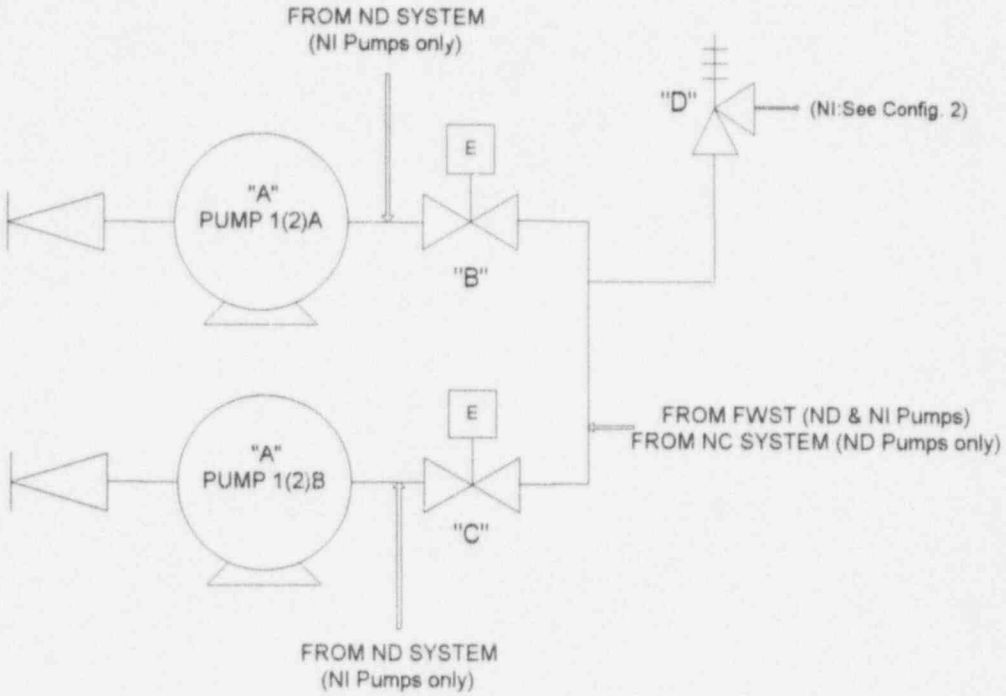


CONFIGURATION 4
CA & NV PUMP SUCTION



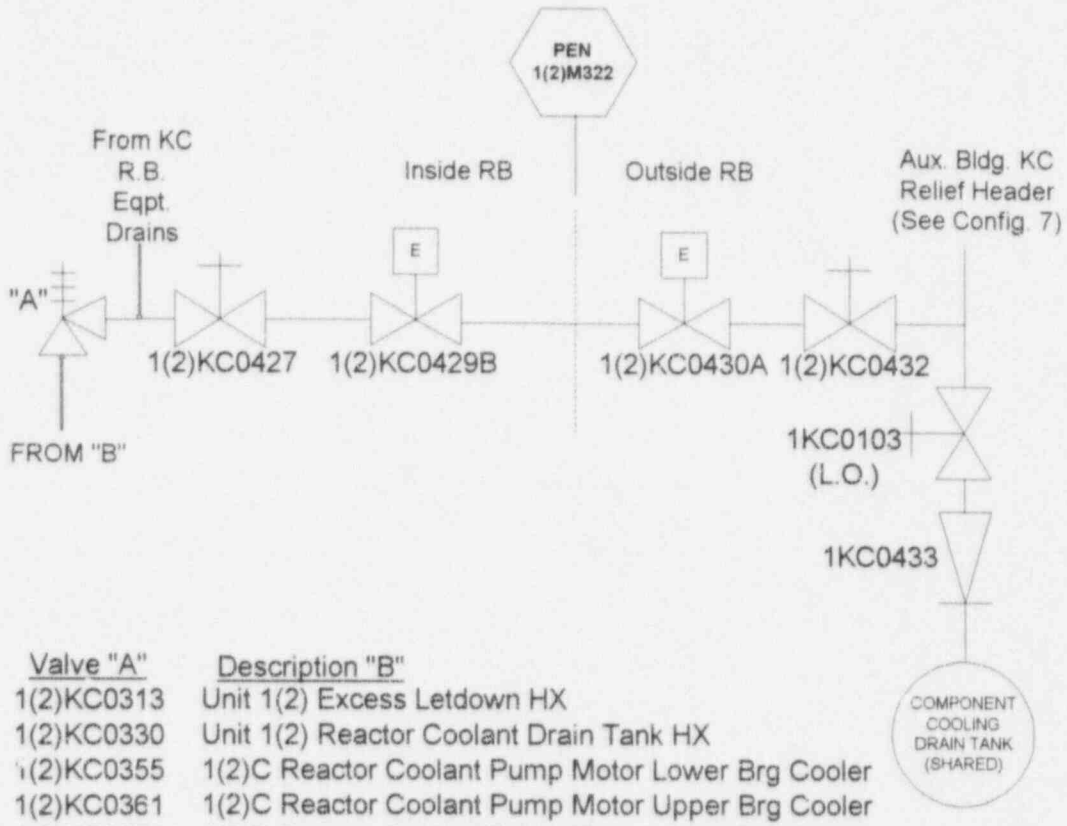
Pump "A"	Valve "B"	Valve "C"	Valve "D"
Motor Driven Aux. Feed. 1A	1CA0167	1CA0025	n/a
Motor Driven Aux. Feed. 1B	1CA0168	1CA0030	n/a
Turbine Driven Aux. Feed. 1	1CA0128	1CA0019	n/a
Centrifugal Charging 1(2)A	1(2)NV0229	1(2)NV0224	1(2)NV0498
Centrifugal Charging 1(2)B	1(2)NV0229	1(2)NV0230	1(2)NV0499

CONFIGURATION 5
ND & NI PUMP SUCTION



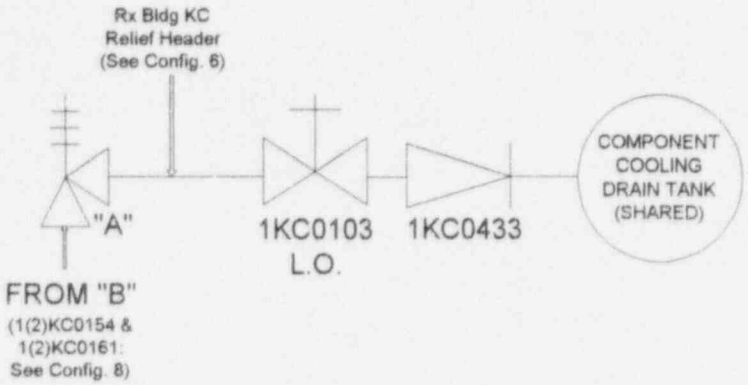
Pump "A"	Valve "B"	Valve "C"	Valve "D"
Residual Heat Removal (ND)	1(2)ND0019A	1(2)ND0004B	1(2)ND0003
Safety Injection (NI)	1(2)NI0103A	1(2)NI0135B	1(2)NI0102

CONFIGURATION 6
REACTOR BUILDING KC DRAIN HEADER



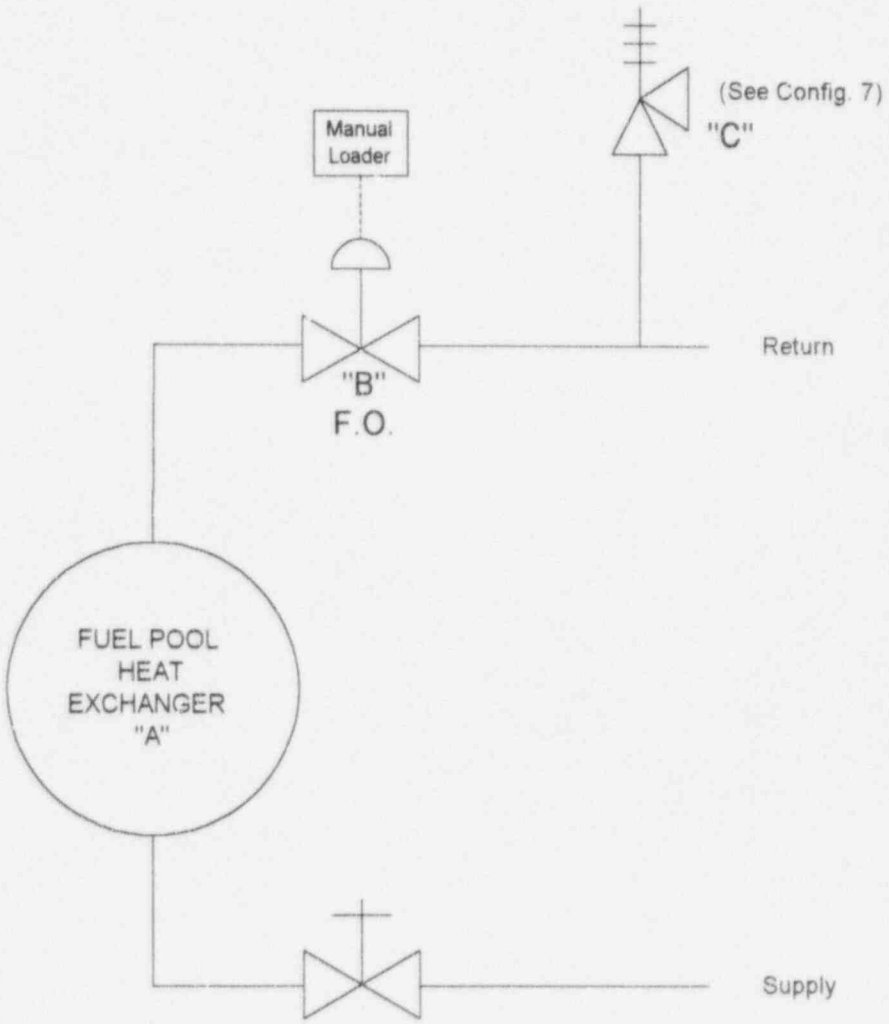
Valve "A"	Description "B"
1(2)KC0313	Unit 1(2) Excess Letdown HX
1(2)KC0330	Unit 1(2) Reactor Coolant Drain Tank HX
1(2)KC0355	1(2)C Reactor Coolant Pump Motor Lower Brg Cooler
1(2)KC0361	1(2)C Reactor Coolant Pump Motor Upper Brg Cooler
1(2)KC0374	1(2)B Reactor Coolant Pump Motor Lower Brg Cooler
1(2)KC0380	1(2)B Reactor Coolant Pump Motor Upper Brg Cooler
1(2)KC0386	1(2)A Reactor Coolant Pump Motor Upper Brg Cooler
1(2)KC0392	1(2)A Reactor Coolant Pump Motor Lower Brg Cooler
1(2)KC0404	1(2)D Reactor Coolant Pump Motor Upper Brg Cooler
1(2)KC0410	1(2)D Reactor Coolant Pump Motor Lower Brg Cooler
1(2)KC0490	1(2)C1 and 1(2)C2 Reactor Vessel Support Cooler
1(2)KC0491	1(2)B1 and 1(2)B2 Reactor Vessel Support Cooler
1(2)KC0492	1(2)A1 and 1(2)A2 Reactor Vessel Support Cooler
1(2)KC0493	1(2)D1 and 1(2)D2 Reactor Vessel Support Cooler

CONFIGURATION 7
AUXILIARY BUILDING KC DRAIN HEADER



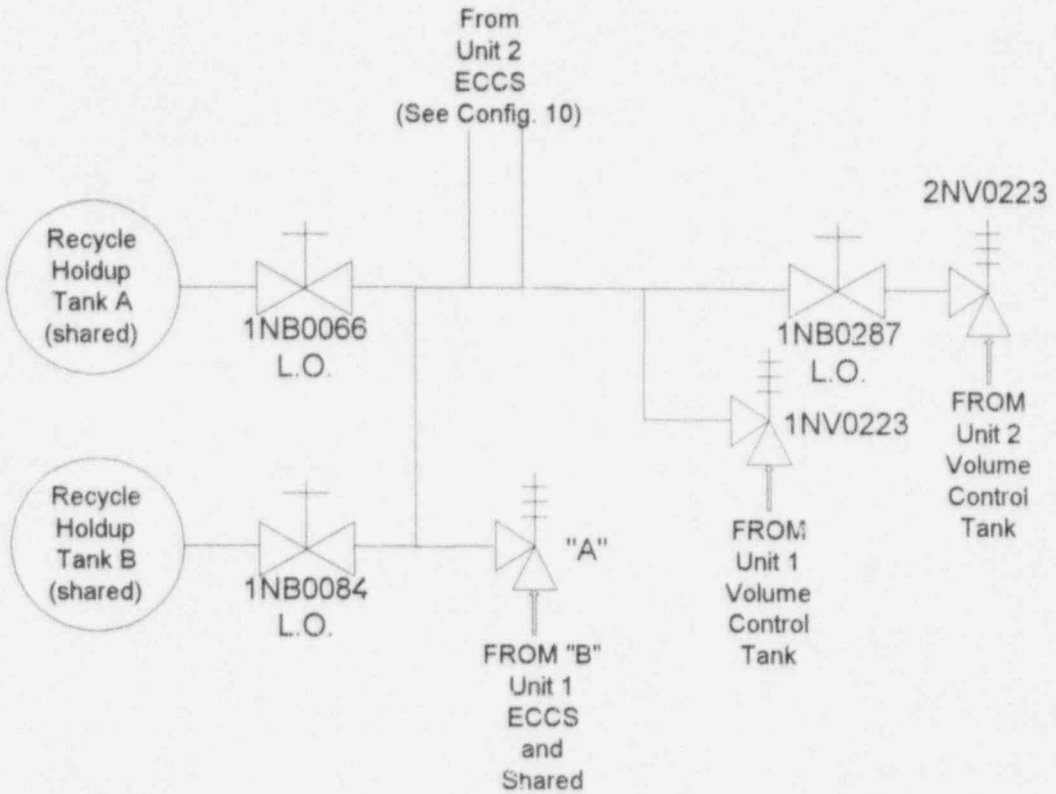
Valve "A"	Description "B"
1(2)KC0061	1(2)A Residual Heat Removal HX
1(2)KC0079	1(2)A Residual Heat Removal Pump Mechanical Seal HX
1(2)KC0086	1(2)B Residual Heat Removal HX
1(2)KC0104	1(2)B Residual Heat Removal Pump Mechanical Seal HX
1(2)KC0138	Unit 1(2) Letdown HX
1(2)KC0147	Unit 1(2) Sealwater HX
1(2)KC0154	1(2)A Fuel Pool HX
1(2)KC0161	1(2)B Fuel Pool HX
1KC0170	1A Waste Gas Compressor HX (shared)
1(2)KC0187	1(2)A Steam Generator Blowdown Sample HX
1(2)KC0193	1(2)B Steam Generator Blowdown Sample HX
1(2)KC0199	1(2)C Steam Generator Blowdown Sample HX
1(2)KC0205	1(2)D Steam Generator Blowdown Sample HX
1(2)KC0211	Unit 1(2) Pressurizer Sample HX
1(2)KC0217	Unit 1(2) Residual Heat Removal Loop Sample HX
1(2)KC0223	Unit 1(2) Reactor Coolant Hot Leg Sample HX
1KC0234	Recycle Evaporator Condenser (shared)
1KC0241	Recycle Evaporator Distillate Cooler (shared)
1KC0248	Recycle Evaporator Vent Condenser (shared)
1KC0261	Waste Evaporator Condenser (shared)
1KC0268	Waste Evaporator Distillate Cooler (shared)
1KC0275	Waste Evaporator Vent Condenser (shared)
1KC0458	1B Waste Gas Compressor NX (shared)
1KC0461	1A Waste Gas Hydrogen Recombiner HX (shared)
1KC0472	1B Waste Gas Hydrogen Recombiner HX (shared)

CONFIGURATION 8
FUEL POOL HEAT EXCHANGERS



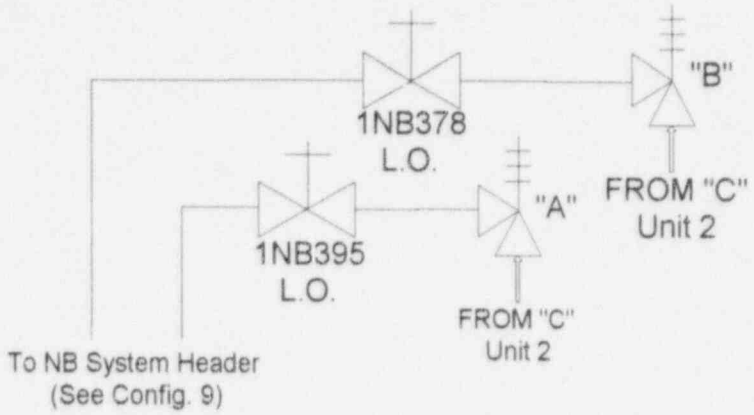
Eqpt. "A"	Valve "B"	Valve "C"
1(2)A	1(2)KC0149	1(2)KC0154
1(2)B	1(2)KC0156	1(2)KC0161

CONFIGURATION 9
NB SYSTEM HEADER & UNIT 1 ECCS



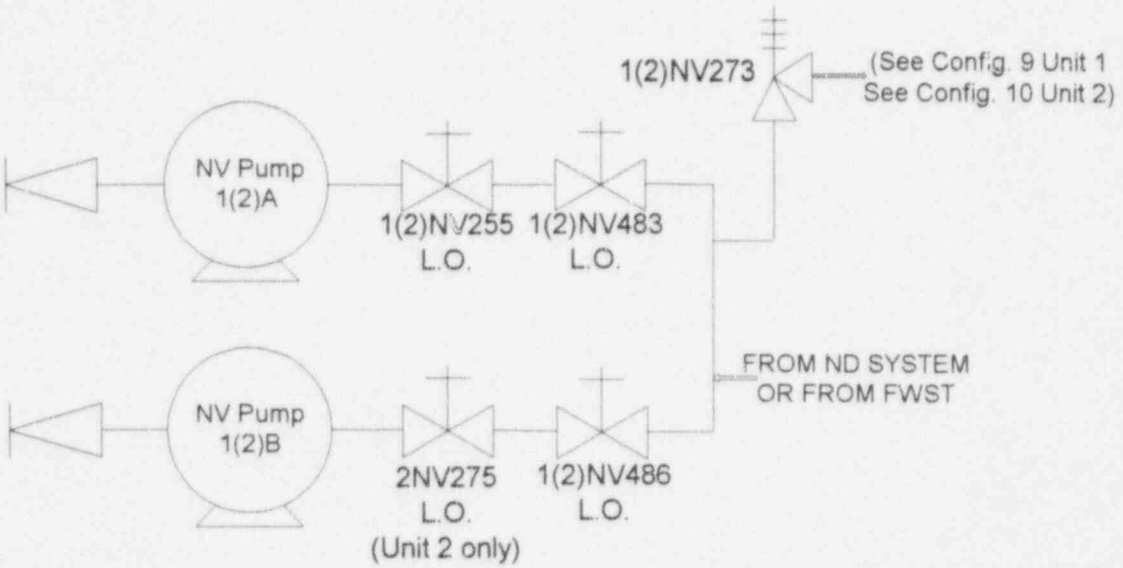
Valve "A"	Description "B"
1NB003	Recycle Evaporator Feed Demin. Inlet Header (Shared)
1ND031	1A ND Cold Leg Injection/Recirc.
1ND035	Unit 1 ND Hot Leg Injection
1ND064	1B ND Cold Leg Injection/Recirc.
1NI102	Unit 1 NI Pump Suction Relief (See also Config. 12)
1NI119	1A NI Pump Discharge Relief
1NI151	1B NI Pump Discharge Relief
1NI161	Unit 1 NI Pump Discharge to Cold Legs
1NS002	1B NS Pump Suction Relief
1NS019	1A NS Pump Suction Relief
1NV273	1A & 1B NV Pumps Suction Relief (See also Config. 11)

CONFIGURATION 10
UNIT 2 ECCS

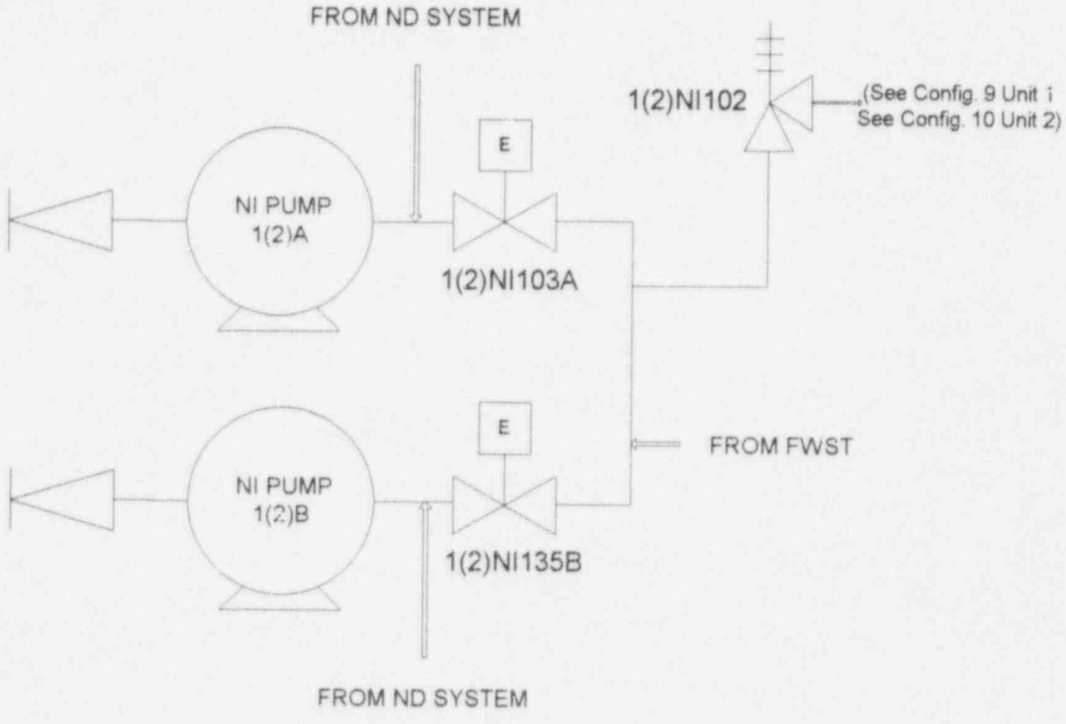


Valve "A"	Valve "B"	Description "C"
2ND031	n/a	2A ND Cold Leg Injection/Recirc.
2ND064	n/a	2B ND Cold Leg Injection/Recirc.
n/a	2ND035	Unit 2 ND Hot Leg Injection
n/a	2NI102	Unit 2 NI Pump Suction Relief (See also Config. 12)
n/a	2NI119	2A NI Pump Discharge Relief
n/a	2NI151	2B NI Pump Discharge Relief
n/a	2NI161	Unit 2 NI Pump Discharge to Cold Legs
n/a	2NS002	2B NS Pump Suction Relief
n/a	2NS019	2A NS Pump Suction Relief
n/a	2NV273	2A & 2B NV Pumps Suction Relief (See also Config. 11)

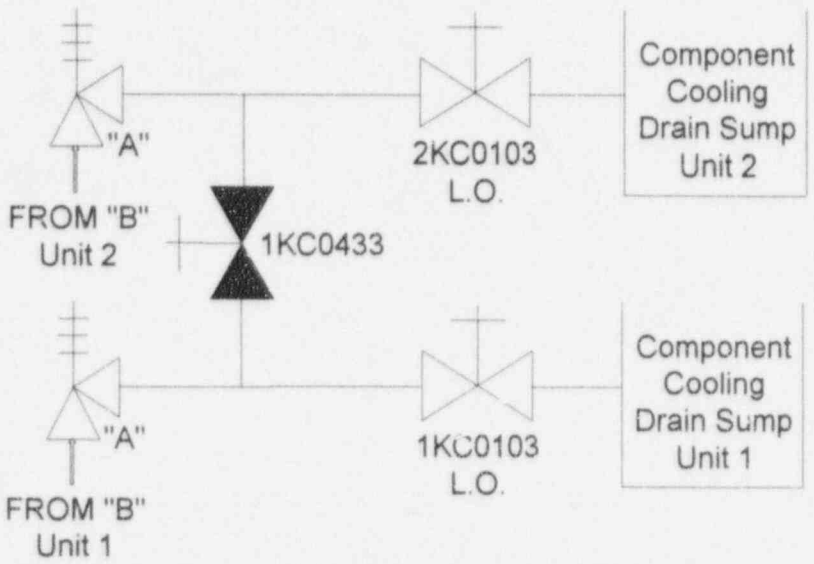
CONFIGURATION 11
NV PUMP SUCTION



CONFIGURATION 12
NI PUMP SUCTION



CONFIGURATION 13
AUXILIARY BUILDING KC DRAIN HEADER



Valve "A"	Description "B"
1(2)KC0061	1(2)A Residual Heat Removal HX
1(2)KC0086	1(2)B Residual Heat Removal HX
1(2)KC0138	Unit 1(2) Letdown HX
1(2)KC0147	Unit 1(2) Sealwater HX
1(2)KC0154	1(2)A Fuel Pool HX
1(2)KC0161	1(2)B Fuel Pool HX
1KC0170	1A Waste Gas Compressor HX (shared)
1KC0458	1B Waste Gas Compressor HX (shared)
1KC0461	1A Waste Gas Hydrogen Recombiner HX (shared)
1KC0472	1B Waste Gas Hydrogen Recombiner HX (shared)