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ACCESSION NBR: 8701060122 DOC. DATE: 86/12/29 NOTARIZED: NO DOCKET #
FACIL: 50-261 H. B. Robinson Plant, Unit 2, Carolina Power & Light C 05000261
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SUBJECT: Forwards response to 860922 request for addl info re pump & valve inservice testing proram. One oversize drawing encl.

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Director of Nuclear Reactor Regulation
Attention: Mr. Lester S. Rubenstein, Director
PWR Project Directorate #2
Division of PWR Licensing - A
United States Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSES TO QUESTIONS REGARDING
PUMP & VALVE IN-SERVICE TESTING PROGRAM

Dear Sir:

Attached are responses to the request for additional information dated September 22, 1986 regarding the H. B. Robinson Steam Electric Plant, Unit No. 2 Pump and Valve In-Service Testing Program.

Questions regarding this matter may be referred to Mr. R. W. Prunty at (919) 836-7318.

Yours very truly,

A. B. Cutter - Vice President
Nuclear Engineering & Licensing

JSK/kts (5093JSK)

Attachment

cc: Dr. J. Nelson Grace (NRC-RII)
Mr. G. Requa (NRC)
Mr. H. Krug (NRC Resident Inspector - RNP)



Drawing
To: Reg Files

A047
1/1

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

## A. GENERAL QUESTIONS AND COMMENTS

QUESTION 1:

Are all valves that require an Appendix J, Type C, leak test included in the IST program and categorized A or A/C?

CP&L RESPONSE:

Yes.

QUESTION 2:

Is H. B. Robinson Plant required to have an operational safety grade Post Accident Sampling System? If so, the associated valves should be included in the IST program and be tested in accordance with Section XI.

CP&L RESPONSE:

In accordance with NUREG-0737, the Post Accident Sampling System (PASS) is not required to be safety grade, 1E. PASS is, therefore, non-seismic, non-code and is not classified as a safety grade system (UFSAR Section 9.3.2.2.1).

QUESTION 3:

Does the control room ventilation system perform any safety-related function? If so, the appropriate support system valves should be included in the IST program.

CP&L RESPONSE:

The control room ventilation system is not a code class system as defined in Regulatory Guide 1.26. In accordance with Regulatory Guide 1.26, systems not classified in quality groupings A through D should be tested to quality standards commensurate with the safety function to be performed. Appropriately, the control room ventilation system operability is verified at refueling intervals during the safety injection actuation test.

QUESTION 4:

The NRC staff will grant relief from the trending requirements of Section XI (Paragraph IWV-3413(c)) for rapid acting valves, i.e., those valves that stroke in 2 seconds or less; however, in order to obtain this relief, the licensee must assign a maximum limiting stroke time of 2 seconds to those valves. Are any valves in the H. B. Robinson IST program affected by this staff position?

CP&L RESPONSE:

The containment purge valves V12-6, 7, 8, and 9 are assigned a maximum limiting stroke time of 2 seconds. These valves are the only valves that would be affected by the staff position.

QUESTION 5:

Does the spent fuel pool cooling system perform a safety-related function at H. B. Robinson? If so, the appropriate pumps and valves should be included in the IST program and tested in accordance with the requirements of Section XI.

CP&L RESPONSE:

The spent fuel pit cooling pumps are not provided with emergency power supplies and are excluded from Section XI testing pursuant to IWP-1100. The valves in the system are not required to perform a specific function in shutting down the reactor to cold shutdown or mitigating the consequences of an accident. These valves are, therefore, excluded from Section XI testing pursuant to IWV-1100.

QUESTION 6:

Are any valves in the H. B. Robinson Plant required to be identified as pressure boundary isolation valves and categorized A or A/C as appropriate?

CP&L RESPONSE:

There are no valves required to be identified as pressure boundary isolation valves and categorized as "A" or "A/C". The Category "A" valves listed in the program are containment isolation valves.

B. MAIN STEAM

QUESTION 1:

Describe the method utilized to verify the full-stroke capacity of valves MS-261A, B, and C.

CP&L RESPONSE:

Valves MS-261A, B, and C are disassembled at refueling intervals on a rotating basis (i.e., one valve per refueling). The valve disc is manually stroked with the bonnet removed to verify free travel.

QUESTION 2:

Do valves MS-263A, B, and C perform a safety-related function in both the open and closed positions? How are these valves individually full-stroke exercised?

CP&L RESPONSE:

Valves MS-263A, B, and C have a safety-related function in the open position only. This function is verified by operation of the steam driven auxiliary feedwater pump when supplied steam through MS-263A, B, and C individually. The valves do not have a safety-related function in the closed position due to the motor-operated valves immediately upstream. These motor-operated valves are provided with emergency power supplies to ensure operability in accident conditions. Additionally, manual valves are available to isolate each line should the motor-operated valves or MS-263A, B, or C fail to close.

## C. FEEDWATER, CONDENSATE, AIR EVACUATION

QUESTION 1:

Does valve AFW-9A, turbine driven auxiliary feedwater pump minimum flow line check, have to change position to provide pump protection during low flow conditions?

CP&L RESPONSE:

The recirculation line for the steam-driven auxiliary feedwater pump is provided for pump protection on low flow conditions. Valve AFW-9A is verified open during testing of the pump which is performed while operating on recirculation. This valve has no safety-related function in the closed position. Valve AFW-9A will be added to the IST program for forward flow verification only.

It is designed to prevent backflow from the motor-driven auxiliary pump. The failure of AFW-9A to close would have no affect on Auxiliary Feedwater System operability.

QUESTION 2:

Review the safety-related function of the following valves to determine if they should be included in the IST program.

| | | | |
|---|---|---|---|
| FCV-1424 (AFW-45) | (C-4) | FW-8A | (F-6) |
| FCV-1425 (AFW-46) | (B-4) | FW-8B | (E-6) |
| FCV-6416 (AFW-26) | (D-4) | FW-8C | (D-6) |

CP&L RESPONSE:

Valves AFW-45 and AFW-46 are normally closed valves that open on a pump start after a five-second time delay. These control valves are exempted from Section XI testing requirements per IWV-1200(a). These valves are verified to open on a pump start in the auxiliary feedwater pump test.

Valve AFW-26 is a normally open flow control valve in the steam-driven auxiliary feedwater pump discharge piping. This valve is exempted from Section XI testing per IWV-1200(a). This valve is verified operable in the steam-driven auxiliary feedwater pump test.

Valves FW-8A, 8B, and 8C are Category "B" passive valves. This is due to the safety-related function of valves V2-6A, 6B, and 6C and FCV-479, 489, and 499 that are in the IST program.

## D. SERVICE AND COOLING WATER

QUESTION 1:

What is the safety-related function of valves 261 and 272 since valves 259 and 263 are shown normally shut?

CP&L RESPONSE:

Check valves 261 and 272 are in the emergency cooling line to the steam-driven auxiliary feedwater pump lube oil cooler. This line taps off the pump impeller casing and is designed to supply bearing cooling should normal service water be lost. Therefore, valves 259 and 263 are normally shut to preclude untreated service water from entering the feedwater system.

QUESTION 2:

What is the frequency of the reverse flow testing being performed to verify that valve 541 shuts?

CP&L RESPONSE:

Monthly.

QUESTION 3:

Valve disassembly and mechanically exercising the disk on a sampling basis each refueling outage is an acceptable alternate testing method for demonstrating proper operability of check valves individually. Relief Request 5.3.6 will be affected by this staff position.

CP&L RESPONSE:

On page 24 of the letter dated December 23, 1985, relief was granted to continue the present method of testing valves SW-542 and SW-543 as stated in Relief Request 5.3.6.

QUESTION 4:

Concerning valve 544, the NRC staff position is that disassembly/ inspection should be performed during each refueling outage. The staff cannot justify an inspection interval longer than each refueling outage until the results of those inspections are supplied by the licensee in the form of a relief request that must subsequently be reviewed and approved before implementation. Relief Request 5.3.5 will be affected by this staff position.

CP&L RESPONSE:

Valve SW-544 was disassembled and inspected during the 1984 steam generator replacement outage. This inspection determined the valve to be in good operating condition with no corrective action required. It should be noted that this inspection was performed after 13 years of valve service. This inspection provided a sufficient baseline data point and assessment of 13 years of service-induced wear. As stated in Relief Request 5.3.5, SW-544 is not subjected to flow-induced wear during plant operation. Two locked closed valves preclude flow from passing through the valve. Additionally, a partial stroke is performed quarterly to verify flow through SW-544 by observing flow through an open downstream drain valve.

The inspection performed after 13 years of operation provides sufficient justification to warrant a disassembly/inspection frequency of each third refueling. Inspection at each refueling would not add any significant margin of safety due to the normal passive operating conditions of the valve and the absence of flow-induced wear. With the established results of the baseline inspection, the partial stroke of the valve at quarterly intervals, and a disassembly/inspection frequency of every third refueling, the operability of SW-544 can be adequately assured.

QUESTION 5:

How is valve 545 verified to shut during power operation?

CP&L RESPONSE:

Check valve SW-545 is verified closed from the differential pressure observed across the valve in the reverse direction (closed position).

QUESTION 6:

Review the safety-related function of the following valves to determine if they should be included in the IST program?

| | | | |
|---|---|---|---|
| V6-95A | (B-6) | V6-95C | (B-5) |
| V6-95B | (B-7) | V6-95D | (C-6) |

CP&L RESPONSE:

Valves V6-95A, V6-95B, V6-95C, and V6-95D are in the supply lines to the hot pipe containment vessel penetration coolers. Failure of either valve to operate would be detected by a low flow indication on the penetration cooler return lines. These lines provide cooling to preclude long-term concrete damage and have no specific function in shutting down the reactor to cold shutdown or in mitigating the consequences of an accident. Flow through each penetration cooler is verified each

shift as part of an area check. Since the valves perform no specific function in shutting down the reactor to cold shutdown or in mitigating the consequences of an accident, they are not included in the IST program.

## E. FUEL OIL SYSTEM

QUESTION 1:

Would failure of one of the two parallel fuel oil valves, FO-27A and FO-29A, or FO-27B, in the closed position be detected during the testing presently being performed? Reference Relief Request 5.3.12.

CP&L RESPONSE:

Yes. Operability of each valve is verified quarterly by the testing currently performed.

## F. PENETRATION PRESSURIZATION SYSTEM

QUESTION 1:

Provide the P&ID that shows the location of valves 274D and 275D.

CP&L RESPONSE:

G-190261, Sheet 2 is provided. See location C-4 for valves PP-274D and PP-275D.

QUESTION 2:

Valve EV-1721B is not identified as a Category A, passive valve; therefore, its stroke time must be measured quarterly.

CP&L RESPONSE:

EV-1721B is a solenoid valve that has no remote indication or individual switch for actuation. This valve ports instrument air to and from the innerspace between V12-10 and V12-11. EV-1721B actuates to depressurize the innerspace when the switch for V12-10 and V12-11 is operated. At 2 psi innerspace pressure, PS-1721 will send a permissive signal to open V12-10 and V12-11. Therefore, only the opening of V12-10 and V12-11 is dependent on EV-1721B actuation. Only the closing stroke times of V12-10 and V12-11 have a safety significance. Since the closing times for these valves are not dependent on EV-1721B actuation, EV-1721B stroke time is not measured. Since V12-10 and V12-11 are Category A active valves, EV-1721B has the same categorization.

QUESTION 3:

Why are valves EV-1723 and -1724 identified as Category A, passive, and exercised without stroke timing during cold shutdowns?

CP&L RESPONSE:

EV-1723 and EV-1724 are solenoid valves that have no remote indication or individual switch for actuation. These valves port instrument air to and from the innerspaces between V12-6 and 7 and V12-8 and 9, respectively, when their switches are actuated. At 2 psi innerspace pressure, PS-1723 (for EV-1723, V12-6, V12-17) and PS-1724 (for EV-1724, V12-8, V12-9) will send a permissive signal to open V12-6, 7, and V12-8, 9, respectively. Therefore, only the opening of V12-6, 7, and V12-8, 9 are dependent on EV-1723 and EV-1724 actuation. Only the closing stroke times for V12-6, 7, and V12-8, 9 have a safety significance. Since the closing stroke times for these valves are not dependent on EV-1723 and EV-1724 actuation, EV-1723 and EV-1724 stroke times are not measured. EV-1723 and EV-1724 are cycled concurrently with V12-6, 7, and V12-8, 9 respectively. (The frequency of testing V12-6, 7 and V12-8, 9 is discussed in the response to Question H.1.)

QUESTION 4:

Valves EV-1727 and -1728 are not identified as Category A, passive valves; therefore, their stroke time must be measured quarterly.

CP&L RESPONSE:

Valves EV-1727 and EV-1728 are solenoid valves that have no remote indication or individual switch for actuation. These valves port instrument air to and from the innerspaces between RMS-1, 2, and RMS-3, 4, respectively, when their switches are operated. At 2 psi innerspace pressure, PS-1727 (for EV-1727, RMS-1, RMS-2) and PS-1728 (for EV-1728 and RMS-3, RMS-4) will send a permissive signal to open RMS-1, 2, and RMS-3, 4, respectively. Therefore, only the opening of RMS-1, 2 and RMS-3, 4 are dependent on EV-1727 and EV-1728 actuation. Only the closing times for RMS-1, 2 and RMS-3, 4 have a safety significance. Since the closing times for RMS-1, 2 and RMS-3, 4 are not dependent on EV-1727 and EV-1728 actuation, EV-1727 and EV-1728 stroke times are not measured. Since RMS-1, 2 and RMS-3, 4 are Category A active valves, EV-1727 and EV-1728 have the same categorization.

QUESTION 5:

Valve EV-1743 is not identified as Category A, passive; therefore, its stroke time must be measured quarterly. Why is this valve exercised only during cold shutdowns?

CP&L RESPONSE:

Valve EV-1743 is a solenoid valve that has no remote indication or individual switch for actuation. This valve ports instrument air to and from the innerspace between V12-18 and V12-19. EV-1743 actuates to depressurize this innerspace when the switch for V12-18 and V12-19 is operated. At 2 psi innerspace pressure, PS-1743 will send a permissive signal to open V12-18 and V12-19. Therefore, only the opening of V12-18 and V12-19 is dependent on EV-1743 actuation. Only the closing times of V12-18 and V12-19 have a safety significance. Since the closing times for

these valves are not dependent on EV-1743 actuation, EV-1743 stroke time is not measured. Valve EV-1743 will be cycled at cold shutdown since V12-18 and V12-19 can only be cycled at cold shutdown due to the containment integrity requirements of Technical Specification 1.7(a).

## G. ISOLATION VALVE SEAL WATER SYSTEM

QUESTION 1:

Why are all the check valves in this system categorized B/C instead of C? Do any of the check valves listed have to change position to perform a safety function?

CP&L RESPONSE:

The isolation valve seal water system (IVSW) is not taken credit for in the FSAR for limiting off-site doses following a loss of coolant accident (Reference UFSAR Section 6.8.1). Therefore, the system check valves do not have to change position to fulfill a safety function.

However, check valve operation is verified at refueling intervals in accordance with Technical Specification 4.4.2 when valves served by IVSW are seat leakage tested.

QUESTION 2:

Should valve AOV-26-E be categorized B instead of BC? Do these air-operated valves have a required fail-safe position?

CP&L RESPONSE:

Valve AOV-26-E should be categorized as a "B" valve. These valves have no required safety-related, fail-safe position due to the operation of the IVSW system as explained in G.1 above. Additionally, the Post Accident Sampling System is not a safety grade system. Therefore, AOV-26-E has no safety-related function.

## H. HVAC-TURBINE, FUEL, AUXILIARY, AND REACTOR BUILDING SYSTEMS

QUESTION 1:

Provide a detailed technical justification for not full-stroke exercising valves V12-6, -7, -8, and -9 quarterly during power operation.

CP&L RESPONSE:

Operation of containment purge valves V12-6, 7, 8, and 9 is governed by Technical Specification 3.6.4.1 through 3.6.4.3. The amount of time these valves are open is kept to a minimum. As stated in Technical Specifications, these valves are tested prior to use if not tested within the previous 90 days but will not be cycled quarterly for testing purposes only.

QUESTION 2:

Provide a detailed technical justification for not full-stroke exercising valves V12-12 and -13 quarterly during power operation.

CP&L RESPONSE:

Valves V12-12 and V12-13 are operated as a pair from one control switch. Operation of these valves with a positive pressure inside containment would result in an unmonitored containment ground release. Since drawing a vacuum inside containment to allow cycling of these valves quarterly is not possible, the valves are cycled at cold shutdown in accordance with IWV-3412.

## I. PRIMARY SAMPLING SYSTEM

QUESTION 1:

Is Category A valve 959 leak tested? Should this valve be Category B instead of Category A?

CP&L RESPONSE:

PS-959 is not leak tested and should be categorized as a "B" valve.

J. COMPONENT COOLING WATER

QUESTION 1:

Provide a more detailed technical justification for not full-stroke exercising valves 716A and B quarterly during power operation.

CP&L RESPONSE:

Closing 716A or 716B will isolate all cooling water flow to the reactor coolant pumps. In accordance with abnormal operating procedures, all reactor coolant pumps must be stopped if any of the following situations occur:

a. Two minutes of reactor coolant pump operation following loss of component cooling flow.
b. Upper bearing temperature reaches 200°F.
c. Lower bearing temperature exceeds 225°F.

Should any of these situations occur during cycling of 716A and 716B, a reactor trip would result due to the loss of the reactor coolant pumps. Such a challenge to plant equipment due to quarterly valve testing is not considered prudent. Valves 716A and 716B are cycled at cold shutdown in accordance with IWV-3412.

QUESTION 2:

What are the consequences of a "disruption of flow" while exercising valve 730? Can this valve be full-stroke exercised during power operation?

CP&L RESPONSE:

Cycling 730 will isolate flow to the control rod drive coolers and reactor coolant pump upper and lower bearings. A loss of reactor coolant pumps could result as stated in J.1 above.

QUESTION 3:

Provide a more detailed technical justification for not full-stroke exercising valves FCV-626 and 735 quarterly during power operation.

CP&L RESPONSE

Cycling FCV-626 and/or 735 would isolate component cooling water flow to the reactor coolant pump thermal barriers. This could result in a loss of reactor coolant pumps as stated in J.1 above and potential reactor coolant pump seal damage.

QUESTION 4:

Review the safety-related function of valves 737A and 739 to determine if they should be categorized A. Do these valves have to change position to perform their safety function?

CP&L RESPONSE:

Valves 737A and 739 are in a line that is totally enclosed, missile protected, and not a postulated leak path following a LOCA. Therefore, these are not categorized as "A" valves. If open, CCW-739 would close on a containment isolation signal. CCW-737A would be closed manually to affect containment isolation.

K. CHEMICAL AND VOLUME CONTROL

QUESTION 1:

Provide a more detailed technical justification for not full-stroke exercising valves 202-A and 282 quarterly during power operations.

CP&L RESPONSE:

Closing of CVC-202A and/or CVC-282 will isolate charging flow to the Reactor Coolant System. This will cause deviations in pressurizer level to an extent dependent on the amount of time the valves are left closed. The control function of HCV-121 will be negated when either CVC-202A or CVC-282 are closed. This will result in fluctuations to reactor coolant pump seal injection flow and, thereby, increase the potential for seal damage.

Inducing perturbations on pressurizer level and seriously affecting reactor coolant pump seal flow by quarterly cycling of these manual valves is not considered prudent. Cycling these manual valves quarterly is impractical and, therefore, they are cycled at cold shutdown in accordance with IWV-3412(a).

QUESTION 2:

Clarify the justification for exercising valves 204-A and -B during cold shutdowns on page 1 of 7. Attachment 6.25, i.e., is normal charging flow secured periodically?

CP&L RESPONSE:

Charging flow is not secured periodically during operation. To do so would increase the probability of creating pressurizer level and pressure transients. Assuming no other measures were taken, cycling CVC-204A and 204B would isolate letdown flow causing pressurizer level to increase, relief valves CVC-203A and CVC-203B to lift, reactor coolant pump seal flow to increase, and a loss of regenerative heat resulting in lower temperature charging flows to the Reactor Coolant System. This would also result in the flashing of letdown flow downstream of CVC-204A or 204B and increase the potential for reactor coolant pump seal damage. These situations would result in abnormal operating conditions that are unwarranted primarily for valve testing purposes. Cycling CVC-204A and 204B quarterly is impractical. These valves are cycled at cold shutdown in accordance with IWV-3412(a).

QUESTION 3:

What is the safety-related function of valve 292-A?

CP&L RESPONSE:

Valve CVC-292A is operated for containment isolation purposes.

QUESTION 4:

Provide a more detailed technical justification for not full-stroke exercising valves 293-A, 293-C, and 295 quarterly.

CP&L RESPONSE:

Cycling of CVC-293A, 293C, and 295 has the potential to cause fluctuations in reactor coolant pump seal injection flow. Surges in seal flow can lead to erratic seal operation and, therefore, increase the potential for seal damage. Valves CVC-293A, 293C and 295 are required to affect containment isolation in the unlikely event seal injection to the reactor coolant pumps required securing. Since these are manual valves, the possibility of inducing seal flow fluctuations solely for quarterly cycling is not prudent. These valves are tested at cold shutdown pursuant to IWV-3412.

QUESTION 5:

Are the valves 297-A, -B, and -C locked or secured in throttled position?

CP&L RESPONSE:

Valves CVC-297A, B, and C are needle valves and do not need to be locked or secured in a throttled position.

QUESTION 6:

Provide a more detailed technical justification for not full-stroke exercising valve 351 quarterly during power operation.

CP&L RESPONSE:

Valve CVC-351 is a check valve. Cycling CVC-351 quarterly would allow highly borated water (20,000 ppm) to enter the Reactor Coolant System. This will have a negative affect on reactor power that could lead to a reactor trip dependent on the amount of time the addition of highly borated water into the Reactor Coolant System continued. In any event, the addition of this borated water could require substantial Reactor Coolant System dilution to negate its effects on power level. Cycling of this check valve with highly borated water is an abnormal operation that can only be attempted at cold shutdown.

QUESTION 7:

How is full-stroke exercising of valves 397-A and -B verified quarterly?

CP&L RESPONSE:

Valves CVC-397A and 397B are stroked during the boric acid transfer pump performance test which is performed quarterly.

QUESTION 8:

Should the justification for full-stroke exercising valve LCV-115-C during cold shutdowns be the same as that for valve 266?

CP&L RESPONSE:

Yes. Closing CVC-266 or LCV-115C would isolate charging flow and reactor coolant pump seal flow.

QUESTION 9:

Review the safety-related function of valve HCV-121 (F-3) to determine if it should be included in the IST program.

CP&L RESPONSE:

Valve HCV-121 is a control valve used to regulate charging and reactor coolant pump seal water flow. It has no safety-related function in the open, closed, or throttled position. The valve is used for system control and is exempt from Section XI testing per IWV-1200(a).

QUESTION 10:

Are valves 312-C (F-5), 311 (E-7), and 313 (E-8) required to be operable to satisfy the requirements of Branch Technical Position RSB 5-1, "Design Requirements of the Residual Heat Removal System"?

CP&L RESPONSE:

Valve CVC-311 is a normally closed, fail closed, passive valve that is not used during power operation. CVC-311 loses motive air force in accident conditions when instrument air to containment is isolated. In this mode, it is not operable for accident mitigation purposes. CVC-311 could be used in accident conditions for pressurizer pressure control if instrument air were available. Since instrument air is not a safety grade system, CVC-311 cannot be relied on in accident conditions. It is used primarily in normal conditions for continued pressurizer cooling after 200°F is reached during Reactor Coolant System cooldown. CVC-311 must be cycled to verify operability of valves CVC-312C and 313 which are check valves upstream and downstream of CVC-311. Therefore, CVC-311, 312C, and 313 are not included in the IST program.

QUESTION 11:

Review the safety-related function of valves 298-D (B-8), -E (B-6), and -F (B-5) to determine if they should be included in the IST program and categorized A/C.

CP&L RESPONSE:

Check valves CVC-298A-F are designed to close in the unlikely event of loss of all charging pumps coincident with a labyrinth shaft seal failure on a reactor coolant pump. When operating, the charging pumps would supply flow at a pressure higher than Reactor Coolant System pressure. These pumps are supplied from emergency busses. In the event of a shaft seal failure and the failure of both of the series check valves on the affected line to close, a pressure gradient would exist due to charging pump operation that would oppose any loss of Reactor Coolant System inventory through the seal injection line. Should the following unlikely scenario occur:

a) reactor coolant pump labyrinth seal failure, with

b) failure of both series check valves in the injection line to close, with

c) loss of all charging pumps,

flow from the Reactor Coolant System could conceivably enter the chemical and volume control system. This is of no safety concern due to the closed system design and the high design pressure of the chemical and volume control system. Additionally, valves CVC-297A, B, or C can isolate the affected seal injection line should this situation occur.

Due to the design pressure of the chemical and volume control system being the same as the Reactor Coolant System, seat leakage past CVC-298A-F is not an overpressurization concern. Therefore, these valves are not categorized as A/C. Valves CVC-297A-C, CVC-292A, CVC-293A, CVC-293C, and CVC-295 are used to isolate the seal injection lines should this be necessary. These valves are Category "A" valves and are included in the IST program.

## L. LIQUID WASTE DISPOSAL SYSTEM

QUESTION 1:

Should valve 1713 be categorized A/C instead of C?

CP&L RESPONSE:

Valve WD-1713 is a Category A/C valve.

QUESTION 2:

Why is Category A, passive, valve 1793 exercised quarterly?

CP&L RESPONSE:

Valve WD-1793 is a containment isolation valve that is normally closed, but can be opened to allow nitrogen into the reactor coolant drain tank. In the closed position, it is a passive valve. It is cycled quarterly to provide added assurance that it will function as a containment isolation valve.

QUESTION 3:

What is the safety-related function of valve 1966?

CP&L RESPONSE:

Valve WD-1966 is part of the containment boundary formed by WD-1793 and WD-1713.

## M. SAFETY INJECTION

QUESTION 1:

Provide a more detailed technical justification for not full-stroke exercising valves 845-A and -B quarterly. The justification for not exercising these valves does not agree with the exercising frequency of valves 844-A and-B stated on page 1 of 9, Attachment 6.18, since it was stated that these four valves must be exercised simultaneously.

CP&L RESPONSE:

To operate SI-845A and SI-845B would require the closing of normally open valve SI-845C or SI-844A and SI-844B to preclude sodium hydroxide from entering the refueling water storage tank.

Valves SI-845A and 845B receive an automatic signal to open as part of the containment spray system actuation. Valve SI-845C does not receive an automatic signal to open. Closing SI-845C during power operation, thereby defeating the automatic sodium hydroxide addition feature, is not considered prudent. Additionally, any cycling of SI-845A or 845B will allow some sodium hydroxide into the containment spray/safety injection system. Therefore, it is necessary to keep the cycling of these valves to a minimum to avoid contamination of the safety injection system including the refueling water storage tank.

A cold shutdown testing interval is adequate to assess operability of valves SI-845A and 845B without jeopardizing the water chemistry of the refueling water storage tank contents.

QUESTION 2:

Review the safety-related function of valves 860-A, -B, 861-A, and -B to determine if they should be categorized A.

CP&L RESPONSE:

Valves RHR-860A, 860B, 861A, and 861B are opened in post-accident situations to take suction on the containment vessel floor for initial and long-term cooling. These valves are connected to an enclosed system outside containment which will supply cooling back to the reactor in accident situations. Therefore, these valves do not constitute a potential leak path during or following an accident. Additionally, the residual heat removal system and these valves are inspected for external leakage pursuant to NUREG-0737.

QUESTION 3:

Do valves 868-A, -B, and -C have to change position to perform a safety function?

CP&L RESPONSE:

No. Valves SI-868A, B, and C are locked opened and the motors are disabled to function as manual valves. These valves are not required to close in any accident scenario.

QUESTION 4:

Valve disassembly and mechanically exercising the disk on a sampling basis each refueling outage is an acceptable alternate testing method for demonstrating proper operability of individual check valves. The staff will not grant relief to never full-stroke exercise a safety-related valve. Relief Request 5.3.14 will be affected by this staff position.

CP&L RESPONSE:

See Relief Request 5.3.14 of the August 27, 1986 letter, Serial NLS-86-295.

QUESTION 5:

Concerning valves 875-D, -E, and -F, the NRC staff position is that the sample disassembly/inspection should be performed during each refueling outage. The staff cannot justify an inspection interval longer than each refueling outage until the results of those inspections are supplied by the licensee in the form of a relief request that must subsequently be reviewed and approved before implementation. Relief Request 5.3.3 will be affected by this staff position.

CP&L RESPONSE:

See Relief Request 5.3.3 of the August 27, 1986 letter, Serial NLS-86-295.

QUESTION 6:

How are valves 876-A, -B, and -C individually verified to full-stroke exercise during cold shutdowns?

CP&L RESPONSE:

Valves SI-876A, B, and C are verified open by the method described in Relief Request 5.3.14 of the August 27, 1986 letter, Serial NLS-86-295. During operation, the valves are held closed by accumulator pressure.

QUESTION 7:

What is the safety-related function of valves 883-L and 883-W?

CP&L RESPONSE:

Valves SI-883L and SI-833W have no safety-related function. These valves are Category A passive since they form part of the IVSW boundary should safety injection be terminated following an accident and the manual IVSW header activated.

QUESTION 8:

How are valves 889-A and -B full-stroke exercised?

CP&L RESPONSE:

Valves SI-889A and 889B are verified open by observing eductor flow indicator FI-949 while the associated containment spray pump is operating. The closing of these valves is verified by observing an operating and non-operating containment spray pump discharge pressure. Should the non-operating pump discharge pressure indicator rise, this would be indicative of a failure of SI-889A or 889B to close.

QUESTION 9:

Describe the method utilized to verify the full-stroke capability of valves 890-A and -B. Reference Relief Request 5.3.8.

CP&L RESPONSE:

Valves SI-890A and 890B are disassembled and manually stroked on a rotating basis each refueling (i.e., one valve disassembled and stroked each refueling).

QUESTION 10:

Describe the method utilized to verify the full-stroke capability of valves 899-D and -E. Reference Relief Request 5.3.11.

CP&L RESPONSE:

Each refueling, valves SI-899D and SI-899E are removed from the spray additive tank and connected to a bench-mounted vacuum pump for testing. By observing a vacuum gauge installed in the test circuit, the actual vacuum breaking setpoint can be determined. The valves are then reinstalled on the spray additive tank after testing.

QUESTION 11:

Review the safety-related function of the following valves to determine if they should be included in the IST program.

| | | | |
|---|---|---|---|
| 893-A | (D-6) | 839 | (D-4) |
| 893-B | (E-6) | 856-A | (E-3) |
| 893-C | (G-6) | 856-B | (E-3) |

CP&L RESPONSE:

Valves SI-893A, B, C, and SI-839 are verified to open during the safety injection pump performance test. These valves are required to open to protect the pump from operation at shutoff head on an auto start. They have no safety-related function in the closed position. These valves will be added to the IST program listing.

Valves SI-856A and 856B are blocked in the open position. Therefore, they are passive valves and are not included in the IST program.

N. RESIDUAL HEAT REMOVAL

QUESTION 1:

Review the safety-related function of valves 744-A, -B, 750, and 751 to determine if they should be categorized A.

CP&L RESPONSE:

Valves 744A and 744B are normally closed valves. These valves are high to low pressure system interface valves (2500 psi to 600 psi). However, the valves are not Reactor Coolant System pressure boundary valves. Valves that form the Reactor Coolant System pressure boundary for these sections of piping follow:

| Loop A | Loop B | Loop C |
|---|---|---|
| SI-875A | SI-875B | SI-875C |
| SI-876A | SI-876B | SI-876C |

Additionally, relief valve RHR-706 is installed immediately upstream of valves RHR-744A and 744B. This valve will provide overpressure protection in the unlikely event any combination of loop isolation valves and RHR-744A or 744B exhibit excessive seat leakage.

For valves RHR-744A and 744B, no specific maximum amount of leakage is specified for fulfillment of their function when the valves are in the closed position. Seat leakage is inconsequential making these Category B valves.

Valves RHR-750 and RHR-751 are interlocked with Reactor Coolant System pressure such that these valves cannot be opened unless system pressure drops below 465 psi. Therefore, the seating characteristics of the valves should not change during an operating cycle. Any leakage past RHR-750 and 751 or any other Reactor Coolant System pressure boundary valve would be detected during the daily Reactor Coolant System leakage measurement. Leakage past RHR-750 and RHR-751 would be compared to the criteria of 1.0 gpm total unidentified Reactor Coolant System leakage contained in Technical Specification 3.1.5.1. Should this unidentified leakage exceed 1.0 gpm for more than 12 hours, the plant must be placed in hot shutdown.

Leakage past RHR-750 and RHR-751 would not overpressurize the residual heat removal system. Any leakage past these valves would be routed to the vented refueling water storage tank.

No specified maximum amount of leakage is assigned to these valves. System overpressurization is precluded by design and valve alignment. Therefore, a "B" categorization for these valves is appropriate.

QUESTION 2:

Review the safety-related function of valves FCV-605 (D-7) and HCV-758 (E-8) to determine if they should be included in the IST program.

CP&L RESPONSE:

Valves FCV-605 and HCV-758 are system control valves and are exempt from Section XI testing per IWV-1220(a). As required by plant Technical Specifications, air to the valve operators is isolated and the valves are closed when Reactor Coolant System pressure is above 1,000 psig. The valves have no safety-related function; their purpose is to control the rate of decay heat removal from the Reactor Coolant System during cooldown operations.

O. REACTOR COOLANT SYSTEM

QUESTION 1:

Provide a detailed technical justification for not full-stroke exercising valves 567, 568, 569, 570, 571, and 572 quarterly during power operation.

CP&L RESPONSE:

When the RCS is greater than 200°F, valves RC-567, 568, 569, and 570 are closed with power removed from the valve actuators in accordance with Technical Specification 3.1.1.4.a. Therefore, these valves cannot be cycled quarterly. Valves RC-571 and 572 are required to be closed above 200°F in accordance with Technical Specification 3.1.1.4.b. In accordance with this Technical Specification, valves RC-571 and 572 may not be cycled above 200°F unless needed to depressurize the head vent piping due to leakage past RC-567, 568, 569, or 570. Therefore, valves RC-567, 568, 569, 570, 571, and 572 are tested at cold shutdown.

QUESTION 2:

Are valves PCV-455-C and -456 used for low temperature overpressure protection?

CP&L RESPONSE:

Yes. At RCS temperature less than 350°F.

P. CONTAINMENT VAPOR AND PRESSURE SAMPLING

QUESTION 1:

Should valve VCT-22 be included in the IST program and categorized A, passive?

CP&L RESPONSE:

Yes. Valve VCT-22 will be included in the IST program and categorized A, passive.

Q. POST-ACCIDENT CONTAINMENT VENTING

QUESTION 1:

Identify the valves affected when full-stroke exercising valve PCV-1716 during power operation.

CP&L RESPONSE:

| | | | |
|---|---|---|---|
| 1. | CVC-303A | 5379-685 | SHT. 1 |
| | CVC-303B | 5379-685 | SHT. 1 |
| | CVC-303C | 5379-685 | SHT. 1 |
| | CVC-307 | 5379-685 | SHT. 1 |
| | CVC-387 | 5379-685 | SHT. 1 |
| | CVC-389 | 5379-685 | SHT. 1 |
| | HCV-137 | 5379-685 | SHT. 1 |
| | CVC-310A | 5379-685 | SHT. 1 |

| | | |
|---|---|---|
| CVC-310B | 5379-685 | SHT. 1 |
| LCV-460A | 5379-685 | SHT. 1 |
| LCV-460B | 5379-685 | SHT. 1 |
| CVC-200A | 5379-685 | SHT. 1 |
| CVC-200B | 5379-685 | SHT. 1 |
| CVC-200C | 5379-685 | SHT. 1 |
| CVC-311 | 5379-685 | SHT. 1 |
| LCV-1003A | 5379-920 | SHT. 3 |
| LCV-1003B | 5379-920 | SHT. 3 |
| WD-1708 | 5379-920 | SHT. 3 |
| SI-850F | 5379-1082 | SHT. 4 |
| SI-850E | 5379-1082 | SHT. 4 |
| SI-850D | 5379-1082 | SHT. 4 |
| SI-850C | 5379-1082 | SHT. 4 |
| HVC-936 | 5379-1082 | SHT. 5 |
| SI-851C | 5379-1082 | SHT. 5 |
| SI-852C | 5379-1082 | SHT. 5 |
| SI-853C | 5379-1082 | SHT. 5 |
| SI-851B | 5379-1082 | SHT. 5 |
| SI-852B | 5379-1082 | SHT. 5 |
| SI-853B | 5379-1082 | SHT. 5 |
| SI-851A | 5379-1082 | SHT. 5 |
| SI-852A | 5379-1082 | SHT. 5 |
| SI-853A | 5379-1082 | SHT. 5 |
| RC-544 | 5379-1971 | SHT. 1 |
| RC-523 | 5379-1971 | SHT. 2 |
| RC-522A | 5379-1971 | SHT. 2 |
| RC-522C | 5379-1971 | SHT. 2 |
| RC-522B | 5379-1971 | SHT. 2 |
| RC-519C | 5379-1971 | SHT. 2 |
| PCV-455B | 5379-1971 | SHT. 2 |
| PCV-455A | 5379-1971 | SHT. 2 |
| PCV-455C | 5379-1971 | SHT. 2 |
| PCV-456 | 5379-1971 | SHT. 2 |
| V12-11 | HBR2-6933 | SHT. 1 |
| V12-14 | HBR2-6933 | SHT. 1 |

| | | |
|---|---|---|
| V12-18 | HBR2-6933 | SHT. 1 |
| PS-955E | 5379-353 | SHT. 1 |
| PS-955D | 5379-353 | SHT. 1 |
| PS-955C | 5379-353 | SHT. 1 |
| PS-955A | 5379-353 | SHT. 1 |
| PS-955B | 5379-353 | SHT. 1 |
| PS-953 | 5379-353 | SHT. 1 |
| PS-951 | 5379-353 | SHT. 1 |
| PCV-1073 | 5379-920 | SHT. 3 |
| V12-9 | G-190304 | SHT. 1 |
| V12-13 | G-190304 | SHT. 1 |
| V12-7 | G-190304 | SHT. 1 |

QUESTION 2:

What is the P&ID location of valve V8-5?

CP&L RESPONSE:

2. IA-525 (V8-5) is located at C-7 on HBR2-6933.

RESPONSE TO PUMP QUESTIONS

QUESTION 1:

The NRC staff position concerning instrumentation is that lack of installed instrumentation is not an adequate justification for long-term relief from performing the Section XI required testing. Pump Relief Request 5.2.3 will be affected by this staff position. Why is relief requested from measuring differential pressure on the service water pumps when no discussion of the request has been provided and Attachment 6.1 indicates that differential pressure is measured during testing?

CP&L RESPONSE:

As stated in Relief Request 5.2.3, service water pump performance is assessed quarterly by measuring header pressure with three and then with four pumps operating. The fourth pump contribution to header pressure is then evaluated. Since service water is not a fixed resistance system, the normal differential pressure measurements (discharge - suction pressure) are not repeatable. This would not allow an adequate assessment of pump performance. Therefore, a shutoff test at refueling intervals is performed on these pumps to supplement the quarterly header differential pressure test. Relief from normal Section XI differential pressure measurement is requested.

Also, as stated in Relief Request 5.2.3, the system design and piping arrangement does not allow flow measurements to be made. The installation of flow instrumentation would require a major modification to the existing system due to insufficient lengths of straight pipe on the discharge side of each pump. The testing currently performed is considered adequate to assess service water pump operability.

QUESTION 2:

In reference to Relief Requests 5.2.4 and 5.2.8, the staff position is lack of installed instrumentation is not a suitable long-term justification for not performing the required Section XI testing. In addition, the staff requires that all parameters from Table IWP-3100-1 be measured or observed during pump tests unless specific relief has been requested and granted.

CP&L RESPONSE:

Relief Requests 5.2.4 and 5.2.8 are based on the provisions of 10CFR50.55a that are intended to preclude backfits due to changes brought about by later editions of Section XI. Also, these requests propose additional testing, where practical, to provide more information relating to pump operability. The testing currently performed is in compliance with applicable regulations and is considered adequate to assess pump operability.

QUESTION 3:

What is the significance of the "R" in the differential pressure column for the service water booster pumps, SWBP-A and -B, on Attachment 6.1, page 3?

CP&L RESPONSE:

The "R" in the differential pressure column for the service water booster pumps represents a shutoff head test that is performed on these pumps at refueling intervals.

QUESTION 4:

Is lubricant level or pressure observed during the testing of the boric acid transfer pumps and the diesel fuel oil transfer pumps?

CP&L RESPONSE:

The boric acid transfer pumps are canned pumps that do not have lubricant reservoirs. The pump and motor are cooled internally by pumped liquid.

The diesel fuel oil transfer pumps have no lubricant reservoirs. The only lubricant is supplied by the pumped fluid.

The requirements of Table IWV-3100-1 relating to lubricant level or pressure observation do not apply to the boric acid transfer and diesel fuel oil transfer pumps due to their design.