UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ENCLOSURE

SAFETY EVALUATION

PUMP AND VALVE INSERVICE TESTING PROGRAM

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT 2

ACKNOWLEDGEMENT

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CONTENTS

1. INTRODUCTION AND SUMMARY

Contained herein is a safety evaluation of the pump and valve inservice testing (IST) program submitted by the Carolina Power and Light Company (CP&L) for its H. B. Robinson Steam Electric Plant, Unit 2.

The licensee's submittal for Interval 2 (3/7/81 to 3/7/91), dated March 10, 1981, was evaluated and the program's variance with the program dated October 25, 1978 was noted. The new program was evaluated for compliance of proposed tests with the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1977 edition, through the summer of 1978 addenda. Those items not in compliance were discussed in a working session with Carolina Power and Light Company representatives, NRC personnel, and EG&G Idaho, Inc. reviewers on September 29, 1981. The licensee made a resubmittal, addressing changes resulting form the working session, dated December 31, 1981. Due to major discrepancies in compliance of the proposed tests with the requirements of Section XI, conference calls involving CP&L, NRC, and EG&G Idaho, Inc. personnel were held on October 18, 21, and 26, 1982, which resulted in the licensee submitting another program dated December 9, 1982. The licensee's submittal dated December 9, 1982, was reviewed for compliance of proposed tests with the requirements of Section XI. A conference call involving CP&L, NRC, and EG&G Idaho, Inc., personnel was held on February 21, 1983, to make the necessary resolutions for writing this safety evaluation report. In their IST program submittal dated December 9, 1982, and the conference call on February 21, 1983, Carolina Power and Light Company requested relief from the ASME Code testing requirements for specific pumps and valves and these requests were evaluated individually to determine whether they have significant risk implications and whether the tests, as required, are indeed impractical. Further discussions were held with the licensee on October 7, 1983 and November 3, 1983. The licensee submitted a revised IST program on January 13, 1984 and a further change to that program on April 13, 1984.

The evaluations in this SER of the H. B. Robinson Steam Electric Plant, Unit 2, pump and valve inservice testing program and the associated relief requests, are those of the NRC staff.

A summary of Section XI pump and valve testing requirements is 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 addressed in Appendix B. This is in full compliance with NRC requirements.

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

Valves that appear to perform a containment isolation function and are not tested in accordance with the requirements of 10CFR50, Appendix J, are listed in Appendix D.

Valves that have an interval between tests longer than each refueling outage and relief requests with insufficient technical basis where relief is not recommended are summarized in Appendix E. This attachment also addresses other items in the body of this report that are not in accordance with current NRC requirements.

Items discussed via telephone on February 21, 1983, with the licensee are detailed in Appendix F.

10 CFR 50.55a(g)(ii) states:

> "If a revised inservice inspection program for a facility conflicts with the technical specification for the facility, the licensee shall apply to the Commission for amendment of the technical specifications to conform the technical specification to the revised program. This application shall be submitted at least 6 months before the start of the period during which the provisions become applicable as determined by paragraph (g)(4) of this section."

The IST program and the technical specifications should not be in conflict. If a conflict is identified by the licensee, both the technical specifications and the IST program must be complied with until relief is granted by the NRC.

The SER is based on submittals by the licensee through April 13, 1984 as listed above. The licensee is to comply with the IST program dated January 13, 1984, as amended on April 13, 1984 in accordance with the relief granted or denied in this SER. The licensee is not to implement any further changes to the IST program except as required by this SER without the written approval of the NRC. Changes required by this SER must be implemented promptly. The licensee is to submit a schedule for revisions of the IST program and Technical Specifications, in order to comply with this SER, within 30 days.

2. PUMP TESTING PROGRAM

The H. B. Robinson, Unit 2, IST program submitted by Carolina Power & Light Company was examined to verify that the listed Class 1, 2, and 3 pumps that perform a function important to safety are subjected to the periodic tests required by the ASME Code, Section XI. Except as noted in this SER or where specific relief from testing has been requested, these pumps are tested to the Code requirements summarized in Appendix A. Each Carolina Power & Light Company basis for requesting relief from the pump testing requirements and the NRC and the NRC staff's evaluation of the request is summarized below.

2.1 Pump Testing Frequency

2.1.1 Relief Request. The licensee has requested specific relief from performing monthly inservice testing of all the listed pumps in the IST program and proposed performing the inservice testing at a quarterly interval.

2.1.1.1 Code Requirement. Refer to Appendix A.

2.1.1.2 Licensee's Basis for Requesting Relief. Monthly Section XI operability testing has been a plant requirement for most of these pumps since operation began. An analysis of the results of these tests and comparable data from other operating plants has shown no significant changes in performance. Based on this analysis, the continuation of Section XI monthly testing would not significantly increase plant safety.

Monthly pump testing requires a total of at least 250 hours per year of pump operation, at least 575 man-hours per year for data acquisition, and at least 50 man-hours per year for data reduction, analysis, and record keeping. This amounts to a total of 625 man-hours per year. At a conservative total costs of $20 per man-hour, this amounts to $12,500 per year. Based upon the average exposure rates in the pump access areas, the total man-rem exposure per year for pump testing is approximately 1.0 man-rem. At the present conservatively estimated cost of $10,000 per man-rem to plant personnel, this exposure costs an additional $10,000 per year. Total cost to our customers is approximately $22,500 per year, for no significant increase in safety.

As an alternate, these pumps will be tested in compliance with ASME Section XI and this program once per quarter. This is in agreement with changes that were implemented in Subsection IWP of the Code in the Winter, 1979, addenda.

2.1.1.3 Evaluation. The code edition utilized by the licensee in preparation of the IST program requires monthly pump tests. Quarterly testing of pumps is acceptable for the IST program.

2.1.1.4 Conclusion. The licensee should test all pumps in the IST program in accordance with the requirements of the latest edition of Section XI and on a quarterly basis.

2.2 Pump Bearing Temperature Measurements

2.2.1 Relief Request. The licensee has requested specific relief from the test requirements of measuring pump bearing temperatures for all the listed pumps in the IST program.

2.2.1.1 Code Requirement. Refer to Appendix A.

2.2.1.2 Licensee's Basis for Requesting Relief. The referenced Edition of the Code requires bearing temperature to be recorded annually. It has been demonstrated by experience that bearing temperature rise occurs only minutes prior to bearing failure. Therefore, the detection of possible bearing failure

by a yearly temperature measurement is extremely unlikely. It requires at least an hour of pump operation to achieve stable bearing temperatures. The small probability of detection of bearing failure by temperature measurement does not justify the additional pump operating time required to obtain the measurements.

No alternate testing is proposed since this is in agreement with present changes that are being implemented in Subsection IWP of the Code to delete yearly bearing temperature measurement. Deletion of bearing temperature has been approved and will be included in future Addenda. See minutes of the November 28, 1979, meeting of the Operating and Maintenance Working Group--Testing of Pumps and Valves in San Jose, California, dated January 9, 1980.

2.2.1.3 Evaluation. Relief should not be granted from the bearing temperature measurement requirements of Section XI. The licensee has not provided sufficient technical justification to demonstrate that pump reliability will not be adversely affected by not measuring bearing temperature. As of this date, all editions and addenda of the Code that have been approved for use by the NRC, require bearing temperature measurements. In addition, no addenda of Section XI to 1984 has deleted this Code requirement.

2.2.1.4 Conclusion. The licensee must measure and record bearing temperatures for all pumps in the IST program in accordance with the requirements of Section XI.

2.3 Pump Flow and Differential Pressure Measurements

2.3.1 Relief Request. The licensee has requested specific relief from measuring flow rate and differential pressure for the service water pumps in accordance with the requirements of Section XI and proposed conducting a "dead head" (zero flow) test on each pump during refueling outages to determine the hydraulic condition of the pump.

2.3.1.1 Code Requirement. Refer to Appendix A.

2.3.1.2 Licensee's Basis for Requesting Relief. The service water pumps are used for removing heat from certain secondary system components during normal operation. Since heat load varies and inlet temperatures vary, automatic temperature control valves will vary the flow rates through the individual components, thus varying pump resistance. The system has no installed flow measuring devices capable of measuring flow from the pumps. The piping is concrete lined which prohibits the use of ultrasonic flow measuring techniques. There is insufficient room on the outlet piping of each individual pump to allow installation of any accurate flow devices.

H.B. Robinson currently verifies service water system operation during refueling by conducting a "dead head" (zero flow) test on each pump. This test provides a point for comparison to determine the condition of the pumps since the previous tests. These tests will be used as an alternative to the monthly Section XI test. If a pump is declared inoperable and maintenance is required on that pump, the pump will be tested in the manner in which the refueling tests are performed. Vibration and normal pump parameters will be checked on a quarterly basis as per the ISI Program requirements.

2.3.1.3 Evaluation. Given the present service water system configuration, pump flow rate cannot be measured for the service water pumps. The proposed alternate test method of performing a "dead head" test during refueling outages may not adequately monitor the hydraulic characteristics of these pumps, and thus detect possible pump degradation; therefore, relief should not be granted. The licensee should perform the necessary modifications to the service water system to allow measuring flow rate in accordance with the requirements of Section XI.

The licensee's basis does not provide a justification for not measuring differential pressure for the service water pumps, therefore, relief should not be granted from the Code Requirement of measuring differential pressure. The Code allows differential pressure to be determined by taking the difference between the pressure at a point in the inlet pipe and the pressure at a point in the discharge pipe. Since the licensee is measuring inlet pressure for these pumps and there are installed discharge pressure gauges for each pump,

differential pressure can be measured in accordance with the requirements of Section XI.

2.3.1.4 Conclusion. The licensee must measure differential pressure and flow rate for the service water pumps in accordance with the requirements of Section XI of the ASME Code.

The licensee is required to make any necessary plant modifications to suit these requirements prior to startup at the end of the next refueling outage following the issue of this SER. Requiring the licensee to complete such modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety. Accordingly, interim relief is granted until the end of the next refueling outage. Relief thus granted will not endanger life or property or the common defense and security of the public.

2.3.2 Relief Request. The licensee has requested specific relief from measuring flow rate for the Auxiliary Feedwater A, B, and SD, Safety Injection A, B, and C, Residual Heat Removal A and B, Containment Spray A and B, Component Cooling A and B, and Boric Acid Transfer A and B pumps in accordance with the requirements of Section XI and proposed monitoring any changes in pump performance by observing changes in differential pressure while the pumps are being tested in a fixed resistance configuration.

2.3.2.1 Code Requirement. Refer to Appendix A.

2.3.2.2 Licensee's Basis for Requesting Relief. Instrumentation is not installed to measure flow rate for testing. For the first ISI interval, these pumps (except Boric Acid Transfer A and B) were tested in a fixed resistance configuration so that any change in performance would be indicated by a change in differential pressure. This method of testing has proven satisfactory and will be continued.

2.3.2.3 Evaluation. Given the present system configurations, pump flow rate cannot be measured in accordance with the requirements of Section XI for the listed pumps. The proposed alternate test method of monitoring pump

differential pressure while these pumps are being tested in a fixed resistance configuration may not adequately monitor the hydraulic characteristics of these pumps and thus detect possible pump degradation. Therefore, relief should not be granted. The licensee should perform the necessary modifications to the applicable systems to allow measuring pump flow rate in accordance with the requirements of Section XI of the ASME Code.

2.3.2.4 Conclusion. The licensee must measure pump flow rate in accordance with the requirements of Section XI of the ASME Code.

The licensee is required to make any necessary plant modifications to suit these requirements prior to startup at the end of the next refueling outage following the issue of this SER. Requiring the licensee to complete such modifications prior to the next refueling outage would impose unnecessary hardship on the licensee without a compensating increase in the level of safety. Accordingly, interim relief is granted until the end of the next refueling outage. Relief thus granted will not endanger life or property or the common defense and security of the public.

2.3.3 Relief Request. The licensee has requested specific relief from measuring flow rate for the diesel fuel oil transfer pumps in accordance with the requirements of Section XI and proposed using manual calculations at refueling outages to determine flow rates.

2.3.3.1 Code Requirement. Refer to Appendix A.

2.3.3.2 Licensee's Basis for Requesting Relief. These pumps discharge through a fixed resistance system of piping into the fuel oil day tanks. There is no flow rate instrumentation installed in this piping. Differential pressure will be measured quarterly for these pumps. These pumps are run weekly to restore the level in the day tank after performance of the diesel generator test. This frequency is four times that required by IWP-3400, Summer 1978 Addenda, and twelve times that referenced in Relief Request 1. Flow rates will be measured by a separate test procedure using manual calculations at refueling intervals.

2.3.3.3 Evaluation. Given the present system configuration, pump flow rate cannot be measured in accordance with the requirements of Section XI for the diesel fuel oil transfer pumps. The proposed alternate test method of using manual calculations to determine pump flow rate during refueling outages will meet the intent of the Code for determining the hydraulic characteristics of these pumps, however, the licensee has not supplied any technical justification for not performing the alternate testing at the Code-specified frequency. Therefore, relief should not be granted to measure flow rate at an interval greater than every three months. It will be acceptable to perform the proposed alternate testing at the Code-specified frequency.

2.3.3.4 Conclusion. The licensee must perform the proposed alternate test of using manual calculations to determine pump flow for the diesel fuel oil transfer pumps at the Code-specified frequency of at least once every three months.

3. VALVE TESTING PROGRAM

The H.B. Robinson, Unit 2, IST program submitted by Carolina Power & Light Company was examined to verify that the listed Class 1, 2, and 3 valves that perform a function important to safety are subjected to the periodic tests required by the ASME Code, Section XI, and the NRC positions and guidelines. Except where specific relief from testing has been requested and granted herein, these valves are tested to the Code requirements and the NRC positions and guidelines summarized in Appendix A and Section 3.1 of this report. Each Carolina Power & Light Company basis for requesting relief from the valve testing requirements and the NRC, evaluation of that request is stated below and grouped according to system and valve category.

3.1 General Considerations

3.1.1 Exercising Check Valves. The 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 disc position is not always observable, the NRC staff position is that verification of the maximum flow rate through a particular check valve would be an adequate demonstration of the full-stroke

requirement. Any flow rate less than this is considered partial-stroke exercising unless it can be shown that the check valve's disc position at the lower flow rate would permit maximum required flow through the valve. This reduced flow rate method of demonstrating full-stroke capability is the only test that requires measurement of the differential pressure across the valve.

3.1.2 Valves Identified for Cold Shutdown Exercising. The Code permits valves to be exercised during cold shutdowns where it is not practical to exercise during plant operation. These valves are required to be specifically identified by the licensee and full-stroke exercised during cold shutdowns. When this is done 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 in such cases. During the review of the licensee's IST program, it was confirmed that it is not practical to exercise these valves during power operation.

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 refueling outages, tests being performed are expected to be maintained as closely as practical to the Code-specified frequencies.

3.1.3 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 not later than 48 hours after shutdown, and continue until complete or the plant is ready to return to power.

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

3. Any testing not completed during one cold shutdown should be performed during any subsequent cold shutdowns that may occur before refueling to as closely as possible meet Code-specified testing frequency. to as closely as possible meet the Code-specified testing frequency.

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

3.1.4 Application of Appendix J Testing to the IST Program. The Appendix J review for this plant is 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, the licensee will amend the IST program accordingly.

3.1.5 Safety Related Valves. This review was limited to valves that perform a safety related function. Safety related valves are defined as those valves that are needed to mitigate the consequences of an accident and/or to shut down the reactor and to maintain the reactor in a shutdown condition. Valves in this category would typically include certain ASME Code class 1, 2, and 3 valves and could include some non-Code class valves. The licensee may have included valves whose functions are not safety related in the IST program as a decision on its part to expand the scope of its program.

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3.2 Generic Relief Requests

3.2.1 Relief Request. The licensee has requested specific relief from leak testing all primary containment isolation valves in accordance with the requirements of Section XI and proposed testing valves in accordance with 10 CFR 50, Appendix J, requirements.

3.2.1.1 Code Requirement. Refer to IWV-3420 of the 1977 Edition through and including summer 1978 Addenda of the ASME B&PV Code, Section XI.

3.2.1.2 Licensee's Basis for Requesting Relief. 10 CFR 50, Appendix J requires periodic leak testing of containment isolation valves. All Section XI Category A valves for this plant are containment isolation valves and require Section XI leak testing. In order to preclude redundant test requirements on these valves, the Appendix J requirements will be met in lieu of the Section XI requirements.

The H.B. Robinson containment has two features in its design that assure adequate integrity during and following a loss of coolant accident. These are the isolation valve seal water (IVSW) system and the penetration pressurization (PPS) system. These two systems are conservatively designed, seismically qualified, and operated in accordance with Unit Technical Specifications and the requirements of 10CFR50, Appendix J, for seal systems that can be used in lieu of local Type C valve testing.

The PPS and IVSW systems will be tested as required by 10CFR50, Appendix J.

3.2.1.3 Evaluation. Containment isolation valves (CIV's) may be leak tested in accordance with 10CFR50, Appendix J as an alternative to leak testing in accordance with Section XI of the ASME Code. All containment isolation valves that are Appendix J leak tested should be included in the IST program as Category A or AC valves. Relief should be granted from paragraph IWV-3421 through 3425 for all CIV's that are Appendix J tested.

Appendix J allows, as a substitute for individual Type C leak testing of CIV's, "leakage surveillance by means of a permanently installed system with provisions for continuous or intermittent pressurization of individual or groups of containment penetrations and measurement of pressure loss of air, nitrogen or pneumatic fluid..." Appendix J also allows CIV's sealed post-accident by a seal system to be excluded from Type C testing, providing proper operation of the system is demonstrated in accordance with Appendix J and the facility Technical Specifications. In accordance with the facility updated FSAR and Technical Specifications, the PPS and IVSW systems are acceptable for these purposes. For those CIV's monitored by either the PPS or IVSW system, relief should also be granted from the analysis of leak rates and corrective actions imposed by ASME Section XI paragraphs IWV 3426 and 3427 respectively because the measurements would be meaningless.

Several containment isolation valves are not monitored by either PPS or IVSW. The licensee indicated on the updated FSAR (page 6.2.4-9) and in the bases of the Technical Specifications (page 4.4-10) that these valves are each either a part of closed systems or systems which operate at a higher pressure than post-accident containment pressure. Examination of the IST program reveals that these valves have been classified as Category B, indicating that they will not be leak tested. For purposes of satisfying the IST program to assure valve integrity, this is acceptable. The licensee should verify that all CIV's which are not monitored by the PPS or IVSW systems are, in fact, attached to closed systems or high pressure systems and thus are exempt from testing.

Containment isolation valves which are also pressure isolation valves must be leak tested as noted in paragraph 3.1.6 of this SER. The licensee's statement in its relief request that all Category A valves are containment isolation valves may be inaccurate because some category A or A/C valves are pressure isolation valves as discussed in paragraph 3.1.6 of this SER.

3.2.1.4 Conclusion. The proposed alternate method, as discussed above, of testing containment isolation valves in accordance with the requirements of 10CFR50, Appendix J, demonstrates valve leak-tight integrity for primary containment isolation valves. Based on the considerations discussed above, the

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

3.3 Chemical and Volume Control System

3.3.1 Category C Valves

3.3.1.1 Relief Request No. 10. The licensee has requested specific relief from exercising valve 357, check valve in the line from the Refueling Water Storage Tank (RWST) to the charging pumps suction, in accordance with the requirements of Section XI and proposed full-stroke exercising this valve during each refueling outage.

3.3.1.1.1 Code Requirement--Refer to Appendix A.

3.3.1.1.2 Licensee's Basis for Requesting Relief--Full-stroke exercising valve 357 during power operation would result in overboration of the RCS, which could result in a plant shutdown. During cold shutdown, full-stroke exercising this valve could result in a low temperature-overpressurization of the RCS. This valve will be partial-stroke exercised quarterly and full-stroke exercised with flow during refueling outages.

3.3.1.1.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valve 357. The licensee has demonstrated that full-stroke exercising this valve with flow during power operation could result in an overboration of the RCS which could result in a plant shutdown. During cold shutdowns, full-stroke exercising this valve could result in a low temperature-overpressurization of the RCS.

3.3.1.1.4 Conclusion--Partial stroke exercising this valve quarterly and full-stroke exercising this valve during refueling outages will demonstrate proper valve operability. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.4 Safety Injection System

3.4.1 Category C Valves

3.4.1.1 Relief Request No. 10. The licensee has requested specific relief from exercising valve 357, check valve in the line from the Refueling Water Storage Tank (RWST) to the charging pumps suction, in accordance with the requirements of Section XI and proposed full-stroke exercising this valve during each refueling outage.

3.4.1.1.1 Code Requirement--Refer to Appendix A.

3.4.1.1.2 Licensee's Basis for Requesting Relief--These valves cannot be full-stroke exercised during normal operation due to the difference in pressure between the RCS (2235 psig) and the discharge head of the SI pumps (1500 psig). Design flow cannot be achieved with the system aligned for miniflow recirculation. Injection into the RCS via the SI pumps during cold shutdown is not desirable due to the possibility for low temperature-overpressurization of the RCS. These valves pass design flow at refueling outages during the SI system flow test. These valves are partial-stroke exercised quarterly by observing a pressure increase from PT-943 when each safety injection pump is tested.

3.4.1.1.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valves 879A, 879B, and 879C. The licensee has demonstrated that the safety injection pumps do not develop sufficient discharge pressure to overcome RCS pressure during power operation. During cold shutdowns, exercising these valves with flow could result in a low temperature-overpressurization of the RCS.

3.4.1.1.4 Conclusion--Full-stroke exercising these valves during refueling outages when the safety injection system flow test is performed will demonstrate proper valve operability. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.4.1.2 Relief Request No. 8. The licensee has requested specific relief from exercising valves 890A, and 890B, containment spray pumps discharge check valves, in accordance with the requirements of Section XI and proposed to partial-stroke exercise these valves during cold shutdowns and verify proper full-stroke operation of these valves at a refueling outage interval.

3.4.1.2.1 Code Requirement--Refer to Appendix A.

3.4.1.2.2 Licensee's Basis for Requesting Relief--These valves are tested at cold shutdown by injecting air upstream and observing a pressure increase on a temporary test gage downstream. The cold shutdown test constitutes the only method to verify disc travel short of initiating flow through the spray nozzles or disassembly. Proper full-stroke operation of these valves will be verified at refueling.

3.4.1.2.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valves 890A and 890B. Full-stroke exercising these valves with system flow at any time would result in spraying containment which could cause wetting of lagging, corrosion of components inside containment, etc. Disassembling these valves during cold shutdowns could cause a delay in startup from the cold shutdown. During a conference call on February 21, 1983, between CP&L, NRC and EG&G Idaho, Inc., representatives, the method by which proper full-stroke operation of these valves would be verified was discussed. At that time, the licensee stated that some positive method, such as valve disassembly and inspection of the internals, would be utilized to demonstrate proper valve operability during each refueling outage.

3.4.1.2.4 Conclusion--Partial-stroke exercising these valves during cold shutdowns and verifying valve full-stroke operability at refueling outage intervals, by some positive method such as valve disassembly, will demonstrate proper valve operability. Only one of the two valves need be disassembled, on an alternating schedule. If a problem is encountered then the second valve must be disassembled as well. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.4.1.3 Relief Request No. 11. The licensee has requested specific relief from exercising valves 870C and 870D, vacuum breaker valves on the containment spray system spray additive tank, in accordance with the requirements of Section XI and proposed verifying proper valve operability for these vacuum breakers at a refueling outage interval.

3.4.1.3.1 Code Requirement--Refer to Appendix A.

3.4.1.3.2 Licensee's Basis for Requesting Relief--Removal of valves 870C and 870D for exercising during power operation would render containment spray additive subsystem inoperable. During cold shutdown, removal for exercising on a test stand could delay startup. Due to the special techniques that must be performed to ensure the vacuum breaking capability of these valves, the frequency has been set at refueling intervals.

Due to special techniques that must be performed to ensure the vacuum breaking capability of these valves, the frequency has been set at refueling intervals. A classification of C-active has been chosen for these valves. A modification must be performed to allow bench testing of these valves. This modification is scheduled for the Steam Generator Replacement Outage.

3.4.1.3.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for vacuum breaker valves 870C and 870D. The licensee has demonstrated that the only practical method for verifying proper operability of these vacuum breakers is removal of the valves from the system and bench testing with a special test assembly. Removal of these valves during power operation would render the containment spray additive subsystem inoperable. During cold shutdown, removal of these valves for verifying proper valve operability could result in delaying startup from the cold shutdown condition.

3.4.1.3.4 Conclusion--Demonstrating full-stroke operability of these valves during refueling outages will provide a reasonable assurance of proper valve operability. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.4.1.4 Relief Request No. 4. The licensee has requested specific relief from exercising valves 873A, 873B, 873C, 873D, 873E, 873F, 874A, and 874B, high head safety injection to RCS cold legs and hot legs check valves, in accordance with the requirements of Section XI and proposed full-stroke exercising these valves during refueling outages when the safety injection system flow test is performed.

3.4.1.4.1 Code Requirement--Refer to Appendix A.

3.4.1.4.2 Licensee's Basis for Requesting Relief--These valves cannot be full-stroke exercised during normal operation due to the difference in pressure between the RCS (2235 psig) and the discharge head of the SI pumps (1500 psig). Injection into the RCS during cold shutdown is not desirable due to the possibility for low temperature-overpressurization of the RCS. These valves pass design flow at refueling outages during the SI system flow test.

3.4.1.4.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valves 873A, 873B, 873C, 873D, 873E, 873F, 874A, and 874B. The licensee has demonstrated that the safety injection pumps do not develop sufficient discharge pressure to overcome RCS pressure during power operation. During cold shutdowns, exercising these valves with flow could result in a low temperature-overpressurization of the RCS.

3.4.1.4.4 Conclusion--Full-stroke exercising these valves during refueling outages when the safety injection system flow test is performed should demonstrate proper valve operability. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.4.1.5 Relief Request. The licensee has requested specific relief from exercising valves 875A, 875B, and 875C, RCS cold leg header check valves from the SI pumps, RHR pumps, and SI accumulators, quarterly and proposed exercising these valves during cold shutdowns when the RHR system is providing reactor core cooling.

3.4.1.5.1 Code Requirement--Refer to Appendix A.

3.4.1.5.2 Licensee's Basis for Requesting Relief--These valves cannot be cycled during normal operation due to the pressure differential that exists across the valves with either the SI or RHR pumps running. These valves are cycled during cold shutdown when the RHR system is providing core cooling.

3.4.1.5.3 Evaluation--The licensee has demonstrated that valves 875A, 875B, and 875C cannot be exercised during power operation since the SI pumps, RHR pumps, or SI accumulators do not develop sufficient discharge pressure to overcome RCS pressure. The licensee has proposed cycling these valves during cold shutddowns utilizing RHR system flow when it is aligned for core cooling. During a conference call on February 21, 1983, between CP&L, NRC, and EG&G Idaho, Inc., representatives, the licensee was asked it this test method demonstrated a full-stroke exercise of these valves, at which time the licensee requested that this remain an open item. Other plants that have similar valve arrangements have stated that RHR system flow does not positively full-stroke exercise these valves, therefore, relief should not be granted from the exercising requirements of Section XI for these valves. Alternate testing methods for demonstrating proper valve operability for these valves, such as partial valve disassembly of one valve at each refueling outage on a rotating schedule, is acceptable.

3.4.1.5.4 Conclusion--Based on the considerations discussed above, the licensee may not be full-stroke exercising these valves at any time. Therefore, relief should not be granted from the exercising requirements of Section XI for these valves. The licensee's proposed alternate testing does not meet the in-tent of the Code and does not provide reasonable assurance of valve operabil-ity. The licensee should disassemble one of the three valves at each refueling on a rotating schedule. If any problem is noted during the inspection, all these vales must be the disassembled before they can be declared operable.

3.4.1.6 Relief Request No. 3. The licensee has requested specific relief from exercising valves 875D, 875E, and 875F, safety injection accumulators discharge check valves, in accordance with the requirements of Section-XI and proposed partial-stroke exercising these valves during cold shutdowns.

3.4.1.6.1 Code Requirements--Refer to Appendix A.

3.4.1.6.2 Licensee's Basis for Requesting Relief--These accumulator check valves are partially stroked at cold shutdown by varying reactor coolant system pressure and observing increases and decreases in accumulator level. Stroke verification by passing design flow during cold shutdown is not practical due to the large volume of water that would be added to the reactor coolant system. Calculations have shown that a differential pressure of approximately 25 psi will shear any particles that may attempt to prevent the valve from functioning (FSAR Section 6.2.3). Based on this calculation and partial stroke testing presently performed, full-stroke testing requirements are waived.

3.4.1.6.3 Evaluation--Relief should not be granted from the exercising requirements of Section XI for valves 875D, 875E, 875F. Section 6.2.3 of the H.B. Robinson 2 FSAR only addresses deposition accumulated on the bearings of these check valves and does not address other possible failure modes for these valves. The licensee can not be assured of proper valve operability of these valves without full-stroke exercising them. Also, the licensee has not supplied any technical justification for not demonstrating full-stroke capability for exercising these valves at a refueling outage interval, therefore, the licensee should perform alternate testing for demonstrating proper valve operability for these valves. Partial valve disassemble as outlined in paragraph 3.4.1.5.3 above is acceptable.

3.4.1.6.4 Conclusion--Based on the considerations discussed above, relief should not be granted from the exercising requirements of Section XI for these valves. The licensee's proposed alternate testing does not meet the intent of the Code and does not provide reasonable assurance of valve operability. The licensee should disassemble one of the three valves at each refueling outage on a rotating schedule. If any problem is noted during the inspection, all three valves must be disassembled before they can be declared operable.

3.5 Main, Extraction and Auxiliary Steam System

3.5.1 Category C Valves

3.5.1.1 Relief Request No. 2. The licensee has requested specific relief form exercising valves MS-VI-3A-, 3B, and 3C, main steam check valves, in accordance with the requirements of Section XI and proposed verifying closure of these valves during refueling outages.

3.5.1.1.1 Code Requirement--Refer to Appendix A.

3.5.1.1.2 Licensee's Basis for Requesting Relief--These valves are the Main Steam Check valves downstream of the MSIV's. Normal steam flow verifies the proper opening of the valves. Section XI requires reverse flow seating of the valves. These valves cannot be exercised shut during power operation since this would result in a plant trip. Verifying closure of these valves during cold shutdown could result in delaying start-up due to the complicated test methods needed to verify closure (i.e., valve disassembly or visual inspection from inside the main steam lines). Also, since these valves are non-isolable during power operation, any steam leaks of appreciable size would require a plant shutdown to correct. Therefore, since disassembly on a frequent basis would increase the probability of such leaks, such maintenance is not considered a feasible alternative. These valves will be verified shut during refueling outages by some method such as disassembly or visual inspection from inside the main steam lines.

3.5.1.1.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valves MS-VI-3A, 3B, and 3C. During power operation, verifying closure of these valves would result in a loss of steam flow and subsequent reactor trip. Due to the present system design, the only positive means of verifying closure of these valves is by some special method such as valve disassembly or visual inspection of the valve from inside the main steam line. Delay of plant startup to perform such a complex inspection is not commensurate with the value of the test. Verification of valve closure at refueling outages is satisfactory for these valves. The licensee should disassemble, inspect (the use of photographs as a means of recording valve condition is

recommended) and manually full-stroke exercise one of these valves on a rotating schedule at each refueling outage. If any problem affecting valve operability is identified by the inspection, all of the valves must be dissambled before any can be declared operable.

3.5.1.1.4 Conclusion Verifying closure of these valves during refueling outages, by some positive method such as valve disassembly on a rotating schedule, will demonstrate proper valve operability. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.6 Service and Cooling Water System

3.6.1 Category C Valves

3.6.1.1 Relief Request No. 6. The licensee has requested specific relief from exercising valves SW-542 and SW-543, service water to steam driven auxiliary feedwater pump lube oil cooler header check valves, in accordance with the requirements of Section XI and proposed verifying flow through both valves collectively at a quarterly interval.

3.6.1.1.1 Code Requirement--Refer to Appendix A.

3.6.1.1.2 Licensee's Basis for Requesting Relief--These valves are installed in parallel, nonisolable flowpaths. Therefore, full-stroke verification cannot be performed individually on each valve. Flow through these valves is verified collectively at quarterly intervals.

3.6.1.1.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valves SW-542 and SW-543. The licensee has demonstrated that with the present piping configuration there is no means available to full-stroke exercise these valves individually. Since these valves are in redundant supply headers to the steam driven auxiliary feedwater pump lube oil cooler, verifying flow through the valves, collectively, will demonstrate the intended safety function of these valves.

3.6.1.1.4 Conclusion--Verifying flow through both valves collectively at a quarterly interval will demonstrate the intended safety function of these valves. Based on the considerations discussed above, the alternate testing proposed will give reasonable assurance of valve operability intended by the Code and that the relief thus granted will not endanger life or property or the common defense and security of the public.

3.6.1.2 Relief Request No. 5. The licensee has requested specific relief from exercising valve SW-544, check valve in the service water supply line to the auxiliary feedwater pumps suction line, in accordance with the requirements of Section XI and proposed partial-stroke exercising this valve quarterly. The licensee also proposes to disassemble this valve during the Steam Generator Replacement outage and report on its internal condition.

3.6.1.2.1 Code Requirement--Refer to Appendix A.

3.6.1.2.2 Licensee's Basis for Requesting Relief--This valve is partial-stroke exercised quarterly by verifying flow through a downstream tell-tale drain. Valve SW-544 is in the service water supply to the auxiliary feedwater (AFW) pump suction line. It is a backup water supply that would only be initiated in emergency conditions (condensate tank level less than 10%). The deep well water system also serves as a backup AFW pump suction supply source.

Full-stroke testing can only be accomplished by adding untreated lake water to the AFW system which has controlled water chemistry. Therefore, system design does not allow full-stroke testing. Dismantling the valve at refueling intervals is not considered necessary nor practical. Disassembly for full-stroke verification does not add to the safety margin verified by a quarterly partial-stroke test. In fact, disassembly for full-stroke verification may prove detrimental and could possibly add to service water system leakage during operation. The position taken is, considering partial-stroke testing now performed quarterly and the redundant role this system shares with the deep well water system, no other testing or periodic disassembly for testing purposes is required.

3.6.1.2.3 Evaluation--Full-stroke exercising of this valve every three months or at cold shutdown is impractical for the reasons stated above by the licensee. However, the licensee has not provided sufficient justification for not disassembling this valve at refueling outages, to determine its condition, as an alternative to full stroke testing.

3.6.1.2.4 Conclusion--With the present system design, full-stroke exercising this valve with flow is not feasible; however, relief should not be granted for never full-stroke exercising this valve. The proposed partial-stroke exercising does not meet the intent of the Code and does not provide reasonable assurance of proper valve operability. Accordingly, the licensee should disassemble this valve at refueling outages in order to determine if its condition is satisfactory. Relief thus granted will not endanger life or property, or the common defense and security of the public.

3.7 Penetration Pressurization System

3.7.1 Category A Valves

3.7.1.1 Releif Request. The licensee has requested specific relief form performing fail-safe testing and stroke timing for valves EV-H2A, EV-H2B, EV-1727, and EV-1728, penetration pressurization air supply and bleed off valves for V12-10 and V12-11, V12-18 and V12-19, RMS-1 and RMS-2, and RMS-3 and RMS-4 innerspaces, in accordance with the requirements of Section XI.

3.7.1.1.1 Code Requirement--Refer to Appendix A.

3.7.1.1.2 Licensee's Basis for Requesting Relief--These valves are normally de-energized, i.e., in the failed position, during normal operation with air being supplied to the penetration innerspace. Therefore, a failure mode test does not apply to these valves. A full-stroke open timing test does not apply to these valves since they are enclosed and stem travel cannot be visually verified. Remote indication for valve position does not exist. The primary safety consideration is the operation of the valves listed in the description.

3.7.1.1.3 Evaluation--Relief should be granted from the fail-safe testing and stroke timing requirements of Section XI for valves EV-H2A, EV-H2B, EV-1727, and EV-1728. The licensee has demonstrated that these valves are normally in their fail-safe position and would not be required to change position in the event of an accident. due to the design of these valves, there is no practical method to measure stroke time. Exercising these valves quarterly by observing system indications, such as pressure, when these valves change position, should demonstrate proper valve operability intended by the Code.

3.7.1.1.4 Conclusion--Full-stroke exercising these valves quarterly by observing proper system indications will demonstrate proper valve operability. Based on the considerations discussed above, the relief thus granted will not endanger life or property or the common defense and security of the public.

3.8 Post Accident Containment Venting System

3.8.1 Category A/C Valves

3.8.1.1 Relief Request No. 9. The licensee has requested specific relief from exercising valve V8-5, instrument air line containment isolation check valve, in accordance with the requirements of Section XI and proposed verifying closure of this valve during the containment integrated leak rate test which is conducted at intervals not to exceed three refueling outages.

3.8.1.1.1 Code Requirement--Refer to Appendix A.

3.8.1.1.2 Licensee's Basis for Requesting Relief--This valve, in the instrument air supply line to containment, cannot be aligned for a reverse flow test. This valve is subject to a reverse flow test during the containment integrated leak rate test which is conducted at intervals not to exceed three refueling outages. Instrument air is a closed system inside containment with valve IA-PCV-1716 serving as the boundary isolation valve.

3.8.1.1.3 Evaluation--Relief should be granted from the exercising requirements of Section XI for valve V8-5. The licensee has demonstrated that

with the present piping configuration, there is no method of testing, the licensee has proposed verifying closure of this valve during the containment integrated leak rate test which is conducted at intervals not to exceed three refueling outages. Verifying closure of this valve by leak rate testing is an acceptable alternate testing method, however, any testing interval longer than each refueling outage has not been justified by the licensee. During a conference call on February 21, 1983, the licensee was informed that the current NRC position is that this valve would have to be disassembled and a report of the valve's internal condition be supplied to the NRC before any interval longer than each refueling outage could be accepted.

3.8.1.1.4 Conclusion--The current NRC position, which was explained to the licensee, is that verifying closure of this valve by leak rate testing each refueling outage is an acceptable alternate testing method. Relief thus granted will not endanger life or property or the common defense and security of the public. The NRC has deferred a decision concerning the acceptability of lengthening that interval pending satisfactory results of an inspection of the valve internals. In order to resolve this matter, the licensee should furnish the NRC with the results of this inspection so that a longer acceptable interval can be verified.

3.9 Isolation Valve Seal Water System

The licensee presently has one general entry in the IST program for the isolation valve seal water (IVSW) system check valves at the class boundaries. During a conference call on February 21, 1983, between CP&L, NRC, and EG&G Idaho, Inc., representatives, the licensee was informed that the current NRC position is that the IVSW system is safety related, therefore, all valves that are necessary for the proper operation of this system should be included in the IST program, individually, and be exercised in accordance with the requirements of Section XI. The licensee must include all applicable valves in the IST program and provide sufficient technical justification for any of these valves that cannot be exercised at the Code-specified frequency. A schedule for amending the IST program to include these valves should be obtained from the licensee within 30 days after issue of this SER.

APPENDIX A

1. CODE REQUIREMENT--VALVES

Subsection IWV-3411 of the 1977 Edition of the Section XI ASME Code with addenda through the summer, 1978 (which discusses full-stroke and partial-stroke requirements) requires that Code Category A and B valves be exercised once every three months, with exceptions as defined in IWV-3412(a), IWV-3415, and IWV-3516. IWV-3521 (which discusses full-stroke and partial-stroke requirements) requires that Code Category C valves be exercised once every three months, with the exceptions as defined in IWV-3522. In the above exceptions, the Code permits the valves to be tested at cold shutdown where:

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

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

Subsection IWV-3413 requires all Category A and B power-operated valves to be stroke-time tested to the nearest second or 10% of the maximum allowable owner-specified time.

2. CODE REQUIREMENTS--PUMPS

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

APPENDIX B

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. This is in full compliance with NRC requirements. These valves are specifically identified by the owner and are full-stroke exercised during cold shutdowns and refueling outages. Testing these valves during power operation is not possible, due to the valve type and location or system design. These valves should not be exercised during power operation. These valves are listed below and grouped according to the system in which they are located.

1.1 Category A Valves

FCV-626 and 735, component cooling water (CCW) from the reactor coolant pump (RCP) thermal barrier isolation valves, cannot be exercised during power operation since closure of these valves could result in damage to the RCPs and possible plant shutdown. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

716B, inlet isolation for CCW to the RCPs, cannot be exercised during power operation since closure of this valve could result in damage to the RCPs and possible plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

730, CCW return flow for the RCPs lube oil cooler isolation valve, cannot be exercised during power operation since closure of this valve could result in damage to the RCPs and possible plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

1.2 Category B Valves

716A, inlet isolation for CCW flow to the RCPs, cannot be exercised during power operation since closure of this valve could result in damage to the RCPs

and possible plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

2. CHEMICAL AND VOLUME CONTROL SYSTEM

2.1 Category A Valves

202A and 282, charging line to RCS manual containment isolation valves, cannot be exercised during power operation since closure of these valves would disrupt charging flow to the RCS. Disrupting charging flow to the RCS could result in a loss of pressurizer level control and a possible plant trip. If the bypass valve (309A) around valve 202A was opened while exercising 202A to supply charging flow to the RCS, a loss of RCP seal water could occur with resulting damage to the RCPs. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

204A and 204B, letdown flow isolation valves, cannot be exercised during power operation since failure of either of these valves in the closed position coincident with normal charging flow could result in a high RCS level trip. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

297A, 297B, 297C, 292A, 293A, 293C and 295, RCP seal water injection manual containment isolation valves, cannot be exercised during power operation since cycling of these valves would disrupt seal flow to the RCPs, possibly resulting in damage to the seals and plant shutdown. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

381, RCP seal water return line isolation valve, cannot be exercised during power operation since cycling this valve would disrupt seal flow to the RCPs, which could result in seal damage and possible plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

2.2 Category B Valves

LCV-115B, refueling water storage tank (RWST) to charging pumps suction isolation valve, cannot be exercised during power operation since cycling this valve could result in addition of borated water (1950 ppm) to the RCS. During normal operation, this would have an undesirable effect on reactor power level, (i.e., a possible plant shutdown). This valve will be full-stroke exercised during cold shutdowns and refueling outages.

LCV-115C, outlet valve from the volume control tank to the charging pumps suction line, cannot be exercised during power operation since cycling this valve would disrupt suction to the charging pumps with a potential loss of charging pumps and all RCP seal flow, which could result in damage to the RCP seals and a possible plant shutdown. Alternate suction paths for the charging pumps cannot be used during power operation since this could result in an overboration of the RCS and possible plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

350, emergency boration isolation valve, cannot be exercised during power operation since this could result in an overboration of the RCS which could result in a plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

2.3 Category C Valves

351, emergency boration line check valve, cannot be exercised during power operation since this would result in an overboration of the RCS which could result in a plant shutdown. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

266, volume control tank outlet check valve, cannot be exercised shut at power without loss of seal water flow to the RCP's. This valve will be exercised shut at cold shutdowns.

3. SAFETY INJECTION SYSTEM

3.1 Category A Valves

869, safety injection containment isolation to the hot legs, cannot be exercised during power operation since failure of this valve in the closed position would result in loss of the flow path to the RCS hot legs. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

3.2 Category B Valves

845A and 845B, spray additive tank to containment spray pumps isolation valves, cannot be exercised during power operation since this would require closing either valve 892A, 892C, or 845C to preclude a level reduction in the spray additive tank. Failure of 892A, 892C, or 845C in the closed position would render the sodium hydroxide addition flow path inoperable. Also, Technical Specification 4.5.2.4 requires valves 844A and 844B to be closed before valves 845A and 845B are cycled. Closing valves 844A and 844B would render the entire containment spray system inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

864A and 864B, refueling water storage tank outlet isolation valves, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be open with the A.C. control power removed when the reactor coolant pressure is in excess of 1,000 psig. Failure of either of these valves in the closed position would render the safety injection, residual heat removal, and containment spray systems inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

878A and 878B, safety injection pumps discharge header cross connect valves, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be open with the AC control power removed when the reactor coolant pressure is in excess of 1,000 psig. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

862A and 862B, residual heat removal pumps suction isolation valves from the refueling water storage tank, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be open with the AC control power removed when the reactor coolant pressure is in excess of 1,000 psig. Failure of either of these valves in the closed position would render the residual heat removal system inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

863A and 863B, residual heat removal pumps discharge to safety injection pumps suction isolation valves, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be closed with the AC control power removed when the reactor coolant pressure is in excess of 1,000 psig. Failure of either of these valves in the open position could render the residual heat removal system inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

865A, 865B, and 865C, safety injection accumulator discharge isolation valves, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be open with the AC control power removed when the reactor coolant pressure is in excess of 1,000 psig. Failure of any of these valves in the closed position would render the associated safety injection accumulator inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

866A and 866B, high head safety injection to RCS hot legs isolation valves, cannot be exercised during power operation since Technical Specification 3.3.1.1.h requires these valves to be closed with the AC control power removed when the reactor coolant pressure is in excess of 1,000 psig. Failure of either of these valves in the open position could defeat the high head safety injection flow path to the RCS cold legs. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

3.3 Category C Valves

876A, 876B, and 876C, residual heat removal pumps discharge check valves to the RCS loop cold legs, cannot be exercised during power operations since

the residual heat removal pumps do not develop sufficient dishcarge pressure to overcome RCS pressure. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

4. RESIDUAL HEAT REMOVAL SYSTEM

4.1 Category B Valves

750 and 751, suction valves to the RHR system from the reactor coolant system hot leg, cannot be exercised during power operation since they are interlocked with the RHR suction valves from the refueling water storage tank (862A and 862B). Valves 862A and 862B are required by Technical Specification 3.3.1.1.h to be open with AC control power removed when RCS pressure is above 1,000 psig since failure of either of these valves in the closed position would render the entire RHR system inoperable. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

4.2 Category C Valves

753A and 753B, RHR pump discharge check valves, cannot be full-stroke exercised during power operation since no flow path can be utilized in the RHR system other than the miniflow recirculation line which does not introduce design flow through these valves. The RHR system flow path to the RCS cannot be utilized since the RHR pumps do not develop sufficient discharge pressure to overcome RCS pressure. The RHR flow path through valves 863A and 863B cannot be utilized since these valves are required to remain closed by Technical Specification requirements (see Section 3.2 of this Attachment). These valves will be partial-stroke exercised quarterly and full-stroke exercised during cold shutdowns and refueling outages.

5. REACTOR COOLANT SYSTEM

5.1 Category B Valves

PCV-455C and PCV-456, pressurizer power operated relief (PORVs) valves, should not be exercised during power operation since the current NRC position

is that these valves be exercised at a cold shutdown frequency. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

6. MAIN, EXTRACTION AND AUXILIARY STEAM SYSTEM

6.1 Category B Valves

MS-VI-3A, 3B, and 3C, main steam isolation valves, cannot be full-stroke exercised during power operation since cycling these valves would result in a loss of steam flow and subsequent reactor trip. These valves also cannot be partial-stroke exercised during power operation since this would place the disc in the steam flow path which could result in full closure of the disc. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

7. FEEDWATER, CONDENSATE, AND AIR EVACUATION SYSTEM

7.1 Category B Valves

FCV-479, FCV-489, and FCV-499, main feedwater regulating valves bypass valves, cannot be exercised during power operation since cycling these valves could result in a steam flow/feed flow mismatch and subsequent plant trip. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

FW-V2-6A, 6B, and 6C, main feedwater regulating valves block valves, cannot be exercised during power operation since cycling these valves could result in a steam flow/feed flow mismatch and subsequent plant trip. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

7.2 Category C Valves

AFW-2, condensate storage tank to auxiliary feedwater (AFW) pumps suction check valve, cannot be full-stroke exercised during power operation since the only available full-flow path is to the steam generators. Utilizing this flow path during power operation could result in thermal shocking the feedwater nozzles and the feed rings which cause premature failure of these components. This

valve will be partial-stroke exercised quartly and full-stroke exercised during cold shutdowns and refueling outages.

AFW-19, steam driven AFW pump discharge check valve, cannot be full-stroke exercised during power operation since the only available full-flow path is to the steam generators. Utilizing this flow path during power operation could result in thermal shocking the feedwater nozzles and the feed rings which could cause premature failure of these components. This valve will be partial-stroke exercised quarterly and full-stroke exercised during cold shutdowns and refueling outages.

AFW-40 and AFW-41, motor dirven AFW pumps discharge check valves, cannot be full-stroke exercised during power operation since the only available full-flow path is to the steam generators. Utilizing this flow path during power operation could result in thermal shocking the feedwater nozzles and the feed rings which could cause premature failure of these components. These valves will be partial-stroke exercised quarterly and full-stroke exercised during cold shutdowns and refueling outages.

AFW-68, AFW-69, and AFW-70, auxiliary feedwater to main feedwater check valves, cannot be exercised during power operation since the only available flow path is to the steam generators. Utilizing this flow path during power operation could result in thermal shocking the feedwater nozzles and the feed rings which could cause premature failure of these components. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

8. POST ACCIDENT CONTAINMENT VENTING SYSTEM

8.1 Category A Valves

PCV-1716, instrument air line containment isolation valve, cannot be exercised during power operations since cycling this valve would isolate air to certain valves in containment and would result in a potential plant trip. This valve will be full-stroke exercised during cold shutdowns and refueling outages.

V12-14, V12-15, V12-18, and V12-19, containment air exhaust lines containment isolation valves, cannot be exercised during power operation since these valves are non-automatic containment isolation valves that are required to remain closed during power operation by Technical Specification requirements to maintain containment integrity. These valves will be full-stroke exercised during cold shutdowns and refueling outages.

9. DIESEL GENERATOR SERVICE VALVES

DG-FO-9A-1, -9A-2, -9B-1, -9B-2 fuel oil day tank isolation valves and the diesel air start solenoid valves (in numbered-2 per diesel generator) are cycled during normal plant operation, each at least every two weeks. (Relief request No. 12 applies).

APPENDIX C

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

System	P&ID	Revision
Sampling System	5379-353	0
Auxiliary Coolant System--Component Cooling	5379-376 Sh. 1 of 3	-
	Sh. 2 of 3	0
	Sh. 3 of 3	-
Chemical and Volume Control System	5379-685 Sh. 1 of 3	0
	Sh. 2 of 3	0
	Sh. 3 of 3	0
Chemical and Volume Control System	5379-686 Sh.1 of 2	0
Waste Disposal System (Liquid)	5379-920 Sh.1 of 4	0
Waste Disposal System (Gaseous)	5379-921 Sh.2 of 2	0
Safety Injection System	5379-1082 Sh.1 of 2	-
	Sh.2 of 2	0
Auxiliary Coolant System--Residual Heat Removal	5379-1484	0
Main, Extraction, and Auxiliary Steam System	G-190196 Sh. 1 of 3	0
Feedwater, Condensate, and Air Evacuation System	G-190197 Sh. 2 of 3	0

Service and Cooling Water System	G-190199 Sh. 1 of 7	0
	Sh. 2 of 7	-
	Sh. 3 of 7	-
Steam Generator Blowdown System	G-190234 Sh. 1 of 2	0
Penetration Pressurization System	G-190261 Sh. 7 of 8	0
Isolation Valve Seal Water	G-190262	0
HVAC	G-190304 Sh. 1 of 2	0
Post Accident Sampling System	HBR2-6490	0
Post Accident Containment Venting System	HBR2-6933	0
Fire Protection System	ISI-SK-1	0
Fuel Transfer Tube	ISI-SK-2	0
Emergency Diesel Generator System	G-190204-A Sh. 1 of 3	0

APPENDIX D

The following valves appear to perform a containment isolation function but are not tested in accordance with the requirements of 10CFR50, Appendix J. If any of these valves are determined by the licensee to be containment isolation valves requiring Appendix J testing, they must be categorized A or A/C as applicable in the IST program and tested accordingly.

Service and Cooling Water System	V6-33A	V6-34A	V6-35A
	V6-33B	V6-34B	V6-35B V6-33C V6-34C V6-35C
	V6-33D	V6-34D	V6-35D V6-33E V6-33F
Component Cooling System	737A		
	739		
Safety Injection System	860A		
	860B 861A 861B 855		
Reactor Coolant System	518		

APPENDIX E

1. The following are relief requests that have insufficient technical basis, and relief is not granted.

   a. 2.2.1

   b. 2.3.1.

   c. 2.3.2

   d. 2.3.3

   e. 3.4.1.2

   f. 3.4.1.5

   g. 3.4.1.6

   h. 3.6.1.2

2. Relief request 3.8.1.1 addresses a valve (instrument air line containment isolation check valve, V8-5) that the licensee has proposed verifying closed during the containment integrated leak-rate test which is conducted at intervals not to exceed three refueling outages.

3. The licensee has not included all applicable valves in the Isolation Valve Seal Water system in the IST program. See Section 3.9 of this report for a detailed discussion of this topic.

4. The licensee requested that stroke timing solenoid valves FO-9A-1, FO-9A-2, FO-9B-1, and FO-9B-2 in the diesel fuel oil transfer system and stroke timing the diesel air start solenoid valves remain an open item for them to determine if it can be done.