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INFORMAL REPORT

TECHNICAL EVALUATION REPORT
PUMP AND VALVE INSERVICE TESTING PROGRAM
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

C. B. Ransom
D. I. Monnie

EG&G Idaho

Work performed under
DOE Contract
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Prepared for the
U. S. NUCLEAR REGULATORY COMMISSION

DISCLAIMER

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Docket Nos. 50-266 and 50-301

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ABSTRACT

This EG&G Idaho, Inc., report presents the results of our evaluation of the Point Beach Nuclear Plant, Units 1 and 2, Inservice Testing Programs for pumps and valves whose function is safety related.

FOREWORD

This report is supplied as part of the "Review of Pump and Valve Inservice Testing Programs for Operating License Plants" Program being conducted for the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Division of PWR Licensing A, by EG&G Idaho, Inc., NRR and I&E Support.

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TECHNICAL EVALUATION REPORT
PUMP AND VALVE INSERVICE TESTING PROGRAMS
POINT BEACH NUCLEAR PLANT, UNITS 1 and 2

1. INTRODUCTION

Contained herein is a technical evaluation of the pump and valve inservice testing (IST) programs submitted by the Wisconsin Electric Power Company for its Point Beach Nuclear Plant, Units 1 and 2.

The working session with Wisconsin Electric Power Company and Point Beach Nuclear Plant representatives was conducted on November 1 and 2, 1983. The licensee's IST programs, Revision 3 dated August 26, 1985, was reviewed to verify compliance of proposed tests of pumps and valves whose function is safety related with the requirements of the ASME Boiler and Pressure Vessel Code (the Code), Section XI, 1977 Edition through Summer 1979 Addenda. Any IST program revisions subsequent to those noted above are not addressed in this technical evaluation report (TER). It is an NRC staff position that required program changes, such as additional relief requests or the deletion of any components from the IST Program, should be submitted to the NRC under separate cover in order to receive prompt attention, but should not be implemented prior to review and approval by the NRC.

In their IST programs, Wisconsin Electric Power Company has requested relief from the ASME Code testing requirements for specific pumps and valves and these requests have been evaluated individually to determine if the required testing is indeed impractical for the specified pumps or valves. This review was performed utilizing the acceptance criteria of the Standard Review Plan, Section 3.9.6, and the Draft Regulatory Guide and Value/Impact Statement titled "Identification of Valves for Inclusion in Inservice Testing Programs". The IST Program testing requirements apply only to component testing (i.e., pumps and valves) and are not intended to provide the basis to change the licensee's current Technical Specifications for system test requirements.

This TER, including all relief requests and component identification numbers, applies to both Unit 1 and Unit 2 unless specifically indicated otherwise.

Section 2 of this report presents the Wisconsin Electric Power Company bases for requesting relief from the Section XI requirements for the Point Beach Nuclear Plants pump testing programs and EG&G's evaluations and conclusions regarding these requests. Similar information is presented in Section 3 for the valve testing program.

The NRC staff's positions and guidelines concerning inservice testing requirements are provided in Appendix A.

Category A, B, and C valves that meet the requirements of the ASME Code, Section XI, and are not exercised quarterly are listed in Appendix B.

A listing of P&IDs and Figures used for this review is contained in Appendix C.

Inconsistencies and omissions in the licensee's IST program noted during the course of this review are listed in Appendix D. The licensee should resolve these items in accordance with the evaluations, conclusions, and guidelines presented in this report.

The details of valve cold shutdown testing justifications are included in Appendix E.

2. PUMP TESTING PROGRAM

The Point Beach, Units 1 and 2, IST programs submitted by Wisconsin Electric Power Company were examined to verify that all pumps that are included in the programs are subjected to the periodic tests required by the ASME Code, Section XI, except for those pumps identified below for which specific relief from testing has been requested and as summarized in Appendix D. Each Wisconsin Electric Power Company basis for requesting relief from the pump testing requirements and the EG&G reviewer's evaluation of that request is summarized below.

2.1 All Pumps in the IST Program

2.1.1 Pump Testing Frequency

2.1.1.1 Relief Request. The licensee has requested relief from testing all pumps in the Units 1 and 2 IST programs monthly in accordance with the IWP-3400 requirements of Section XI (1977 Edition through Summer 1979 Addenda) and proposed to perform pump testing once per quarter.

2.1.1.1.1 Licensee's Basis for Requesting Relief--Industry data indicates that monthly testing of pump operating parameters is not necessary to assure the reliability of a safety grade pump. In fact, the acceptability of assessing a pump's operational readiness through a testing program based on a three month interval is evidenced by the recommended program contained in the 1980 edition of Section XI of the ASME Boiler and Pressure Vessel Code. These pumps are tested nominally every three months during normal plant operation.

2.1.1.1.2 Evaluation--The NRC staff has approved the recent editions of the Code that specify quarterly pump testing instead of monthly testing. Relief can, therefore, be granted.

2.1.1.1.3 Conclusion--The reviewer concludes that the proposed alternate pump test frequency of testing all pumps in the IST programs quarterly is acceptable and that relief should be granted from the monthly pump testing requirements.

2.1.2 Pump Vibration Measurements.

2.1.2.1 Relief Request. The licensee has requested relief from the IWP-3100 requirement of Section XI for measuring vibration amplitude on all pumps in the IST programs and proposed to measure vibration in units of velocity.

2.1.2.1.1 Licensee's Basis for Requesting Relief--Vibration severity is a function of displacement and frequency. Since vibration velocity is also a function of displacement and frequency, it can be concluded that a measure of vibration velocity is a direct measure of vibration severity. This has been found, through experience, to be true for frequencies between 600 cycles per minute and 60,000 cycles per min. All of the safety-related pumps at the Point Beach Nuclear Plant fall within this range.

During each inservice test, at least one broadband vibration velocity (in/s. pk) measurement will be obtained. The allowable ranges of the inservice vibration velocity test data are shown on the following table.

Reference Vibration Amplitude (in/sec-peak)	Acceptable Range (in/sec-peak)	Alert Range (in/sec-peak)	Required Action Range (in/sec-peak)
$V_R \leq 0.1$	0 to 0.2	0.2 to 0.3	>0.3
$0.1 > V_R \leq 0.3$	0 to 2 V_R	2 V_R to 3 V_R	>3 V_R
$0.3 < V_R \geq 0.6$	0 to V_R + 0.3	V_R + 0.3 to V_R + 0.6	>V_R + 0.6
$V_R > 0.6$	0 to 1.5 V_R	1.5 V_R to 2.0 V_R	>2.0 V_R

V_R = Reference vibration amplitude (unfiltered velocity)

V = Measured vibration amplitude (unfiltered velocity)

2.1.2.1.2 Evaluation--The reviewer agrees that measurement of vibration velocity in lieu of vibration amplitude provides acceptable information for assessing pump mechanical condition. However, the licensee's proposed allowable ranges are higher than the limits that have been approved by the NRC staff. The NRC approved vibration velocity limits are given in the following table (Table 1).

2.1.2.1.3 Conclusion--The reviewer concludes that it is acceptable for the licensee to measure pump vibration in units of velocity if the ranges of Table 1 are used. For pumps with vibration velocities in excess of the limits specified in the NRC provided table, the method and limits of Section XI should be utilized.

TABLE 1. ALLOWABLE RANGES OF VIBRATION VELOCITY FOR PUMP TESTING PER SUBSECTION IWP

Test Band No.	Test Quantity	Acceptable Range	Alert Range	Required Action Range
1	V_t when $0 \leq Vr_1 \leq 0.05$ in/sec	0 to 0.075 in/sec	0.075 to 0.1 in/sec	>0.1 in/sec
2	V_t when 0.05 in/sec $\leq Vr_2 \leq 0.1$ in/sec	0 to 0.15 in/sec	0.15 to 0.2 in/sec	>0.2 in/sec
3	V_t when 0.1 in/sec $\leq Vr_3 \leq 0.15$ in/sec	0 to 0.2 in/sec	0.2 to 0.25 in/sec	>0.25 in/sec
4	V_t when 0.15 in/sec $\leq Vr_4 \leq 0.25$ in/sec	0 to 0.285 in/sec	0.285 to 0.314 in/sec	>0.314 in/sec

Definitions: V_r = Reference velocity measurement (in/sec unfiltered peak)

V_t = Surveillance test velocity measurement (in/sec unfiltered peak)

Note: The frequency response range of the vibration measuring transducers and their readout system shall be from one-half minimum pump shaft rotational speed to at least 1,000 Hertz.

2.2 All Unit 1 Pumps in the IST Program

2.2.1 Applicable Code Addenda

2.2.1.1 Relief Request. The licensee has requested relief from testing all Unit 1 pumps in the IST program in accordance with the requirements of Section XI of the Code, 1977 Edition through Summer of 1978 Addenda, and proposed to test the Unit 1 pumps in accordance to the requirements of Section XI of the Code, 1977 Edition through Summer of 1979 Addenda.

2.2.1.1.1 Licensee's Basis for Requesting Relief--The change in applicable Addenda of the 1977 Edition of the Code is desired for Unit 1 in order to achieve identical inspection bases for both Point Beach Nuclear Plant units for the Section XI pump and valve inservice testing program. The Unit 1 pump testing will comply with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, Division 1, 1977 Edition through Summer of 1979 Addenda.

2.2.1.1.2 Evaluation--Since there are no changes in the pump testing requirements between the Summer of 1978 Addenda of the 1977 Edition of the Code and the Summer of 1979 Addenda of that Code Edition, changing the Unit 1 pump testing program to the later Code Addenda would not result in a change in or reduction of the testing requirements. Testing pumps to the requirements of the 1977 Edition through Summer of 1979 Addenda of the Code would provide the same assurance of pump operability as would testing to the Summer of 1978 Addenda of that Code Edition.

2.2.1.1.3 Conclusion--The reviewer concludes that the proposed change to comply with the requirements of the 1977 Edition through Summer of 1979 Addenda of the Code represents no change to the pump testing requirements and is, therefore, acceptable.

2.3 Residual Heat Removal

2.3.1 Relief Request

The licensee has requested relief from measuring flow of the residual heat removal pumps in accordance with the IWP-3100 and IWP-3400 requirements of Section XI and proposed to measure flow while conducting system full flow tests during refueling outages.

2.3.1.1 Licensee's Basis for Requesting Relief. The inservice testing is accomplished by operating the pumps in a recirculation mode through a flow-restricting orifice. The flow-restricting orifice ensures a fixed-resistance, fixed-flow condition near the horizontal portion of the pump curve which is associated with shutoff head, therefore, flow measuring instrumentation is not indicative of pump performance and consequently does not provide meaningful information in this portion of the pump curve.

During each inservice test, we propose to establish the recirculation mode system resistance via the fixed flow-restricting orifice, and to measure or observe all required parameters, except flow, and analyze these values per IWP-3200. During reactor refueling outages, when design system flow testing can be achieved, it is proposed to vary the system resistance to obtain flow and developed pump head data at three points along the pump curve and analyze these values per IWP-3200 with respect to the applicable reference values.

2.3.1.2 Evaluation. The reviewer does not agree with the licensee's basis for requesting relief from the quarterly flow measurement requirements of IWP-3100 and IWP-3400. The NRC staff position is that the pump flowrate must be measured in order to assess pump hydraulic condition, and that the lack of installed instrumentation is not an adequate long term justification for not making this Code required measurement. Although the reviewer agrees with the licensee that the proposed refueling outage test where design system flow is established would provide more meaningful information than the quarterly test where a small flowrate is established

through a recirculation line, the licensee has not provided an adequate justification for not measuring the Code required flowrate quarterly. Also, these pumps can be ran in the cooldown mode during cold shutdowns, and testing these pumps at that time would provide the flowrate information to assess pump condition.

2.3.1.3 Conclusion. Based on the above discussion, the reviewer finds the request for relief unacceptable, therefore, the licensee should measure pump flowrate in accordance with the requirements of Section XI. Suitable instrumentation or other means should be provided by the licensee in order to do so. The licensee should make these modifications prior to the end of the next refueling outage. For the balance of the period of the current fuel cycle, interim relief should be granted to test the pumps as proposed by the licensee except that the pumps should also be tested during cold shutdowns. The reviewer concludes that requiring the licensee to make these modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety.

2.4 Containment Spray

2.4.1 Relief Request

The licensee has requested relief from measuring flow of the containment spray pumps in accordance with the IWP-3100 requirements of Section XI and proposed to measure all other required parameters.

2.4.1.1 Licensee's Basis for Requesting Relief. The inservice testing is accomplished by operating the pumps in a recirculation mode through a flow-restricting orifice. The flow-restricting orifice ensures a fixed-resistance, fixed-flow condition near the horizontal portion of the pump curve which is associated with shutoff head, therefore, flow measuring instrumentation is not indicative of pump performance and consequently does not provide meaningful information in this portion of the pump curve.

During each inservice test, it is proposed to establish the recirculation mode system resistance via the fixed flow-restricting orifice, and to measure or observe all required parameters, except flow, and analyze these values per IWP-3200.

2.4.1.2 Evaluation. The reviewer does not agree with the licensee's basis for requesting relief from the quarterly flow measurement requirements of IWP-3100. The NRC staff position is that the pump flowrate must be measured in order to assess pump hydraulic condition, and that the lack of installed instrumentation is not an adequate long term justification for not making these Code required measurements.

2.4.1.3 Conclusion. Based on the above NRC staff position, the reviewer finds the request for relief unacceptable, therefore, the licensee should measure pump flowrate in accordance with the requirements of Section XI. Suitable instrumentation or other means should be provided by the licensee in order to do so. The licensee should make these modifications prior to the end of the next refueling outage. For the balance of the period of the current fuel cycle, interim relief should be granted to test the pumps as proposed by the licensee. The reviewer concludes that requiring the licensee to make these modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety.

2.5 Safety Injection

2.5.1 Relief Request

The licensee has requested relief from measuring flow on the safety injection pumps in accordance with the IWP-3100 and IWP-3400 requirements of Section XI and proposed to measure flow while conducting system full flow tests during refueling outages.

2.5.1.1 Licensee's Basis for Requesting Relief. The inservice testing is accomplished by operating the pumps in a recirculation mode through a flow-restricting orifice. The flow-restricting orifice ensures a fixed-resistance, fixed-flow condition near the horizontal portion of the pump curve which is associated with shutoff head, therefore, flow measuring instrumentation is not indicative of pump performance and consequently does not provide meaningful information in this portion of the pump curve.

During each inservice test, we propose to establish the recirculation mode system resistance via the fixed flow-restricting orifice, and to measure or observe all required parameters, except flow, and analyze these values per IWP-3200. During reactor refueling outages, when design system flow testing can be achieved, it is proposed to vary the system resistance to obtain flow and developed pump head data at three points along the pump curve and analyze these values per IWP-3200 with respect to the applicable reference values.

2.5.1.2 Evaluation. The reviewer does not agree with the licensee's basis for requesting relief from the quarterly flow measurement requirements of IWP-3100. The NRC staff position is that the pump flowrate must be measured in order to assess pump hydraulic condition, and that the lack of istalled instrumentation is not an adequate long term justificaion for not making these Code required measurements. The reviewer agrees that the refueling outage test where design system flow is established would provide more meaningful information than the quarterly test where a small flowrate is established through a recirculation line, however, the licensee has not provided an adequate justification for not measuring all Code required parameters quarterly.

2.5.1.3 Conclusion. Based on the above discussion, the reviewer finds the request for relief unacceptable, therefore, the licensee should measure pump flowrate in accordance with the requirements of Section XI. Suitable instrumentation or other means should be provided by the licensee in order to do so. The licensee should make these modifications prior to the end of the next refueling outage. For the balance of the period of the

current fuel cycle, interim relief should be granted to test the pumps as proposed by the licensee. The reviewer concludes that requiring the licensee to make these modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety.

2.6 Auxiliary Feedwater

2.6.1 Relief Request

The licensee has requested relief from measuring flow on the auxiliary feedwater pumps in accordance with the IWP-3100 and IWP-3400 requirements of Section XI and proposed to measure flow while conducting system full flow tests during cold shutdowns.

2.6.1.1 Licensee's Basis for Requesting Relief. The inservice testing is accomplished by operating the pumps in a recirculation mode through a flow-restricting orifice. The flow-restricting orifice ensures a fixed-resistance, fixed-flow condition near the horizontal portion of the pump curve which is associated with shutoff head, therefore, flow measuring instrumentation is not indicative of pump performance and consequently does not provide meaningful information in this portion of the pump curve.

During each inservice test, we propose to establish the recirculation mode system resistance via the fixed flow-restricting orifice, and to measure or observe all required parameters, except flow, and analyze these values per IWP-3200. During cold shutdown conditions, when design system flow testing can be achieved without thermal shocking the auxiliary feedwater line to feedline nozzles, it is proposed to obtain flow and developed pump head data with system operation at or near design conditions, and to analyze this data per IWP-3200 with respect to the applicable reference values.

2.6.1.2 Evaluation. The reviewer does not agree with the licensee's basis for requesting relief from the quarterly flow measurement

requirements of IWP-3100. The NRC staff position is that the pump flowrate must be measured in order to assess pump hydraulic condition, and that the lack of installed instrumentation is not an adequate long term justification for not making these Code required measurements.

2.6.1.3 Conclusion. Based on the above NRC staff position, the reviewer finds the request for relief unacceptable, therefore, the licensee should measure pump flowrate in accordance with the requirements of Section XI. Suitable instrumentation or other means should be provided by the licensee in order to do so. The licensee should make these modifications prior to the end of the next refueling outage. For the balance of the period of the current fuel cycle, interim relief should be granted to test the pumps as proposed by the licensee. The reviewer concludes that requiring the licensee to make these modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety.

2.7 Service Water

2.7.1 Relief Request

The licensee has requested relief from the Section XI, IWP-3100, requirement of measuring service water pump flow, and proposed to measure pump ΔP in a fixed resistance system.

2.7.1.1 Licensee's Basis for Requesting Relief. Normal plant operation requires a minimum of two pumps to be in operation on a fixed resistance system. With the system resistance the same for each test of paired pumps, a measured ΔP is indicative of pump performance.

The testing will be performed by operating a given pair of pumps on a fixed resistance system, measuring ΔP and comparing the measured ΔP to a reference value for the same flow conditions. Periodic maintenance

inspections (such that each pair of pumps is inspected once during every 10 yr ISI interval) will be made on paired pumps to determine if mechanical and/or hydraulic degradation is occurring.

2.7.1.2 Evaluation. The reviewer does not agree with the licensee's basis for requesting relief from the quarterly flow measurement requirements of IWP-3100. The NRC staff position is that both the pump flowrate and differential pressure must be measured in order to assess pump hydraulic condition, and that the lack of installed instrumentation is not an adequate long term justification for not making these Code required measurements.

2.7.1.3 Conclusion. Based on the above NRC staff position, the reviewer finds the request for relief unacceptable, therefore, the licensee should measure pump flowrate in accordance with the requirements of Section XI. Suitable instrumentation or other means should be provided by the licensee in order to do so. The licensee should make these modifications prior to the end of the next refueling outage. For the balance of the period of the current fuel cycle, interim relief should be granted to test the pumps as proposed by the licensee. The reviewer concludes that requiring the licensee to make these modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety.

2.7.2 Relief Request

The licensee has requested relief from the Section XI, IWP-3100, requirement of measuring service water pump bearing temperatures and observing pump lubricant level.

2.7.2.1 Licensee's Basis for Requesting Relief--These pumps are vertical water lubricated sump pumps located in the circulating water forebay. The pump bearings are submerged in the forebay and are inaccessible for temperature measurements. Lubricant level is also inaccessible and will not be observed.

2.7.2.2 Evaluation--The licensee has stated that these pumps are submerged in water and that the pump bearings are cooled and lubricated by the water being pumped. Since these pumps are submerged, the pump bearings are inaccessible for temperature measurements. Furthermore the temperature of the submerged pump bearings would be strongly affected by the water temperature and the temperature measurement would not be indicative of bearing or pump condition. Also, these are water lubricated pump bearings, and as such, there is no lubricant level or pressure to observe. The licensee is measuring pump vibration which should provide a reasonable indication of pump mechanical degradation. Because there is no meaningful alternate test that can be performed, the proposal by the licensee to utilize only pump vibration as an indication of mechanical degradation is the best that can be achieved.

2.7.2.3 Conclusion--The reviewer concludes that measuring or observing these parameters for the submerged service water pumps are not meaningful tests to help monitor pump condition or detect degradation, therefore, relief should be granted from the Section XI requirements to measure pump bearing temperatures and to observe lubricant levels for the service water pumps. Measuring the pump vibration and the hydraulic parameters should provide sufficient information to demonstrate proper pump operability.

3. VALVE TESTING PROGRAM

The Point Beach Nuclear Plant, Units 1 and 2, IST programs submitted by Wisconsin Electric Power Company were examined to verify that all valves included in the programs are subjected to the periodic tests required by the ASME Code, Section XI, and the NRC positions and guidelines. The reviewer found that, except as noted in Appendix D or where specific relief from testing has been requested, these valves are tested to the Code requirements and the NRC positions and guidelines summarized in Appendix A of this report. Each Wisconsin Electric Power Company basis for requesting relief from the valve testing requirements and the reviewer's evaluation of that request is summarized below and grouped according to system and valve category.

3.1 Safety Injection System

3.1.1 Category A/C Valves

3.1.1.1 Relief Request. The licensee has requested relief from exercising 842-A and 842-B the accumulator discharge check valves, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to partial-stroke exercise these valves during the transition period from hot shutdown to cold shutdowns and to disassemble and visually inspect them at 10 year intervals.

3.1.1.1.1 Licensee's Basis for Requesting Relief--During normal operation, accumulator pressure of 700 psig cannot overcome reactor coolant system pressure so full- or partial-stroke testing is not possible. Partial-stroke testing during operation via use of the test line is also not possible as it would result in violating minimum accumulator levels as set forth in the plant Technical Specifications. A full- or partial-stroke test is not practical during cold shutdown because the higher pressure accumulators would be connected to the solid primary system which could result in a low-temperature overpressurization event. A full-stroke test could be possible during refuelings, when the reactor vessel head is removed, but the volume and flow rate required for the test could possibly damage core

internals. There would also be the possibility of forcing a nitrogen bubble through the reactor coolant system and refueling cavity resulting in possible safety implications which makes this testing concept inadvisable.

The valves will be partial-stroke tested during the transition period from hot shutdown to cold shutdown. This will be considered a cold shutdown test. However, this testing will not be performed if it will result in disturbing an "Event V" valve which is not required to be tested within the associated cold shutdown. In addition, these valves will be disassembled and visually inspected once per 10 year ISI interval. Seat leakage testing will be performed quarterly coincident with the SI pump tests and a seat leakage rate of 5 gpm or less will be considered acceptable.

3.1.1.1.2 Evaluation--The reviewer agrees that these valves cannot be exercised during power operation because accumulator pressure cannot overcome reactor coolant system pressure. Exercising the valves during cold shutdowns could result in a low-temperature overpressurization of the reactor coolant system. Full-stroke exercising these valves during refueling outages when the reactor vessel head is removed to provide an adequate expansion volume could damage reactor vessel internal components due to excessive flow rates. These valves are partial-stroke exercised when entering cold shutdowns provided that exercising a particular valve will not disturb an "Event V" valve that is not scheduled for testing during that shutdown. The frequency of partial-stroke exercising was discussed with the NRC staff during the working meeting and was found to be acceptable on the basis that the "Event V" valve identification and testing is in accordance with the licensee's Technical Specifications and that the Technical Specifications had been previously reviewed and approved by the NRC.

The NRC staff has concluded that partial-stroke exercising on a cold shutdown frequency and disassembly on a 10-year interval are inadequate to assess valve operability. A valve sampling disassembly/inspection utilizing a manual full-stroke of one disk is an acceptable method to verify a check valve's full-stroke capability. The sampling technique requires that each valve in the group must be of the same design (manufacturer, size, model

number and materials of construction) and must have the same service conditions. Additionally, at each disassembly it must be verified that the disassembled valve is capable of full-stroking and that its internals are structurally sound (no loose or corroded parts).

A different valve of each group is required to be disassembled, inspected and manually full-stroked at each refueling, until the entire group has been tested. If it is found that the disassembled valve's full-stroke capability is in question, the remainder of the valves in that group must also be disassembled, inspected and manually full-stroked at the same outage.

Following successful disassembly, inspection and manual full-stroking of all the check valves in the group, the licensee may submit a relief request to the NRC requesting a change of the intervals between these tests. This relief request should contain all pertinent historical maintenance data on each valve, including the inspection and maintenance data obtained at each disassembly/inspection and manual full-stroke. Photographs should be provided of the valve "as found" internals, noting particularly any anomalies encountered.

3.1.1.1.3 Conclusion--The reviewer agrees that these valves cannot be exercised to the Section XI requirements but finds that the proposed alternate is not sufficient to insure the operational readiness of these valves and, therefore, is not acceptable. However, if the licensee utilizes the above described valve disassembly inspection program that is acceptable to the NRC, then relief should be granted from the exercising requirements of Section XI.

3.1.1.2 Relief Request. The licensee has requested relief from exercising valves 845-A, 845-B, 845-C, 845-D, 845-E, and 845-F, safety injection header checks, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to full-stroke exercise these valves during refueling outages.

3.1.1.2.1 Licensee's Basis for Requesting Relief--During normal operation, the safety injection pump discharge pressure of 1500 psig is

insufficient to overcome reactor coolant system pressure. If the pumps could overcome reactor coolant system pressure, a reactivity excursion and thermal transient would take place during the injection of highly borated cold water. Testing during cold shutdown is prohibited because the pumps are deactivated for overpressurization protection. Lack of a recirculation path prohibits partial-stroking.

These valves will be full-stroke exercised at refueling. Seat leakage testing will be in accordance with the requirements of Technical Specification 15.3.16, "Reactor Coolant System Pressure Isolation Valve Leakage Tests."

3.1.1.2.2 Evaluation--The reviewer agrees that the only flow path through these valves is into the reactor coolant system. This flow path cannot be utilized during power operation because the safety injection pumps do not develop sufficient discharge pressure to overcome operating reactor coolant system pressure. Exercising these valves during cold shutdowns could result in a low-temperature overpressurization of the reactor coolant system because an adequate expansion volume does not exist to accommodate the required flow. The reviewer also agrees that the only time these valves can be full-storke exercised is during refueling outages when the safety injection system can be full flow tested.

3.2.1.2.3 Conclusion--The reviewer concludes that relief should be granted form the exercising interval requirements of Section XI for these valves and that the proposed alternate testing should give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.1.1.3 Relief Request. The licensee has requested relief from exercising 853-A, 853-B, 853-C, and 853-D, the low head safety injection header check valves, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to full-stroke exercise these valves during certain cold shutdowns and each refueling outage.

3.1.1.3.1 Licensee's Basis for Requesting Relief--Full- or partial-stroking during normal operation is not possible because low head safety injection pump discharge pressure is insufficient to overcome reactor coolant system pressure. Even if the pump discharge pressure was high enough, any stroking could cause the injection of cold borated water into the system, resulting in a power and thermal transient.

Stroke testing the subject valves during cold shutdowns is possible, however, not desirable unless "Event V" valve testing is also scheduled. The "Event V" testing assures valve integrity, thus minimizing the possibility of an intersystem LOCA which bypasses containment. Exercising these valves during every cold shutdown may reduce the assurance that the valve is, in fact, properly seated, as established via the "Event V" testing.

These valves will be full-stroke exercised during the pump full flow test at refueling. These valves will be full-stroke exercised at cold shutdowns which also require the performance of "Event V" valve testing. Seat leakage testing will be in accordance with the requirements of Technical Specification 15.3.16, "Reactor Coolant System Pressure Isolation Valve Leakage Tests."

3.1.1.3.2 Evaluation--The reviewer agrees that these valves cannot be exercised during power operation because the low head safety injection pumps do not develop sufficient discharge pressure to overcome operating reactor coolant system pressure. These valves will be full-stroke exercised during those cold shutdowns when "Event V" valve testing is scheduled and during each refueling outage. That frequency of exercising was discussed with the NRC staff during the working meeting and was found to be acceptable on the basis that the "Event V" valve identification and testing is in accordance with the licensee's Technical Specifications and that the Technical Specifications had been previously reviewed and approved by the NRC.

3.1.1.3.3 Conclusion. The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these

valves, and that the proposed alternate testing should give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.1.1.4 Relief Request. The licensee has requested relief from exercising valve 867-A, combined "A" accumulator discharge and safety injection check, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to partial-stroke exercise it during cold shutdowns and to disassemble and visually inspect it at 10 year intervals.

3.1.1.4.1 Licensee's Basis for Requesting Relief--During normal operation, safety injection pump discharge pressure of 1500 psig is insufficient to overcome reactor coolant system pressure so full- or partial-stroke testing is not possible.

During cold shutdowns, partial- or full-stroke testing via the use of the accumulators or safety injection pumps is not allowed to prevent any possibility of a low-temperature overpressurization event.

A full-stroke test could be possible during refueling, when the reactor vessel head is removed, but the volume and flow rate required for the test could possibly damage core internals. There would also be the possibility of forcing a nitrogen bubble through the reactor coolant system and refueling cavity resulting in possible safety implications which makes this testing concept inadvisable.

This valve will be partial-stroke tested during the transition period from hot shutdown to cold shutdown. This will be considered a cold shutdown test. However, this testing will not be performed if it will result in disturbing an "Event V" valve which is not required to be tested within the associated cold shutdown. In addition, this valve will be disassembled and inspected once per 10 year ISI interval. Seat leakage testing will be in accordance with the requirements of Technical Specification 15.3.16, "Reactor Coolant System Pressure Isolation Valve Leakage Tests."

3.1.1.4.2 Evaluation--The reviewer agrees that this valve cannot be exercised during power operation because accumulator pressure and safety injection pump discharge pressure cannot overcome reactor coolant system pressure. Exercising the valve during cold shutdowns could result in a low-temperature overpressure condition in the reactor coolant system. Full-stroke exercising this valve during refueling outages when the reactor vessel head is removed to provide an adequate expansion volume could damage reactor vessel internal components due to excessive flow rates. This valve is partial-stroke exercised when entering cold shutdowns providing that exercising it will not disturb an "Event V" valve that is not scheduled for testing during that shutdown. This frequency of partial-stroke exercising was discussed with the NRC staff during the working meeting and was found to be acceptable on the basis that the "Event V" valve identification and testing is in accordance with the licensee's Technical Specifications and that the Technical Specifications had been previously reviewed and approved by the NRC.

The NRC staff has concluded that partial-stroke exercising on a cold shutdown frequency and disassembly on a 10-year interval are inadequate to assess valve operability. A valve sampling disassembly/inspection utilizing a manual full-stroke of the valve disk is also an acceptable method to verify a check valve's full-stroke capability. The sampling technique requires that each valve in the group must be of the same design (manufacturer, size, model number and materials of construction) and must have the same service conditions. Additionally, at each disassembly it must be verified that the disassembled valve is capable of full-stroking and that its internals are structurally sound (no loose or corroded parts).

A different valve of each group is required to be disassembled, inspected and manually full-stroked at each refueling, until the entire group has been tested. If it is found that the disassembled valve's full-stroke capability is in question, the remainder of the valves in that group must also be disassembled, inspected and manually full-stroked during the same outage.

Following successful disassembly, inspection and manual full-stroking of all the check valves in the group, the licensee may submit a relief request to

the NRC requesting a change of the intervals between these tests. This relief request should contain all pertinent historical maintenance data on each valve, including the inspection and maintenance data obtained at each disassembly/inspection and manual full stroke. Photographs should be provided of the valve "as found" internals, noting particularly any anomalies encountered.

3.1.1.4.3 Conclusion--The reviewer agrees that this valve cannot be exercised to the Section XI requirements and finds that the proposed alternate testing is not sufficient to insure the operational readiness of this valve and, therefore, is not acceptable. However, if the licensee utilizes the above described valve disassembly/inspection program that is acceptable to the NRC, then relief should be granted from the exercising requirements of Section XI.

3.1.1.5 Relief Request. The licensee has requested specific relief from exercising valves 862-A and 862-B, containment spray header supply checks, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify these valves operable by disassembly during refueling outages.

3.1.1.5.1 Licensee's Basis for Requesting Relief--These check valves can only be full-stroke tested during a full flow test of the spray pumps. A full flow test of the spray pumps would require actually spraying borated water through the spray nozzles in containment. Partial-stroke testing of these valves could also result in spraying containment, thus, will not be performed.

These valves will be disassembled and visually inspected at reactor refueling outages. Seat leakage testing of these valves will be performed in accordance with 10 CFR 50, Appendix J.

3.1.1.5.2 Evaluation--The reviewer agrees that, due to system design, the only method available to exercise these containment spray header check valves with flow would establish spray flow into the containment which could result in electrical equipment damage and extensive containment

cleanup. Valve disassembly and manually full-stroking to verify freedom of movement of the check valve disk is an acceptable alternate testing method and is the only method currently available to the licensee.

3.1.1.5.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves provided the licensee utilizes the NRC approved valve dissassembly, inspection and manual full-stroke exercising plan described in Section 3.1.1.1.2 of this report. The reviewer concludes that the alternate testing proposed will give reasonalble assurance of valve operability required by the Code and, therefore, is acceptable.

3.1.2 Category C Valves

3.1.2.1 Relief Request. The licensee has requested relief from exercising valves 854-A and 854-B, residual heat removal pumps RWST suction checks, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to full-stroke exercise them during refueling outages.

3.1.2.1.1 Licensee's Basis for Requesting Relief--Valve stroking is not possible during normal operation because the RHR pump discharge pressure is insufficient to overcome reactor coolant system pressure during normal operation. During cold shutdown condition, full-stroke testing the valves is not possible because the reactor coolant system does not contain a sufficient expansion volume and there is no return flow path back to the refueling water storage tank for recirculation.

These valves will be full-stroke exercised during the pump full-flow test at refueling.

3.1.2.1.2 Evaluation--The reviewer agrees that the only flow path through these valves is into the reactor coolant system which cannot be used during power operation because the residual heat removal pumps do not develop sufficient discharge head to overcome reactor coolant system pressure. Additionally, that flow path cannot be utilized during cold shutdowns because

the reactor coolant system does not provide an adequate expansion volume to accommodate the required flow. Consequently, testing can only be performed during a refueling outage.

3.1.2.1.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves because they can only be exercised during refueling outages when the reactor vessel head is removed to provide an adequate expansion volume. This proposed alternate testing interval should give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.1.2.2 Relief Request. The licensee has requested relief from exercising 889-A and 889-B, safety injection pump discharge check valves, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to full-stroke exercise these valves during refueling outages.

3.1.2.1.2 Licensee's Basis for Requesting Relief--During operation, the safety injection pump discharge pressure (1500 psig) is insufficient to overcome reactor coolant system pressure. The recirculation line size is also insufficient to allow full-stroke exercising during operation.

During cold shutdowns, testing is prohibited because the safety injection pumps are deactivated for low-temperature overpressurization protection reasons. Thus, a full-stroke test is not possible.

These valves will be full-stroke tested during the pump full flow test at refueling shutdowns. These valves are also partially stroke exercised during operation.

3.1.2.2.2 Evaluation--The reviewer agrees that the only full flow path available is into the reactor coolant system which cannot be utilized during power operation because the safety injection pumps do not develop sufficient discharge pressure to overcome reactor coolant system pressure. These valves cannot be full-stroke exercised during cold shutdowns because the

reactor coolant system does not provide a sufficient expansion volume to accommodate the required flow and a low-temperature overpressurization condition could result. Consequently, full-stroke testing can only be performed during a refueling outage.

3.1.2.2.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves because they can only be full-stroke exercised during refueling outages when the reactor vessel head is removed to provide an adequate expansion volume. This proposed alternate testing interval will give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.1.2.3 Relief Request. The licensee has requested relief from exercising valves 840-A and 840-B, containment spray chemical additive tank vacuum breakers, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to remove and full-stroke exercise these valves during refueling outages.

3.1.2.3.1 Licensee's Basis for Requesting Relief--Due to the nature of the spray additive fluid and system arrangement, in-place testing of these valves is not desirable. To maximize system availability, since testing requires valve removal, testing will not be performed at operation or cold shutdowns.

These valves will be exercised during reactor refueling outages.

3.1.2.3.2 Evaluation--The licensee's basis for relief described in the previous section is not adequate, however, the following additional information was provided during the working meeting held on November 1 and 2, 1983. Based on this information the staff agrees with the licensee's technical justification for not exercising these valves in accordance with the Code. The spray chemical additive tank is pressurized with nitrogen to ensure a suction head to the containment spray eductors and is heated to maintain the sodium hydroxide in solution. The spray chemical additive tank must be cooled and depressurized prior to exercising valves 840-A and 840-B in order

to reduce the chemical hazard to personnel as much as possible. These valves cannot be manually exercised during power operation because the spray additive tank must be operable. Additionally, the time required to cool the tank and then reheat it to operating temperature may delay reactor startup if the testing were performed during cold shutdown. As a result, these valves can only be tested during refueling outages by removing the valves and manually full-stoke exercising the valve disks to verify operability.

3.1.2.3.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves provided the licensee utilizes the NRC approved valve disassembly, inspection and manual full-stroke exersising plan described in Section 3.1.1.1.2 of this report. The staff concludes that the alternate testing proposed will give reasonable assurance of valve operability required by the Code and, therefore, is acceptable.

3.1.2.4 Relief Request. The licensee has requested relief from exercising 858-A and 858-B, containment spray refueling water storage tank suction check valves, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to partial-stroke exercise these valves quarterly and to disassemble and full-stroke exercise them during refueling outages.

3.1.2.4.1 Licensee's Basis for Requesting Relief--These check valves can only be full-stroke tested during a full flow test of the spray pumps. A full flow test of the spray pumps would require actual spraying of borated water through the spray nozzles in containment.

These valves will be partial-stroke exercised during the containment spray system test required in the Technical Specifications. During reactor refueling shutdowns, these valves will be disassembled and visually inspected.

3.1.2.4.2 Evaluation--The reviewer agrees that these valves can be partial-stroke exercised during pump testing but cannot be full-stroke exercised because the only full flow path available is into the containment

via the spray headers. Establishing flow through this path would result in spraying the containment which could result in electrical equipment damage and extensive containment cleanup. Disassembly and manually full-stroking to verify valve operation is an acceptable alternate testing method and is the only method currently available to the licensee.

3.1.2.4.3 Conclusion.--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves provided the licensee utilizes the NRC approved valve disassembly, inspection and manual full-stroke exercising plan described in Section 3.1.1.1.2 of this report. The reviewer concludes that the proposed alternate testing will give reasonable assurance of valve operability required by the Code and, therefore, is acceptable.

3.2 Auxiliary Coolant System

3.2.1 Category A/C Valves

3.2.1.1 Relief Request. The licensee has requested relief from exercising valve 767, excess letdown heat exchanger cooling water supply check, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify valve closure (its only safety related position) during each refueling outage.

3.2.1.1.1 Licensee's Basis for Requesting Relief--The only method to verify closure is by a seat leakage test, which is not performed during reactor operation for ALARA purposes.

This valve is leak tested per 10 CFR 50, Appendix J, during refueling outages.

3.2.1.1.2 Evaluation--The reviewer agrees that, due to plant design, the only method available to verify valve closure (its only safety related function) is leak testing. This valve is located inside containment and is not equipped with position indication.

3.2.1.1.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for this valve and that the proposed alternate testing of verifying valve closure during the performance of leakrate testing at refueling outages should give reasonable assurance of valve operability required by the Code and, therefore, is acceptable..

3.2.1.2 Relief Request. The licensee has requested relief from exercising valves 755-A and 755-B, reactor coolant pump component cooling water supply header checks, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify valve closure (their only safety related position) during each refueling outage.

3.2.1.2.1 Licensee's Basis for Requesting Relief. Properly stroke testing these valves requires securing component cooling water flow to the reactor coolant pumps. This is not practical during normal operation because it could require the securing of a reactor coolant pump. The only method available to verify full closure is to perform a leak test on the valves.

These valves will be full-stroke exercised at refueling. Seat leakage testing will be performed in accordance with 10 CFR 50, Appendix J, during reactor refuelings.

3.2.1.2.2 Evaluation--The reviewer agrees that, due to plant design, the only method available to verify valve closure (their only safety related position) is leak testing and that the reactor coolant pump must be secured while the leak testing is performed to prevent damage due to loss of component cooling water flow.

3.2.1.2.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves and that the proposed alternate testing of verifying valve closure during the performance of leakrate testing at refueling outages should give reasonable assurance of valve operability required by the Code and, therefore, is acceptable.

3.3 Reactor Coolant System

3.3.1 Category A/C Valves

3.3.1.1 Relief Request. The licensee has requested relief from exercising valve 528, the pressurizer relief tank from nitrogen supply check, and valve 529, the pressurizer relief tank makeup water supply check, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify valve closure (their only safety related position) during each refueling outage.

3.3.1.1.1 Licensee's Basis for Requesting Relief--These valves are normally closed. The only method to verify closure is by leak testing. These valves will be full-stroke exercised at refueling. Seat leakage testing will be performed in accordance with 10 CFR 50, Appendix J, during refueling outages.

3.3.1.1.2 Evaluation--The reviewer agrees that, due to plant design, the only method available to verify valve closure (their only safety related function) is leak testing. These valves are located inside containment and are not equipped with position indication.

3.3.1.1.3 Conclusion--The reviewer concludes that relief should be granted form the exercising interval requirement of Section XI for these valves and that the proposed alternate testing of verifying valve closure during the performance of leakrate testing at refueling outages should give reasonable assurance of valve operability required by the Code and, therefore, is acceptable.

3.4 Chemical and Volume Control System

3.4.1 Category A/C Valves

3.4.1.1 Relief Request. The licensee has requested relief from exercising valves 304-C and 304-D, reactor coolant pump seal water injection

checks, and valve 370, the charging header check, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify valve closure (their only safety related position) during each refueling outage.

3.4.1.1.1 Licensee's Basis for Requesting Relief--These valves are normally open. The only way to verify full closure is to secure reactor coolant pump seal flow and perform a valve leak test. Closure of these valves could cause reactor coolant pump damage.

These valves will be verified closed via the performance of a seat leakage test at reactor refueling outages.

3.4.1.1.2 Evaluation--The reviewer agrees that, due to plant design, the only method available to verify valve closure (their only safety related function) is leak testing. These valves are located inside containment and are not equipped with position indication.

3.4.1.1.3 Conclusion--The reviewer concludes that relief should be granted from the exercising interval requirements of Section XI for these valves and that the proposed alternate testing of verifying valve closure during the performance of leakrate testing at refueling outages should give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.5 Waste Disposal System

3.5.1 Category A/C Valves

3.5.1.1 Relief Request. The licensee has requested relief from exercising valve 1713, reactor coolant drain tank nitrogen supply check, in accordance with the requirements of Section XI, Pargraphs IWV-3400 and -3500, and proposed to verify valve closure (its only safety related position) during each refueling outage.

3.5.1.1.1 Licensee's Basis for Requesting Relief--This valve is normally shut. The only way to verify closure is to perform a valve leak test. This valve will be verified closed via seat leakage testing at reactor refueling outages.

3.5.1.1.2 Evaluation--The reviewer agrees that, due to plant design, the only method available to verify valve closure (its only safety related function) is leak testing. This valve is located outside containment, however, it is not equipped with position indication and some of the required test connections are inside containment.

3.5.1.1.3 Conclusion--The reviewer concludes that relief should be granted from tne exercising interval requirements of Section XI for this valve and that the proposed alternate testing of verifying valve closure during the performance of leakrate testing at refueling outages should give reasonable assurance of valve operability as required by the Code and, therefore, is acceptable.

3.6 Service Water System

3.6.1 Category B Valves

3.6.1.1 Relief Request. The licensee has requested relief from measuring the stroke time of valve SV-2090, turbine driven auxiliary feedwater pump service water supply, in accordance with the requirements of Section XI, Paragraph IWV-3413, and proposed to verify proper valve operation by monitoring proper turbine bearing temperatures.

3.6.1.1.1 Licensee's Basis for Requesting Relief--This is a rapid-acting valve. The valve design prohibits visual observance of stroking. Failure of the valve to stroke would result in unusually high turbine bearing temperatures during testing.

This valve will be stroke tested during associated auxiliary feedwater pump testing. Acceptable valve operation will be based on acceptable bearing temperatures during testing.

3.6.1.1.2 Evaluation--The reviewer agrees that this solenoid valve is completely enclosed and direct observation of stem movement is impossible. The method currently utilized by the licensee to verify proper valve operation is to monitor the turbine driven auxiliary feedwater pump lubricating oil temperature which will be indicated by proper turbine bearing temperatures during the quarterly inservice testing of the turbine driven auxiliary feedwater pump; valve failure would be indicated by excessive bearing temperatures.

3.6.1.1.3 Conclusion--The reviewer concludes that the proposed alternate testing of verifying valve operation by monitoring acceptable auxiliary feedwater pump turbine bearing temperatures should be sufficient to demonstrate proper valve operability and, therefore, relief should be granted from the stroke time measurement requirements of Section XI.

3.7 Heating and Ventilation

3.7.1 Category A/C Valves

3.7.1.1 Relief Request. The licensee has requested relief from exercising valve 3200-A CHK, containment gas and particulate radiation monitor return line check, in accordance with the requirements of Section XI, Paragraphs IWV-3400 and -3500, and proposed to verify valve closure (its only safety related position) during each refueling outage.

3.7.1.1.1 Licensee's Basis for Requesting Relief--During normal operation, gases from a continuous sampling system return to the containment through this line/valve. To test this valve during operation, or cold shutdown, it would be necessary to discharge potentially radioactive gases to the environment. There is no mechanism to partial-stroke this valve.

This valve will be verified closed using seat leakage testing at reactor refueling outages.

3.7.1.1.2 Evaluation--The reviewer agrees that, due to system design, the only method available to verify valve closure (its only safety related function) is leak testing. This valve is located inside containment and is not equipped with position indication, also some of the required test connections are located inside containment.

3.7.1.1.3 Conclusion--The reviewer concludes that the proposed alternate testing of verifying valve closure during the performance of leak rate testing at refueling outages should provide reasonable assurance of the ability of this valve to perform its safety related function and, therefore, relief should be granted from the exercising requirements of Section XI.

3.8 All Systems

3.8.1 Rapid-Acting Valves

3.8.1.1 Relief Request. The licensee has requested relief from the power operated valve timing requirements of Section XI, Paragraphs IWV-3413 (b) and (c), for all safety related rapid-acting valves and proposed to apply a maximum stroke time limit to all rapid-acting power operated valves.

3.8.1.1.1 Licensee's Basis for Requesting Relief--Measuring the stroke time for rapid acting valves, per the requirements, is not practical as highly sophisticated measurement devices and valve modifications would become necessary. In addition, slight deviations in stroke times that would be encountered under normal conditions would result in exceeding Code allowables due to the very restrictive band within this time range.

The stroke times of rapid acting valves shall be measured to the nearest one-half second. If an increase in stroke time of 1.5 seconds greater than the previous test is experienced, then the test frequency shall be increased to once each month until corrective action is taken.

3.8.1.1.2 Evaluation--The licensee has identified the rapid-acting valves in the IST program and has proposed a maximum stroke time limit of

4.5 seconds to each valve. The reviewer finds that this proposed limit is greater than the limiting stroke time of 2 seconds or less as required by the NRC staff (refer to Section 8 of Appendix A).

3.8.1.1.3 Conclusion--The reviewer concludes that the licensee should measure the stroke times of all safety-related power operated valves with maximum limiting stroke times greater than 2 seconds in compliance with the requirements of Section XI, IWV-3413(c). The reviewer also concludes that relief should be granted from the requirements of Section XI for all rapid-acting valves with maximum limiting stroke times of 2 seconds or less.

3.8.2 Unit 1 Applicable Code Addenda

3.8.2.1 Relief Request. The licensee has requested relief from testing all Unit 1 safety related valves in accordance with the requirements of Section XI of the ASME Code, 1977 Edition through Summer of 1978 Addenda, and proposed to test the Unit 1 safety related valves in accordance with the requirements of Section XI of the Code, 1977 Edition through Summer of 1979 Addenda. The applicable Edition and Addenda of the Code is specified by 10 CFR 50.55a.

3.8.2.1.1 Licensee's Basis for Requesting Relief--The change in applicable Addenda of the 1977 Edition of the Code is desired for Unit 1 in order to achieve identical inspection bases for both Point Beach Nuclear Plant units for the Section XI pump and valve inservice testing program. The Unit 1 valve testing will comply with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, Division 1, 1977 Edition through Summer of 1979 Addenda.

3.8.2.1.2 Evaluation--The reviewer has found that there are no substantive changes in the valve testing requirements between the Summer of 1978 Addenda and the Summer of 1979 Addenda of the 1977 Edition of the Code and that the proposed change is only editorial.

3.8.2.1.3 Conclusion--The reviewer concludes that the proposed change to comply with the requirements of the 1977 Edition through Summer of 1979 Addenda of the Code is editioial in nature and, therefore, relief should be granted to allow the licensee use of the 1977 Edition through the Summer of 1979 Addenda.

3.9 Emergency Diesel Generator Air Starting System

3.9.1 Category B Valves

3.9.1.1 Relief Request. The licensee has requested relief from the stroke time measurement requirements of Section XI, Paragraph IWV-3413, for valves CV-3057A, 3057B, 3058A, and 3058B, the emergency diesel air start motor air supply valves, and proposed to check for proper valve operation monthly by verifying acceptable start of the associated emergency diesel generator.

3.9.1.1.1 Licensee's Basis for Requesting Relief--This is a rapid acting valve. Valve design prohibits visual observance of stroking. Failure of the valve to stroke would result in the failure of the diesel generator to start on the initial attempt. Since the diesel generators are tested biweekly, the subject valve is tested monthly.

Valve stroke testing is performed monthly, in conjunction with the diesel generator start testing. Valve stroking parameters will be considered acceptable if the associated diesel generator start was acceptable. If the diesel generator failed to start, at no fault of the valve, the valve stroking parameters will be considered acceptable, which will be proven with a restart following diesel generator corrective action.

3.9.1.1.2 Evaluation--The reviewer agrees that these valves are constructed in such a manner that direct observation of stem movement is impossible. The method currently utilized by the licensee to verify proper valve operation is to monitor the emergency diesels for acceptable starting times during the biweekly tests of the emergency diesel generators. Proper

start of the emergency diesel is a good indication of valve condition; additionally, failure of an air start solenoid valve during diesel generator testing will not result in damage to the diesel generator.

3.9.1.1.3 Conclusion--The reviewer concludes that the proposed alternate testing of verifying valve operation by monitoring acceptable emergency diesel generator start times provides sufficient information to demonstrate valve operability and, therefore, relief should be granted from the stroke time measurement requirement of Section XI.

APPENDIX A

NRC STAFF POSITIONS AND GUIDELINES

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NRC STAFF POSITIONS AND GUIDELINES

1. FULL-STROKE EXERCISING OF CHECK VALVES

NRC's position was stated to the licensee that check valves whose safety function is to open are expected to be full-stroke exercised. Since the disk position is not always observable, the NRC staff position is that verification of the maximum flow rate through the check valve identified in any of the plant's safety analyses would be an adequate demonstration of the full-stroke requirement. Any flow rate less than this will be considered partial-stroke exercising unless it can be shown that the check valve's disk position at the lower flow rate would permit maximum required flow through the valve. It is the NRC staff position that this reduced flow rate method of demonstrating full-stroke capability is the only test that requires measurements of the differential pressure across the valve.

2. VALVES IDENTIFIED FOR COLD SHUTDOWN EXERCISING

The Code permits valves to be exercised during cold shutdowns when exercising is not practical during plant operation 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 is not necessary to grant relief; however, during our review of the licensee's IST program, we have verified that it is not practical to exercise these valves during power operations and that we agree with the licensee's basis.

It should be noted the NRC differentiates, for valve testing purposes, between the cold shutdown mode and the refueling mode. That is, for valves identified for testing during cold shutdowns, it is expected that the tests will be performed both during cold shutdowns and each refueling outage. However, when relief is granted to perform tests on a refueling outage

frequency, testing is expected only during each refueling outage. In addition, for extended outages, tests being performed are expected to be maintained as closely as practical to the Code-specified frequencies.

3. CONDITIONS FOR VALVE TESTING DURING COLD SHUTDOWNS

Cold shutdown testing of valves identified by the licensee is acceptable when the following conditions are met:

1. The licensee is to commence testing as soon as the cold shutdown condition is achieved, but no 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 during one cold shutdown should be performed during any subsequent cold shutdowns starting from the last test performed at the previous cold shutdown.

4. For planned cold shutdowns, where ample time is available and testing all the valves identified for the cold shutdown test frequency in the IST program will be accomplished, exceptions to the 48 hours may be taken.

4. CATEGORY A VALVE LEAK TEST REQUIREMENTS FOR CONTAINMENT ISOLATION VALVES

All containment isolation valves (CIVs) that are Appendix J, Type C, leak tested should be included in the IST program as Category A or A/C valves. The NRC has concluded that the applicable leak test procedures and requirements for containment isolation valves are determined by 10CFR50, Appendix J. Relief from Paragraphs IWV-3431 through -3425 (1977 Edition through Summer 1979) Addenda) for containment isolation valves presents no

safety problem since the intent of these paragraphs is met by Appendix J requirements, however, the licensee must comply with the Analysis of Leakage Rates and Corrective Action requirements of Paragraphs IWV-3426 and -3427. Based on the considerations discussed above, the NRC staff has concluded that the alternate testing proposed will give reasonable assurance of valve leak-tight integrity as required by the Code.

5. APPLICATION OF APPENDIX J TESTING TO THE IST PROGRAM

The Appendix J review of this plant is completely separate from the IST program review. However, the determinations made by the Appendix J review are directly applicable to the IST Program. The licensee has agreed that, should the Appendix J program be amended, they will amend their IST program accordingly.

6. SAFETY RELATED VALVES

The review was limited to valves whose function is safety related. Valves whose function is safety related are defined as those valves that are needed to mitigate the consequences of an accident and/or to shutdown the reactor to the cold shutdown condition and to maintain the reactor in a cold 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 valves whose function is not safety related in their IST program as a decision on their part to expand the scope of their program.

7. ACTIVE VALVES

The NRC staff position is that active valves are those for which changing position may be required to shutdown a reactor to the cold shutdown condition or in mitigating the consequences of an accident. Included are valves which respond automatically to an accident signal, such as safety injection, and valves which may be optionally utilized but are

subject to plant operator actions, such as service water supply to the steam generators and valves utilized to establish long term recirculation following a LOCA.

8. RAPID-ACTING POWER OPERATED VALVES

The NRC staff has identified rapid-acting power operated valves as those which stroke in 2 seconds or less. Relief from the trending requirements of Section XI (Paragraph IWV-3413(c), 1977 Edition through Summer 1979 Addenda) presents no safety concerns for these valves since variations in stroke time will be affected by slight variations in the response time of the personnel performing the tests. However, the staff does require that the licensee assign a maximum limiting stroke time of 2 seconds to these valves in order to obtain this Code relief.

9. VALVES WHICH PERFORM A PRESSURE BOUNDARY ISOLATION FUNCTION

The following valves have been identified by the licensee as pressure boundary isolation valves (PIVs) and have been categorized accordingly. These valves are individually leakrate tested by the licensee in accordance with Point Beach Technical Specification 15.4.16.

Valve	Function	Category
842-A	Accumulator discharge check	A/C
842-B	Accumulator discharge check	A/C
867-A	Second accumulator discharge check	A/C
867-B	Second accumulator discharge check	A/C
853-A	Residual heat removal injection check	A/C
853-B	Residual heat removal injection check	A/C
853-C	Residual heat removal injection check	A/C
853-D	Residual heat removal injection check	A/C

Valve	Function	Category
845-A	Safety injection header check	A/C
845-B	Safety injection header check	A/C
845-C	Safety injection header check	A/C
845-D	Safety injection header check	A/C
845-E	Safety injection header check	A/C
845-F	Safety injection header check	A/C

The following valves appear to perform a pressure isolation function, however, they are not categorized A or A/C and are not individually leak tested. In accordance with guidance from the Committee to Review Generic Requirements (CRGR) on July 24, 1985, backfitting of non-Event V PIV leak testing at operating reactors may not be appropriate. Therefore, pending review and approval by CRGR of a PIV testing plan for operating reactors, leak testing of these valves which are not listed in Table 3.4-2 of the licensee's Technical Specifications, is not to be involuntarily imposed on the licensee. The licensee should be advised of his option to only continue leak testing his current technical specification list of PIVs until further notice.

Valve	Function	Category
700	Isolation for RHR suction from Loop A hot leg	A
701	Isolation for RHR suction from Loop A hot leg	A
720	Isolation for RHR discharge to Loop A cold leg	A

10. 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 be 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 quarterly exercising during power operation should not be performed.

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 at each[a] cold shutdown or, as a minimum, once each refueling cycle.

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

3. Fail-safe actuation testing should be performed at each cold shutdown.

4. The PORV valves should be included in the IST program and tested quarterly to provide protection against a small break LOCA should a PORV fail open.

The licensee has included the PORVs and the associated block valves in the IST programs and is testing them in accordance with the above guidelines.

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a. The staff position described in Section 3 of Appendix A regarding cold shutdown testing is not applicable to the PORVs; however, in the case of frequent cold shutdowns, testing of the PORVs is not required more often than each three months.

APPENDIX B

VALVES TESTED DURING COLD SHUTDOWNS

APPENDIX B

VALVES TESTED DURING COLD SHUTDOWNS

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 in accordance with Paragraph IWV-3412 and are full-stroke exercised during cold shutdowns and refueling outages. The staff has reviewed all valves in this Appendix and agrees with the licensee that testing these valves during power operation is not practical due to the valve type, location or system design. These valves should not be full-stroke exercised during power operation. These valves are listed below and grouped according to the system in which they are located.

System	Valve Identification	Function
Safety Injection	867-B	"B" accumulator discharge check
	878-A 878-C	RCS hot leg injection header isolation valves
	852-A 852-B	RHR injection to the reactor vessel isolation valves
	826-B 826-C	Safety injection pumps boric acid suction
	HCV-836-A HCV-836-B	Spray additive tank outlet check valves
Auxiliary Coolant	754-A 754-B	Reactor coolant pumps component cooling water supply
	759-A 759-B	Reactor coolant pumps component cooling water return
	710-A 710-B	RHR discharge check valves
Reactor Coolant System	PCV-430 PCV-431-C	Pressurizer PORVs
	515 516	Pressurizer PORV block valves

System	Valve Identification	Function
Chemical and Volume Control System	313 313-A	Reactor coolant pump seal water return isolation valves
	371 371-A	Letdown isolation valves
Main and Reheat Steam	CV-2017 CV-2018	Main steam isolation valves
	MS-2017-A MS-2018-A	Main steam header check valves
Service Water	MOV-2880	Turbine hall service water supply isolation
Heating and Ventilation	CV-3212 CV-3213	Containment purge exhaust isolation valves
	CV-3244 CV-3245	Containment purge supply isolation valves
Auxiliary Feedwater	100 101 102 (Unit 1 only) 103 (Unit 2 only) 104 (Unit 1 only) 105 (Unit 2 only) 106 107	Auxiliary feedwater header check valves
	108	Turbine driven auxiliary feedwater pump discharge check valve
	109 110	Motor driven auxiliary feedwater pump discharge check valves
	111	Turbine driven auxiliary feedwater pump suction check valve
	112	Motor driven auxiliary feedwater pump suction check valves
	466-A 466-B 476-A 476-B	Main feedwater header check valves

APPENDIX C

P&ID AND FIGURE LIST

APPENDIX C

P&ID AND FIGURE LIST

The P&IDs and Figures listed below were used during the course of this review.

System	P&ID or Figure	Revision
Safety Injection	Fig. 6.2-1, Sh. 1	--
	Sh. 2	--
	Sh. 3	--
Auxiliary Coolant	Fig. 9.3-1	
	Fig. 9.3-2	
	Fig. 9.3-3	
Reactor Coolant	Fig. 4.2-1	
Sampling	541F448	13
Chemical and Volume Control	Fig. 9.2-1	
	Fig. 9.2-2	
	Fig. 9.2-4	
Waste Disposal	684J971	24
Main and Reheat Steam	M-2201, Sh. 1	7
Service Water	M-207, Sh. 1	20
	M-207, Sh. 4	3
	M-2207,	10
Service Air	M-209, Sh. 1	10
	M-209, Sh. 5	6
Auxiliary Steam, Heating Steam	M-2214	7
Heating and Ventilation	M-2215	8
	M-215, Sh. 2	3
Auxiliary Feedwater	M-217	28
Post-accident Containment Venting	M-224	4

APPENDIX D

IST PROGRAM ANOMALIES IDENTIFIED DURING THE REVIEW

APPENDIX D

IST PROGRAM ANOMALIES IDENTIFIED DURING THE REVIEW

Inconsistencies and omissions in the licensee's program noted during the course of this review are summarized below. The licensee should resolve these items in accordance with the evaluations, conclusions, and guidelines presented in this report.

1. The licensee has requested relief from measuring vibration amplitude on all pumps in the IST program and proposed to measure vibration in units of velocity and provided a table of allowable ranges of inservice vibration velocity test data. The licensee should utilize the table of allowable ranges of vibration velocity provided by the NRC staff or measure pump vibration amplitude in accordance with the requirements of Section XI. (See Section 2.1.2.1 of this report).

2. The licensee should be required to make system modifications during the next refueling outage so that the RHR pump flow can be measured in accordance with the Section XI requirements. During the period of interim relief, the pumps should be tested as proposed by the licensee. In addition, tests should also be performed during cold shutdowns. (See Section 2.3.1 of this report).

3. The licensee should be required to make system modifications during the next refueling outage so that the containment spray pump flow can be measured in accordance with the Section XI requirements. Interim relief should be granted to test the pumps as proposed by the licensee. (See Section 2.4.1 of this report).

4. The licensee should be required to make system modifications during the next refueling outage so that the safety injection pump flow can be measured in accordance with the Section XI

requirements. Interim relief should be granted to test the pumps as proposed by the licensee. (See Section 2.5.1 of this report).

5. The licensee should be required to make system modifications during the next refueling outage so that the auxiliary feedwater pump flow can be measured in accordance with the Section XI requirements. Interim relief should be granted to test the pumps as proposed by the licensee. (See Section 2.6.1 of this report).

6. The licensee should be required to make system modifications during the next refueling outage so that the service water pump flow can be measured in accordance with the Section XI requirements. Interim relief should be granted to test the pumps as proposed by tne licensee. (See Section 2.7.1 of this report).

7. The licensee has proposed to disassemble, inspect, and manually full-stroke exercise the accumulator discharge (842-A and 842-B) and combined accumulator/safety injection discharge (867-A) check valves once every ten years. The NRC staff agrees that valve disassembly, inspection, and manual stroking is an acceptable alternate testing method to full-stroke exercise check valves that cannot be full-stroke exercised with system flow. However, the licensee's proposed disassembly frequency is not in accordance with the NRC staff positions and guidelines which specify a refueling outage frequency for valve disassembly. The licensee should be required to test these valves on a refueling outage frequency either individually or on a group sampling basis, if appropriate, as explained in Sections 3.1.1.1.2 and 3.1.1.4.2 of tnis report. (See Items 3.1.1.1 and 3.1.1.4 of this report).

8. The basis for requesting relief for the containment spray chemical additive tank vacuum breakers (840-A and 840-B) provided by the licensee is inadequate, however, additional information was provided in the November 1 and 2, 1983 working meeting (see Section 3.1.2.3.2) which justifies the granting of relief. Tne

licensee should be required to augment the relief request for these valves. (See Item 3.1.2.3 of this report).

9. The licensee has proposed a testing scheme that could allow the limiting value of full-stroke time for rapid acting valves to be as long as 4.5 seconds, which is longer than the maximum limit required by the NRC staff position for rapid acting valves (See Appendix A Item 8) which specifies a limiting value of full-stroke time of 2 seconds. The licensee should be required to set the limiting value of full-stroke time for rapid acting power operated valves at 2 seconds and should be required to comply with the requirements of Section XI, Paragraph IWV-3413(c), for all valves with limiting values of full-stroke time greater than 2 seconds. (See Section 3.9.1 of this report).

10. Section XI, IWV-1100 and the proposed regulatory guide states that all valves which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident should be tested to the requirements of Section XI. The following system pumps and valves meet the above criteria and therefore, must be included in the Point Beach IST programs and be tested in accordance with the Code.

System	Component	Description
Safety Injection	856A 856B	RHR suction from RWST
	857A 857B	Safety injection pump suction from RHR
	871A 871B	Containment spray pump suction from RHR
Component Cooling Water	P11A P11B	Component cooling water pumps
	--	All component cooling system active inline valves
Emergency Diesel Generator	--	Diesel generator fuel oil transfer pumps
	--	All active inline valves in the diesel fuel oil transfer system that supplies the day tank
Chemical and Volume Control	P2A P2B P2C	Charging pumps
	--	All active inline valves in the pressurizer auxiliary spray line

APPENDIX E

VALVES TESTED DURING COLD SHUTDOWN-DETAILS

APPENDIX E

VALVES TESTED DURING COLD SHUTDOWN-DETAILS

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 in accordance with Paragraph IWV-3412 and are full-stroke exercised during cold shutdowns and refueling outages. The staff 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 or system design. We feel that these valves should not be full-stroke exercised during power operation. These valves are listed below and grouped according to the system in which they are located.

1. SAFETY INJECTION SYSTEM

1.1 Category A/C Valves

Valve 867-B, "B" accumulator discharge check, cannot be exercised during power operation. The safety injection pumps do not develop sufficient discharge pressure to overcome reactor coolant system pressure nor can accumulator pressure overcome reactor pressure during power operation. This valve will be full-stroke exercised during cold shutdowns and refueling outages utilizing low head safety injection pump discharge flow.

1.2 Category B Valves

Valves 878-A and 878-C, hot leg safety injection header stops, cannot be exercised during power operation. Exercising these valves during operation could result in overpressurization of the low pressure safety injection system if upstream pressure isolation check valves should leak through. There are no pressure monitors installed on the high pressure side of these valves to determine the status of the upstream pressure

isolation valves. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valves 852-A and 852-B, residual heat removal reactor vessel injections, cannot be exercised during power operation. Exercising these valves during operation could result in overpressurization of the low pressure residual heat removal system if the upstream pressure isolation check valves should leak through. There are no pressure monitors installed on the high pressure side of these valves to determine the status of the upstream pressure isolation valves. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valves 826-B and 826-C, safety injection pumps boric acid suction, cannot be exercised during power operation. The valve alignment required to facilitate valve stroking would prevent boric acid from reaching the safety injection pump suctions if valve 826-A were to fail shut while testing. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

1.3 Category C Valves

Valves HCV-836-A and HCV-836-B, spray additive tank outlets, cannot be exercised during power operation. The valve alignment required to facilitate valve testing during power operation would isolate the sodium hydroxide from the containment spray system. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

2. AUXILIARY COOLANT SYSTEM

2.1 Category A Valves

Valves 754-A and 754-B, reactor coolant pumps component cooling water supply, and 759-A and 759-B, reactor coolant pumps component cooling water return, cannot be exercised during power operation. Failure of any of these valves while testing could result in damage to the associated reactor

coolant pump due to loss of cooling water flow. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

2.2 Category C Valves

Valves 710-A and 710-B, residual heat removal discharge checks, cannot be full-stroke exercised during power operation. The residual heat removal pumps do not develop sufficient discharge pressure to overcome reactor coolant system pressure during plant operation and the recirculation line is not capable of passing the required flow. These valves will be partial-stroke exercised quarterly and full-stroke exercised during cold shutdowns and refueling outages.

3. REACTOR COOLANT SYSTEM

3.1 Category B Valves

Valves PCV-430 and PCV-431-C, PORVs, will be exercised during cold shutdowns. This exercising frequency is consistent with the NRC guidelines explained in Appendix A, Section 10.

Valves 515 and 516, PORV block valves, will normally be stroke exercised during operation, however, if a PORV leaks and is isolated in accordance with the Technical Specifications, then the associated block valve will be exercised during cold shutdowns. This exercising frequency is consistent with the NRC guidelines explained in Section 10 of Appendix A and at the working meeting.

4. CHEMICAL AND VOLUME CONTROL SYSTEM

4.1 Category A Valves

Valves 313 and 313-A, reactor coolant pump seal water return isolations, cannot be exercised during power operation. Exercising these valves during power operation produces transients in the charging and letdown system. These transients affect seal injection flow to the reactor

coolant pumps and could result in pump seal damage. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valves 371 and 371-A, normal letdown isolations, cannot be exercised during power operation. Exercising these valves during power operation produces transients in the charging and letdown system. These transients affect seal injection flow to the reactor coolant pumps and could result in pump seal damage. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

5. MAIN AND REHEAT STEAM

5.1 Category C Valves

Valves CV-2017 and CV-2018, main steam isolation valves, cannot be exercised during power operation. Exercising either of these valves during power operation will cause isolation of the main steam flow resulting in a turbine and reactor trip. Valve design does not permit partial-stroke exercising. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valves MS-2017-A and MS-2018-A, main steam header check valves, cannot be exercised during power operation. Exercising either of these valves during power operation will cause isolation of the main steam flow resulting in a turbine and reactor trip. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

6. SERVICE WATER

6.1 Category B Valves

Valve MOV-2880, turbine hall service water supply, cannot be exercised during power operation. Exercising this valve results in securing service water to the turbine hall. The major components relying on service water cooling in the turbine hall include the main turbine, main generator, steam

generator feed pumps, and condensate pumps. Thus, exercising this valve during operation could result in significant damage to secondary plant equipment should it fail while testing. This valve will be full-stroke exercised during cold-shutdowns and refueling outages.

7. HEATING AND VENTILATION

7.1 Category A Valves

Valves CV-3212 and CV-3213, containment purge exhaust, CV-3244 and CV-3245, containment purge supply, cannot be exercised during power operation. These valves must be locked closed and may not be opened unless the reactor is in a cold shutdown or refueling shutdown condition per the plant Technical Specifications. As long as the subject valves are maintained locked closed, the system is considered to be out of service. Thus, quarterly stroke testing of the subject valves, during any plant condition in which they are locked closed, is not required per IWV-3416. Prior to returning the system to an operable status, the valves will be exercised, and the Code required schedule will be resumed. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

8. AUXILIARY FEEDWATER

8.1 Category C Valves

The following auxiliary feedwater header checks valves cannot be exercised during power operation because establishing flow through these valves would result in thermal shock to the auxiliary feedline to the main feedline nozzles. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valve	Unit	Function
100	both	Combined auxiliary feedwater header checks
101	both	Combined auxiliary feedwater header checks
102	1	Motor driven auxiliary feedwater header check
103	2	Motor driven auxiliary feedwater header check
104	1	Motor driven auxiliary feedwater header check
105	2	Motor driven auxiliary feedwater header check
106	both	Turbine driven auxiliary feedwater header checks
107	both	Turbine driven auxiliary feedwater header checks

Valve 108, turbine driven auxiliary feedwater pump discharge check, cannot be exercised during power operation because that would result in thermal shock to the auxiliary feedline to the main feedline nozzles. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

Valves 109 and 110, the motor driven auxiliary feedwater pumps discharge checks, cannot be exercised during power operation since establishing flow through these valves would result in thermal shock to the auxiliary feedline to main feedline nozzles. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

Valve 111, turbine driven auxiliary feedwater pump suction check, cannot be full-stroke exercised during power operation. Full-stroke exercising this valve during power operation would require injection of relatively cold auxiliary feedwater to the steam generators since the recirculation line cannot pass the required flow. This would result in thermal shock to the auxiliary feedline to main feedline nozzles. This valve will be partial-stroke exercised during power operation and full-stroke exercised during cold shutdowns and refueling outages.

Valves 112 and 113, the motor driven auxiliary feedwater pumps suction checks, cannot be full-stroke exercised during power operation since establishing sufficient flow through these valves to constitute a full-stroke exercise would result in injecting relatively cold auxiliary feedwater into the steam generators since the recirculation lines cannot pass the required flow. This would result in thermal shock to the auxiliary feedline to main feedline nozzles. These valves will be partial-stroke exercised during power operation and full-stroke exercised during cold shutdown and refueling outages.

Valves 466-A, 466-B, 476-A, and 476-B, main feedwater header checks, cannot be exercised during power operation. Closure of any of these valves would cause a loss of feedwater flow which would result in a reactor trip. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

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