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Safety Evaluation of the Inservice Testing Program for Pumps and Valves at the Beaver Valley Power Station Unit 1 (Docket No. 50-334) for the Period 1-30-80 through 9-29-81

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This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

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NRC Research and Technical
Assistance Report

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I. Introduction

Contained herein is a safety evaluation of the pump and valve inservice testing (IST) program submitted by the Duquesne Light Company on 5-2-79 for its Beaver Valley Power Station Unit 1 nuclear plant. The program applies to Beaver Valley for the period 1-30-80 through 9-29-81. The working session with Duquesne Light and Beaver Valley Power Station Unit 1 representatives was conducted on 12-13-79 and 12-14-79. The licensee resubmittal was issued on 3-17-80 and was reviewed by EG&G Idaho Inc., to verify compliance of proposed tests of safety related Class 1, 2, and 3 pumps and valves with requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1974 Edition, through the Summer of 1975 Addenda. Duquesne Light Company has also requested relief from the ASME Code from testing specified pumps and valves because of practical reasons. These requests have been evaluated individually to determine whether they have significant risk implications and whether the tests, as required, are indeed impractical.

The evaluation of the pump testing program and associated relief requests is contained in Section II; the evaluation of the valve testing program and associated relief requests is contained in Section III. All evaluations for Sections II and III are the recommendations of EG&G Idaho, Inc.

Category A, B, and C valves that meet the requirements of the ASME Code Section XI and are not exercised every 3 months are contained in Attachment I.

A listing of P&ID's used for this review are contained in Attachment II.

Valves that are never full stroke exercised or that have a testing interval greater than each refueling outage and relief requests with

insufficient technical basis where relief is not recommended are summarized in Attachment III.

II. Pump Testing Program

The IST program submitted by Duquesne Light Company for its Beaver Valley Power Station Unit 1 was examined to verify that Class 1, 2, and 3 safety related pumps were included in the program and that those pumps are subjected to the periodic tests as required by the ASME Code, Section XI. Our review found that Class 1, 2, and 3 safety related pumps were included in the IST program and, except for those pumps identified below for which specific relief from testing has been requested, the pump tests and frequency of testing comply with the code. Each Duquesne Light Company basis for requesting specific relief from testing pumps and the EG&G evaluation of that request is summarized (B through F) below and grouped according to the system in which the pumps reside:

A. Code Requirement

An inservice test shall be conducted on all safety related pumps, nominally once each month during normal plant operation. Each inservice test shall include the measurement, observation, and recording of all quantities in Table IWP-3100-1, except bearing temperature, which shall be measured during at least one inservice test each year.

B. Boric Acid Transfer Pumps (CH-P-2A and CH-P-2B)

1. Relief Request

The licensee has requested specific relief from measuring bearing temperature (T_b) and vibration velocity (V) on the boric acid transfer pumps in accordance with the requirements of Section XI.

Code Requirement

Refer to pump testing paragraph II. A.

Licensee's Basis for Requesting Relief

These pumps are located in a heat traced box. Removal of the box can cause heat trace damage and thus degrade system integrity (cold spots could occur on the heat trace box).

Evaluation

We agree with the licensee's basis and therefore feel that temporary relief should be granted for the boric acid transfer pumps from the testing requirments of Section XI. The licensee has demonstrated that these pumps are inaccessible and T_b and V cannot be measured. Removal of the box could cause heat trace damage that could result in boron precipitation and crystallization that would result in system degradation. We conclude that with the present plant design V and T_b cannot be measured on these pumps. However, will feel the licensee should further investigate some method to determine the mechanical characteristics of the boric acid transfer pumps.

C. Residual Heat Removal Pumps (RH-P-1A and RH-P-1B)

1. Relief Request

The licensee has requested specific relief for the residual heat removal pumps from the testing requirements of Section XI and proposed to measure all required parameters during cold shutdown.

Code Requirement

Refer to pump testing paragraph II. A.

Licensee's Basis for Requesting Relief

The pumps and associated instrumentation are located inside the subatmosphere containment missile barrier where a high radiation area exists. Radiation levels are approximately 200 mR/hr and an operator work time of 30 minutes is required to perform each pump test at power and this would violate ALARA guidelines. The pumps are not required to be run at power or fulfill any safety function to mitigate the consequences of an accident.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for the residual heat removal pumps from the testing requirements of Section XI. The licensee has demonstrated that these pumps are inaccessible and are not required to function during power operation. We conclude that the proposed cold shutdown testing frequency should demonstrate pump operability.

D. Inside Recirculation Spray Pumps (RS-P-1A and RS-P-1B)

1. Relief Request

The licensee has requested specific relief for the inside recirculation spray pumps from the testing requirements of Section XI and proposed to run these pumps dry monthly up to 100 rpm then stop the pumps.

Code Requirement

Refer to pump testing paragraph II. A.

Licensee's Basis for Requesting Relief

For monthly surveillance requirement, the pump is run dry and then stopped when it reaches 100 rpm as indicated by a blue light in the control room. All other monitored parameters are not obtained in any plant mode due to the infeasibility of flooding the containment basement.

Evaluation

We agree with the licensee's basis and therefore feel that temporary relief should be granted for the inside recirculation spray pumps from the testing requirements of Section XI. The licensee has demonstrated that with the present plant design they are performing the only testing possible. Flooding the containment sump for pump testing would result in damage to electrical equipment located inside the containment. However, we conclude that the licensee should further investigate other methods and possible plant modifications that would enable the licensee to determine the hydraulic and mechanical characteristics and any degradation of these pumps.

E. Outside Recirculation Spray Pumps (RS-P-2A and RS-P-2B)

1. Relief Request

The licensee has requested specific relief for the outside recirculation spray pumps from the testing requirements of Section XI and proposed to run these pumps dry monthly for 60 seconds and run them on wet recirculation during refueling outages.

Code Requirement

Refer to pump testing paragraph II. A.

Licensee's Basis for Requesting Relief

These pumps are started and stopped immediately during power operation and cold shutdown. During this test the pumps are run dry and cannot be run more than 60 seconds, thus no parameters are measured. During refueling outages the pumps are isolated from the system, filled, vented, and run approximately 2 minutes (to prevent pump overheating and pump damage) so that speed (N), inlet pressure (P_i), differential pressure (dP), and flowrate (Q) can be measured. These pumps cannot be run long enough to measure vibration velocity (V) and bearing temperature (T_b).

Evaluation

We agree with the licensee's basis and therefore feel that temporary relief should be granted for the outside recirculation spray pumps from the testing requirements of Section XI. The licensee has demonstrated that with the present plant design they are performing the only testing possible. However, we conclude that the licensee should further investigate other methods and possible plant modifications that would enable the licensee to determine the mechanical characteristics and any pump mechanical degradation.

F. Radiation Monitoring Pumps

1. Relief Request

The licensee has requested specific relief for the radiation monitoring pumps that monitor river water 1RM-P-RW100, recirculation sprays heat exchanger 1RM-P-RW100A

through 100D, CCR/RW heat exchanger 1RM-P-RW101, and S/G blowdown 1RM-P-BD100, from the testing requirements of Section XI and proposed to observe radiation monitor system operation to determine each pumps operability.

Code Requirement

Refer to pump testing paragraph II. A.

Licensee's Basis for Requesting Relief

Relief from all monthly testing of all applicable in plant Radiation Monitor Pumps is requested for the following reasons:

a. These pumps are an integral part of a Radiation Monitor.

b. Radiation Monitor Pumps with an emergency power source serve no automatic safety-related function.

c. There are high and low flow alarms associated with the applicable radiation monitors that alarm in the Control Room. There is no other installed instrumentation.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for the radiation monitoring pumps 1RM-P-RW100, 1RM-P-RW100A through D, 1RM-P-RW101, and 1RM-P-BD100 from the testing requirements of Section XI. We conclude that the licensee's proposal of observing proper system operation should demonstrate proper pump operation.

III. Valve Testing Program Evaluation

The IST program submitted by Duquesne Light Company was examined to verify that Class 1, 2, and 3 safety related valves were included in the program and that those valves are subjected to the periodic tests required by the ASME Code, Section XI, and the NRC positions and guidelines. Our review found that Class 1, 2, and 3 safety related valves were included in the IST program and, except for those valves identified below for which specific relief from testing has been requested, the valve tests and frequency of testing comply with the code requirements and the NRC positions and guidelines listed in General Section A. Also, included in the General Section A is the NRC position and valve listings for the leak testing of valves that perform a pressure isolation function and a procedure for the licensee's use to incorporate these valves into the IST program. Each Duquesne Light Company basis for requesting specific relief from testing valves and the EG&G evaluation of that request is summarized (B through K) below and grouped according to each specific system.

A. General Considerations

1. Testing of Valves which Perform a Pressure Isolation Function

Several safety systems connected to the reactor coolant pressure boundary have design pressures below the reactor coolant system operating pressure. Redundant isolation valves within the Class 1 boundary forming the interface between these high and low pressure systems prevent the low pressure systems from pressures which exceed their design limit. In this role, the valves perform a pressure isolation function. The NRC considers the redundant isolation provided by these valves to be important. The NRC considers it necessary to assure that the condition of each

of these valves is adequate to maintain this redundant isolation and system integrity. For these reasons, EG&G believes that some method, such as pressure monitoring, leak testing, radiography or ultrasonic testing, should be used to assure the condition of each valve is satisfactory in maintaining this pressure isolation function.

If leak testing is selected as the appropriate method for achieving this objective, the NRC and EG&G Idaho, Inc., believe that the following valves should be categorized as A or AC and leak tested according to IWV-3420 of Section XI of the applicable edition of the ASME Code. These valves are:

1RH-720A and B
1RH-700 and 701
1SI-48, 51, 49, 52, 50 and 53
1SI-850B, D and F
1SI-15, 16 and 17
1SI-20, 21 and 22
1SI-10, 11 and 12
1SI-23, 24 and 25
1SI-100, 101 and 102
1SI-83 and 84
1CH-170
1CH-170
1RC-556A, B and C

The NRC and EG&G Idaho, Inc., have discussed this matter with the licensee and identified the valves listed above. The licensee agreed to consider testing and categorizing each of these valves with the appropriate designation depending on the testing method selected. Whatever method the licensee selects for determining the condition of each valve, the licensee will provide to the NRC for evaluation the details of the testing method which clearly demonstrates the condition of each valve.

2. ASME Code Section XI Requirements

Subsection IWV-3410(a) of the Section XI Code (which discusses full stroke and partial stroke) requires that Code Category A and B valves be exercised once every 3 months, with the exceptions as defined in IWV-3410(b-1), (e), and (f). IWV-3520(a) requires that Code Category C valves be exercised once every 3 months, with the exceptions as defined in IWV-3520(b). IWV-3700 requires no regu testing for Code Category E valves. Operational checks, with appropriate record entries, shall record the position of these valves before operations are performed and after operations are completed and shall verify that each valve is locked, or sealed. The limiting value of full stroke time for each power operated valve shall be identified by the owner and tested in accordance with IWV-3410(c). In the above exceptions, the code permits the valves to be tested at cold shutdown where:

a. It is not practical to exercise the valves to the position required to fulfill their function or to the partial position during power operation.

b. It is not practical to observe the operation of the valves (with fail-safe actuators) upon loss of actuator power.

3. Stroke Testing of Check Valves

The NRC stated its position to the licensee that check valves whose safety function is to open are expected to be full-stroked. If only limited operation is possible (and it has been demonstrated by the licensee and agreed to by the NRC) the check valve shall be partial stroked. Since disk position is not always observable, the NRC staff stated that

verification of the plant's safety analysis design flow rate through the check valve would be an adequate demonstration of the full-stroke requirement. Any flow rate less than design will be considered part-stroke exercising unless it can be shown that the check valve's disk position at the lower flow rate would be equivalent to or greater than the design flow rate through the valve. The licensee agreed to conduct flow test to satisfy the above position.

4. Stroke Testing of Motor Operated Valves

The licensee has requested relief from the part-stroke requirement of Section XI for all power operated valves. The licensee has stated that none of the Category A or B power operated valves identified can be part-stroked because of the design logic of the operating circuits. These circuits are such that when an open or close signal is received the valve must complete a full stroke before the relay is released to allow the valve to stroke in the other direction. We find that the above relief request from part-stroking is warranted and should be granted because the required function of the valves involves only full open or full closed positions.

5. Test Frequency of Check Valves Tested at Cold Shutdowns

The Code states that, in the case of cold shutdowns, valve testing need not be performed more often than once every three months for Category A and B valves and once every nine months for Category C valves. It is NRC's position that the Code is inconsistent and that Category C valves should be tested on the same schedule as Category A and B valves. The licensee has agreed to modify his procedures on cold shutdowns to read, "In the case of frequent cold shutdowns, valve testing need not be performed more often than once every three (3) months for Category A, B and C valves."

6. Licensee Request for Relief to Test Valves at Cold Shutdown

The Code permits valves to be tested at cold shutdown, and the Code conditions under which this is permitted is noted in Appendix A. These valves are specifically identified by the licensee and are full stroked exercised during cold shutdowns; therefore, the licensee is meeting the requirments of the ASME Code. Since the licensee is meeting the requirements of the ASME Code, it will not be necessary to grant relief; however, during our review of the licensee's IST program, we have verified that it was not practical to exercise these valves during power operation and that we agree with the licensee's basis. It should be noted that the NRC differentiates, for valve testing purposes, between the cold shutdown mode and the refueling mode. That is, for testing purposes the refueling mode is not considered as a cold shutdown.

7. Changes to the Technical Specification

In a November 1976 letter to the licensee, the NRC provided an attachment entitled, "NRC Guidelines for Excluding Exercising (Cycling) Tests of Certain Valves During Plant Operation." The attachment stated that when one train of a redundant system such as the Emergency Core Cooling System (ECCS) is inoperable, nonredundant valves in the remaining train should not be cycled if their failure in a non-safe position would cause a loss of total system function. For example, during power operation in some plants, there are stated minimum requirements for systems which allow certain limiting conditions for operation to exist at any one time and if the system is not restored to meet the requirements within the time period specified in a plant's Technical Specifications (T.S.), the reactor is required to be put in

some other mode. Furthermore, prior to initiating repairs all valves and interlocks in the system that provide a duplicate function are required to be tested to demonstrate operability immediately and periodically thereafter during power operation. For some plants this situation could be contrary to the NRC guideline as stated in the document mentioned above. It should be noted that a reduction in redundancy is not a basis for a T.S. change nor is it by itself a basis for relief from exercising in accordance with Section XI. The licensee has agreed to review the plant's T.S. and to consider the need to propose T.S. changes which would have the effect of precluding such testing. After making this review, if the licensee determines that the T.S. should be changed because the guidelines are applicable, the licensee will submit to the NRC, in conjunction with the proposed T.S. change, the inoperable condition for each system that is affected which demonstrates that the valve's failure would cause a loss of system function or if the licensee determines that the T.S. should not be changed because the guidelines are not applicable or cannot be followed, the licensee will submit the reasons that led to their determination for each potentially affected section of the T.S.

8. Safety Related Valves

This review was limited to safety-related valves. Safety-related valves are defined as those valves that are needed to mitigate the consequences of an accident and/or to shutdown the reactor and to maintain the reactor in a shutdown condition. Valves in this category would typically include certain ASME Code Class 1, 2 and 3 valves and could include some non-code class valves. It should be noted that the licensee may have included non-safety related valves in their Inservice Test Program as a decision on the licensee's part to expand the scope of their program.

9. Valve Testing at Cold Shutdown

Inservice valve testing at cold shutdown is acceptable when the following conditions are met: It is understood that the licensee is to commence testing as soon as the cold shutdown condition is achieved but not later than 48 hours after shutdown and continue until complete or plant is ready to return to power. Completion of all valve testing is not a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during any subsequent cold shutdowns that may occur before refueling to meet the Code specified testing frequency. For planned cold shutdowns, where the licensee will complete all the valves identified in his IST program for testing in the cold shutdown mode, exceptions to the 48 hours may be taken.

10. Category A Valve Leak Check Requirements for Containment Isolation Valves (CIV)

All CIVs shall be classified as Category A valves. The Category A valve leak rate test requirements of IWV-3420(a-e) have been superseded by Appendix J requirements for CIVs. The NRC has concluded that the applicable leak test procedures and requirements for CIVs are determined by 10 CFR 50 Appendix J. Relief from paragraph IWV-34-20 (a-e) for CIVs presents no safety problem since the intent of IWV-3420 (a-e) is met by Appendix J requirements.

The licensee shall comply with Sections f and g of IWV-3420 until relief is requested from these paragraphs. It should be noted that these paragraphs are only applicable where a Type C Appendix J leak test is performed. Based on the considerations discussed above the NRC concludes that the

alternate testing proposed above will give the reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property of the common defense and security of the public.

11. Application of Appendix J Testing to the IST Program

The Appendix J review for this plant is a completely separate review from the IST program review. However, the determinations made by that review are directly applicable to the IST program. Our review has determined that the current IST program as submitted by the licensee correctly reflects our interpretation of Section XI vis-a-vis Appendix J. The licensee has agreed that, should the Appendix J program be amended, they will amend their IST program accordingly.

B. Reactor Coolant System

1. Category A and A/C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves RC-68, N_2 make-up to PRT and RC-72, primary water supply to PRT in accordance with the requirements of Section XI and proposed to verify valve closure (their safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

During normal plant operation RC-68 and RC-72 are closed and only require opening upon nitrogen or water makeup to the Pressurizer Relief Tank. During an accident condition (DBA) the required position of these valves is shut as is the normal operational position thereby reducing the possibility of the valve being open at the time of the accident. In addition, no installed instrumentation exists to detect makeup flow or check valve position. No alternate stroke testing is proposed in addition to the 18 month leak test.

Evaluation

We agree with the licensee's basis, and therefore feel that relief should be granted for Category A/C Valves RC-68 and RC-72 from the exercising requirements of Section XI. The licensee has demonstrated that due to plant design the only method available to verify valve closure (their safety related position) is during leak testing. These valves are not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

b. Relief Request

The licensee has requested specific relief from exercising Category A Valves RC-277 and RC-278, containment isolations for pressure calibration instruments, in accordance with the requirements of Section XI and proposed to leak test these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are closed during normal plant operation and were designed for use in emergency conditions only to open a path to determine RCS pressure, with loss of normal pressure indication, from outside the containment. These are passive valves not required to change position in an accident condition. No alternate stroke testing is proposed in addition to the 18 month leak test.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A, passive Valves RC-277 and RC-278 from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

C. Chemical and Volume Control

1. Category A/C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category A/C Valve 1CH-31, charging header inside containment isolation check, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

This check valve is a normally open valve and valve closure can only be checked by leak test. The safety related position of this valve is closed. There is no instrumentation to monitor upstream pressure during normal operation. Therefore, relief is requested from Quarterly and Cold Shutdown Stroke tests. No alternate seating check is proposed in addition to the refueling leak test.

Evaluation

We agree with the licensee's basis, and therefore feel that relief should be granted for Category A/C Valve 1-CH-31 from the exercising requirements of Section XI. The licensee has demonstrated that due to

plant design the only method available to verify valve closure (its safety related position) is during leak testing. This valve is not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

b. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves 1CH-181, 1CH-182, and 1CH-183 RCP seal injection isolation checks, in accordance with the requirements of Section XI and proposed to verify valve closure (their safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These check valves are normally open during power operation and are required to close to fulfill their safety function. Closure of these valves would stop seal injection and compromise pump operation. In addition, seal injection flow is required anytime the system is pressurized greater than 100 psig. Therefore, relief from quarterly and cold shutdown full stroke exercising is requested. These valves are full stroke exercised during leak rate testing done at refueling per OST 1.47.28.

Evaluation

We agree with the licensee's basis, and therefore feel that relief should be granted for Category A/C Valves 1CH-181, 1CH-182, and 1CH-183, from the exercising requirements of Section XI. The licensee has demonstrated that due to plant design the only method available to verify valve closure (their safety related position) is during leak testing. These valves are not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

c. Relief Request

The licensee has requested specific relief from exercising Category A/C Valve 1CH-170, reactor coolant system fill line isolation check, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

This check valve is normally closed during power operation and is required to remain closed to fulfill its safety function. Relief from quarterly exercising

of this check valve at power is requested because exercising would thermal shock the RCS piping. Also due to a lack of installed instrumentation, relief is requested from cold shut exercising. This valve is full stroke exercised at refueling per OST 1.47.37.

Evaluation

We agree with the licensee's basis, and therefore feel that relief should be granted for Category A/C Valve 1CH-170 from the exercising requirements of Section XI. The licensee has demonstrated that due to plant design the only method available to verify valve closure (its safety related position) is during leak testing. This valve is not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

d. Relief Request

The licensee has requested specific relief from exercising Category A/C Valve 1CH-369, pressure relief check around MOV-CH-378, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

This valve is normally closed at power operation and required to remain closed to fulfill its safety function. Since it is a passive valve with no permanently installed instrumentation, relief from quarterly and cold shutdown full stroke exercising is requested. This valve is full stroke exercised during leak rate testing done at refueling per OST 1.47.18.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A/C passive Valve 1CH-369 from the requirements of Section XI. This valve is in its safety related position and is not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of this valve is inconsequential with regard to the safety function which it performs. We conclude that verifying valve closure during leak testing at refueling should demonstrate proper valve operability.

2. Category B Valves

a. Relief Request

The licensee has requested specific relief from exercising Category B Valves HCV-1CH-105 and HCV-1CH-110, boric acid recirculation hand control valves, in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These are passive Category B valves and are not required to change position to perform their intended safety function. Normal position is shut during power operation.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category B, passive Valves HCV-1CH-105 and HCV-1CH-110 from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

3. Category C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category C Valves 1CH-22, 1CH-23, and 1CH-24, charging pump discharge checks in accordance with the requirements of Section XI and proposed to full stroke exercise these valves during refueling outages and partial stroke exercise these valves during power operation.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

The design function of this check valve is to prevent reverse flow during pump shutdown and to stroke full open for safety analysis flow. Relief from quarterly exercising is requested because no flow paths exist but the design path to facilitate the 500 gpm design flow. Relief is also requested from cold shutdown exercising due to the generation of additional radioactive waste from the boration to verify full flow conditions. A full flow test of these valves is conducted at refueling to verify full stroke exercise open per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category C Valves 1CH-22, 1CH-23, and 1CH-24 from the exercising requirements of Section XI. The licensee has demonstrated that the only available path for full stroke exercising these valves is through the safety injection/BIT into the RCS. During power operation injecting highly borated water would cause power transients that could result in a reactor trip. During cold shutdown, injecting highly borated water could result in a delay of reactor startup due to the extensive boron cleanup requirement to return plant water chemistry to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

D. Residual Heat Removal

1. Category A/E Valves

Relief Request

The licensee has requested specific relief from exercising Category A/E Valves 1RH-14, 1RH-15, and 1RH-16, inside and outside RHR containment isolations, in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are passive normally shut containment isolations that are not required to change their position to fulfill their safety function. In addition, the valves are administratively controlled with respect to the "as left" position. Therefore, relief is requested from quarterly and cold shutdown exercising. A valve full stroke verification is completed at refueling per leak test OST 1.47.20.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A/E passive Valves 1RH-14, 1RH-15, and 1RH-16, from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the

plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

2. Category B Valves

Relief Request

The licensee has requested specific relief from exercising Category B Valves MOV-1RH-700, MOV-1RH-701, MOV-1RH-720A, and MOV-1RH-720B, RHR inlet and outlet isolations, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

Cycling these valves could subject the Residual Heat Removal System to pressure greater than design. These valves are normally closed and de-energized during power operations and required to be closed during an accident condition. Therefore, relief is requested during power operations and cold shutdown.

NOTE: These valves are exercised but not timed each plant cooldown or heatup from cold shutdown per applicable plant startup and shutdown procedures. These valves are exercised and timed in accordance with OST 1.10.4 Residual Heat Removal System refueling valve exercise testing.

Evaluation

We agree with the licencee's basis, and therefore feel relief should be granted for Category B, passive Valves MOV-1RH-700, MOV-1RH-701, and MOV-1RH-726 A and B from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

E. Safety Injection

1. Category A/C and A/E Valves

Relief Request

a. The licensee has requested specific relief from exercising Category A/C Valves 1SI-10, 1SI-11, and 1SI-12, LHSI header checks, and 1SI-13 and 1SI-14, inside containment isolation header checks, in accordance with the requirements of Section XI proposed to full stroke exercise these valves at refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut during power operation but required to open to fulfill their safety function. Due to the lack of installed instrumentation and

relative system pressures, relief from quarterly full or part stroke exercising is requested. In addition, relief is requested from full or partial stroke exercising at cold shutdown due to the generation of additional rad waste by the additional boration required to verify a full flow condition through the LHSI injection flow path. A full flow stroke exercise for these valves will be performed at refueling per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel relief should be granted for Category A/C Valves 1SI-10, 1SI-11, 1SI-12, 1SI-13, and 1SI-14, from the exercising requirements of Section XI. The licensee has demonstrated that these valves cannot be exercised during power operation because the LHSI pumps cannot overcome RCS operating pressure. During cold shutdown exercising these valves would inject highly borated water into the RCS that could result in a delay of reactor startup due to the extensive cleanup required to return RCS water chemistry to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

b. Relief Request

The licensee has requested specific relief from exercising Category A/C Valve 1SI-42, inside containment isolation on accumulator fill line, in accordance with the requirements of Section XI and

proposed to verify valve closure (its safety related position) during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

This valve is shut during power operation and is required to be shut to fulfill its safety function which is containment isolation. It is not required to change position at all except when filling S.I. Accumulators. Relief is requested from quarterly and cold shutdown full or part stroke exercising because testing would be meaningless. In addition, no installed instrumentation exists. This valve will be exercised at refueling during leak rate testing per OST 1.47.19.

Evaluation

We agree with the licensee's basis and therefore feel relief should be granted for Category A/C Valve 1SI-42 from the exercising requirements of Section XI. The licensee has demonstrated that due to plant design the only method available to verify valve closure (its safety related position) is during leak testing. This valve is not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

c. Relief Requ

The licensee has requested specific relief from exercising Category A/C Valves 1SI-48, 1SI-49, and 1SI-50, accumulator discharge checks, in accordance with the requirements of Section XI and proposed to partial stroke exercise these valves during cold shutdown and leak test these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

This valve at power operation is shut but required to be open for a low pressure accident requiring passive injection for core cooling to fulfill its safety function. Relief from full stroke exercising at any mode of operation and part stroke exercising at power is requested due to high differential pressure, lack of installed instrumentation and an uncontrolled test volume change required to simulate safety analysis flow. These valves will be part stroked at extended cold shutdowns per OST 1.11.15 and leak tested per OST 1.11.4.

Evaluation

We agree with the licensee's basis and therefore feel that temporary relief should be granted for Category A/C Valves 1SI-48, 1SI-49, and 1SI-50 from the exercising requirements of Section XI during power operation and cold shutdown. The licensee has

demonstrated that during power operation these valves cannot be exercised because accumulator pressure cannot overcome RCS operating pressure. During cold shutdown, exercising these valves with accumulator flow could result in a low temperature over-pressurization of the RCS. We also agree that full stroke exercising these valves with accumulator flow during refueling outages with the vessel head removed to provide an adequate expansion volume could result in internal core damage because of the excessive flow rates. We conclude that with the present piping configurations, only partial stroke exercising of these valves is possible. However, we recommend that the utility further investigate a method to full stroke exercise these valves (i.e. manual exercising during refueling outages).

d. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves 1SI-51, 1SI-52, and 1SI-53, reverse flow preventers from the RCS to the accumulators, in accordance with the requirements of Section XI and proposed to partial stroke exercise these valves during cold shutdown and leak test during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves at power operation are shut but required to be open for a low pressure passive injection for core cooling to fulfill its safety function. Relief

from full stroke exercising at any mode of operation and partial stroke exercising at power is requested due to differential pressure considerations, lack of installed instrumentation required to simulate safety analysis flow and uncontrollable test volume changes. These valves are part stroke exercised with operation of the RHR at cold shutdowns. These valves are also leak checked at a refueling frequency per OST 1.11.4.

Evaluation

We agree with the licensee's basis and therefore feel temporary relief should be granted for Category A/C Valves 1SI-51, 1SI-52, and 1SI-53 from the exercising requirements of Section XI. The licensee has demonstrated that the valves cannot be exercised during power operation because accumulator pressure or LHSI flow cannot overcome RCS operating pressure. During cold shutdown these valves are partial stroke exercised with RHR flow. These valves cannot be full stroke exercised during cold shutdown because accumulator flow could result in a low temperature overpressurization of the RCS. We also agree that full stroke exercising these valves with accumulator flow during refueling outages with the vessel head removed to provide an adequate expansion volume could result in internal core damage because of the excessive flow rates. We conclude that with the present piping configurations, only partial stroke exercising of these valves is possible. However, we recommend that the utility further investigate a method to full stroke exercise these valves (i.e. manual exercising during refueling outages).

e. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves 1SI-83 and 1SI-84, HHSI recirculation to hot leg inside containment isolation checks, in accordance with the requirements of Section XI and proposed to full stroke exercise and leak test at refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut during power operation but are required to open to fulfill their safety function. Due to the lack of installed instrumentation and relative system pressures, relief from quarterly full or part stroke exercising is requested. In addition, relief from cold shutdown full or partial stroke exercising is requested due to the increased RCS boration required that would necessitate processing a large volume of RCS water. Waste processing could result in increased down time and more generation of rad waste. A full flow stroke exercise for these valves will be performed at refueling per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category A/C 1SI-83 and 1SI-84 from the exercising requirements of Section XI. The licensee has demonstrated that these

valves cannot be full stroke exercised during power operation becuse the HHSI pumps cannot overcome RCS operating pressure. Partial stroke exercising would result in thermal shocking of the injection nozzles. Exercising these valves during cold shutdown with highly borated water could delay reactor startup due to the extensive cleanup required to return the RCS water to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

f. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves 1SI-94 and 1SI-95, inside containment isolation checks for the BIT and fill header, in accordance with the requirements of Section XI and proposed to full stroke exercise and leak test these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut during power operation but are required to open to fulfill their safety function. Due to the lack of installed instrumentation and relative system pressures, relief from quarterly full or part stroke exercising is requested. In addition, relief from cold shutdown full or partial stroke exercising is requested due to the increased RCS boration required that would necessitate processing a large volume of RCS water. Waste processing could result in increased down time and more generation of rad waste. A full flow stroke exercise for these valves will be performed at refueling per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category A/C 1SI 94 and 1SI-95 from the exercising requirements of Section XI. The licensee has demonstrated valves cannot be full stroke exercised during power operation because the HHSI pumps cannot overcome RCS operating pressure. Partial stroke these valves exercising would result in reactivity excursions from BIT injection nozzles that could result in a reactor trip. Exercising these valves during cold shutdown with highly borated water could delay reactor startup due to the extensive cleanup required to return the RCS water to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

g. Relief Request

The licensee has requested specific relief from exercising Category A/E Valve 1SI-41, accumulator fill line isolation in accordance with the requirements of Section XI and proposed to leak test this valve at refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

Relief from quarterly and cold shutdown full or part stroke exercising is requested because this is a manual passive valve and its normal position is closed. Also its safety related position is closed and testing would be meaningless.

This valve will be leak rate tested at refueling per OST 1.47.19.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A/E, passive Valve 1SI-41 from the requirements of Section XI. This valve is in its safety related position and is not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of this valve is inconsequential with regard to the safety function which it performs. We conclude that the quarterly stroke and stroke time measurements are meaningless for a passive valve.

2. Category C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category C Valves 1SI-1 and 1SI-2, LHSI pump suction checks from the containment sump in accordance with the requirements of Section XI and proposed to physically inspect and manually exercise the check valve discs during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These check valves, at power operation, are in their intended design position and remain closed. Any type of stroke testing would violate containment integrity. To fulfill its safety function for long term core cooling the valve must open. Due to the lack of test instrument tap offs and the feasibility of simulating actual safety injection long term cooling water flow from the containment sump because of physical limitations, relief from quarterly and cold shutdown exercising is requested.

A maintenance inspection to physically inspect these check valves will be performed at refueling to verify proper stroke.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category C Valves 1SI-1 and 1SI-2 from the exercising requirements of Section XI. The licensee has demonstrated that due to present piping configuration and test taps that these valves cannot be exercised during power operation or cold shutdown. In addition, flooding the containment sump to provide adequate LHSI pump suction would result in damage to electrical equipment inside the containment. We conclude that valve disassembly and manually full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

b. Relief Request

The licensee has requested specific relief from exercising Category C Valve 1SI-5, LHSI pumps suction from the RWST, 1SI-6 and 1SI-7, LHSI pump discharge checks, and 1SI-27, LHSI to charging pump suction in accordance with the requirements of Section XI and proposed to partial stroke these valves quarterly and full stroke exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut but to fulfill their safety function they must open permitting flow from the RWST to the LHSI pump suctions. Quarterly the valve is part stroked through surveillance checks but full stroke verification requires safety analysis flow. Therefore, relief from quarterly full stroke exercising is requested due to the lack of test flow capability to simulate safety analysis flow and actual LHSI injection flow path inaccessability due to pressure differentials. In addition, relief from cold shutdown full stroke exercising in requested due to the generation of additional radioactive waste by the additional boration required to verify a full flow condition through the LSHI injection flow path. A full flow stroke exercise for these valves will be performed at refueling per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category C Valves 1SI-5, 1SI-6, 1SI-7 and 1SI-27 from the exercising requirements of Section XI. The licensee has demonstrated that the only full flow test path is into the RCS and that the LHSI pumps cannot overcome RCS operating pressure. Partial stroke exercising during power operation is accomplished during the LHSI pump testing on a recirculation flow path. During cold shutdown exercising these valves would inject highly borated water into the RCS which could result in a delay of reactor startup due to the extensive cleanup requirements to return the RCS water to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

c. Relief Request

The licensee has requested specific relief from exercising Category C Valves 1SI-15, 1SI-16, 1SI-17, 1SI-20, 1SI-21, 1SI-22, 1SI-23, 1SI-24, 1SI-25, 1SI-100, 1SI-101, and 1SI-102 safety injection to RCS header checks, in accordance with the requirements of Section XI and proposed to full stroke exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut during power operation but are required to open to fulfill their safety function. Due to the lack of installed instrumentation and relative system pressures, relief from quarterly full or part stroke exercising is requested. In addition, relief from cold shutdown full or partial stroke exercising is requested due to the increased RCS boration required that would necessitate processing a large volume of RCS water. Waste processing could result in increased downtime and more generation of rad waste. A full flow stroke exercise for these valves will be performed at refueling per OST 1.11.14.

Evaluation

We agree with the licensee's basis and therefore feel that relief should be granted for Category C Valves 1SI-15, 1SI-16, 1SI-17, 1SI-21, 1SI-22, 1SI-23, 1SI-24, 1SI-25, 1SI-100, 1SI-101, and 1SI-102, from the exercising requirements of Section XI. The licensee has demonstrated that these valves cannot be exercised during power operation because the safety injection pumps cannot overcome RCS operating pressure. Exercising these valves during cold shutdown would inject highly borated water into the RCS and could result in a delay of reactor startup due to the extensive cleanup required to return the RCS water to startup specifications. We conclude that full stroke exercising these valves during refueling outages should demonstrate proper valve operability.

F. Containment Vacuum and Leakage

1. Category A and A/E Valves

a. Relief Request

The licensee has requested specific relief from exercising Category A/E Valves HCV-1CV151 and HCV-1CV151-1 inside and outside containment isolations for vacuum air ejectors, in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are shut at power and are passive manual valves not required to change position to fulfill their safety function.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A Valves HCV-1CV151 and HCV-1CV151-1 from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

b. Relief Request

The licensee has requested specific relief from exercising Category A/E Valves 1CV-35 and 1CV-36, inside and outside containment isolations for the sealed pressure system in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are manual passive valves shut at power and are required to be shut to fulfill their safety function. Relief, therefore, is requested from full or partial stroke exercising at power or cold shutdowns.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A Valves 1CV-35 and 1CV-36 from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

G. Component Cooling

1. Category A/E Valves

a. Relief Request

The licensee has requested specific relief from exercising Category A/E Valves 1CC-247, 1CC-248, 1CC-251 and 1CC-252, component cooling water to and from RHR heat exchangers, in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These passive valves are not required to change position to fulfill their safety function. These valves are exercised during cold shutdowns.

Evaluation

We agree with the licensee's basis and therefore feel relief should be granted for Category A Valves 1CC-247, 1CC-248, 1CC-251 and 1CC-252, from the requirements of Section XI. These valves are in their safety related position and are not required to open or close to mitigate the consequences of an accidnet or safely shut down the plant. Therefore, the operability of

these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

H. Fuel Pool Cooling and Purification

1. Category A/E Valves

Relief Request

The licensee has requested specific relief from exercising Category A/E Valves 1PC-9, 1PC-10, 1PC-37, and 1PC-38, fuel pooling cooling and purification containment isolations, in accordance with the requirements of Section XI.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

Relief is requested from power and cold shutdown full or part stroke testing because these are normally shut, manual passive containment isolation valves and their safety position is shut. These valves will be leak tested during refueling outages.

Evaluation

We agree with the licensee's basis, and therefore feel relief should be granted for Category A/E Valves 1PC-9, 1PC-10, 1PC-32 and 1PC-38 from the requirements of Section XI. These valves are in their safety related

position and are not required to open or close to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regard to the safety function which they perform. We conclude that the quarterly stroke and stroke time measurements are meaningless for passive valves.

I. Main Steam

1. Category C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category C Valves 1MS-80, 1MS-81, and 1MS-82, Loop A, B, and C residual heat release reverse flow checks, in accordance with the requirements of Section XI and proposed to manually disassemble and exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

Relief is requested from at power and cold shutdown full stroke testing because there is no installed instrumentation to check for reverse flow and the headers are normally cross connected and pressurized. No way exists to isolate and systematically check operation of these valves. A maintenance inspection to disassemble and check full stroke exercising will be performed at refueling outages.

Evaluation

We agree with the licensee's basis and therefore feel relief should be granted for Category C Valves 1MS-80, 1MS-81, and 1MS-82 from the exercising requirements of Section XI. These valves are not equipped with position indicators and no other instrumentation is installed that could indicate valve position. The licensee has demonstrated that due to plant design the only method available to verify valve position and exercising is visually and manually. We conclude that valve disassembly with a visual inspection and a manual full stroke exercise during refueling outages should verify valve operability.

J. River Water

1. Category C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category C Valves 1RW-197, and 1RW-198, river water reverse flow checks, in accordance with the requirements of Section XI and proposed to partial stroke exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These valves are normally shut at power operation but are required to open to fulfill their safety function.

Relief from quarterly and cold shutdown full stroke exercising is requested due to rendering the entire river water system inoperable to facilitate maintenance to remove the checks for visual inspection. There is no existing instrumentation to verify check valve position. These valves are partial stroked at refueling outages through flow checks on the recirculation spray heat exchangers.

Evaluation

We agree with the licensee's basis and therefore feel temporary relief should be granted for Category C Valves 1RW-197, and 1RW-198 from the exercising requirements of Section XI. The licensee has demonstrated that due to present plant design these redundant parallel valves cannot be individually exercised. In addition, no instrumentation is installed that could assure each valve is full stroke exercised. Therefore, only partial stroke exercising is possible. The river water system is required for reactor power operation, cold shutdown and refueling outages. Thus, these valves cannot be removed from the system and manually exercised. We conclude that due to present plant design the only available test is partial stroke exercising through the recirculation spray heat exchangers. However, we feel the licensee should further investigate a method to full stroke exercise each valve.

K. Post H_2 DBA Control

1. Category A/C Valves

a. Relief Request

The licensee has requested specific relief from exercising Category A/C Valves 1HY-119 and 1HY-120, recombiner containment isolation checks, in accordance with the requirements of Section XI and proposed to full stroke exercise these valves during refueling outages.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

These check valves are shut at power and are required to remain shut at the onset of the postulated accident to fulfill their safety function. Relief from quarterly and cold shutdown full or part stroke exercising is requested due to inaccessibility of the valves inside containment and the need for extensive rigging to get near the valve. These valves are full stroke exercised during refueling outages.

Evaluation

We agree with the licensee's basis and therefore feel relief should be granted for Category A/C Valves 1HY-119 and 1HY-120 from the exercising requirements of Section XI. The licensee has demonstrated that due to plant design the only method

available to verify valve closure (their safety related position) is during leak testing. These valves are not equipped with valve position indicators and some of the required test connections are located inside the containment. We conclude that the proposed alternate testing frequency of verifying valve closure during the performance of leak rate testing at refueling outages should demonstrate proper valve operability.

2. Category B Valves

a. Relief Request

The licensee has requested specific relief from exercising Category B Valves MOV-1HY201A and MOV-1HY201B, H_2 recombiner flow regulating valves, in accordance with the requirements of Section XI and proposed to exercise these valves every 6 months.

Code Requirement

Refer to valve testing paragraph A. 2.

Licensee's Basis for Requesting Relief

Relief is requested from quarterly full or part stroke testing of these valves because they are an integral part of the Hydrogen Recombiner. It is presently tested every six months during normal operation. These valves cannot be physically observed, but operation is checked by virtue of the valve maintaining a specific flow. These valves will be exercised every six months.

Evaluation

We do not agree with the licensee's basis and therefore feel relief should not be granted for Category B Valves MOV-1HY201A and MOV-1HY201B from the exercising requirements of Section XI. The licensee has not provided a specific technical basis for not exercising these valves quarterly. We conclude that these valves should be exercised quarterly and that the proposed test method should demonstrate proper valve operability.

V. Attachment I

The following are Category A, B, and C valves that meet the requirements of the ASME Code Section XI and are not full stroke exercised every three months during plant operation. These valves are specifically identified by the owner and are full stroke exercised during cold shutdowns and refueling outages. EG&G has reviewed all valves in this attachment and agrees with the licensee that testing these valves during power operation is not possible due to the valve type and location, system design, or because this action would place the plant in an unsafe condition. We feel these valves should not be exercised during power operation. These valves are listed below and grouped according to the system in which they are located.

A. Chemical and Volume Control

1. Category A Valve MOV-CH-142, residual heat removal letdown to chemical and volume control isolation, cannot be exercised during power operation. During power operation this valve is shut and is not required to change position to fulfill its safety function. It is a passive valve and opening it during normal operation of the plant would divert normal letdown back into the RHR system and cause an overpressure condition to exist. Therefore, relief from normal three month exercising is being requested. This valve will be stroke exercised and timed at each cold shutdown per OST 1.1.10.

2. Category A Valve FCV-1CH-160, reactor coolant system fill header isolation, need not be exercised during power operation. This valve is a normally closed passive containment isolation valve and is not required to change position to fulfill its safety function. During cold shutdown this valve will be stroked and timed per OST 1.1.10.

3. Category A Valves MOV-1CH-308A, B, and C, and MOV-1CH-378 and MOV-1CH-381 RCP seal water isolations, cannot be exercised during power operation. These valves are open during power operation but are required to be shut to perform their safety function. Closing these valves during power operation would secure seal injection water to the reactor coolant pump seals resulting in seal damage. Therefore, relief from quarterly stroke exercising and timing is requested. These valves will be stroke exercised and timed at each cold shutdown and refueling, when the Reactor Coolant Pumps are secured, per OST 1.1.10.

4. Category B Valves MOV-1CH-115C and E, volume control tank isolations cannot be exercised during power operation. These valves are normally open during power operation and shutting them would isolate the Volume Control Tank from the Charging Pumps. This would result in a loss of normal Reactor Coolant System makeup and Reactor Coolant Pump seal injection water causing possible pump damage and system degradation. These valves will be exercised and timed per OST 1.1.10 during cold shutdowns.

5. Category B Valve MOV-1CH-311, pressurizer alternate spray valve, cannot be exercised during power operation. At power operation this valve is shut and is required to be shut to perform its safety function. Opening this valve at power operation would thermally shock the spray nozzles, exceed the 320F ΔT, and cause an uncontrolled pressure transient. Therefore, relief from quarterly stroke exercising and timing is requested. This valve will be full stroke exercised and timed at each cold shutdown and refueling per OST 1.1.10.

6. Category C Valve 1CH-141, emergency boration line non-return check, cannot be exercised during power operation. During power operation this valve is shut and the only means to verify valve operation, due to the lack of installed instrumentation, would be to initiate flow through the emergency boration path. This would cause an undesired power transient that could result in a reactor trip. Therefore, relief from quarterly full stroke testing is requested. This valve will be full stroke tested at each cold shutdown per OST 1.1.10.

B. Safety Injection

1. Category A Valve 1SI-91, BIT manual bypass, cannot be exercised during power operation. This is a manual passive valve not required to change position to fulfill its safety function. This valve is shut at power operation and opening fully or partially would thermal shock the cold leg safety injection line nozzles. Therefore, relief is requested from full as well as partial stroke exercising at power. This valve will be full stroke exercised at cold shutdown and leak tested at refueling per OST 1.1.10 and OST 1.47.70.

2. Category A Valves MOV-1SI-860A and MOV-1SI-860B, LHSI containment suctions, cannot be exercised during power operation. These valves are containment isolation valves open to containment atmosphere. Failure of these valves in the open position during power operations testing would compromise containment integrity. Therefore, relief is requested from testing during power operation. These valves will be stroked and timed during cold shutdown and leak tested during refueling.

3. Category A Valves MOV-1SI-867C and MOV-1SI-867D, BIT outlet containment isolations cannot be exercised during power operation. These valves are shut at power but required to

open to fulfill their safety function. Opening these valves at power would require isolating the recirculation system to prevent possible overpressurization of lower pressure piping due to the lack of instrumentation. With isolation of the recirculation system the possibility of failure to reopen the isolation valves could render the BIT inoperable. Therefore, relief from full or part stroke exercising at power is requested. These valves will be full stroke exercised at cold shutdowns and leak tested at refueling.

4. Category A Valve MOV-1SI-869B, charging header BIT by-pass, cannot be exercised during power operation. This valve is shut at power and is not required to change position to fulfill its safety function at the onset of the accident. Only during the simultaneous cold and hot leg recirculation phase is the valve opened. In addition, thermal stressing of the hot leg injection nozzles would occur. Therefore, relief from full or part stroke exercising of this valve at power is requested. This valve will be full stroked at cold shutdowns per OST 0.1.10 and leak tested at refueling per OST 1.47.9.

5. Category A Valves MOV-1SI-890A and MOV-1SI-890B, LHSI to RCS hot legs, cannot be exercised during power operation. These valves are shut at power and remain shut to fulfill their safety function. Relief from full or partial stroke exercising at power is requested due to the possibility of overpressurizing the LHSI system caused by failure of the upstream check valve and lack of positive pressure indication. These valves will be full stroke exercised at cold shutdown per OST 1.1.10 and leak tested at refueling per OST 1.47.52.

6. Category A Valve MOV-1SI-890C, LHSI to RCS cold legs, cannot be exercised during power operation. This valve is open during plant operation and is required to be open to fulfill its safety function at the onset of the accident. Relief from full or partial stroke exercising of this valve at power is requested because failure of this valve to reopen would render LHSI cold leg injection from both trains inoperable. This valve will be full stroked at cold shutdown per OST 1.1.10 and refueling leak tested per OST 1.47.53.

7. Category B Valves MOV-1SI-867A and MOV-1SI-867B, BIT inlet isolations, cannot be exercised during power operation. These valves are shut at power operation but are required to open to fulfill their safety function. Opening partially or fully at power would dilute the concentration and lower the operating temperature of the (BIT) rendering it inoperable per technical specification requirements. Therefore, relief is requested from full or partial stroke exercising at power. These valves will be full stroke exercised at extended cold shutdowns and refuelings.

8. Category B Valves TV-1SI-884A, TV-1SI-884B, and TV-1SI-884C, BIT recirculation isolations, cannot be exercised during power operation. These valves are normally open during power operation for boric acid recirculation. Their safety position is shut and closing this valve with subsequent failure to reopen could degrade the Boron Injection System due to acid solidification. Relief from exercising is requested for the above reason during power operation. These valves will be exercised and timed during cold shutdown per OST 1.1.10.

C. Containment Depressurization

1. Category A/C Valves 1QS-3 and 1QS-4, inside containment isolation checks for quench spray headers, cannot be exercised during power operation. These valves are shut at power and open with initiation of quench spray flow at onset of the accident, and shut after containment depressurization is achieved. Relief from full or part stroke exercising this valve at power is requested because of physical limitations, (scaffolding needs to be built to reach these valves) that are located inside the containment. These valves will be exercised during cold shutdowns.

2. Category A/C Valves 1RS-100 and 1RS-101, inside containment isolation checks for outside recirculation spray lines, cannot be exercised during power operation. These valves are normally shut at power but are required to open to fulfill their safety function. Due to inaccessibility without ladders or scaffolding, being located inside the sub-atmospheric containment, and being dry pipe, relief from part or full stroke exercising quarterly is requested. These valves will be manually full stroke exercised during cold shutdowns.

D. Component Cooling

1. Category B Valve TV-NS101, neutron shield tank makeup water isolation, cannot be exercised during power operation. This valve is shut at power and is required to remain shut to fulfill its safety function. Relief from quarterly full or partial exercising is requested due to the possibility of the valve sticking open and overflowing the neutron shield expansion tank. This valve will be exercised during cold shutdowns.

2. Category A Valves TV-1CC103A, TV-1CC103A1, TV-1CC103B, TV-1CC103B1, TV-1CC103C, TV-1CC103C1, TV-1CC105A, TV-1CC105B, TV-1CC105C, TV-1CC105D1, TV-1CC105D2, TV-1CC105E1, TV-1CC105E2, TV-1CC107D1, TV-1CC107D2, TV-1CC107E1, and TV-1CC107E2, component cooling supply and return to RCP's containment isolations cannot be exercised during power operation. Stroking these valves with the Reactor Coolant Pump running could cause severe damage to pump bearings, stator and thermal barrier if this valve would fail to reopen. Relief is requested from full or partial stroking during power operation and cold shutdown when the respective pumps are running. These valves will be exercised during cold shutdowns when RCP's are secured.

3. Category B Valves TV-1CC107A, TV-1CC107B, and TV-1CC107C, component cooling to RCP's trip valves, cannot be exercised during power operation. Stroking these valves with the Reactor Coolant Pump running could cause severe damage to pump bearings, stator and thermal barrier if this valve would fail to reopen. Relief is requested from full or partial stroking during power operation and cold shutdown when the pump is running. These valves will be full stroke exercised during cold shutdowns when the respective RCP is secured.

4. Category A Valve TV-1CC110F1, cooling water discharge from containment air recirculation coolers, cannot be exercised during power operation. Relief is requested from at power testing because if this valve failed to close while being tested, this would incapacitate the containment cooling system that is normally cooled by chilled water. This valve will be tested at cold shutdown. This valve will be full stroke exercised during cold shutdowns.

5. Category A Valves TV-1CC111A1, TV-1CC111A2, TV-1CC111D1, and TV-1CC111D2, inside and outside containment isolations for the CRDM coolers, cannot be exercised during power operation. These valves are normally open at power operation and are required to close to fulfill their safety function upon a CIB signal. Relief from at power part or full stroke testing is requested because shutting any of these valves and isolating cooling water, while the reactor control or shutdown rods are energized, or the plant is above 250 degrees Fahrenheit, would result in component damage. These valves will be exercised during cold shutdowns.

E. Main Steam

1. Category C Valves 1MS-18, 1MS-19, and 1MS-20, steam driven auxiliary feed pump reverse flow checks, cannot be exercised during power operation. Relief is requested from quarterly, full stroke and backseat verification because of the (potentially hazardous) environment encountered in the main steam valve room. These valves are exercised during the monthly OST because it is one of three steam supplies to a steam header. These valves are normally closed, but may be required to either open or shut to fulfill their intended purpose. These valves are full stroke exercised during return to power from cold shutdown.

2. Category B/C Valves NRV-1MS-101A, NRV-1MS-101B, and NRV-1MS-101C, main steam non-return checks, cannot be exercised during power operation. Relief is requested for stroke testing during power operation because it is not

possible to stroke these valves due to both physical restraints (steam flow) and reactor protection (steam break) restraints. These valves will be verified closed during cold shutdown valve exercising.

3. Category B Valves PCV-1MS-101A, PCV-1MS-101B, and PCV-1MS-101C, main steam line atmospheric dump valves, cannot be exercised during power operation. Relief is requested from full or part stroke testing during power operation because these manual isolation valves are located in a potentially hazardous area. The manual valve could possibly be damaged when being reopened against a 1,000 psi Wp. These valves will be full stroked and timed at cold shutdown.

4. Category B/C Valves TV-1MS-101A, TV-1MS-101B, and TV-1MS-101C, main steam line isolations, cannot be exercised during power operation. Relief is requested for full stroke testing during power operation because it would cause a possible safety injection and reactor trip. These valves will be part stroked quarterly during power operation and full stroked and timed during hot standby.

F. Feedwater

1. Category C Valves 1FW-33, 1FW-34, and 1FW-35, auxiliary feed pump discharge checks, cannot be exercised during power operation. Relief is requested from stroking at power due to thermal shock of auxiliary feed and main feed interface. Feeding steam generators with cold water would result in large level transients. These valves will be exercised during cold shutdowns.

2. Category C Valves 1FW-42, 1FW-43, and 1FW-44, auxiliary feedwater to main feedwater checks, cannot be exercised during power operation. Relief is requested from stroking at power due to thermal shocking of auxiliary feed and main feed interface. Feeding steam generators with cold water would result in large level transients. These valves are full stroke exercised during cold shutdowns.

3. Category C Valves 1FW-387, 1FW-388, 1FW-389, 1FW-390, 1FW-391, and 1FW-392, auxiliary feedwater redundant header checks, cannot be exercised during power operation. Relief is requested from full or part stroke testing at power because of the thermal shock of auxiliary feed and main feed interface. Feeding steam generators with cold water would result in large level transients. These valves will be full stroke exercised during cold shutdowns.

4. Category B/C Valves MOV-1FW-156A, MOV-1FW-156B, and MOV-1FW-156C, loop feedwater containment isolation checks, cannot be exercised during power operation. Relief is requested from full and part stroke testing at power because shutting these valves during power operation could cause a loss of feedwater resulting in a loss of heat sink and a reactor trip. The motor operator associated with this valve is for closure with a very small or no differential pressure across the valve; it is not for use at power. These valves will be exercised during cold shutdown.

5. Category B Valves FCV-1FW-478, FCV-1FW-479, FCV-1FW-488, FCV-1FW-489, FCV-1FW-497, and FCV-1FW-499, main feedwater flow control and bypass valves, cannot be exercised during power operation. Relief is requested from full or part stroke testing at power because shutting these valves at power could cause a loss of feedwater resulting in a loss of heat sink and a reactor trip. These valves are backup containment isolation valves. These valves will be full stroke exercised during cold shutdown.

G. Compressed Air

1. Category A Valve 1IA-90 and Category A/C Valve 1IA-91, instrument air containment isolations, need not be exercised during power operation. Relief from quarterly full or partial stroke exercising is requested because these valves are passive valves not required to change position to fulfill their safety function. These valves are full stroke exercised during cold shutdown.

2. Category A/C Valve 1SA-15, and Category A/E Valve 1SA-14, station air containment isolations need not be exercised during power operation. These valves are shut at power and are required to remain shut to fulfill their safety function. Therefore, they are classified as passive valves and relief from quarterly full or partial stroke exercising is requested. These valves are full stroke exercised during cold shutdowns.

H. Control Air Ventilation

1. Category A Valves 1VS-D5-3A, 1VS-D5-3B, 1VS-D5-5A, and 1VS-D5-5B, containment isolations for refueling purge lines, need not be exercised during power operation. These dampers are shut at power operation and are required to remain shut to fulfill their safety function. Relief from quarterly full or part stroke exercising is requested for these passive valves not required to change position to fulfill their safety function. These valves will be exercised during cold shutdowns.

2. Category A/E Valve 1VS-D-5-6, containment vacuum break line isolation, need not be exercised during power operation. This damper is shut at power operation and required to

remain shut to fulfill its safety function. Relief from quarterly full or part stroke exercising is requested because of it being a passive valve not required to change position to fulfill its safety function. This valve will be exercised during cold shutdown.

3. Category B Valves TV-1VS101A, TV-1VS101B, TV-1VS101C, TV-1VS101D, and TV-1VS101E, control room emergency air bottle outlet isolations cannot be exercised during power operation. These valves are shut at power operation and are required to open to fulfill their safety function. Relief from quarterly full or partial stroke exercising is requested due to the fact that present testing capabilities would possibly violate technical specification bottle pressure requirements. These valves will be full stroke exercised during cold shutdown.

I. Post H_2DBA Control

1. Category A/E Valves 1HY101, 1HY102, 1HY103, 1HY104, 1HY110, and 1HY111, H_2 recombiner containment isolations, need not be exercised during power operation. These valves are shut at power and are required to remain shut at the onset of the postulated accident to fulfill their safety function. Relief from quarterly full or part stroke exercising is requested to prevent violating containment integrity. These valves will be full stroke exercised during cold shutdown.

VI. Attachment II

The drawings listed below were used during the course of this review.

System	Drawing No.
Reactor Coolant	155A-6 & 155B-6
Chemical and Volume Control	159A-6 & 159B-7
Vent and Drain	169A-6, 169B-5, & 169C-6
Residual Heat Removal	156A-6
Safety Injection	167A-4 & 167P-4
Containment Vac. and Leakage Monitoring	168A-5
Containment Depressurization	165A-6
Sample	179A-6, 179B-6, & 179C-5
Component Cooling	157A-6, 157B-5, 157C-5 & 157D-6
Fuel Pool Cooling	162A-4
Main Steam	120A-5
Feedwater	124A-6
Steam Generator Blowdown	180A-4
Auxiliary Steam	122A-4
Chilled Water	129B-1
River Water	127A-7
Intake Structure	127B-6
Emergency Diesel	151A-4
Post DBA Hydrogen	150B-6

VII. Attachment III

A. The following valves are never full stroke exercised or have a testing frequency greater than each refueling outage.

1. Valve Testing Program

a. E.1.c
b. E.1.d
c. J.1.a

B. The following relief requests have insufficient technical basis, and relief is not recommended.

1. Valve Testing Program

a. K.2.b