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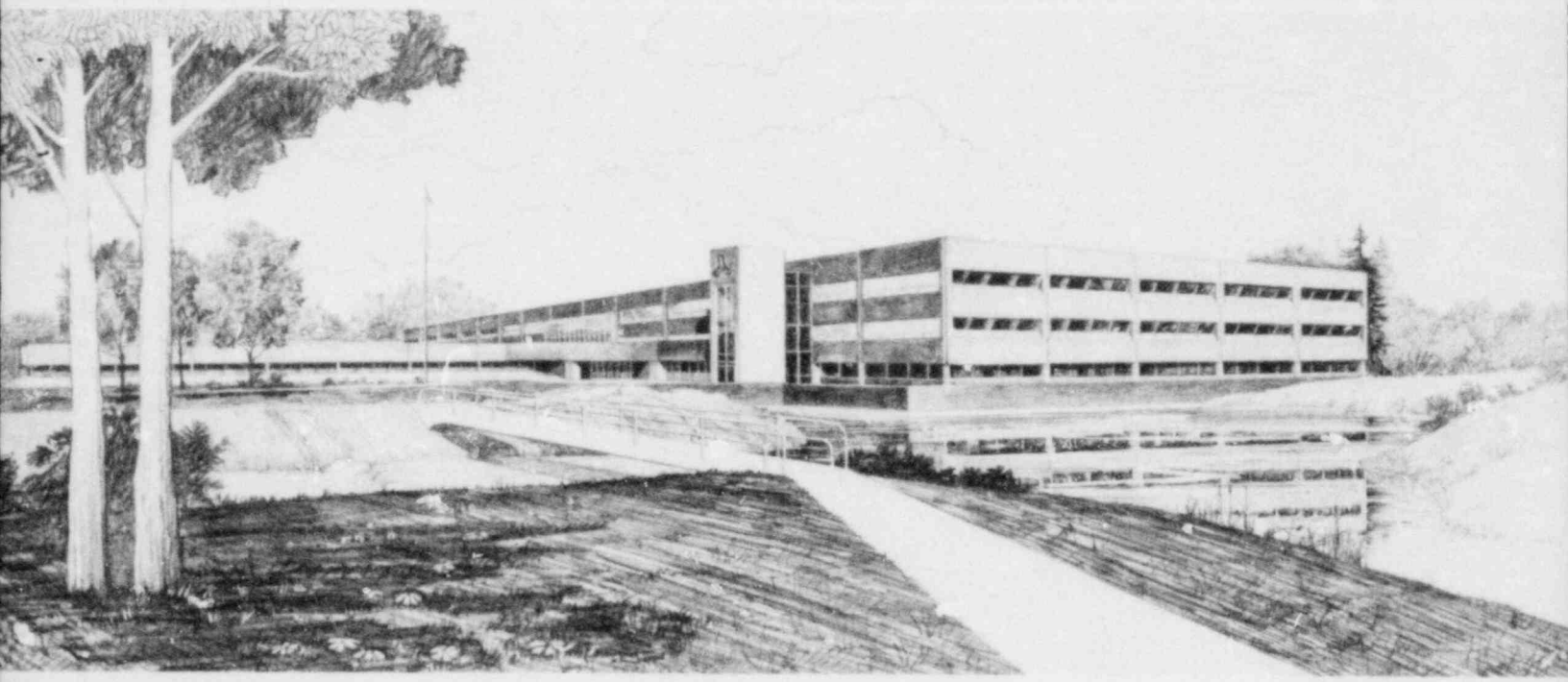
SAFETY EVALUATION REPORT, INSERVICE TESTING PROGRAM, NORTH ANNA NUCLEAR POWER STATION UNIT 2, DOCKET NO. 50-339

T. L. Cook
J. F. Hanek

U.S. Department of Energy
Idaho Operations Office • Idaho National Engineering Laboratory



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EG&G Idaho, Inc.

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INTERIM REPORT

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Review of Pump and Valve Inservice Testing Programs for Operating Plants

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Safety Evaluation of the Inservice Testing Program for Pumps and Valves at the Palo Verde Nuclear Power Station Unit 2 (Docket No. 50-339) for the Period (TBS) through (TBS)

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Author(s):

T. L. Cook
J. F. Hanek

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A. J. Cappucci, NRC-DE

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.

EG&G Idaho, Inc.
Idaho Falls, Idaho 83415

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INTERIM REPORT

CONTENTS

I. INTRODUCTION

Contained herein is a safety evaluation of the pump and valve inservice testing (IST) program submitted by the Virginia Electric and Power Company on January 31, 1979 for its North Anna Nuclear Power Station Unit 2. The program applies to North Anna Unit 2 for the period (TBS) through (TBS). The working session with North Anna Unit 2 and Virginia Electric and Power Company representatives was conducted on September 9 and 10, 1980. The licensee resubmittal was issued on Feburary 13, 1981 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. Virginia Electric and Power 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 tasks 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.

A summary of pump and valve testing requirements is contained in Appendix A.

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

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 II.

A listing of P&IDs used for this review are contained in Attachment III.

Items discussed with the Licensee which may appear as differences between this report and the North Anna Unit 2 IST program are discussed in Attachment IV.

II. PUMP TESTING PROGRAM

The IST program submitted by Virginia Electric and Power Company 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 all 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 Virginia Electric and Power Company request for relief from testing pumps, the code requirement for testing, the basis for requesting relief, and the EG&G evaluation of that request is summarized below.

1. Component Cooling Pumps

1.1 Relief Request

The licensee has requested specific relief from measuring differential pressure (ΔP) and flowrate (Q) for the Component Cooling pumps 2-CC-P-1A and 2-CC-P-1B in accordance with the requirements of Section XI and proposes to record ΔP and Q for each of these pumps but not compare to reference values for head curve verification. Additionally, motor current will be recorded for comparison purposes.

1.1.1 Code Requirement. Refer to Appendix A.

1.1.2 Licensee's Basis for Requesting Relief. The accuracy of flow instrumentation at normal operating flows is about $\pm 8\%$. This accuracy does not lend itself to satisfying the requirements of Table IWP-2100-2 where the acceptable range is + 2% - 6%. In addition, varying flow rates interfere with normal plant operation since flows have been balanced to meet heat load requirements. Therefore, the ΔP and Q for each of these pumps will be recorded but not compared to reference values for head curve verification. Additionally, motor current will be recorded for comparison purposes.

1.1.3 Evaluation. We agree with the liciensee's basis and, therefore, feel that relief should be granted for the Component Cooling pumps 2-CC-P-1A and 2-CC-P-1B from the Section XI requirements to measure ΔP and Q. The licensee has demonstrated that gage lines have not been provided with a suitable means to assure or determine the presence or absence of liquid when the presence or absence could produce a difference of more than 0.25% in the indicated value of the measured pressure. Reference values and subsequent test values will all be taken with the gage lines as designed. Therefore, any error would be common to all values recorded and not affect the evaluation of the data. Instrumentation included under this relief request is only $\pm 4\%$ accurate. We conclude that the licensee's proposal to record ΔP, Q and motor current and measuring all other parameters required by Section XI should provide sufficient data to determine any pump degradation (the intent of Section XI).

2. Charging Pumps

2.1 Relief Request

The licensee has requested specific relief from measuring inlet pressure [illegible] the Charging Pumps 2-CH-P-1A, 2-CH-P-1B and 2-CH-P-1C in a[illegible]ch the requirements of Section XI and proposed to observe vo[illegible]rol tank pressure to assure repeated initial test conditions.

2.1.1 Code Requirement. Refer to Appendix A.

2.1.2 Licensee's Basis for Requesting Relief. Suction pressure instrumentation is not installed or required. These pumps are capable of producing greater than 2400 psig discharge pressure, while the suction pressure would nominally be 15 to 20 psig. The Volume Control Tank pressure will be recorded using Control Room indication to establish initial conditions for testing. This indication is about 4% accurate.

2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel relief should be granted for the Charging Pumps 2-CH-P-1A, 2-CH-P-1B and 2-CH-P-1C from the Section XI requirement to measure P_i. The licensee has demonstrated that, since no suction pressure instrumentation is installed, observing VCT pressure to establish repeated test conditions is an acceptable alternative. We conclude that observing VCT pressure to establish repeated test conditions for P_i and measuring all other parameters required by Section XI should provide sufficient data to determine any pump degradation (the intent of Section XI).

3. Boric Acid Transfer

3.1 Relief Request

The licensee has requested specific relief from measuring P_i, vibration amplitude (V), lubricant level or pressure, and bearing temperature (Tb) for the Boric Acid pumps 1-CH-P-2C and 1-CH-P-2D in accordance with the requirements of Section XI and proposed to observe Boric Acid Storage Tank level to establish initial test conditions.

3.1.1 Code Requirement. Refer to Appendix A.

3.1.2 Licensee's Basis for Requesting Relief. Monitoring discharge pressure monthly is considered sufficient since these pumps provide the driving force to deliver boric acid to the charging pump suction and operator observation of boration and chemical analysis of boron concentration will indicate whether desired results have been achieved. The Boric Acid Tanks serv as the head for these pumps. Tank level will be observed from the Control Room to establish initial conditions for testing. This indication is about 4% accurate. The pump is totally encased in insulation making Tb, V and lubricant level or pressure impossible to measure or observe.

3.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that temporary relief should be granted for the Boric Acid Transfer

pumps 1-CH-P-2C and 1-CH-P-2D from the Section XI requirements to measure Pi, V, lubricant level or pressure and Tb. The licensee has demonstrated that using boric acid storage tank level to establish repeated test conditions is an acceptable alternate for P_i measurements. We conclude that the hydraulic characteristics of these pumps can be sufficiently analyzed to determine any pump degradation. However, we feel the licensee should further investigate some means to determine the mechanical characteristics (V, T_b) of these pumps to assure that mechanical degradation has not occurred.

4. Inside Recirculation Spray Pumps

4.1 Relief Request

The licensee has requested specific relief from measuring all parameters for the Inside Recirculation Spray Pumps 2-RS-P-1A and 2-RS-P-1B in accordance with the requirements of Section XI and proposed to monitor pump rotation and vibration monthly.

4.1.1 Code Requirement. Refer to Appendix A.

4.1.2 Licensee's Basis for Requesting Relief. These pumps are run dry to verify operational readiness; therefore Pi, ΔP, Q, and proper lubricant level or pressure cannot be measured. Each pump is equipped with a sensor to detect pump rotation. In addition, a vibration alarm associated with each pump will alert Control Room personnel to excessive pump vibration.

4.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that temporary relief should be granted for the Inside Recirculation Spray Pumps 2-RS-P-1A and 2-RS-P-1B from the requirements of Section XI. The licensee has demonstrated that, with the present plant design, all parameters required by Section XI cannot be measured. We conclude that the licensee's proposed alternate test of monitoring rotation and vibration to demonstrate pump operability is the only practical test available. However, we also feel that the licensee should further investigate alternate test methods and possible plant modifications to allow pump testing that will provide more adequate data to determine if any hydraulic or mechanical degradation of these pumps has occurred.

5. Outside Recirculation Spray Pumps

5.1 Relief Request

The licensee has requested specific relief from measuring all parameters for the outside Recirculation Spray Pumps 2-RS-P-2A and 2-RS-P-2B in accordance with the requirements of Section XI and proposed to verify operational readiness and rotation.

5.1.1 Code Requirements. Refer to Appendix A.

5.1.2 Licensee's Basis for Requesting Relief. These pumps will be run dry or wet to verify operational readiness. Each will be observed to verify rotation. At least once per 18 months, each will be tested on its

recirculation path when flow and discharge pressure will be observed. A vibration alarm associated with each pump will alert Control Room personnel to excessive pump vibration. Due to pump design, it is not possible to measure a suction pressure. Proper lubricant level or pressure is not required since the bearings are in the main flow path.

5.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that temporary relief should be granted for the Outside Recirculation Spray Pumps 2-RS-P-2A and 2-RS-P-2B from the requirements of Section XI. The licensee has demonstrated that, with the present plant design, all parameters required by Section XI cannot be measured. We conclude that the licensee's proposed alternate test to verify operational readiness and rotation to demonstrate pump operability is the only practical test available. However, we also feel that the licensee should further investigate alternate test methods and possible plant modifications to allow pump testing that will provide more adequate data to determine if any hydraulic or mechanical degradation of these pumps has occured.

6. Low Head Safety Injection

6.1 Relief Request

The licensee has requested specific relief from measuring P_i and lubricant level or pressure for the LHSI pumps 2-SI-P-1A and 2-SI-P-1B in accordance with the requirements of Section XI and proposed to establish a reference level in the Refueling Water Storage Tank to assure repeated test conditions.

6.1.2 Licensee's Basis for Requesting Relief. These pumps take suction from the RWST for pump performance testing. This tank has a minimum level required by Technical Specifications, which will be observed from the Control Room. This indication is about 4% accurate. Proper lubricant level or pressure cannot be observed since bearings are in the main flow path.

6.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for the LHSI Pumps 2-SI-P-1A and 2-SI-P-1B from the Section XI requirements to measure P_i and lubricant level or pressure. The licensee has demonstrated that, since no suction pressure instrumentation is installed, observing RWST level to establish repeated test conditions is an acceptable alternative. Also, we feel that since the bearings are cooled by the liquid pumped, proper lubricant level or pressure cannot be observed. We conclude that observing RWST level to establish repeated test conditions for P_i and measuring all other parameters required by Section XI should provide sufficient data to determine any pump degradation (the intent of Section XI).

7. Service Water

7.1 Relief Request

The licensee has requested specific relief from measuring P_i, Q, and lubricant level or pressure for the Service Water Pumps 2-SW-P-1A and

2-SW-P-1B in accordance with the requirements of Section XI and proposed to record flow and service water reservoir level to establish initial conditions for testing.

7.1.1 Code Requirement. Refer to Appendix A.

7.1.2 Licensee's Basis for Requesting Relief. The accuracy of flow instrumentation at normal operating flows is about ±8%. This accuracy does not lend itself to satisfying the requirements of Table IWP-2100-2 where the acceptable range is +2% -6%. In addition, varying flow rates interfere with normal plant operation since flows have been balanced to meet heat load requirements. Therefore, the discharge pressure and Q for each pump will be recorded but not compared to reference values for head curve verification. These pumps take suction from the Service Water Reservoir, which has a minimum level required by Technical Specifications. This level indication, which is about 4% accurate, will be observed from the Control Room to establish initial conditions for testing. Proper lubricant level or pressure cannot be observed since bearings are in the main flow path. Motor current will be recorded for comparison purposes.

7.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for the Service Water Pumps 2-SW-P-1A and 2-SW-P-1B from the Section XI requirements to measure P_i, Q and lubricant level or pressure. The licensee has demonstrated that the accuracy of the flow instrumentation does not satisfy the requirements of Section XI, and that comparing motor current is an acceptable alternate parameter. We conclude that using Service Water Reservoir level to establish initial test conditions for P_i is an adequate alternate parameter. Also we feel that since the pumps are submerged and the bearings are cooled by the liquid pumped, proper lubricant level or pressure cannot be observed. Thus, we feel that adequate data is available to determine any pump degradation (the intent of Section XI).

8. Auxiliary Service Water

8.1 Relief Request

The licensee has requested specific relief from measuring P_i, Q, and lubricant level or pressure for the Auxiliary Service Water Pump 2-SW-P-4 in accordance with the requirements of Section XI and proposed to record flow and monitor Lake Anna level to establish initial conditions for testing.

8.1.1 Code Requirement. Refer to Appendix A.

8.1.2 Licensee's Basis for Requesting Relief. The accuracy of flow instrumentation at normal operating flows is about ±8%. This accuracy does not lend itself to satisfying the requirements of Table IWP-2100-2 where the acceptable range is + 2% - 6%. In addition, varying flow rates interfere with normal plant operation since flows have been balanced to meet heat load requirements. Therefore, the discharge pressure and Q for this pump will be recorded but not compared to reference values for head curve verification. This pump takes suction from Lake Anna, which has a minimum

level required by Technical Specifications. This level indication, which is about 4% accurate, will be observed from the Control Room to establish initial conditions for testing. Proper lubricant level or pressure cannot be observed since bearings are in the main flow path.

8.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Auxiliary Service Water Pump 2-SW-P-4 from the Section XI requirements to measure P_i, Q and lubricant level or pressure. The licensee has demonstrated that instrumentation does not exist to measure inlet pressure and that the accuracy of the flow instrumentation does not conform to the requirements of Section XI, but some alternate parameters can be monitored to evaluate pump performance and degradation. We conclude that using reservoir level to establish initial test conditions for P_i is an adequate alternate parameter. Also, we feel that since the bearings are cooled by the liquid pumped, adequate data is available to determine any pump degradation (the intent of Section XI).

9. Radiation Monitoring Sample Pumps

9.1 Relief Request

The licensee has requested specific relief from measuring all parameters for the Radiation Monitoring Sample Pumps 2-SW-P-5, 2-SW-P-6, 2-SW-P-7, and 2-SW-P-8 in accordance with the requirements of Section XI and proposed to run these pumps dry monthly to verify operability and to run these pumps every 18 months and measure vibration (V).

9.1.1 Code Requirement. Refer to Appendix A.

9.1.2 Licensee's Basis for Requesting Relief. The flow paths of these pumps are normally dry. These pumps will be run monthly, but because the system flow path is dry, they are not run long enough to record any parameters. No instrumentation is installed to record any of the parameters required by Section XI. At least once per 18 months, each pump will be automatically started in conjunction with a test signal for Containment Depressurization Actuation. Pump vibration will be measured and the radiation monitor associated with each pump will be observed to determine if the Low Flow Alarm resets, thus verifying flow.

9.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for the Radiation Monitoring Sample Pumps 2-SW-P-5, 2-SW-P-6, 2-SW-P-7, and 2-SW-P-8 from the requirements of Section XI. The licensee has demonstrated that with the present plant design, the parameters required by Section XI cannot be measured. We conclude that the licensee's proposed alternate tests of verifying pump operability monthly and measuring vibration and verifying flow once per 18 months is the only practical test available. However, we also feel that the licensee should further investigate alternate test methods and possible plant modifications to allow more adequate data to determine if any hydraulic or mechanical degradation of these pumps has occured.

10. Casing Cooling Pumps

10.1 Relief Request

The licensee has requested specific relief from measuring proper lubricant level or pressure for the Casing Cooling Pumps 2-RS-P-3A and 2-RS-P-3B in accordance with the requirements of Section XI and proposed to replace the grease once per year.

10.1.1 Code Requirement. Refer to Appendix A.

10.1.2 Licensee's Basis for Requesting Relief. The bearing lubrication for these pumps is grease instead of oil. The manufacturer's recommended maintenance schedule specifies that the grease be replaced after 1000 hours of operation. The anticipated yearly operating time of these pumps is considerably less than 1000 hours. There are no means available to check the lubricant level of these bearings without replacing the grease.

10.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for the Casing Cooling Pumps 2-RS-P-3A and 2-RS-P-3B from the Section XI requirements to measure proper lubricant level or pressure. The licensee has demonstrated that, because of the limited operating time of these pumps, replacing the grease on a yearly frequency is sufficient to prevent any pump degradation (the intent of Section XI).

III. VALVE TESTING PROGRAM EVALUATION

The IST program submitted by Virginia Electric and Power 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 all 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 Section 1. Also included in Section 1 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 Virginia Electric and Power Company request for relief from testing valves, the Code requirement for testing, Virginia Electric and Power Company's basis for requesting relief, and the EG&G evaluation of that request is summarized below and grouped according to each specific system.

1. General Considerations

1.1 Testing of Valves Which Perform a Pressure Isolation Function

There are several safety systems connected to the reactor coolant pressure boundary that have design pressure below the rated Reactor Coolant System (RCS) pressure. Also included are those systems which are rated at full reactor pressure on the discharge side of pumps that have pump suction below RCS pressure. In order to protect these systems from RCS pressure, two or more isolation valves are placed in series to form the interface between the high pressure RCS and the low pressure systems. The leak tight integrity of these valves must be ensured by periodic leak testing to prevent exceeding the design pressures of the low pressure systems causing a LOCA.

It is NRC's position that these valves be classified as Category A or A/C, as described in Section XI, Subsection IWV, of the ASME Boiler and Pressure Vessel Code and leak tested in accordance with IWV-3420 of the above mentioned Code at least once per refueling outage. The allowable leakage limit for each valve should not exceed 1.0 gallons per minute (gpm).[a] The NRC has discussed this matter with the licensee and has identified the valves that perform a pressure boundary isolation function.

Pressure boundary isolation valves have been included in the IST program and categorized properly, i.e. two of three valves in series have been categorized A or AC between the high pressure system and the piping class change. Test frequency has been specified as each refueling for leakage tests.

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a. See NUREG-0677, "The Probability of Intersystem LOCA: Impact Due to Leak Testing and Operational Changes," and the proposed Appendix A to SRP Section 3.9.6, "Leak Testing of Pressure Isolation Valves."

1.2 ASME Code, Section XI, Requirements

Subsection IWV-3410(a) of the Section XI Code (which discusses full stroke and partial stroke testing) requires that Code Category A and B valves be exercised once every three 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 three months, with the exception as defined in IWV-3520(b). IWV-3700 requires no regular 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:

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

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

1.3 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 tests to satisfy the above position.

1.4 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.

1.5 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 Cateogry A and B valves and once every nine months for Category C valves. It is the 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."

1.6 Licensee Request for Relief to Test Valves at Cold Shutdowns

The Code permits valves to be tested at cold shutdowns, and these valves are specifically identified by the licensee and are full stroke exercised during cold shutdowns; therefore, the licensee is meeting the requirements 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.

1.7 Changes to the Technical Specifications

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 conjection 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.

1.8 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 shut down the reactor and to maintain the reactor in a shutdown condition. Valves in this cateogry 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 IST program as a decision on the licensee's part to expand the scope of their program.

1.9 Valve Testing at Cold Shutdowns

Inservice valve testing at cold shutdowns is acceptable when the following conditions are met:

1. 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 the plant is ready to return to power

2. Completion of all valve testing is not a prerequistite to return to power

3. 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.

1.10 Category A Valve Leak Check Requirements for Containment Isolation Valves (CIVs)

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-3420(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 or the common defense and security of the public.

1.11 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 has determined that the current IST program as submitted by the licensee correctly reflects the NRC's 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.

1.12 Pressurizer Power Operated Relief Valves

The NRC has adopted the position that the pressurizer power operated relief valves should be included in the IST program as Category B valves and tested to the requirements of Section XI. However, since the PORVs have shown a high probability of sticking open and are not needed for overpressure protection during power operation, the NRC has concluded that routine exercising during power operation is "not pratical" and, therefore, not required by IWV-3412(a).

The PORVs' function during reactor startup and shutdown is to protect the reactor vessel and coolant system from low temperature-overpressurization conditions and should be exercised prior to initiation of system conditions for which vessel protection is needed.

The following test schedule is recommended:

1. Full stroke exercising should be performed during cooldown prior to achieving the water solid condition in the pressurizer and during cold shutdown prior to heat up.

2. Stroke timing should be performed at each cold shutdown or, as a minimum, once each refueling cycle.

3. Fail safe actuation testing is permitted by the Code to be performed at each cold shutdown if the valves cannot be tested during power operation. This testing should be performed at each cold shutdown.

The power operated relief valves PCV-2455 and PCV-2456 are not included in the IST program but are tested in accordance with the above recommended test schedule.

1.13 PORV Block Valves

The PORV block valves, MOV-2535 and MOV-2536 are not included in the IST program but are tested in accordance with Technical Specification 4.4.3.2.2.

2. Component Cooling

2.1 Category A Valves

2.1.1 Relief Request. The licensee has requested specific relief from exercising Category A valves TV-CC-201A, and B, reactor coolant pumps, thermal barrier containment isolation valves; TV-CC-202A, B, C, D, E, and F, and TV-CC-204A, B, and C, reactor coolant pumps upper bearing lube oil, lower bearing lube oil, and stator cooler containment isolation valves, in accordance with the requirements of Section XI. The licensee has proposed to exercise these valves during cold shutdowns when the reactor coolant pumps are secured and during refueling outages.

2.1.1.1 Code Requirement. Refer to Appendix A.

2.1.1.2 Licensee's Basis for Requesting Relief. Component cooling water flow to the reactor coolant pumps is required at all times the pumps are in operation. Failure of one of these valves in a closed position during cycling would result in a loss of the cooling flow to the pump. Power operated valves in these systems will be cycled at each cold shutdown and refueling when the reactor coolant pumps are secured.

2.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valves TV-CC-201A, and B; TV-CC-202A, B, C, D, E, and F; and TV-CC-204A, B, and C from the exercising requirements of Section XI. The licensee has demonstrated that exercising any of these valves while the RCPs are operating would result in a loss of RCP cooling which could result in RCP damage requiring a reactor shutdown for repairs. We conclude that exercising these valves during cold shutdown when the RCPs are secured and at least once each refueling outage should demonstrate proper valve operability.

2.2 Category A/C Valves

2.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-CC-78, 115, and 152, RCPs upper bearing lube oil, lower bearing lube oil and stator cooler inlet check valves; 2-CC-194 and 199 RHR heat exchanger inlet check valves and 2-CC-276, 289, and 302 containment recirculation air cooler isolation check valves, in accordance with the requirements of Section XI. The licensee has proposed to verify valve closure (their safety-related position) during each refueling outage.

2.2.1.1 Code Requirement. Refer to Appendix A.

2.2.1.2 Licensee's Basis for Requesting Relief. These check valves remain in a normally open position with component cooling flow. The only method for verifying these valves closed is during the refueling outage leak rate test.

2.2.1.3 Evaluation. We agree with the licensee's basis and therefore, feel that relief should be granted for Category A/C valves 2-CC-78, 115, and 152, 2-CC-194 and 199, and 2-CC-276, 289, and 302 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 leak testing. These valves are not equipped with valve position indication 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.

3. Chemical and Volume Control

3.1 Category A Valves

3.1.1 Relief Request. The licensee has requested specific relief from exercising category A valve FCV-2160, auxiliary reactor coolant system charging control valve, in accordance with the requirements of Section XI and proposed to test this valve each refueling outage.

3.1.1.1 Code Requirement. Refer to Appendix A.

3.1.1.2 Licensee's Basis for Requesting Relief. Valve FCV-2160 cannot be exercised during power operation or cold shutdown. FCV-2160 is normally closed and its accident position is closed (containment isolation function).

3.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valve FCV-2160 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.

3.1.2 Relief Request. The licensee has requested specific relief from excersing Category A valve MOV-2289A, normal charging header isolation valve, in accordance with the requirements of Section XI and proposed to exercise this valve when the charging system is not in use during cold shutdown and refueling outages.

3.1.2.1 Code Requirement. Refer to Appendix A.

3.1.2.2 Licensee's Basis for Requesting Relief. Failure of this valve in a closed position during exercising would cause a loss of charging flow and could result in an inability to maintain reactor coolant inventory. This valve will be exercised when the charging system is not in use during cold shutdown and refueling outages.

3.1.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valve MOV-2289A 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 timing measurements are meaningless for a passive valve.

3.1.3 Relief Request. The licensee has requested specific relief from exercising Category A valves MOV-2380 and MOV-2381, reactor coolant pump seal water return containment isolation valves, in accordance with the requirements of Section XI and proposed to exercise these valves when the reactor coolant pumps are secured during cold shutdown and refueling outages.

3.1.3.1 Code Requirements. Refer to Appendix A.

3.1.3.2 Licensee's Basis for Requesting Relief. To protect pump seals, flow to them is required at all times during power operation. Exercising of these valves will be performed during cold shutdown and refueling outages when the risk of equipment damage is eliminated by securing the pumps.

3.1.3.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valves MOV-2380 and MOV-2381 from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves while the RCPs are operating would result in a loss of seal water flow and could result in RCP damage requiring a reactor shutdown for repairs. We conclude that exercising these valves during cold shutdown when the RCPs are secured and at least once each refueling outage should demonstrate proper valve operability.

3.1.4 Relief Request. The licensee has requested specific relief from exercising Category A valve TV-2204, letdown header containment isolation valve, in accordance with the requirements of Section XI and proposed to exercise this valve when the charging system is not in use during cold shutdown and refueling outages.

3.1.4.1 Code Requirement Refer to Appendix A.

3.1.4.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised when the charging and letdown systems are in operation due to the high risk of overpressurization of the RCS. It will be exercised at cold shutdown and refueling outages when the charging and letdown systems are secured.

3.1.4.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valve TV-2204 from the exercising requirements of Section XI. The licensee has demonstrated that exercising this valve when the charging system is in operation would result in a loss of reactor coolant system pressure and level control. We conclude that exercising this valve during cold shutdown when the charging system is secured and at least once each refueling outage should demonstrate proper valve operability.

3.2 Category A/C Valves

3.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valve RV-2203, letdown header relief valve, in accordance with the requirements of Article IWV-3410 and proposed to exercise this valve per the requirements of Article IWV-3500.

3.2.1.1 Code Requirement. Refer to Appendix A.

3.2.1.2 Licensee's Basis for Requesting Relief. The frequency and quantity of relief valves subject to test at each refueling outage will be in accordance with IWV-3500. RV-2203 will be exercised in accordance with the frequency in IWV-3500.

3.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C relief valve RV-2203 from the exercising requirements of Section XI. The licensee has demonstrated that this valve which is located inside the containment is inaccessible during power operation. RV-2203 provides a containment isolation function from the pressurizer relief tank when shut and exercising this valve per the requirements of Article IWV-3410 will not provide any increase in plant safety. We conclude that exercising this valve in accordance with Article IWV-3500 and reverse flow leak rate testing at refueling outages should demonstrate proper valve operability.

3.2.2 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-CH-331, 332, 335, 308, 284 and 260, reactor coolant system charging containment isolation valves, in accordance with the requirements of Section XI and proposed to verify valve closure (their safety-related position) during refueling outages

3.2.2.1 Code Requirement. Refer to Appendix A.

3.2.2.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation or cold shutdown. The only method available to verify that these valves close is during the refueling leak rate test.

3.2.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-CH-331, 332, 335, 308, 284, and 260 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 rate testing. In addition, these valves are not equipped with valve position indicators. 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.

3.3 Category B Valves

3.3.1 Relief Request. The licensee has requested specific relief from exercising Category B valve MOV-2289B, normal charging header isolation valve, in accordance with the requirements of Section XI and proposed

to exercise this valve when the charging system is not in use during cold shutdown and refueling outages.

3.3.1.1 Code Requirement. Refer to Appendix A.

3.3.1.2 Licensee's Basis for Requesting Relief. Failure of this valve in a closed position during exercising would cause a loss of charging flow and could result in an inability to maintain reactor coolant inventory. This valve will be exercised when the charging system is not in use during cold shutdown and refueling outages.

3.3.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category B valve MOV-2289B 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 timing measurements are meaningless for a passive valve.

3.3.2 Relief Request. The licensee has requested specific relief from exercising Category B valve MOV-2373, charging pump recirculation header isolation valve, in accordance with the requirements of Section XI and proposed to exercise this valve when the charging system is not in use during cold shutdown and refueling outages.

3.3.2.1 Code Requirement. Refer to Appendix A.

3.3.2.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised without possible damage to the charging pumps. It will be exercised with the charging pumps secured at cold shutdown and refueling outages.

3.3.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief shall be granted for Category B valve MOV-2289B 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 timing measurements are meaningless for a passive valve.

3.3.3 Relief Request. The licensee has requested specific relief from exercising Category B valve MOV-2373, charging pump recirculation header isolation valve, in accordance with the requirements of Section XI and proposed to exercise this valve when the charging system is not in use during cold shutdown and refueling outages.

3.3.3.1 Code Requirement. Refer to Appendix A.

3.3.3.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised without possible damage to the charging pumps. It will

be exercised with the charging pumps secured at cold shutdown and refueling outages.

3.3.3.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category B valve MOV-2373 from the exercising requirements of Section XI. This normally open valve provides a flow path for the minimum flow recirculation header for the charging pumps. MOV-2373 receives a safety injection signal to shut. The licensee has demonstrated that shutting this valve when the charging pumps are operating could cause pump damage if it failed in the shut position. We conclude that exercising this valve during cold shutdown and refueling outages when the charging pumps are not operating should demonstrate proper valve operability.

3.3.4 Relief Request. The licensee has requested specific relief from exercising Category B valves MOV-2267A and B, 2269A and B, 2270A and B, charging pumps suction valves, MOV-2286A, B, C, 2287A, B, and C, charging pump discharge valves, in accordance with the requirements of Section XI and proposed to exercise these valves during cold shutdown when the charging pumps are secured and during refueling outages.

3.3.4.1 Code Requirement. Refer to Appendix A.

3.3.4.2 Licensee's Basis for Requesting Relief. Category B valves MOV-2267A and B, 2269A and B, 2270A and B, charging pump suction valves, MOV-2286A, B, C, 2287A, B and C, charging pump discharge valves, cannot be exercised during power operation. These valves are in their intended safety position (open). A failure in the closed position may damage the charging pumps in the event of an automatic start. These valves will be exercised at cold shutdown when the charging pumps are not required to be operating and during refueling outages.

3.3.4.3 Evaluation. We agree with the licensees basis and, therefore, feel that relief should be granted for Category B valves MOV-2267A and B, 2269A and B, 2270A and B, 2286A, B and C, and 2287A, B and C from the exercising requirements of Section XI. The licensee has demonstrated that these valves are in their intended safety position and that a failure of these valves during testing could damage the charging pumps. These valves are not required to operate to mitigate the consequences of an accident or safely shut down the plant. Therefore, the operability of these valves is inconsequential with regards to the safety function which they perform. We conclude that the licensee's proposed alternate testing should demonstrate proper valve operability.

4. Containment Vacuum

4.1 Category A Valve

4.1.1 Relief Request. The licensee has requested specific relief from exercising Category A valve TV-CV-200, containment vacuum trip valve, in accordance with the requirements of Section XI and proposed to exercise this valve each refueling outage.

4.1.1.1 Code Requirement. Refer to Appendix A.

4.1.1.2 Licensee's Basis for Requesting Relief. TV-CV-200 is normally closed and its accident position is closed. The valve will be exercised during refueling outages when establishing containment vacuum.

4.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel relief should be granted for Category A valve TV-CV-200 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 accidnet 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.

4.2 Category A/E Valve

4.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valve 2-CV-4, containment vacuum ejector isolation valve, in accordance with the requirements of Section XI and proposed to exercise this valve each refueling outage.

4.2 1.1 Code Requirement. Refer to Appendix A.

4.2.1.2 Licensee's Basis for Requesting Relief. 2-CV-4 is a manual valve and is in its intended safety position (closed). This valve will be exercised during refueling outages when establishing containment vacuum.

4.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valve 2-CV-4 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 regards to the safety function which it performs. We conclude that the quarterly stroke and stroke time measurements are meaningless for a manual, passive valve.

5. Containment Sump Drains

5.1 Category A/C Valve

5.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valve 2-DA-49, post accident sample system return line check valve, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety-related position) during each refueling outage.

5.1.1.1 Code Requirement. Refer to Appendix A.

5.1.1.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation or cold shutdown. The only

method available to verify that these valves close is during the refueling leak rate test.

5.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valve 2-DA-49 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 leak testing. This valve is not equipped with valve position indication and some of the required test connections are located inside the containment.

5.2 Category A/E Valves

5.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valves 2-DA-7 and 2-DA-9, primary drain transfer line isolation valves, in accordance with the requirements of Section XI.

5.2.1.1 Code Requirement. Refer to Appendix A.

5.2.1.2 Licensee's Basis for Requesting Relief. These are manual valves and will not be exercised because they are in their accident position (closed).

5.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valves 2-DA-7 and 2-DA-9 from the exercising 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 manual, passive valves.

6. Feedwater

6.1 Category B Valves

6.1.1 Relief Request. The licensee has requested specific relief from stroke timing Category B valves PCV-FW-259A and B, auxiliary feed water control valves, in accordance with the requirements of Section XI.

6.1.1.1 Code Requirement. Refer to Appendix A.

6.1.1.2 Licensee's Basis for Requesting Relief. PCV-FW-259A and B will be exercised quarterly but will not be timed. Stroke time is not important because these are modulating valves.

6.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category B valves PCV-FW-259A and B from the stroke timing requirements of Section XI. The licensee has demonstrated that stroke timing a modulating valve will not

provide any meaniful data for valve degradation. We conclude that verifying proper system operation is the most practical method of ensuring proper valve operability.

6.2 Category C Valves

6.2.1 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-FW-62, 94, and 126, main feedwater check valves at the penetration, in accordance with the requirements of Section XI and proposed to exercise these valves when entering or leaving cold shutdown.

6.2.1.1 Code Requirement. Refer to Appendix A.

6.2.1.2 Licensee's Basis for Requesting Relief. Closure of mainsteam or feedwater valves during normal operations would result in turbine and reactor trips. These valves are closed during the process of shutdown and reopened during plant start-up. Operation of these valves will be verified when entering or leaving cold shutdown.

6.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-FW-62, 94, and 126 from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves during power operation to their safety related position (closed) would require securing feedwater to the respective steam generator and would result in a reactor trip. We conclude that full stroke exercising these valves when entering or leaving cold shutdown should demonstrate proper valve operability.

6.2.2 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-FW-70, auxiliary feedwater header check valve at the main feedwater header, 2-FW-150 and 156, auxiliary feedwater pumps discharge and recirculation check valves, and 2-FW-279, auxiliary feedwater header check valve, during cold shutdown.

6.2.2.1 Code Requirement. Refer to Appendix A.

6.2.2.2 Licensee's Basis for Requesting Relief. 2-FW-70, 2-FW-150, 2-FW-156, and 2-FW-279 cannot be exercised during cold shutdown because steam is not available to operate the turbine driven auxiliary feedwater pump.

6.2.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-FW-70, 2-FW-150, 2-FW-156, and 2-FW-279 from the exercising requirements of Section XI. The licensee has demonstrated that since steam is not available during cold shutdown there is no practical method available to exercise these valves. We conclude that the licensee's proposed alternate method of exercising these valves during power operation should demonstrate proper valve operability.

7. Instrument Air

7.1 Category A/C Valve

7.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valve 2-IA-428, air radiation monitor return line check valve, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety-related position) during each refueling outage.

7.1.1.1 Code Requirement. Refer to Appendix A.

7.1.1.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised during power operation or cold shutdown. The only method available to verify that this valve closes is during the refueling leak rate test.

7.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valve 2-IA-428 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 leak testing. This valve is not equipped with valve position indication and some of the required test connections are located inside the containment.

8. Main Steam

8.1 Category B Valve

8.1.1 Relief Request. The licensee has requested specific relief from exercising and stroke timing the Terry Turbine trip valve on the turbine driven auxiliary feed pump and proposed to exercise but not time this valve every 18 months.

8.1.1.1 Code Requirement. Refer to Appendix A.

8.1.1.2 Licensee's Basis for Requesting Relief. This is the governor valve for the steam driven auxiliary feed pump. This valve is normally open and will be exercised but not timed every 18 months during the overspeed trip test.

8.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for the Category B Terry Turbine trip valve. This valve admits steam to the auxiliary feed pump turbine when open. The only method available to shut this valve is with an actual overspeed on the turbine which is only required at 18 month intervals. Stroke timing of this valve is inconquential with regards to the safety function it performs. We conclude that the licensee's proposed alternate testing is sufficient to ensure proper valve operability.

8.2 Category C Valves

8.2.1 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-MS-117, 119, and 121, main steam to auxiliary feedwater turbine pump check valves, in accordance with the requirements of Section XI and proposed to full stroke exercise these valves during power operation only.

8.2.1.1 Code Requirement. Refer to Appendix A.

8.2.1.2 Licensee's Basis for Requesting Relief. These valves will be tested during power operation. These valves cannot be tested during cold shutdwon or refueling because steam is not available to run the turbine driven auxiliary feedwater pump.

8.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-MS-117, 119, and 121 from the exercsing requirements of Section XI. The licensee has demonstrated that since steam is not available during cold shutdown there is no practical method available to exercise these valves. We conclude that the licensee's proposed alternate method of exercising these valves during power operation should demonstrate proper valve operability.

9. Compressed Air

9.1 Category A/C Valve

9.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valve 2-IA-250, containment instrument air return line check valve, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety-related position) during each refueling outage.

9.1.1.1 Code Requirement. Refer to Appendix A.

9.1.1.2 Relief Request. This valve cannot be exercised during power operation or cold shutdown. The only method available to verify that this valve closes is during the refueling leak rate test.

9.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valve 2-IA-250 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 leak testing. This valve is not equipped with valve position indication and some of the required test connections are located inside the containment.

10. Quench Spray

10.1 Category A/C Valves

10.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-QS-11 and 2-QS-22, quench spray pump

containment isolation check valves, in accordance with the requirements of Section XI and proposed to manually exercise these valves open during refueling outages and verify them closed during the containment leak rate test.

10.1.1.1 Code Requirement. Refer to Appendix A.

10.1.1.2 Licensee's Basis for Requesting Relief. It is not possible to verify that these normally closed check valves open without initiation of spray through the upper containment header or by visual observation inside the containment. These valves shall be exercised during refueling outages as per the Technical Specification requirements for weight loaded check valves.

10.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-QS-11 and 2-QS-22 from the exercising requirements of Section XI. The licensee has demonstrated that since these valves are located inside the containment, the only method available for exercising them open is with system flow or manual operation which requires containment access. Using flow to exercise these valves would result in spraying the containment causing electrical equipment damage and an extensive containment clean up. Manual exercising requires containment access and venting which is not always possible during cold shutdown. The only method available to verify valve closure is during the Type C containment leak rate test. We conclude that, with the present plant design, the licensee's proposed alternate testing should demonstrate proper valve operability.

11. Recirculation Spray

11.1 Category A/C Valves

11.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valves, 2-RS-20 and 2-RS-30, outside recirculation pump discharge and containment isolation check valves, in accordance with the requirements of Section XI and proposed to manually exercise these valves open during refueling outages and verify them closed during the containment leak rate test.

11.1.1.1 Code Requirement. Refer to Appendix A.

11.1.1.2 Licensee's Basis for Requesting Relief. It is not possible to verify that these normally closed check valves open without initiation of spray through the upper containment header or by visual observation inside the containment. These valves shall be exercised during refueling outages as per the Technical Specification requirements for weight loaded check valves.

11.1.1.3 Evaluation. We agree with the licensee's basis and therefore, feel that relief should be granted for Category A/C valves 2-RS-20 and 2-RS-30 from the exercising requirements of Section XI. The licensee has demonstrated that since these valves are located inside the containment, the only method available for exercising them open is with

system flow or manual operation which requires containment access. Using flow to exercise these valves would result in spraying the containment causing electrical equipment damage and an extensive containment clean up. Manual exercising requires containment access and venting which is not always possible during cold shutdown. The only method available to verify valve closure is during the Type C containment leak rate test. We conclude that, with the present plant design, the licensee's proposed alternate testing should demonstrate proper valve operability.

11.2 Category C Valves

11.2.1 Relief Request. The licensee has requested specific relief from exercising Category C valves, 2-RS-103 and 2-RS-118, casing cooling pump discharge check valves to outside recirculation pumps, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

11.2.1.1 Code Requirement. Refer to Appendix A.

11.2.1.2 Licensee's Basis for Requesting Relief. It is impractical to exercise this check valve during power operation per IWV-3520. Opening the test valve would break containment vacuum. The check valves shall be exercised at refueling outages.

11.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-RS-103 and 2-RS-118 from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves would break containment vacuum, which would cause a reactor trip. These valves cannot be exercised during cold shutdown unless containment vacuum is broken, which is not always possible. We conclude that the licensee's proposed alternate testing should demonstrate proper valve operability.

12. Reactor Coolant

12.1 Category A/C Valve

12.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valve 2-RC-162, primary grade water to pressurizer relief tank check valve, and proposed to verify valve closure (its safety-related position) during each refueling outage.

12.1.1.1 Code Requirement. Refer to Appendix A.

12.1.1.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised during power operation or cold shutdown. The only method available to verify that this valve closes is during the refueling leak rate test.

12.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valve 2-RC-162 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 leak testing. This valve is not equipped with valve position indication and some of the required test connections are located inside the containment.

12.2 Category A/E Valves

12.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valves 2-RC-143 and 2-RC-145, pressurizer pressure dead weight tester containment isolation valves, in accordance with the requirements of Section XI.

12.2.1.1 Code Requirement. Refer to Appendix A.

12.2.1.2 Licensee's Basis for Requesting Relief. These are manual valves and will not be exercised because they are in their accident position (closed).

12.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valves 2-RC-143 and 2-RC-145 from the exercising 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 manual, passive valves.

13. Safety Injection

13.1 Category A Valves

13.1.1 Relief Request. The licensee has requested specific relief from exercising Category A valves MOV-2867C and D, boron injection tank outlet valves, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

13.1.1.1 Code Requirement. Refer to Appendix A.

13.1.1.2 Licensee's Basis for Requesting Relief. To exercise these valves would require leakage testing as per Technical Specification 4.4.6.2.2. This leakage testing disturbs the downstream check valve 2-SI-93 which would require a containment entry to leak test. These valves will be exercised at refueling when the containment is accessable.

13.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valves MOV-2867C and D from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves would disturb the downstream check valve and require a containment entry to leak test this valve per the Technical Specifications. Because the containment is not always accessible during cold shutdown, this would delay plant startup. We conclude that the licensee's proposed alternate testing of exercising these valves during refueling outages should demonstrate proper valve operability.

13.1.2 Relief Request. The licensee has requested specific relief from exercising Category A valves MOV-2890C and 2890D, LHSI to cold legs, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

13.1.2.1 Code Requirement. Refer to Appendix A.

13.1.2.2 Licensee's Basis for Requesting Relief. These valves are in their required safety position with power to their operators removed during power operation. To exercise these valves would require leakage testing as per Technical Specification 4.4.6.2.2. The leakage testing would disturb the downstream check valve which would require a containment entry to leak test this valve. As an alternative these valves will be exercised during refueling outages.

13.1.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A valves MOV-2890C and 2890D from the exercising requirements of Section XI. The licensee has demonstrated that these valves are in their intended safety position and are not required to operate to mitigate the consequences of an accident or safely shut down the plant. Exercising these valves would disturb the downstream check valve and require a containment entry to leak test this valve per the Technical Specifications. Because the containment is not always accessible during cold shutdown, this would delay plant startup. We conclude that the licensee's proposed alternate testing of exercising these valves during refueling outages should demonstrate proper valve operability.

13.2 Category A/C Valves

13.2.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-SI-85, 93, 107, and 119, high head safety injection to cold legs containment isolation check valves, and 2-SI-92, 100, and 106, cold leg safety injection admission check valves, in accordance with the requirements of Section XI. The licensee has proposed to exercise these check valves during refueling outages.

13.2.1.1 Code Requirement. Refer to Appendix A.

13.2.1.2 Licensee's Basis for Requesting Relief. The only way to verify that these normally closed check valves open is by initiating flow, using the charging pumps, into the reactor coolant system hot and cold legs. If charging flow was directed to the reactor coolant system in this manner it could cause overpressurization during cold shutdown or provide a loss in charging flow control during operation. As an alternate, these check valves shall be exercised open during refueling outages.

13.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-SI-85, 93, 107, 119, 92, 100, and 106 from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves during power operation would cause a loss of charging flow control and thermal shock to the injection nozzles and possible nozzle damage. Also,

during cold shutdown, a low temperature-overpressurization accident could occur while exercising these valves. We conclude that full stroke exercising these valves during refueling outages, when the vessel head is removed to provide an adequate expansion volume, should demonstrate proper valve operability.

13.2.2 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-SI-91, 105, and 99, low head safety injection check valves, and 2-SI-126 and 128, low head safety injection to the hot legs containment isolation check valves, in accordance with the requirements of Section XI. The licensee has proposed to exercise these valves during refueling outages.

13.2.2.1 Code Requirement. Refer to Appendix A.

13.2.2.2 Licensee's Basis for Requesting Relief. The only way to verify that these normally closed check valves can open is by initiating flow, using the low head safety injection pumps, into the reactor coolant system hot and cold legs. During operation or cold shutdown, reactor coolant system pressure will be higher than the low head pump discharge pressure precluding flow into the vessel. As an alternate, these valves shall be exercised open at refueling outages.

13.2.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-SI-91, 105, 99, 126, and 128 from the exercising requirements of Section XI. The licensee has demonstrated that the LHSI pumps cannot overcome operating RCS pressure. Also, during cold shutdown, RCS pressure is greater than design accident pressure and the LHSI pumps cannot achieve design flow through these valves. We conclude that full stroke exercising these valves during refueling outages, when the vessel head is removed and the RCS has minimum back pressure, should demonstrate proper valve operability.

13.2.3 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-SI-136 and 2-SI-132, accumulator makeup and nitrogen supply check valves, in accordance with the requirements of Section XI and proposed to verify valve closure (its safety-related position) during each refueling outage.

13.2.3.1 Code Requirement. Refer to Appendix A.

13.2.3.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation or cold shutdown. The only method available to verify that these valves close is during the refueling leak rate test.

13.2.3.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-SI-136 and 2-SI-132 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 rate testing. In addition, these valves are not equipped with valve position indicators. 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.

13.2.4 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-SI-151, 153, 168, 170, 185, and 187, accumulator discharge check valves, in accordance with the requirements of Section XI and proposed to parital stroke exercise these valves during refueling outages.

13.2.4.1 Code Requirement. Refer to Appendix A.

13.2.4.2 Licensee's Basis for Requesting Relief. To exercise these normally closed check valves would require the simulation of a loss of coolant accident, i.e., low RCS pressure. These valves shall be verified operable by initiating accumulator injection to the RCS with the vessel head removed during each refueling outage. 2-SI-170 and 2-SI-187 will be exercised when the RHR System is in service during cold shutdown.

13.2.4.3 Evaluation. We agree with the licensee's basis and, therefore, feel that temporary relief should be granted for Category A/C valves 2-SI-151, 153, 168, 170, 185, and 187 from the exercising requirements of Section XI. The licensee has demonstrated that these valves cannot be exercised during power operation because the accumulators cannot overcome RCS pressure. During cold shutdown, exercising these valves could result in an RCS low temperature-overpressurization accident. We conclude that, with the present plant design, a partial stroke exercise during refueling outages is the only test possible. However, we recommend that the licensee further investigate some alternate test method to full stroke exercise these valves at least once each refueling outage.

13.3 Category A/E Valves

13.3.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valve 2-SI-47, accumulator make-up isolation, in accordance with the requirements of Section XI.

13.3.1.1 Code Requirement. Refer to Appendix A.

13.3.1.2 Licensee's Basis for Requesting Relief. This is a manual valve and will not be exercised because it is in its accident position (closed).

13.3.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valve 2-SI-47 from the exercising 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 regards to the safety function which it performs. We conclude that the quarterly stroke and stroke time measurements are meaningless for a manual, passive valve.

13.3.2 Relief Request. The licensee has requested specific relief from exercising category A/E valves MOV-2836, MOV-2869A and 2869B, high

head safety injection off charging header, in accordance with the requirements of Section XI and proposed to exercise these valves during cold shutdown when the charging pumps are secured and at refueling outages.

13.3.2.1 Licensee's Basis for Requesting Relief. These normally closed valves are directly attached to the charging pump discharge header. During operation or cold shutdown the charging system must be in operation. If these valves were opened during these periods, uncontrolled flow to the reactor coolant system may cause overpressurization. As an alternate, these valves shall be cycled at refueling outages and at cold shutdown when the charging pumps can be secured.

13.3.2.2 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valves MOV-2836, MOV-2869A and 2869B from the exercising requirements of Section XI. The licensee has demonstrated that the charging pumps are required to be operating when the reactor coolant pumps are operating. The licensee has demonstrated that opening these valves with the charging pumps running would allow uncontrolled flow to the reactor coolant system and cause a loss of pressurizer level or reactor coolant system overpressurization. We conclude that exercising these valve during cold shutdown when the charging pumps are secured and during refueling outages should demonstrate proper valve operability.

13.3.3 Relief Request. The licensee has requested specific relief from exercising Category A/E valves MOV-2890A and 2890B, LHSI to hot legs, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

13.3.3.1 Code Requirement. Refer to Appendix A.

13.3.3.2 Licensee's Basis for Requesting Relief. These valves are in their required safety position with power to their operators removed during power operation. To exercise these valves would require leakage testing as per Technical Specification 4.4.6.2.2. The leakage testing would disturb the downstream check valve which would require a containment entry to leak test this valve. As an alternative these valves will be exercised during refueling outages.

13.3.3.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valves MOV-2890A and 2890B from the exercising requirements of Section XI. The licensee has demonstrated that these valves are in their intended safety position and are not required to operate to mitigate the consequences of an accident or safely shut down the plant. Exercising these valves would disturb the downstream check valve and require a containment entry to leak test this valve per the Technical Specifications. Because the containment is not always accessible during cold shutdown, this would delay plant startup. We conclude that the licensee's proposed alternate testing of exercising these valves during refueling outages should demonstrate proper valve operability.

13.4 Category C Valves

13.4.1 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-SI-1 and 2-SI-21, low head safety injection pump check valves from containment sump, in accordance with the requirements of Section XI and proposed to manually exercise these valves at refueling outages.

13.4.1.1 Code Requirement. Refer to Appendix A.

13.4.1.2 Licensee's Basis for Requesting Relief. These normally closed check valves cannot be exercised during plant operation or cold shutdown. No connections exist downstream of the check valve to input flow or pressure which could promote movement of the disc away from the seat. A test connection is required between the isolation valve and the check valve but cannot be installed. The isolation valve and check valve are butt welded together with no spool piece between them to provide a place for the test connection. As an alternate test, the check valve bonnet shall be removed at refueling outages and the disc shall be exercised mechanically to verify free movement without binding.

13.4.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-SI-1 and 2-SI-21. The licensee has demonstrated that no test connections exist to open the valves with a test medium without using flow from the containment sump. We conclude that the proposed alternate testing method of manual exercising at refueling outages should demonstrate proper valve operability.

13.4.2 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-SI-9 and 32, LHSI pump discharge check valves, and 2-SI-19, LHSI check valve from refueling water storage tank, in accordance with the requirements of Section XI and proposed to exercise them during refueling outages.

13.4.2.1 Code Requirement. Refer to Appendix A.

13.4.2.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation because the discharge pressure of the low head S.I. pumps cannot overcome RCS pressure. These valves will be exercised during refueling outages when the reactor vessel head is removed to provide enough volume to accomodate the large flow rate. 2-SI-19 will be partially stroked during the monthly pump test.

13.4.2.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-SI-9, 32, and 19 from the exercising requirements of Section XI. The licensee has demonstrated that the low head safety injection pumps cannot overcome operating RCS pressure. During cold shutdown, the LHSI pumps cannot achieve design flow because the RCS pressure is greater than design accident pressure. We conclude that partial stroke exercising these valves quarterly on pump recirculation and full stroke exercising these valves during refueling outages, with the vessel head removed to provide minimum back pressure and permit design flow, should demonstrate proper valve operability.

13.4.3 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-SI-90, 98, and 104, high head safety injection to cold legs, and 2-SI-113, 118, and 125, hot leg safety injection admission check valves, in accordance with the requirements of Section XI and proposed to exercise them during refueling outages.

13.4.3.1 Code Requirement. Refer to Appendix A.

13.4.3.2 Licensee's Basis for Requesting Relief. The only way to verify that these normally closed check valves open is by initiating flow, using the charging pumps, into the reactor coolant system hot and cold legs. If charging flow was directed to the reactor coolant system in this manner it would cause overpressurization during cold shutdown or provide a loss in charging flow control during operation. As an alternate, these check valves shall be exercised open during refueling outages.

13.4.3.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-SI-90, 98, 104, 113, 118, and 125 from the exercising requirements of Section XI. The licensee has demonstrated that exercising these valves during power operation would cause a loss of charging flow control and thermal shock to the injection nozzles and possible nozzle damage.

Also, during cold shutdown, a low temperature-overpressurization accident could occur while exercising these valves. We conclude that full stroke exercising these valves during refueling outages, when the vessel head is removed to provide an adequate expansion volume, should demonstrate proper valve operability.

13.4.4 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-SI-112, 117, and 124, low head safety injection to hot legs, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

13.4.4.1 Code Requirement. Refer to App A.

13.4.4.2 Licensee's Basis for Requesting Relief. The only way to verify that these normally closed check valves can open is by initiating flow, using the low head safety injection pumps, into the reactor coolant system hot and cold legs. During operation or cold shutdown, reactor coolant system pressure will be higher than the low head pump discharge pressure precluding flow into the vessel. As an alternate, these valves shall be exercised open at refueling outages.

13.4.4.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-SI-112, 117, and 124 from the exercising requirements of Section XI. The licensee has demonstrated that the LHSI pumps cannot overcome operating RCS pressure. Also, during cold shutdown, RCS pressure is greater than design accident pressure and the LHSI pumps cannot achieve design flow through these valves. We conclude that full stroke exercising these valves during refueling outages, when the vessel head is removed and the RCS has minimum back pressure, should demonstrate proper valve operability.

14. Service Water

14.1 Category A/C Valves

14.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/C valves 2-SW-74, 84, 94, and 104, recirculation spray heat exchanger inlet containment isolation check valves, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

14.1.1.1 Code Requirement. Refer to Appendix A.

14.1.1.2 Licensee's Basis for Requesting Relief. A commitment has been made to the ACRS prohibiting the introduction of service water into the recirculation spray heat exchangers when not in use. These heat exchangers are maintained in a standby condition filled with primary grade makeup water. Exercising these valves will be done at refueling outages when containment access is possible and the heat exchangers can be drained and refilled with primary grade makeup water.

14.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/C valves 2-SW-74, 84, 94, and 104 from the exercising requirements of Section XI. The licensee has demonstrated that, because of a commitment to the ACRS to keep service water out of the heat exchangers when not in use, these valves cannot be operated during power operation or cold shutdown because containment access is required to drain the heat exchangers. We conclude that the licensee's proposed alternate testing during refueling outages should demonstrate proper valve operability.

14.2 Category B Valves

14.2.1 Relief Request. The licensee has requested specific relief from exercising Category B valves MOV-SW-201A, B, C, and D, and MOV-SW-205A, B, C, and D, recirculation spray heat exchanger isolation valves, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

14.2.1.1 Code Requirement. Refer to Appendix A.

14.2.1.2 Licensee's Basis for Requesting Relief. A commitment has been made to the ACRS prohibiting the introduction of service water into the recirculation spray heat exchangers when not in use. These heat exchangers are maintained in a standby condition filled with primary grade makeup water. Exercising these valves will be done at refueling outages when containment access is possible and the heat exchangers can be drained and refilled with primary grade makeup water.

14.2.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category B valves MOV-SW-201A, B, C, and D and MOV-SW-205A, B, C, and D from the exercising requirements of Section XI. The licensee has demonstrated that, because of a commitment to the ACRS to keep service water out of the heat exchangers

when not in use, these valves cannot be operated during power operation or cold shutdown because containment access is required to drain the heat exchangers. We conclude that the licensee's proposed alternate testing during refueling outages should demonstrate proper valve operability.

14.3 Category C Valves

14.3.1 Relief Request. The licensee has requested specific relief from exercising Category C valves 2-SW-68 and 2-SW-70, service water to recirculation spray heat exchangers check valves, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

14.3.1.1 Code Requirement. Refer to Appendix A.

14.3.1.2 Licensee's Basis for Requesting Relief. A commitment has been made to the ACRS prohibiting the introduction of service water into the recirculation spray heat exchangers when not in use. These heat exchangers are maintained in a standby condition filled with primary grade makeup water. Exercising these valves will be done at refueling outages when containment access is possible and the heat exchangers can be drained and refilled with primary grade makeup water.

14.3.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category C valves 2-SW-68 and 2-SW-70 from the exercising requirements of Section XI. The licensee has demonstrated that, because of a commitment to the ACRS to keep service water out of the heat exchangers when not in use, these valves cannot be operated during power operation or cold shutdown, because containment access is required to drain the heat exchangers. We conclude that the licensee's proposed alternate testing during refueling outages should demonstrate proper valve operability.

15. Steam Generator Wet Layup

15.1 Category A/E Valves

15.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valves 2-WT-437, 438, 439, 446, 447, and 448, steam generator wet layup isolations, in accordance with the requirements of Section XI and proposed to exercise these valves during refueling outages.

15.1.1.1 Code Requirement. Refer to Appendix A.

15.1.1.2 Licensee's Basis for Requesting Relief. These are manual valves and they are in their intended safety position (closed). They will be exercised during refueling when the wet layup system is placed in operation.

15.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel relief should be granted for Category A/E valves, 2-WT-437, 438, 439, 446, 447, and 448 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 manual, passive valves.

16. Refueling Purification System

16.1 Category A/E Valves

16.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valves 1-RP-50, 1-RP-84, 2-RP-6, and 2-RP-7, refueling purification system containment isolation valves, in accordance with the requirements of Section XI.

16.1.1.1 Code Requirement. Refer to Appendix A.

16.1.1.2 Licensee's Basis for Requesting Relief. These are manual valves and will not be exercised because they are in their accident position (closed).

16.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel relief should be granted for Category A/E valves 1-RP-50, 1-RP-84, 2-RP-6, and 2-RP-7 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 manual, passive valves.

17. Residual Heat Removal

17.1 Category A/E Valves

17.1.1 Relief Request. The licensee has requested specific relief from exercising Category A/E valves 2-RH-37 and 2-RH-38, RHR containment isolation valves, in accordance with the requirements of Section XI.

17.1.1.1 Code Requirement. Refer to Appendix A.

17.1.1.2 Licensee's Basis for Requesting Relief. These are manual valves and will not be exercised because they are in their accident position (closed).

17.1.1.3 Evaluation. We agree with the licensee's basis and, therefore, feel that relief should be granted for Category A/E valves 2-RH-37 and 2-RH-38 from the exercising 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 manual, passive valves.

IV. APPENDIX A

1. Code Requirement--Valves

Subsection IWV-3410(a) of the 1974 Edition of the Section XI ASME Code (which discussed full stroke and partial stroke requirements) requires that Code Category A and B valves be exercised once every three months, with exceptions as defined in IWV-3410(b)(1), (e), and (f). IWV-3520(a) (which discusses full stroke and partial stroke requirements) requires that Code Category C valves be exercised once every three months, with exceptions as defined in IWV-3520(b). In the above exceptions, the Code permits the valves to be tested at cold shutdown where:

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

2. It is not practical to observe the operation of the valves (with failsafe actuators) upon loss of actuator power.

Subsection IWV-3410(c) requires all Category A and B power-operated valves to be stroke-time tested to the nearest second or 10% of the maximum allowable owner-specified time.

2. Code Requirements--Pumps

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.

V. ATTACHMENT I

The following are Category A, B and C valves that meet the exercising 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 that 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.

1. Component Cooling

1.1 Category A Valves

Category A valves, TV-CC-200A, B, C and TV-CC-205-A, B, and C, containment air recirculation coils isolation valves, cannot be exercised during power operation. Closing of these valves during power operations would seriously impair the heat removal capability of the containment ventilation system. These valves are vital for continued power operations. As an alternative, they will be cycled each cold shutdown.

2. Chemical and Volume Control

2.1 Category A Valves

Category A valves, HCV-2200A, B, and C, hand control letdown valves, cannot be exercised during power operation. These valves cannot be exercised when the charging and letdown systems are in operation due to the high risk of overpressurization of the reactor coolant system. They will be exercised at cold shutdown and refueling outages.

2.2 Category B Valves

Category B valves MOV-2115B, C, D, and E, charging pump suction isolation valves, cannot be exercised during power operation. Exercising these valves during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in RCS boron inventory. They will be exercised during cold shutdown when the RCS is borated to shutdown conditions.

Category B valve MOV-2350, emergency boration valve, cannot be exercised during power operation. Exercising this valve during power operation could cause a sudden increase in RCS boron inventory. It shall be exercised at cold shutdown when the RCS is already borated to shutdown conditions.

2.3 Category C Valves

Category C valves 2-CH-157 and 159, emergency boration path check valves, cannot be exercised during power operation. Exercising these valves during power operation could cause a sudden increase in RCS boron inventory. They shall be exercised at cold shutdown when the RCS is already borated to shutdown conditions.

3. Feedwater

3.1 Category B Valves

Category B valves, HCV-FW-200C and MOV-FW-200B, and D, auxiliary feedwater pump admission valves to steam generators, cannot be exercised during power operation. These valves are in the position required to fulfill their function. Exercising these valves will not improve their operational readiness. Exercising these valves may actually decrease system reliability if they fail in a nonconservative position. As an alternate, they will be exercised at cold shutdown and refueling outages.

4. Air Cooling and Purging System Reactor Containment

4.1 Category A Valves

Category A valves MOV-HV-200A, B, C, D and MOV-HV-201 and 202, containment purge and exhaust, cannot be exercised during power operation. Opening these valves during power operation would break containment vacuum and violate containment integrity. These valves shall be exercised each cold shutdown, but not more than once every 92 days.

5. Main Steam

5.1 Category B Valves

Category B valves TV-MS-201A, B, and C, main steam trip isolation valves, cannot be exercised during power operation. Closure of these valves during power operation will result in a reactor trip. As an alternative, they will be cycled each cold shutdown, but not more than once every 92 days.

5.2 Category C Valves

Category C valves, NRV-MS-201A, B, and C, main steam non-return valves, cannot be exercised during power operation. Closure of these valves during power operation will result in a reactor trip. As an alternative, they will be cycled each cold shutdown, but not more than once every 92 days.

Category C valves 2-MS-19, 58, and 96, main steam check valves, cannot be exercised during power operation. 2-MS-19, 58, and 96 are located in a high temperature area that would be hazardous to enter during power operation. These valves will be exercised closed during cold shutdown and refueling outages.

6. Recirculation Spray

6.1 Category B Valves

Category B valves MOV-RS-255A, B and MOV-RS-256A, B, outside recirculation spray pump suction and discharge, cannot be exercised during power operation. These valves are in the position required to fulfill their function. Exercising these valves will not improve their operational readiness. Exercising these valves may actually decrease system reliability if they fail in a nonconservative position. As an alternate, they will be exercised at cold shutdown and refueling outages.

7. Residual Heat Removal

7.1 Category A Valves

Category A valves MOV-2700, 2701, 2720A and B, RHR system isolation valves, cannot be exercised during power operation. Operation of RHR system valves during power operations would subject the RHR system to full RCS pressure. Valves in the RHR system will be exercised each time the RHR system is put into operation during the cooldown and shutdown of the reactor coolant system. These valves will be leak tested in accordance with Technical Specifications.

7.2 Category C Valves

Category C valves 2-RH-7 and 2-RH-15, RHR pump discharge check valves, cannot be exercised during power operation. Operation of RHR system valves during power operations would subject the RHR system to full RCS pressure. Valves in the RHR system will be exercised each time the RHR system is put into operation during the cooldown and shutdown of the reactor coolant system. These valves will be leak tested in accordance with Technical Specifications.

8. Safety Injection

8.1 Category A Valve

Category A valve HCV-2936, accumulator tank purge control valve, cannot be exercised during power operation. HCV-2936 is in its safety position and will be exercised during cold shutdown and refueling outages.

8.2 Category B Valves

Category B valve MOV-2863B, LHSI to charging pump suction, cannot be exercised during power operation. Exercising this valve during power operation would require the charging pump suctions to be aligned with the refueling water storage tank. This would cause a sudden increase in RCS boron inventory. It will be exercised during cold shutdown when the RCS is borated to shutdown conditions.

Category B valves MOV-2864A and 2864B, LHSI pump cold leg discharge stop valves, cannot be exercised during operation. These valves are in the

position required to fulfill their function. Exercising these valves will not improve their operational readiness. Exercising these valves may actually decrease system reliability if they fail in a nonconservative position. As an alternate, they will be exercised at cold shutdown and refueling outages.

Category B Valves MOV-2865A, B, and C, accumulator outlet valves, cannot be operated during cold shutdown. These normally open valves are in the required position for an accident and are required by Technical Specifications to remain open during power operations. They are closed in the normal process of shutdown to cold conditions and reopened during subsequent heat up.

8.3 Category C Valve

Category C valve 2-SI-18, refueling water storage tank to charging pump suction check valve, cannot be exercised during power operation. Exercising this valve during operation could cause a sudden increase in RCS boron inventory. It shall be exercised at cold shutdown when the RCS is already borated to shutdown conditions.

9. Service Water

9.1 Category A and B Valves

Category B valves MOV-SW-202A, B and 206A, B, Unit 2 recirculation spray heat exchangers cross connect valves, and Category A valves MOV-SW-203A, B, C, D and 204A, B, C, D, recirculation spray heat exchanger containment isolation valves, cannot be exercised during power operation. These valves are in the position required to fulfill their function. Exercising these valves will not improve their operational readiness. Exercising these valves may actually decrease system reliability if they fail in a nonconservative position. As an alternate, they will be exercised at cold shutdown and refueling outages.

VI. ATTACHMENT II

1. The following item concerns valves that are never full stroke exercised or that have a testing frequency greater than each refueling outage.

   a. Valve Testing Program

      (1) 13.2.4

VII. ATTACHMENT III

The following P&IDs were used during the course of this review:

Air Cooling and Purging Sys. Reactor Containment	FB-7C
Main Steam	FM-70A and B
Feedwater	FM-74A
Service Water	FM-78A, B and C
Component Cooling	12050-FM-79A and B
	11715-FM-79A
Compressed Air	FM-82B
Sampling System	FM-89A and B
Vent and Drain	FM-90A and B
Containment Quench & Recirculation Spray Subsystems	FM-91A and B
Containment Vacuum & Leakage Monitor System	FM-92A
Reactor Coolant System	FM-93B
Residual Heat Removal System	FM-94A
Chemical and Volume Control System	FM-95A, B and C
Safety Injection System	FM-96A and B
Steam Generator Blowdown	FM-98A
Steam Generator Wet Layup	11715-FM-38A
Refueling Purification System	11715-FM-88A

VIII. ATTACHMENT IV

The following items were discussed with David Heacock of North Anna Unit 2 and may appear as differences between this report and their IST program. The Licensee has agreed to send revised pages of their report to reflect the below-listed changes.

1. 2-CC-37 will be exercised every 3 months.

2. HCV-2200A, B, and C will be exercised at cold shutdown.

3. Relief request 9 was revised.

4. 1-CH-113 is changed to 1-CH-133.

5. 2-CV-4 will have relief request 30 instead of 38.

6. HCV-FW-200C will be exercised at cold shutdown.

7. MOV-FW-200B and D will be exercised at cold shutdown.

8. 2-IA-250 will be categorized A/C and exercised at refueling. Relief request 28 will apply to this valve.

9. NRV-MS-201A, B, and C, will be categorized C instead of E.

10. MOV-RS-255A, B, and MOV-RS-256A, B will be exercised at cold shutdown.

11. 2-RS-103 and 118 will be categorized C instead of B/C.

12. MOV-SW-202A, B and 206A, B will be exercised at cold shutdown. Relief request 10 will apply to these valves.

13. MOV-SW-203A, B, C, D and 204A, B, C, D are exercised at cold shutdown.

14. 2-WT-437, 438, 439, 446, 447, and 448 are categorized A/E instead of A.

15. 1-RP-50, 84 and 2-RP-6, 7 will be included in the program as Category A/E valves. Relief request 30 will apply to these valves.

16. Relief Request 12 will also apply to 2-FW-150.

17. Relief Request 34 will change 2-MS-98 to 2-MS-96.

18. Charging Pumps 2-CH-P-1A, 1B, and 1C ΔP will be measured monthly.

19. Boric acid transfer pumps 1-CH-P-2C and 2D ΔP will be calculated monthly.

20. Screenwash pumps 2-CW-P-2A and 2-SW-P-2 will be deleted from the program, not safety related.

21. Auxiliary feed pumps 2-FW-P-2, 2-FW-P-3A, and 3B Q will be measured monthly.

22. Residual heat removal pumps 2-RH-P-1A and 1B will be deleted from the program, not safety related.

23. Low head safety injection pumps 2-SI-P-1A and 1B Q will be measured monthly. Note 1 will apply to ΔP.

24. Service water pumps, 2-SW-P-1A, 1B, and 4 ΔP and Q will be measured monthly.

25. HCV-2200A, B, and C will be exercised at cold shutdown. Relief Request 9 will apply to these valves.

26. MOV-2267A and B, 2269A and B, 2270A and B, 2286A, B, and C, 2287A, B, and C will be exercised at cold shutdown when the charging pumps are secured and at refueling outages. Relief Request 38 will apply to these valves.

27. MOV-2267C and D will be exercised at refueling outages. Relief Request 39 will apply to these valves.

28. MOV-2836 and 2869A and B will be exercised at refueling outages. Relief Request 18 was revised and will apply to these valves.

29. MOV-2890A, B. C, and D will be exercised at refueling outages. Relief Request 20 was revised and will apply to these valves.