NRC Research and/or Technical Assistance Report

EGG-EA-5588

OCTOBER 1981

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SAFETY EVALUATION REPORT, PUMP AND VALVE INSERVICE TESTING PROGRAM, INDIAN POINT 3 NUCLEAR POWER PLANT, DOCKET NO. 50-286

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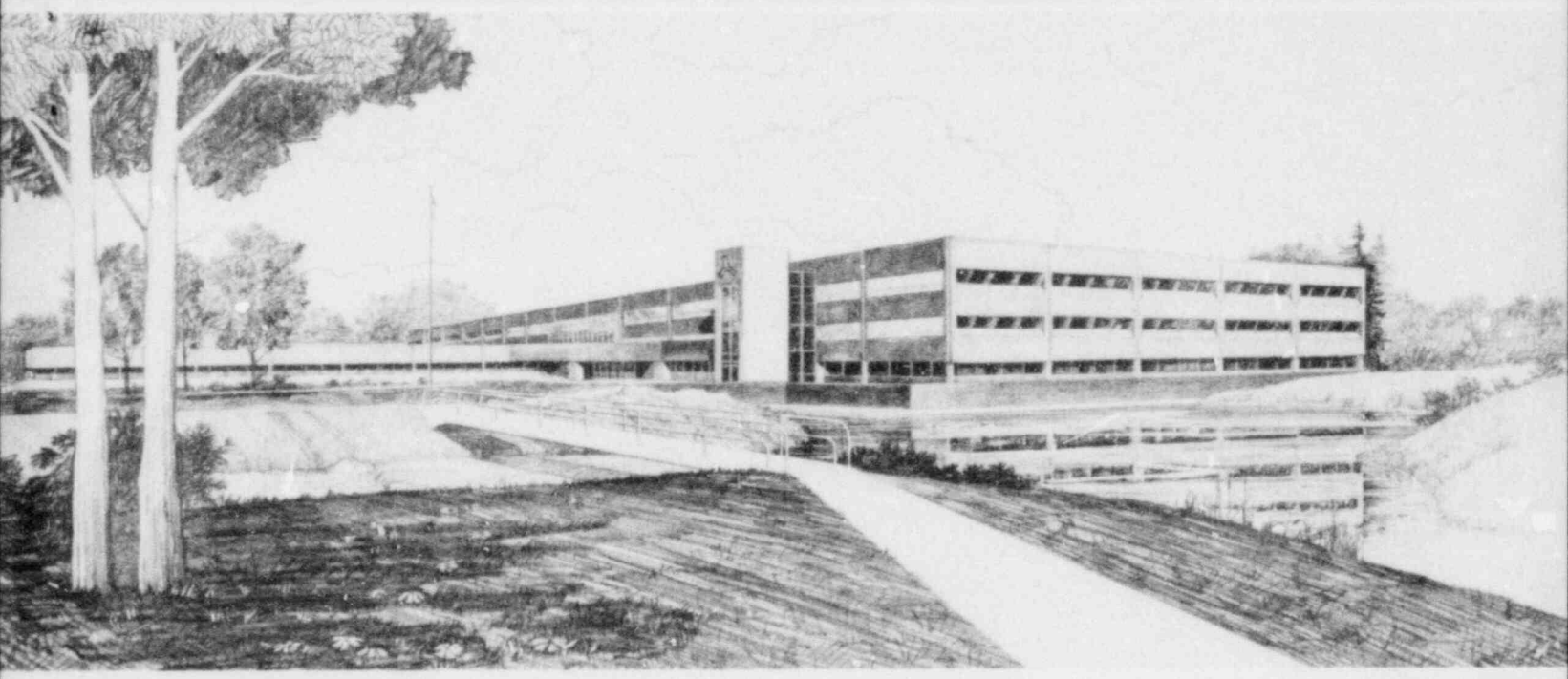

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Prepared for the
U.S. Nuclear Regulatory Commission
Under DOE Contract No. DE-AC07-76ID01570
FIN No. A6258

EG&G Idaho

EG&G Idaho, Inc.

FORM EG&G 398
(Rev. 11-79)

INTERIM REPORT

Accession No. _____

Report No. EGG-EA-5588

Contract Program or Project Title:

Systems Engineering Support

Subject of this Document:

Safety Evaluation Report, Pump and Valve Inservice Testing Program, Indian Point 3 Nuclear Power Plant, Docket No. 50-286

Type of Document:

Safety Evaluation Report

Author(s):

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Date of Document:

October 1981

Responsible NRC Individual and NRC Office or Division:

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

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Prepared for the
U.S. Nuclear Regulatory Commission
Washington, D.C.
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INTERIM REPORT

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I. INTRODUCTION

Contained herein is a safety evaluation of the pump and valve inservice testing (IST) program submitted by the Power Authority of the State of New York (PASNY) for its Indian Point 3 Nuclear Power Station.

The working session with PASNY and Indian Point 3 representatives was conducted on April 1 and 2, 1980. The licensee resubmittal was received by EG&G Idaho, Inc., on December 29, 1980, and reviewed 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. PASNY has also requested relief from the ASME Code from testing specified pumps and valves because of practical reasons. These requests have been evaluated individually to determine whether they have significant risk implications and whether the tests, as required, are indeed impractical.

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

A summary of valve testing requirements is provided in Appendix A.

Appendix J exemption requests for Category A valves that should be reveiwed by the NRC are contained in Attachment I.

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

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

Relief requests with insufficient technical basis where relief is not recommended and potential NRC guideline conflicts are summarized in Attachment IV.

Items discussed via telephone after the IST meeting with the licensee that result in changes to their program and may appear as differences between their IST program and this report are detailed in Attachment V.

II. PUMP TESTING PROGRAM

The IST program submitted by Indian Point 3 was examined to verify that Class 1, 2, and 3 safety-related pumps were included in the program and that those pumps are subjected to the periodic tests as required by the ASME Code, Section XI. Our review found that Class 1, 2, and 3 safety-related pumps were included in the IST program and, except for those pumps identified below for which specific relief from testing has been requested, the pump tests and frequency of testing comply with the code. Each Indian Point 3 basis for requesting relief from testing pumps and the EG&G evaluation of that request is summarized below.

1. Safety-Related Pumps

1.1 Relief Request

Relief is requested from the code-specified method of measuring pump inlet pressure for the containment spray pumps.

1.1.1 Code Requirement. Section XI, Table IWP-3100-1, Footnote 2, states, "measure [inlet pressure] before pump startup and during test."

1.1.2 Licensee's Basis for Requesting Relief. The system, as designed and installed, does not contain instrumentation for the measurement of pump inlet pressure. Under the conditions that the pump performance test will be carried out, with low-flow conditions on recirculation "mini-flow," the head losses in the 10-inch-diameter suction piping will be extremely small and inlet pressure can be taken from the head of water above the pump suction in the RWST.

1.1.3 Evaluation. The licensee has demonstrated that the present piping configuration does not include provisions for measurement of containment spray pump inlet pressure and we feel the proposed alternate test of measuring the head of water above pump suction will adequately provide the information required by Section XI. Therefore, we feel relief should be granted from the requirements of Section XI for measurement of pump inlet pressure for the containment spray pumps.

1.2 Relief Request

Relief is requested from the Section XI requirements for measurement of nuclear and conventional service water pump inlet pressure.

1.2.1 Code Requirement. IWP-4211 Pressure Tap Construction. "Pressure taps shall be flush with and normal to the wall of the liquid passage."

IWP-4212 Pressure Tap Location. "Pressure taps shall be located in a section of the flowpath that is expected to have reasonably stable flow as close as practical to the pump. Any line valves between inlet and discharge pressure taps shall be in an open position during the inservice test."

1.2.2 Licenee's Basis for Requesting Relief. The service water pumps are vertical design with no means of direct inlet pressure measurement as

required by IWP-4200. Inlet pressure to these pumps will be established by reference to the level of water above the pump suction. As the measurement of the level of water above suction is to be used to determine the inlet pressure, relief is required from meeting pressure tap construction and location requirements of IWP-4211 and IWP-4212.

1.2.3 Evaluation. The licensee had demonstrated that the present configuration does not provide for measurement of inlet pressure for these vertical, submerged pumps. We feel the licensee's proposed alternate test of measurement of the level of water above pump suction will provide the information necessary for pump performance evaluation. Therefore, we feel relief should be granted from these requirements of Section XI.

1.3 Relief Request

Relief is requested from the code-specified method of performing the pump inservice tests for the nuclear and conventional service water pumps.

1.3.1 Code Requirement. IWP-3100 requires the owner to establish reference test conditions for performing the inservice tests for pumps. Also, Table IWP-3100-1 requires the measurement of inlet pressure, differential pressure, and pump flowrate for the evaluation of the hydraulic performance of these pumps.

1.3.2 Licensee's Basis for Requesting Relief. The nuclear and conventional service water pump systems, as designed and installed, do not allow the collection of meaningful data for trending the hydraulic parameters for these pumps. Relief is required from measuring these hydraulic parameters until the systems are modified to permit the obtaining of meaningful data for evaluating a realistic trend analysis. Vibration measurements will be taken and analyzed but relief is requested from the specified action ranges for these pumps. Two pumps minimum in each header are in continuous operation for both the essestial and non-essential loads during all modes of plant operation. The service load for these pumps constantly varies with plant power load, plant operating status, river water and ambient air temperatures and it is not possible to ensure that flow and head parameters will be the same at any given two monthly performance tests. There is no instrumentation to monitor flowrate in the plant system as designed and constructed. However, modifications will be installed to record this parameter.

1.3.3. Evaluation. The licensee has demonstrated that present piping configuration and system design does not provide for testing these pumps in the code-specified manner. We feel relief should be granted from the requirements of Section XI for measurement of pump flowrate until proper instrumentation can be installed. Additionally, we feel relief should be granted from the code-specified action range for vibration for these pumps, but we feel the licensee should provide to the NRC for review, the proposed alternate alert and action ranges for these pumps that the licensee feels would be more appropriate.

1.4 Relief Request

Relief is requested from the test frequency requirements of Section XI for the recirculation pumps.

1.4.1 Code Requirement. IWP-3400(a) states, "an inservice test shall be run on each pump nominally each month during normal plant operation."

1.4.2 Licensee's Basis for Requesting Relief. The recirculation pumps cannot be properly tested during power operation, since these pumps are located inside containment and are inaccessible. During a cold shutdown, pump testing will not occur due to the length of time that is required for filling and draining the sumps which is required to perform such tests. Additionally, 5,000 gal of contaminated waste water is generated and will require reprocessing. These pumps will be tested during a refueling outage, and all required hydraulic and mechanical parameters will be taken for each pump test (except bearing temperature--see paragraph 1.5 of this section of this report).

1.4.3 Evaluation. The licensee has demonstrated that testing the recirculation pumps during power operation cannot be accomplished since the pumps are physically located inside containment and are inaccessible for local observation. During cold shutdown, testing of these pumps would require approximately 5,000 gal of water that would have to be processed as radioactive waste. Therefore, we feel relief should be granted from the testing frequency requirements of Section XI for these pumps. We feel the licensee's proposed alternative test frequency of each refueling outage will adequately demonstrate proper operability of these normally-idle, dry-suction pumps.

1.5 Relief Request

Relief is requested from the code-specified method of temperature measurement for the following pumps.

Auxiliary Feedwater Pumps

Safety Injection Pumps

Containment Spray Pumps

Residual Heat Removal Pumps

Recirculation Pumps

1.5.1 Code Requirement. IWP-3500(b) states, "when measurement of bearing temperature is required [yearly], each pump shall be run until the bearing temperatures stabilize, and then the quantities specified shall be measured or observed and recorded. A bearing temperature shall be considered stable when three successive readings, taken at ten-minute intervals, do not vary by more than 3%."

1.5.2 Licensee's Basis for Requesting Relief. The temperature measurement test method, as specified in the ASME Code IWP-3500, cannot be achieved for the Auxiliary Feedwater Pumps, Safety Injection Pumps, Containment Spray Pumps, Residual Heat Removal Pumps and Recirculation Pumps. IWP-3500 requires each pump to be run until the bearing temperature stabilizes and then the quantities specified can be measured. To prevent internal damage to these pumps, the running time can be no longer than 30 minutes when utilizing only the minimum flow recirculation line. Temperature measurements on these pumps will be taken yearly to analyze pump bearing degradation.

1.5.3 Evaluation. The licensee has demonstrated that running these pumps with flow through the minimum flow recirculation line only (the established pump testing method) for periods greater than 30 minutes can cause internal damage to the pumps. Therefore, we feel relief should be granted from the test method requirements of IWV-3500(b).

III. VALVE TESTING PROGRAM EVALUATION

The IST program submitted by Indian Point 3 was examined to verify that Class 1, 2, and 3 safety-related valves were included in the program and that those valves are subjected to the periodic tests required by the ASME Code, Section XI, and the NRC positions and guidelines. Our review found that Class 1, 2, and 3 safety-related valves were included in the IST program and, except for those valves identified below for which specific relief from testing has been requested, the valve tests and frequency of testing comply with the code requirements and the NRC positions and guidelines listed in 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 licenee's use to incorporate these valves into the IST program. Each Indian Point 3 basis for requesting specific relief from testing valves 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

Several safety systems connected to the reactor coolant pressure boundary have design pressures below the reactor coolant system operating pressure. Redundant isolation valves within the Class 1 boundary forming the interface between these high- and low-pressure systems prevent the low-pressure systems from experiencing pressures which exceed their design limit. In this role, the valves perform a pressure isolation function. The NRC considers the redundant isolation provided by these valves to be important. The NRC considers it necessary to assure that the condition of each of these valves is adequate to maintain this redundant isolation and system integrity. For these reasons, EG&G and the NRC believe that some method, such as pressure monitoring, leak testing, radiography, or ultrasonic testing, should be used to assure the condition of each valve is satisfactory in maintaining this pressure isolation function.

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

857A, B, C, D, E, F, H, J, K, L, M, N, P, Q, S, U

897A, B, C, D

838A, B, C, D

895A, B, C, D

730

731

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

1.2 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.

1.3 Test Frequency of Check Valves Tested at Cold Shutdowns

The Code states that, in the case of cold shutdowns, valve testing need not be performed more often than once every three months for Category A and B valves and once every nine months for Category C valves. It is 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."

1.4 Licensee Request for Relief to Test Valves at Cold Shutdowns

The Code permits valves to be tested at cold shutdowns, and the conditions under which this is permitted is noted in Appendix A. 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, betwee the cold-shutdown mode and the refueling mode. That is, for testing purposes, the refueling mode is not considered as a cold shutdown.

1.5 Technical Specification Changes

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 conjuction 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.

1.6 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 category would typically include certain ASME Code Class 1, 2, and 3 valves and could include some non-code class valves. It should be noted that the licensee may have included non-safety-related valves in their IST program as a decision on the licensee's part to expand the scope of their program.

1.7 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 prerequisite 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.

4. 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.

1.8 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 requrements 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.

1.9 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.

2. Generic Relief Requests

2.1 Category A and B Valves

2.1.1 Relief Request. Relief is requested from the requirements of Section XI, Article IWV-3410(c)(3), for power-operated valves with stroke times of less than 5 seconds.

2.1.1.1 Code Requirement. IWV-3410(c)(3) states, "If an increase in stroke time of 25% or more from the previous test for valves with stroke times greater than 10 seconds or 50% or more for valves with stroke times less than or equal to 10 seconds is observed, test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed. In any case, any abnormality or erratic action shall be reported."

2.1.1.2 Licensee's Basis for Requesting Relief. The stroke times of solenoid-controlled, air-operated valves are both extremely rapid and subject to considerable variation. Valves whose stroke times are less than 5 seconds will be only verified that they meet the 5-second limit. Exception is taken to complying with stroke time variations defined by Article IWV-3410(c)(3).

2.1.1.3 Evaluation. The licensee has demonstrated that stroke timing of rapid-acting, solenoid-controlled, and air-operated valves whose stroke times are less than 5 seconds, would produce no meaningful data since these stroke times are extremely rapid and subject to considerable variation. Therefore, we feel relief should be granted from the stroke timing requirements of Section XI for these valves. We feel the licensee's proposed alternate test of verification of stroke times less than the 5-second maximum will adequately verify proper valve operation.

2.1.2 Relief Request. Relief is requested from the requirements of Section XI, Article IWV-3410(g).

2.1.2.1 Code Requirement. IWV-3410(g):

1. Valves with leakage rates exceeding either the values specified by the plant owner, or those rates shown in Table IWV-3420-1 as directed by IWV-3420(f), shall be replaced or repaired and retested to demonstrate satisfactory operation before being returned to service.

2. For valves 6 in. and larger, if a leakage rate exceeds the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate by 50% or more, the test frequency shall be doubled and tests scheduled to coincide with a cold shutdown until corrective action is taken, at which time, the original test frequency shall be resumed. When tests show a leakage rate increasing with time, and a projection based on three or more tests indicates that the leakage rate of the next scheduled test will exceed the maximum permissible leakage rate by more than 10%, the valve shall be replaced or repaired and retested to demonstrate satisfactory operation before being returned to service.

2.1.2.2 Licensee's Basis for Requesting Relief. Exemption is requested from the corrective action requirements of Article IWV-3410(g) of Section XI. The requirement for corrective action of components in safety systems is adequately covered in the limiting conditions for operation contained in the present Indian Point 3 Technical Specifications.

2.1.2.3 Evaluation. The licensee has demonstrated that the limiting conditions for operation as specified by the plant's Technical Specifications more appropriately describe which equipment must be in service for plant operation. Additionally, the containment isolation valves are leak-tested per Appendix J requirements and individual valve leakage rates are not determined. Therefore, we feel relief should be granted from the requirements of Article IWV-3410(g) of Section XI.

2.1.3 Relief Request. Relief is requested from the exercising requirements of Section XI for the following passive valves:

990A	Recirculation Pump Discharge Sample Valve
990C	RHR Sample Valve
958	RHR Loop Sample Valve
1833A and B	Boron Injection Recirculation Line Isolation Valves
732	RHR Pump Suction from Hot Leg
990B	Containment Recirculation Pump Sample Isolation Valve
SWN-43	(5 Valves) Containment Cooler Service Water Line Vents
1875A and B	H_2 Recombiner Containment Isolation Valves
1876A and B	H_2 Recombiner Containment Isolation Valves
1872A	H_2 Recombiner Containment Isolation Valve
PS-7, 8, 9, and 10	Post-Accident Containment Vent Valves
UH-37 and 38	Containment Heater Steam Supply and Cond. Return Isolation Valves
883	RHR Pump Discharge to RWST Stop Valve
850A	SI Pump No. 31 Discharge Stop Valve

2.1.3.1 Code Requirement. Refer to Appendix A.

2.1.3.2 Licencee's Basis for Requesting Relief. These valves are passively closed and are not required to change position to perform their safety-related function. These valves' position will be verified per the appropriate system check-off list prior to plant operation.

2.1.3.3 Evaluation. 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 feel relief should be granted from the exercising requirements of Section XI for these passive valves.

2.1.4 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 851B, safety injection pump #32 discharge to BIT.

2.1.4.1 Code Requirement. Refer to Appendix A.

2.1.4.2 Licensee's Basis for Requesting Relief. This valve which is passively open, is not required to change position to perform its safety function. This valve will have its position verified by Safety Injection System Check-Off List prior to plant power operation.

2.1.4.3 Evaluation. 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 is meaningless for this passive valve and, therefore, feel relief should be granted from the exercising requirements of Section XI.

2.2 Category C Valves

2.2.1 Relief Request. Relief is requested from the exercising requirements of Section XI for Valves SWN-100A and B, service water to component cooling heat exchanger check valves.

2.2.1.1 Code Requirement. Refer to Appendix A.

2.2.1.2 Licensee's Basis for Requesting Relief. SWN-100A and B are passively opened valves which are not required to change position to perform their safety function. These valves will have their positions verified during monthly diesel-generator testing.

2.2.1.3 Evaluation. These valves are in their safety related position and are not required to change position to perform their safety related function. The operability of these valves is inconsequential with regard to their safety function and, therefore, we feel relief should be granted from the exercising requirements of Section XI for these passive valves.

3. Condensate and Boiler Feed System

3.1 Category B Valves

3.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for Valves PCV-1187, -1188, and -1189, auxiliary feedwater pump suctions from city water supply.

3.1.1.1 Code Requirement. Refer to Appendix A.

3.1.1.2 Licensee's Basis for Requesting Relief. These valves are required to function only in the event that a main steam turbine missile would puncture the condensate storage tank. All or partial exercising these valves would introduce city water (containing chlorides) into the condensate system to the auxiliary feedwater pumps. Exercising these valves requires isolating city water to the entire turbine hall and draining this piping. The suction piping of the auxiliary feedwater pumps must then be flushed prior to return to service. These valves will be full stroke exercised during refueling outages.

3.1.1.3 Evaluation. The licensee has demonstrated that these valves cannot be exercised during power operation or cold shutdown without introducing chlorides into the condensate system, auxiliary feedwater system, and potentially, into the steam generators. During refueling outages, the system piping can be drained and flushed with condensate system grade water to ensure removal of chlorides prior to return of system to service. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test will adequately verify proper valve operability.

3.2 Category C Valves

3.2.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valve CT-29, steam-driven auxiliary feedwater pump suction check.

3.2.1.1 Code Requirement. Refer to Appendix A.

3.2.1.2 Licensee's Basis for Requesting Relief. The only full flow flowpath for full stroke exercising of this valve during power operation would be into the steam generators. This would thermal shock the feedwater nozzles, which have a limited number of thermal cycles. This valve cannot be full stroke exercised during cold shutdown because steam is not available to the steam turbine pump drive. This valve will be partial stroke exercised every three months during the turbine-driven auxiliary feedwater pump test. This valve will be full stroke exercised during refueling outages.

3.2.1.3 Evaluation, The licensee has demonstrated that this valve cannot be full stroke exercised during power operation or cold shutdown since this would require full feedwater flow into the steam generators, resulting in thermal shock to the feedwater nozzles, which have a design-limited number of thermal cycles. Additionally, during cold shutdown, no steam is available to run the turbine-driven auxiliary feedwater pump to permit exercising this valve. Therefore, we feel relief should be granted from the exercising requirements of Section XI for this valve. We feel the licensee's proposed alternate test of partial stroke exercising quarterly and full stroke exercising during refueling outages will adequately demonstrate proper valve operability.

4. Feedwater System

4.1 Category C Valves

4.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves BFD-31, turbine-driven auxiliary feedwater pump discharge check, and BFD-47 (four valves) turbine-driven auxiliary feedwater pump discharge to individual S/Gs check valves.

4.1.1.1 Code Requirement. Refer to Appendix A.

4.1.1.2 Licensee's Basis for Requesting Relief. The only full flow flowpath for full stroke exercising of these valves during power

operation would be into the steam generators. This would thermal shock the feedwater nozzles, which have a limited number of thermal cycles. The valves cannot be stroked during cold shutdown because steam is not available to the steam turbine pump drive. These valves will be full stroke exercised during refueling outages.

4.1.1.2 Evaluation. The licensee has demonstrated that these valves cannot be exercised during power operation since flow through these valves would require feeding the steam generators with relatively cold water, resulting in thermal shock to the feedwater nozzles, which have a design limited number of thermal cycles. During cold shutdown, steam to drive the turbine-driven pump is not available; therefore, these valves cannot be exercised. We feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

5. Auxiliary Coolant System

5.1 Category A Valves

5.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 744, RHR containment isolation.

5.1.1.1 Code Requirement Refer to Appendix A.

5.1.1.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised during power operation since failure in the closed position would render the Residual Heat Removal System inoperable. During cold shutdown, the Residual Heat Removal System flowpath is through this valve and it cannot be closed. This valve will be full stroke exercised during refueling outages.

5.1.1.3 Evaluation. The licensee has demonstrated that exercising this valve during power operation could render the RHR/LPSI system inoperable. Additionally, during cold shutdowns, this valve cannot be exercised since this would isolate RHR flow, which is required for decay heat removal. Therefore, we feel relief should be granted from the exercising requirements of Section XI for this valve. We feel the proposed alternate test of full stroke exercising this valve during refueling outages will adequately demonstrate proper valve operability.

5.2 Category B Valves

5.2.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 745A and B, RHR pump discharge to heat exchanger #2.

5.2.1.1 Code Requirement. Refer to Appendix A.

5.2.1.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation; since these valves are located inside containment, if a failure should occur, the plant must be shut down

for repairs. During cold shutdown, heat exchangers are required for decay heat removal. Exercising these valves will cause the system to become inoperable. These valves will be full stroke exercised during refueling outages.

5.2.1.3 Evaluation. The licensee has demonstrated that failure of these valves during testing at power would require plant shutdown for repairs and these valves are in the normal shutdown cooling flowpath. During cold shutdown these valves must remain open for reactor decay heat removal. Therefore, we feel relief should be granted from the quarterly and cold shutdown exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages, when the decay heat removal system can be shut down, will adequately demonstrate proper valve operability.

6. Safety Injection Systems

6.1 Category A and A/C Valves

6.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 1835A and B, boron injection tank (BIT) discharge isolations.

6.1.1.1 Code Requirement. Refer to Appendix A.

6.1.1.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation, since exercising would allow highly concentrated boric acid (23,000 ppm) from the BIT to migrate down the piping which is not heat traced and could result in blockage of the injection piping. During cold shutdown, the flushing of this piping would require using the high head safety injection pumps which could result in a low-temprature overpressurization of the RCS. These valves will be full stroke exercised during refueling outages.

6.1.1.3 Evaluation. The licensee has demonstrated that exercising these valves during power operation cannot be accomplished since this would allow the highly concentrated boric acid to migrate into non-heat traced piping and result in blockage of the BIT injection flowpath. During cold shutdown, the pipe flush required after valve operation could result in a low-temperature overpressurization of the RCS. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.1.2 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 897A, B, C, and D, accumulator/RHR/LPSI injection checks.

6.1.2.1 Code Requirement. Refer to Appendix A.

6.1.2.2 Licensee's Basis for Requesting Relief. These valves cannot be full or partial stroke exercised during power operation since the

RHR/Low Head Safety Injection Pumps or the accumulators cannot overcome the RCS pressure to open these check valves. These valves can be partial stroke exercised during cold shutdown. This is an OPEN ITEM for the licensee to determine if RHR flow will full stroke exercise these valves.

6.1.2.3 Evaluation. The licensee had demonstrated that these check valves cannot be full or partial stroke exercised during power operation since neither the accumulators nor the LPSI pumps can overcome RCS pressure. During cold shutdowns, these valves will be partial stroke exercised with the RHR flow into the RCS, but a full storke of the valves cannot be verified. Therefore, we feel temporary relief should be granted from the exercising requirements of Section XI for these valves until the licensee can determine a full stroke exercising method and frequency.

6.1.3 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 895A, B, C, and D, accumulator discharge checks.

6.1.3.1 Code Requirement. Refer to Appendix A.

6.1.3.2 Licensee's Basis for Requesting Relief. Valves 895 A-D cannot be full stroke exercised during power operation since the only full flow/full stroke flowpath is into the RCS and the accumulators are pressurized to approximately 660 psi and the RCS is approximately 2265 psi. These valves cannot be partially or full stroke exercised during cold shutdown since full stroking could result in a low temperature over pressurization of the RCS. These valves are partial stroke exercised during refueling. Licensee is investigating methods for full stroke exercising these check valves.

6.1.3.3 Evaluation. The licensee has demonstrated that full or partial stroke exercising of these valves during power operation cannot be accomplished since the accumulators cannot overcome RCS pressure. During cold shutdown, exercising these valves could result in a low-temperature overpressurization of the RCS. Therefore, we feel temporary relief should be granted from the quarterly and cold shutdown exercising requirements of Section XI for these valves. However, we feel the licensee should continue to investigate a test method for full stroke exercising these valves at least each refueling outage.

6.1.4 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 867A and B, containment spray pump discharge checks.

6.1.4.1 Code Requirement. Refer to Appendix A.

6.1.4.2 Licensee's Basis for Requesting Relief. These valves cannot be full stroke exercised during power operation and cold shutdown, since the only full flowpath would require spraying containment. During refueling outages these valves will be full stroke exercised either with flow through a special test pipe or by manually exercising the valve disc by partial valve disassembly.

6.1.4.3 Evaluation. The licensee has demonstrated that full flow/full stroke exercising these check valves during power operation or cold shutdowns would result in spraying contaminated water from the RWST into the containment, resulting in soaking lagging, electrical equipment, etc. and requiring extensive cleanup efforts. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of partial stroke exercising quarterly and full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.1.5 Relief Request. Relief is requested from the exercising and remote-position indicator check requirements of Section XI for valve 885A, RHR pump suction from containment sump isolation.

6.1.5.1 Code Requirement. Refer to Appendix A. Additionally, IWV-3300 requires that, "All valves with remote-position indicators which, during plant operation, are inaccessible for direct observation, shall be visually observed at the same (or greater) frequency as scheduled refueling outages, but not less than one observation every two years, to confirm that remote valve indications accurately reflect valve operation."

6.1.5.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised during power operation since the valve is interlocked with normally-open valve 882. Valve 882 cannot be closed during power operation since this would render the Residual Heat Removal System inoperable. During cold shutdown, this valve cannot be exercised since the Residual Heat Removal System is in operation and opening this valve could cause the Residual Heat Removal System to drain into the containment sump. Valve 885A is contained in a sealed container and verification of remote position cannot be made. This valve will be exercised during a refueling outage when the Residual Heat Removal System can be isolated.

6.1.5.3 Evaluation. The licensee has demonstrated that this valve cannot be exercised during power operation since it is interlocked with valve 882 and closure of this valve would render the LPSI/RHR system inoperable. During cold shutdowns this valve is also interlocked with valves 730 and 731, RHR system suction from the hot leg of RCS loop 2. Valves 730 and 731 must remian open during cold shutdown to permit RCS decay heat removal. Therefore, we feel relief should be granted from the exercsing requirments of Section XI for this valve. We feel the licensee's proposed alternate test of full stroke exercising this valve during refueling outages will adequately verify proper valve operability.

6.2 Category B Valves

6.2.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 1852A and B, BIT inlet isolations.

6.2.1.1 Code Requirement. Refer to Appendix A.

6.2.1.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation, since exercising would allow highly concentrated boric acid (23,000 ppm) to migrate down the piping

which is not heat traced and could result in blockage of the injection piping. During cold shutdown, the flushing of this piping would require using the high head safety injection pumps which could result in a low-temperature overpressurization of the RCS. These valves will be full stroke exercised during refueling outages.

6.2.1.3 Evaluation. The licensee has demonstrated that exercising these valves during power operation cannot be accomplished since this would allow the highly-concentrated boric acid to migrate into non-heat traced piping and result in blockage of the BIT injection flowpath. During cold shutdown, the pipe flush required after valve operation could result in a low-temperature overpressurization of the RCS. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.2.2 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 885B, RHR pump suction from containment sump stop.

6.2.2.1 Code Requirement. Refer to Appendix A.

6.2.2.2 Licensee's Basis for Requesting Relief. This valve cannot be exercised during power operation since the valve is interlocked with normally-open valve 882. Valve 882 cannot be closed during power operation since this would render the Residual Heat Removal System inoperable. During cold shutdown, this valve cannot be exercised since the Residual Heat Removal System is in operation and opening this valve could cause the Residual Heat Removal System to drain into the containment sump. This valve will be exercised during a refueling outage when the Residual Heat Removal System can be isolated.

6.2.2.3 Evaluation. The licensee has demonstrated that this valve cannot be exercised during power operation since it is interlocked with valve 882 and closing this valve would render the LPSI/RHR system inoperable. During cold shutdowns this valve is also interlocked with valves 730 and 731, RHR system suction from the hot leg of RCS loop 2. Valves 730 and 731 must remain open during cold shutdown to permit RCS decay heat removal. Therefore, we feel relief should be granted from the exercising requirements of Section XI for this valve. We feel the licensee's proposed alternate test of full stroke exercising this valve during refueling outages will adequately verify proper valve operability.

6.2.3 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 889A and B, RHR pump discharge to the containment spray headers.

6.2.3.1 Code Requirement. Refer to Appendix A.

6.2.3.2 Licensee's Basis for Requesting Relief. Failure of these valves in an open position during full or partial stroke exercising while at power operation would bypass the low head safety injection system

from the RCS to the containment spray headers. Also, during a cold shutdown, the two RHR heat exchangers are in operation and exercising the valves in an open position would spray the containment building with RHR/RCS water. These valves would be full stroke exercised during refueling outage.

6.2.3.3 Evaluation. The licensee has demonstrated that exercising these valves during power operation would divert the low head safety injection system from the RCS to containment spray. During cold shutdown, exercising these valve would allow the RHR pump discharge to enter the containment spray headers and result in spraying containment with contaminated borated water which would soak lagging, damage electrical equipment, spray personnel working in containment, etc. Therefore, we feel relief should be granted from the exercising requirements of Section XI. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.2.4 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 1802A and B, recirculation pumps discharge isolations.

6.2.4.1 Code Requirement. Refer to Appendix A.

6.2.4.2 Licensee's Basis for Requesting Relief. Exercising these valves during power operation or cold shutdown would drain the residual heat removal system into the containment recirculation sump. These valves will be full stroke exercised during a refueling outage.

6.3.4.3 Evaluation. The licensee has demonstrated that these valves cannot be exercised during power operation or cold shutdown since this could drain the residual heat removal system into the containment recirculation sump. Additionally, exercising during cold shutdown by modifing the valve line up could result in valve seat and disc damage due to exercising these valves dry. Therefore, we agree with the licensee's basis and feel relief should be granted from the exercising requirements of Section XI. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.2.5 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 1851A and B, BIT recirculation line stops.

6.2.5.1 Code Requirement. Refer to Appendix A.

6.2.5.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation and cold shutdowns since failure of either of these valves in the closed position would result in loss of recirculation flow of the boric acid in the boron injection tank. Loss of this recirculation flow could result in stratification of the boric acid, precipitation, and solidification in the boron injection tank and associated piping, resulting in a plugged system. These valves will be full stroke exercised during refueling outages.

6.2.5.3 Evaluation. The licensee has demonstrated that these valves cannot be exercised during power operation or cold shutdown since failure in the closed position could result in statification, precipitation, and solidification of the boron in the BIT and associated piping, resulting in loss of the boron injection system. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will demonstrate proper valve operability.

6.3 Category C Valves

6.3.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 857A, Q, S, U, G, R, T, and W, high head safety injection to cold legs, and 857B and H, high head safety injection to hot legs.

6.3.1.1 Code Requirement. Refer to Appendix A.

6.3.1.2 Licensee's Basis for Requesting Relief. These valves cannot be full or partial stroke exercised during power operation since the safety injection pumps cannot develop enough head to open these check valves against RCS pressure. During cold shutdown, exercising these valves could cause a low-temperature overpressurization of the RCS. These valves will be full stroke exercised during a refueling outage.

6.3.1.3 Evaluation. The licensee has demonstrated that these valves cannot be full or partial stroke exercised during power operation since the safety injection pumps cannot develop enough head to overcome RCS pressure to open these check valves. Additionally, during cold shutdown, these valves cannot be exercised since a low-temperature overpressurization of the RCS could occur. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these vavles. We feel the licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

6.3.2 Relief Request. Relief is requested from the exercising requirements of Section XI for valves 857C, D, E, F, J, K, L, M, N, and P, pressure boundary isolation checks in the BIT lines to hot and cold legs.

6.3.2.1 Code Requirement. Refer to Appendix A.

6.3.2.2 Licensee's Basis for Requesting Relief. These valves cannot be full or partial stroke exercised during power operation since the safety injection pumps cannot develop enough head to open these check valves against RCS pressure. During cold shutdown, exercising these valves could cause a low-temperature overpressurization of the RCS. These valves will be partial stroke exercised during refueling outages. These valves will be full stroke exercised every ten years as a minimum.

6.3.2.3 Evaluation. The licensee has demonstrated that these valves cannot be full or partial stroke exercised during power operation since the safety injection pumps cannot develop enough head to overcome RCS

pressure. Additionally, during cold shutdown, these valves cannot be full or partial stroke exercised since utilizing the safety injection pumps could cause a low-temperature overpressurization of the RCS. The licensee has proposed a partial stroke exercise of these valves during refueling outages and a full stroke exercise every ten years. We feel the licensee has not provided justification for not performing a full stroke exercise of these valves each refueling outage. Therefore, we recommend relief not be granted for any full stroke exercising test interval longer than each refueling outage.

6.3.3 Relief Request. Relief is requested from the exercising requirements of Section XI for Valves 886A and B, containment recirculation pumps discharge checks.

6.3.3.1 Code Requirement. Refer to Appendix A.

6.3.3.2 Licensee's Basis for Requesting Relief. These valves cannot be partial or full stroke exercised during power operation or cold shutdown since the system is dry during these operating modes and the pumps cannot be run dry without sustaining damage. During refueling outages, water is added to the containment recirculation sump and the pumps are operated with flow through the minimum flow bypass line back to the sump. At that time, these valves are partial stroke exercised. The licensee has also proposed valve disassembly to demonstrate valve operability at refueling.

6.3.3.3 Evaluation. The licensee has demonstrated that these valves cannot be full or partial stroke exercised during power operation since the recirculation pump suction is normally dry and flow through these check valves cannot be accomplished. Additionally, flooding the containment recirculation sump during cold shutdown for pump and valve testing would generate approximately 5000 gal of contaminated waste water that would require reprocessing (refer to Pump Testing Section, Paragraph 1.4 of this report). Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of partial stroke exercising these valves with pump flow and full stroke exercising by valve disassembly at refueling outages will demonstrate proper valve operability.

6.3.4 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 1820, containment recirculation pumps minimum flow line check.

6.3.4.1 Code Requirement. Refer to Appendix A.

6.3.4.2 Licensee's Basis for Requesting Relief. Valve cannot be partial or full stroke exercised during power operation or cold shutdown since the system is dry during these operating modes and the pumps cannot be run dry without sustaining pump damage. During refueling outages, water is added to the containment recirculation sump and the pumps are operated with flow through the minimum flow bypass line back to the sump. At that time, the subject valve is full stroke exercised.

6.3.4.3 Evaluation. The licensee has demonstrated that this valve cannot be exercised during power operation since the containment recirculation sump is normally dry and running the recirculation pumps dry would damage the pumps as well as not provide any flow for check valve exercising. During cold shutdown, the pumps cannot be run since flooding the sump for pump and valve testing would generate approximately 5000 gallons of contaminated waste that would have to be processed. Therefore, we feel relief should be granted from the exercising requirements of Section XI for this valve. We feel the licensee's proposed alternate test of full stroke exercising this valve during refueling outages will adequately demonstrate proper valve operability.

6.3.5 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 847, safety injection system pumps suction.

6.3.5.1 Code Requirement. Refer to Appendix A.

6.3.5.2 Licensee's Basis for Requesting Relief. A full stroke exercise during power operation requires a design accident flow through two high head safety injection pumps. The valve will be partial stroke exercised every three months. The licensee will determine frequency and method for full flow test.

6.3.5.3 Evaluation. The licensee has demonstrated that this valve cannot be full stroke exercised during power operation since the full stroke would require design accident flow of two safety injection pumps through this valve. This cannot be accomplished since the only full flow flowpath is into the RCS and the safety injection pumps cannot overcome RCS pressure. However, we feel the licensee has the ability to full stroke exercise this valve at least during each refueling outage and possibly more frequently. Therefore, we feel relief should be granted from the quarterly full stroke exercising requirements of Section XI for this valve, but the licensee must submit to the NRC a schedule for full stroking this valve.

6.3.6 Relief Request. Relief is requested from the exercising requirements of Section XI for valve 881, RHR/LPSI pump suction from RWST check valve.

6.3.6.1 Code Requirement. Refer to Appendix A.

6.3.6.2 Licensee's Basis for Requesting Relief. Valve 881 cannot be full or partial stroke exercised during power opration since the only flowpath would render the Residual Heat Removal System inoperable. During cold shutdown, the low head safety injection pumps are utilized for residual heat removal and are not available for any flow test through this valve. This valve will be full stroke exercised during a refueling outage.

6.3.6.3 Evaluation. The licensee has demonstrated that this valve cannot be full or partial stroke exercised during power operation since the only available flowpaths are into the RCS or recirculation to RWST via valve 883. The RHR/LPSI pumps cannot develop enough head to pump into the RCS and opening normally-closed valve 883 would render the RHR/LPSI system inoperable. During cold shutdown, the RHR/LPSI pumps are

utilized for residual heat removal of the RCS, so flow through check valve 881 cannot be accomplished. Therefore, we feel relief should be granted from the exercising requirements of Section XI for this valve. We feel the licensee's proposed alternate test of full stroke exercising this valve during refueling outages will adequately demonstrate proper valve operability.

6.3.7 Relief Request Relief is requested from the exercising requirements of Section XI for valves 849A and B, and 852A and B, safety injection pump discharge checks.

6.3.7.1 Code Requirement. Refer to Appendix A.

6.3.7.2 Licensee's Basis for Requesting Relief. These valves cannot be full stroke exercised during power operation since the only full flow flowpath is into the RCS and the SI pumps cannot develop sufficient discharge head to overcome RCS pressure. During cold shutdown, exercising these valves could result in a low-temperature overpressurization of the RCS. These valves will be partial stroke exercised every three months. Valves 849A and 852A will be full stroke exercised during a refueling outage. The licensee is investigating the method and frequency of full stroke exercising Valves 849B and 852B.

6.3.7.3 Evaluation. The licensee has demonstrated that the only full flow flowpath for full stroke exercising these check valves is into the RCS and the safety injection pumps cannot overcome RCS pressure. During cold shutdown, utilizing the safety injection pumps for exercising these valves could cause a low-temperature overpressurization of the RCS. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel the licensee's proposed alternate test of partial stroke exercising quarterly and full stroke exercising during refueling outages of valves 849A and 852A will adequately demonstrate proper valve operability. However, we feel the licensee has the ability to full stroke exercise valves 849B and 852B during refueling outages also. We feel the licensee can obtain full flow for full stroke exercising of these two valves (as well as the check vaves listed in Paragraph 6.3.2 of this report) by injecting through the BIT. Therefore, we feel relief should not be granted from the refueling outage exercising frequency for these two valves.

7. Instrument Air Systems

7.1 Category A Valves

7.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves IA-39 and PCV-1228, instrument air containment isolations.

7.1.1.1 Code Requirement. Refer to Appendix A.

7.1.1.2 Licensee's Basis for Requesting Relief. These valves cannot be exercised during power operation or cold shutdown since failure of these valves in a closed position would render instrumentation and controls inside containment to their failed/as is conditions. These valves will be exercised during a refueling outage.

7.1.1.3 Evaluation. The licensee has demonstrated that these valves cannot be exercised during power operation or cold shutdown since failure in the closed position of either valve could cause safety-related valves, instrumentation, and controls to go to their failed conditions, which could cause plant shutdown or loss of shutdown systems control. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these valves. We feel that licensee's proposed alternate test of full stroke exercising these valves during refueling outages will adequately demonstrate proper valve operability.

8. Service Water System

8.1 Category A Valves

8.1.1 Relief Request. Relief is requested from the exercising requirements of Section XI for valves SWN-41, 44, 51 and 71, service water to containment air coolers isolation valves.

8.1.1.1 Code Requirement. Refer to Appendix A.

8.1.1.2 Licensee's Basis for Requesting Relief. These are manual containment isolation valves that only perform a containment isolation function on a tube rupture in a fan cooler. These valves will be full stroke exercised during the leak tests performed each refueling outage.

8.1.1.3 Evaluation. The licensee has demonstrated that these manual valves only perform a containment isolation function if a containment fan cooler experiences a tube failure. Therefore, we feel relief should be granted from the exercising requirements of Section XI for these manual valves and feel the licensee's proposed alternate test of full stroke exercising these valves during the valves leak tests performed during refueling outages will demonstrate proper valve operability.

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 cases of 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.

V. ATTACHMENT I

During the course of our review of the Indian Point Unit 3 IST program we found no valves that need further review by the NRC Appendix J review committee.

VI. ATTACHMENT II

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

1. Main Steam System

1.1 Category B Valves

MSI-31, -32, -33, and -34, main steam isolation valves, cannot be exercised during power operation since closure of a valve would result in a turbine trip and subsequent reactor trip. These valves will be full stroke exercised closed when entering a cold shutdown conditions and reopened on plant startup.

PCV-1310A and B, steam to turbine-driven auxiliary feedwater pump isolations, cannot be exercised during power operation since the valve operators are not designed to open with differential pressure across the valve discs. If these valves were closed during power operation, they could not be reopened until cold shutdown. Closing either of these valves could result in loss of the turbine-driven auxiliary feedwater pump. These valves will be full stroke exercised during cold shutdowns and refueling outages.

1.2 Category C Valves

MS-2 (four valves), main steam header checks, cannot be exercised during power operation since closure of these valves would result in turbine and reactor trips. These valves will be full stroke exercised closed each time the plant goes into a cold shutdown and reopened upon plant startup.

2. Condensate and Boiler Feed System

2.1 Category B Valves

LCV-1158, condensate storage tank outlet to nonseismic portion of condensate system, cannot be exercised during power operation since failure of this valve in the closed position could result in loss of feedwater chemistry control, which could require plant shutdown. This valve will be full stroke exercised during cold shutdowns and refueling outages.

2.2 Category C Valves

CT-26 and -32, motor-driven auxiliary feedwater pumps suction checks, cannot be full stroke exercised during power opration since full flow/full

stroke exercising would require injecting into the steam generators resulting in thermal shock of the feedwater nozzles which have a limited number of thermal cycles. These valves will be partial stroke exercised during power operation and full stroke exercised during cold shutdowns and refueling outages.

3. Feedwater System

3.1 Category C Valves

BFD-6 (four valves), feedwater to steam generator checks, cannot be exercised during power operation since closing these valves would isolate feed flow to the associated steam generator causing a feed flow/steam flow mismatch resulting in a reactor trip. These valves will be full stroke exercised during cold shutdowns and refueling outages.

BFD-34, -35, -37, -39, 40, and 42, motor-driven auxiliary feedwater pump discharge to steam generator checks, cannot be full or partial stroke exercised during power opration since the only flow path through these valves is into the steam generators and utilizing this flowpath would thermal shock the feedwater nozzles which have a designed limited number of thermal cycles. These valves will be fullstroke exercised during cold shutdowns and refueling outages.

BFD-67, -68, -69, and 70, auxiliary feedwater to steam generator checks, cannot be full or partial stroke exercised during power operation since exercising would require injection of auxiliary feedwater into the steam generator, which would thermal shock the feedwater nozzles. These valves will be full stroke exercised during cold shutdowns and refueling outages.

4. Auxiliary Coolant System

4.1 Category A and A/C Valves

1870 and 743, RHR pump recirculation line isolations, cannot be exercised during power operation since this could cause RHR pump failure should the pumps start and the injection flowpaths were not available. These valves will be full stroke exercised during cold shutdowns and refueling outages.

797, 784, and FCV-625 component cooling water to reactor coolant pumps (RCPs), cannot be exercised during power operation since closing the valves would isolate cooling water to the RCPs which could result in damage to the RCP thermal barrier and bearings. This would require stopping the pumps and, thus, require plant shutdown. These valves will be full stroke exercised during cold shutdowns and refueling outages.

741, RHR pumps to RHR heat exchangers inside containment isolation check, cannot be full stroke exercised during power operation since the only full flow flowpath is into the RCS and the RHR pumps cannot overcome RCS pressure to permit flow. This valve will be partial stroke exercised

during power operation and full stroke exercised during cold shutdowns and refueling outages.

4.2 Category B Valves

730 and 731, RHR pumps suction from RCS hot leg isolations, cannot be exercised during power operation since these valves are electrically interlocked to remain closed when the RCS pressure is greater than 600 psi to protect the low-pressure RHR system from overpressurization. These valves will be full stroke exercised during cold shutdowns and refueling outages.

769, 786, and 789, component cooling water to reactor coolant pumps (RCPs), cannot be exercised during power operation since closing the valves would isolate cooling water to the RCPs which could result in damage to the RCP thermal barrier and bearings. This would require stopping the pumps and, thus, require plant shutdown. These valves will be full stroke exercised during cold shutdowns and refueling outages.

4.3 Category C Valves

738A and B, RHR pump discharge checks, cannot be full stroke exercised during power operation since the only full flow flowpath is into the RCS and these pumps cannot develop sufficient head to pump into the RCS during power operation. These valves will be partial stroke exercised during power operation and full stroke exercised during cold shutdowns and refueling outages.

5. Safety Injection System

5.1 Category A and A/C Valves

888A and B, RHR heat exchangers to safety injection pumps containment isolations, cannot be exercised during power operation since failure in the open position would divert the low head safety injection from the RCS rendering the low head safety injection system inoperable. These valves will be full stroke exercised during cold shutdowns and refueling outages.

838A, B, C, and D, low head safety injection to RCS loop checks, cannot be exercised during power operation since the low head safety injection pumps cannot develop sufficient head to overcome RCS pressure. These valves will be full stroke exercised during cold shutdowns and refueling outages.

5.2 Category B Valves

856B and G, safety injection pumps discharge to RCS hot legs, cannot be exercised during power operation since these valves are interlocked closed unless two of the cold leg injection flowpath valves are closed. This would defeat the normal injection flowpath. These valves will be full stroke exercised during cold shutdowns and refueling outages.

894A, B, C, and D, safety injection accumulator tank isolations, cannot be exercised during power operation since all four accumulators are required by safety analysis to be inservice (i.e., these valves open and power racked

out). These valves will be full stroke exercised during cold shutdowns and refueling outages.

876A and B, spray additive tank outlet isolations to containment spray pumps, cannot be exercised during power operation since opening these valves would introduce highly corrosive sodium hydroxide into the containment spray system piping. During cold shutdowns and refueling outages, the spray additive tank will be isolated and the lines flushed with water to permit full stroke exercising of these valves.

882, RHR pump suction from RWST isolation, cannot be exercised during power operation since closing this valve would render the low head safety injection system inoperable. This valve will be full stroke exercised during cold shutdowns and refueling outages.

842 and 843, high head safety injection pumps minimum flow line isolations, cannot be exercised during power operation since closing these valves would isolate the minimum flow recirculation line and pump damage could result if these pumps were started and the RCS injection flow paths were not available. These valves will be full stroke exercised during cold shutdowns and refueling outages.

1810, SI pump suction from RWST isolation valve, cannot be exercised during power operation since this would render all 3 SI pumps inoperable. This valve will be full stroke exercised during cold shutdowns and refueling outages.

5.3 Category C Valves

1838A and B, containment spray additive line to eductor checks, cannot be exercised during power operation since realignment of system valves to permit exercising would defeat the spray additive feature of the containment spray system. These valves will be full stroke exercised during cold shutdowns and refueling outages.

1822, BIT recirculation check valve, cannot be exercised during power operation since recirculation flow through the BIT must be maintained to prevent stratification and precipitation of boron out of solution possibly resulting in a plugged pipe. This valve will be exercised closed (its safety related position) during cold shutdowns and refueling outages.

6. Chemical and Volume Control System

6.1 Category A Valves

201 and 202, letdown system containment isolations, cannot be exercised during power operation since closing either of these valves would isolate letdown flow causing a heat unbalance between charging and letdown flow, resulting in thermal shock to the regenerative heat exchanger and to RCS piping nozzles. These valves will be full stroke exercised during cold shutdowns and refueling outages.

222, RCP seal water return to CVCS isolations, cannot be exercised during power operation since this would result in loss of RCP seal water flow and RCP seal failure could result and require plant shutdown for repair. This valve will be full stroke exercised during cold shutdowns and refueling outages.

7. Penetration and Liner Weld Joint Channel Pressurization System

7.1 Category A Valves

FCV-1170, -1171, -1172, and -1173, containment building purges, cannot be exercised during power operation since failure of these valves in the open position would allow a flowpath for containment air to escape to the outside environment. These valves will be full stroke exercised during cold shutdowns and refueling outages.

VII. ATTACHMENT III

Below is a listing of P&IDs utilized during the course of this review.

System	P&ID Number	Revision
Main Steam	20173	15
Condensate and Boiler Feed	20183	17
Boiler Feedwater	20193	16
Station Air	20353	13
Instrument Air	20363	18
Post-Accident Containment Sampling	26533	1
Auxiliary Coolant, Sheet 1	27203	11
Service Water	27223	18
Nitrogen to Nuclear Equipment	27233	12
Primary Make-Up Water	27243	11
Penetration and Liner Weld Joint Channel Pressurization	27263	9
Auxiliary Steam and Condensate	27273	9
Waste Disposal, Sheet 2	27303	8
Safety Injection, Sheet 1	27353	12
Chemical and Volume Control, Sheet 1	27363	11
Chemical and Volume Control, Sheet 2	27373	12
Reactor Coolant, Sheet 1	27383	12
Sampling	27453	7
Reactor Coolant, Sheet 2	27473	14
Safety Injection, Sheet 2	27503	10
Auxiliary Coolant, Sheet 2	27513	15
Hydrogen Recombiner	27533	4
Auxiliary Steam Supply and Condensate Return	40573	9
Post-Accident Containment Venting	40793	7

VIII. ATTACHMENT IV

The following relief request have insufficient technical basis provided and relief is not recommended.

6.3.2 BIT injection check valves

6.3.5 Safety injection pumps suction check

6.3.7 SI pumps discharge check valves

IX. ATTACHMENT V

The following items were discussed via telephone with the licensee, (Anthony Sorrentino, Karl Jacobs and Charlie Connell) on July 27, August 6 and 27, 1981 and the licensee agreed to send revised pages to the NRC to modify their IST program dated December 12, 1980 to reflect these changes.

1. Valves SWN-41, 44, 51 and 71 will be categorized A and operability demonstrated during refueling outages while performing the leak rate testing on these manual containment isolation valves.

2. Service water pump discharge check valves SWN-1 (6 valves) will be exercised quarterly and relief request No. 18 will be deleted.

3. Auxiliary feedwater system check valves BFD-34, 35, 37, 39, 40 and 42 will not be partial stroke exercsied quarterly but a full stroke exercise will be performed during cold shutdowns. Relief Request No. 9 will be modified to relfect these changes.

4. Containment recirculation pumps discharge check valves 1802A & B will be full stroke exercised during refueling outages and relief request No. 15 will be modified to reflect the contents of section 6.2.4 of this report.

5. Relief request No. 45 will be deleted from the licensee's IST program and valves 761A, B and C, component cooling water check valves, will be full stroke exercised quarterly.

6. Containment spray pump discharge check valves 867A & B will be partial stroke exercised quarterly and full stroke exercised during refueling outages as described in Section 6.1.4 of this report.

7. Containment sump outlet isolation valves 885A & B will be full stroke exercised during refueling outages and relief request No. 34 will be modified to reflect the contents of sections 6.1.5 and 6.2.2 of this report.

8. BIT recirculation line check valve 1822 will be exercised to its safety related position during cold shutdowns after the late 1981 refueling outage when a plant modification will be made to permit this test. Relief request No. 53 will be modified to reflect the information in Section 5.3 of Attachment II of this report.

9. Containment recirculation pumps discharge check valves, 886A & B, will be full stroke exercised by partial valve disassembly during refueling outages. The licensee's IST program relief request No. 22 will be modified to reflect the changes as specified in Section 6.3.3 of this report.

10. The following check valves in the BIT injection flowpath are currently identified by the licensee as being partial stroke exercised during refueling outages and full stroke exercised once

every ten years. This is contrary to the NRC's acceptable testing frequency and has been identified to the licensee as such. The licensee is currently reviewing possible methods of testing these valves at least each refueling outage and is to respond to the NRC on or before October 15, 1981 on this issue.

857C, D, E, F, J, K, L, M, N, P BIT injection checks
849B & 852B SI pumps disch to BIT
847--SI pumps suction