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INFORMAL REPORT

RECOMMENDATIONS TO THE NRC FOR THE SAFETY EVALUATION REPORT OF CONNECTICUT YANKEE (HADDAM NECK) NUCLEAR PLANT

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ENGINEERING AND ADVANCED REACTOR SAFETY DIVISION

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DEPARTMENT OF NUCLEAR ENERGY BROOKHAVEN NATIONAL LABORATORY
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NOTICE

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Recommendations to the NRC for the Safety Evaluation Report of Connecticut Yankee (Haddam Neck) Nuclear Plant

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TABLE OF CONTENTS

516 245

Brookhaven National Laboratory
Recommendations to the NRC for the
Safety Evaluation Report of Connecticut Yankee
(Haddam Neck) Nuclear Plant
Inservice Inspection & Testing Program
(Docket No. 50-213)

Executive Summary

Under contract to the Nuclear Regulatory Commission (NRC), the Reactor Engineering Analysis Group of Brookhaven National Laboratory (BNL) has conducted a review of the following Connecticut Yankee Inservice Inspection and Testing Program submittals:

a. June 29, 1977 (D.C. Switzer to A. Schwencer), Inservice Inspection - Class 1 and Class 3 Components.

b. May 26, 1978 (D.C. Switzer to A. Schwencer), Inservice Inspection - Class 2 Components and Table IWV-1, Valve Test Program.

c. July 14, 1978 (W.G. Counsil to D.L. Zieman), Inservice Pump Test Program and Valve Test Program (changes to IWV-1).

These submittals represent the Inservice Inspection Program and Inservice Pump/Valve Test Program for the 40 month and 20 month periods respectively beginning January 1, 1978.

The BNL review process culminated with the Safety Evaluation Review (SER) meeting held at the Connecticut Yankee plant on January 17, 18, and 19, 1978. Attendees were personnel from the plant, NUSCO, NRC and BNL. Mr. T.J. Restivo (consultant to BNL) and Mr. V. Lettieri (BNL) represented BNL.

The recommendations made in this report are based on evaluations which considered: Practicality within limitations of equipment design and geometry, requirements of Section XI of the 1974 Edition thru Summer of 1975 of the ASME Boiler and Pressure Vessel Code, 10CFR50.55a(g), NRC Staff Guidance Letters (November 1976 and January 1978), and topics of numerous NRC Staff/BNL briefings.

The licensee has requested that Code relief be granted for 17 Inservice Inspection items, 11 pump test items and 50 valves. Also that, Cold Shutdown Testing be approved for 40 other valves.

This report recommends that Code relief be granted for; 5 of the 9 Inservice Inspection relief requests remaining (following the withdrawal of 8 requests), 10 of the pump items and 34 of the 50 valves.

Also recommended is that Cold Shutdown Testing be approved for all of the valves against which this request was made.

1.0 INSERVICE INSPECTION

1.1 Relief Request - IWB-2600 (B1.2), IWB 2500 (B-B)

a. Lower Head Peel Segment Meridional Welds (6)

b. Lower Head Peel Segment to Disc Circumferential Weld

The examination of these welds as required by IWB-2600 from inside the vessel is restricted by the locations of the adjacent incore instrumentation penetrations. Examination of those areas accessible between the penetrations and conduits may be performed from the outside surface to the extent practical due to radiation levels.

Code Requirement - Volumetric examination is required. The areas shall include the longitudinal and circumferential welds in the vessel heads. This includes weld metal and base metal for one plate thickness beyond the edge of the weld.

The examinations performed during each inspection interval shall cover at least 10 percent of the length of each longitudinal shell weld and meridional weld, and 5 percent of the length of each circumferential weld and head weld.

For welds on the reactor vessel, examinations may be performed at or near the end of each inspection interval.

Licensee Basis for Request - The examination of these welds as required by IWB-2600 from inside the vessel is restricted by the locations of the adjacent incore instrumentation penetrations. Examination of those areas accessible between the penetrations and conduits will be performed from the outside surface to the extent practical due to radiation levels.

The general area radiation levels at this location are expected to be in the 300 to 500 mr/hour range at 3 feet from the vessel with 30,000 to 50,000 dpm surface contamination.

Examinations will not be performed if the examiners must receive a whole body dose in excess of 1250 mr in order to complete any one examination. Examinations will be performed on 5 percent or 10 percent of the total length of each weld as required by the Code. Examination of these welds will be performed at or near the end of the ten-year inspection interval, as allowed by the Code. Radiography cannot be utilized as an alternative examination method as access to both sides of the weld would be required. Surface examinations would require basically the same access as ultrasonic examination and consequently, radiation levels permitting, ultrasonic examination would be performed.

Evaluation - Discussions with the licensee at the SER meeting concluded that this item should not be considered a relief request at this time.

This inspection is planned for the April 1980 interval, and the licensees' intent is to satisfy the code at that time. At present, radiation levels and accessibility problems are not accurately known, and no specific justification can be presented for not satisfying the code. A relief request will be submitted at the time of the inspection if it is then determined that the applicable code requirements cannot be met.

1.2 Relief Request - IWB-2600 (B1.2), IWB-2500 (B-B). Closure Head Peel Segment to Disc Circumferential Weld

The licensee has requested relief to visually examine the subject weld for leakage during hydrostatic tests in lieu of volumetric examinations.

Code Requirement - See Code Requirement, Item 1.1

Licensee Basis for Request - The closure head peel segment is completely enclosed within the pattern of CRDM penetrations inside the shroud and is not accessible for examination as required by IWB-2600.

Evaluation - Discussions with the licensee at the SER meeting have led to the following agreements. When the vessel head is removed during the February 1979 refueling outage, the licensee will determine more specifically what problems if any are presented that prevent satisfying the Code. At that time, the licensee will provide a more definitive position concerning these welds.

Until such time that this information is reviewed and evaluated, it is recommended that the request for relief from the Code requirement be denied.

1.3 Relief Request - IWB-2600 (B2.2), IWB-2500 (B-D). Pressurizer - Nozzle to Vessel Welds (6)

The geometric configuration of the weld surface prevents ultrasonic examinations being performed as required by IWB-2600. Surface examinations will be performed on this weld in lieu of volumetric examination.

Evaluation - The licensees' May 26, 1978 response letter to the Q-1 has deleted Note 6 from the "Code Relief Request" column, and states that "Item B2.2, Category B-D, pressurizer nozzle to vessel welds are in accordance with Code requirements."

1.4 Relief Request - Table IWB-2600 (B3.3) and Table IWB-2500 (B-F). Steam Generators (Primary Side) Nozzle to Safe End Welds.

Volumetric examinations will be performed to the extent practical.

Code Requirement - The volumetric examinations performed during each inspection interval shall cover the circumference of 100 percent of the welds.

The areas shall include dissimilar metal welds (e.g., safe-end welds) between combinations of carbon, low allow, or high tensile steels and stainless steels, nickel-chromium-iron alloys, nickel-copper alloys. This shall include the base material for, at least, one wall thickness beyond the edge of weld.

Licensee Basis for Request - The geometric configuration and surface condition of the steam generator safe end to pipe weld prevents ultrasonic examinations being performed to the extent required by IWB-2600. Examinations will be performed to the extent practical.

Evaluation - The licensee has agreed to review the subject weld item, and determine by percentage, the weld volume to be examined ultrasonically, and determine the percentage of weld to be surface examined. Supporting reasons for these limitations will also be presented. Until this information is received and reviewed, it is recommended that the relief request be denied at this time.

1.5 Relief Request - Table IWB-2600 (B3.2) and Table IWB-2500 (B-D). Regenerative Heat Exchanger Nozzle to Vessel Welds.

See Relief Request, Item 1.3

Evaluation - See Evaluation, Item 1.3

1.6 Relief Request - IWB-2600 (B3.7, IWB-2500 (B-H). Regenerative Heat Exchanger Integrally Welded Supports.

Volumetric examinations cannot be accomplished to the extent required by IWB-2600.

Code Requirement - In the case of vessel support skirt, the volumetric examination performed during each inspection interval shall cover at least 10 percent of the circumference of the weld to the vessel. In the case of support lug attachments, 100 percent of the welding to the vessel shall be examined.

The areas shall include the integrally-welded support attachment (e.g., support skirts). This includes the welds to the vessel and the base metal beneath the weld zone and along the support attachment member for a distance of two support thicknesses.

Integral support pads on nozzles are excluded.

Licensee Basis for Request - The integrally welded supports are attached by fillet welds. The configurations of such welds is such that examinations cannot be performed to the extent required by IWB-2600 and only the base material of the component wall can be examined by ultrasonic techniques. Surface examination will be performed on integrally welded attachments to supplement the volumetric examination.

Evaluation - The licensee has satisfactorily demonstrated that the configuration of these welds make it impossible to perform volumetric examinations to the extent required by the code. In that ultrasonic exams are accomplished where practical and 100 percent surface exams (penetrant) are also accomplished, it is recommended that relief be granted.

1.7 Relief Request - Table IWB-2600 (B4.1), Table IWB-2500 (B-F). Piping Pressure Boundary - Safe End to Pipe Welds.

Volumetric examinations cannot be accomplished to the extent required by IWB-2600.

Code Requirement - See Code Requirement, Item 1.4.

Licensee Basis for Request - The examination is limited by the nozzle and safe end geometry and surface condition, and the surface condition of the weld. The surface on the pipe side of the weld, which is a cast elbow, is machined for a distance of approximately 3 inches from the edge of the weld. Ultrasonic examination is limited to this distance from the edge of the weld.

Evaluation - The licensee has agreed to review the subject weld item, and determine by percentage the volume of weld to be ultrasonically examined, and determine the percentage of weld to be surface examined. The licensee will also present reasons to justify the limited examinations proposed. Until this information is received and reviewed, it is recommended that the relief request be denied at this time.

1.8 Relief Request - Table IWB-2600 (4.5), Table IWB-2500 (B-J). Piping Pressure Boundary - Circumferential and Longitudinal Pipe Weld.

It is not known at this time whether there are any welds in this item/category which the licensee intends to examine in this applicable inspection period that require a code relief request. The licensee will review the welds planned for this period and determine if there are any welds that cannot be examined to code. A relief request will be initiated with a determination made of the percentage of weld to be volumetrically examined and percentage of weld to be surface examined to supplement the volumetric.

If this inspection period does not involve any welds in this category which require code relief, the relief request will be withdrawn.

1.9 Relief Request - Table IWB-2600 (B4.6), Table IWB-2500 (B-J). Branch Pipe Connection Welds Exceeding 6" Diameter.

The licensee has requested relief from volumetric examinations to the extent required by IWB-2600.

Code Requirement - See Code Requirement, Item 1.8.

Licensee Basis for Request - The geometric configuration of the weld surface prevent ultrasonic examinations from being performed to the extent required by IWB-2600. Examinations will be performed to the extent practical from the pipe and nozzle surfaces adjacent to the weld. Surface examination of the weld will be performed to supplement the volumetric examination.

Evaluation - The licensee has agreed to review the subject weld item, and determine by percentage the weld volume to be examined ultrasonically, and determine the percentage of weld to be surface examined. Supporting reasons for these limitations will also be presented. Until this information is received and reviewed, it is recommended that the relief request be denied at this time.

1.10 Relief Request - IWB-2600 (B4.9), IWB-2500 (B-K-1). Piping Pressure Boundary - Integrally Welded Supports.

The licensee has requested relief from volumetric examinations to the extent required by the code.

Code Requirement - The volumetric examinations performed during each inspection interval shall cover 25 percent of the integrally-welded supports.

The areas shall include the integrally-welded external support attachments. This includes the welds to the pressure-retaining boundary and the base metal beneath the weld zone and along the support attachment member for a distance of two support thicknesses.

Licensee Basis for Request - The integrally welded supports are attached by fillet welds. The configurations of such welds is such that examinations cannot be performed to the extent required by IWB-2600 and only the base material of the component wall can be examined by ultrasonic techniques. Surface examination will be performed on integrally welded attachments to supplement the voluemtric examination.

Evaluation - The licensee has satisfactorily demonstrated that the configuration of these welds make it impossible to perform volumetric examinations to the extent required by the code. In that ultrasonic exams are accomplished where practical and 100 percent surface exams (penetrant) is also accomplished, it is recommended that relief be granted.

1.11 Relief Request - IWB-2600 (B5.2), IWB-2500 (B-G-1). Reactor Coolant Pumps - Pressure Retaining Bolting (when removed).

This relief request will be withdrawn. The licensee tests the subject bolts in-place to IWB-2600 (B5.1).

1.12 Relief Request - IWB-2600 (B5.6), IWB-2500 (B-L-1). Reactor Coolant Pumps - Pump Casting Welds.

This relief request will be withdrawn at this time. The licensee has stated that, "Volumetric examinations as required by IWB-2600 will be attempted utilizing radiographic techniques. The success of these examinations will be dependent upon the availability of high energy gamma sources and the level of background radiation. Internal fittings in the pump may also restrict the extent of examinations performed." Any request for relief will be made if required at the time the proposed exams are attempted.

1.13 Relief Request - IWB-2600 (B6.2), IWB-2500 (B-G-1). Valve Pressure Boundary - Pressure Retaining Bolting.

This relief request will be withdrawn. The licensee tests the subject bolts in-place to IWB-2600 (B6.3).

1.14 Relief Request - IWC-2600 (C1.2), IWC-2520 (C-B). Residual Heat Exchangers - Nozzle to Vessel Welds.

The licensee has requested that surface examinations be conducted on the nozzle to channel weld in lieu of volumetric examination.

Code Requirement - The volumetric examination shall cover 100 percent of the nozzle-to-vessel attachment welds.

Licensee Basis for Request - The reinforcing collar on the nozzle to channel weld precludes volumetric examination. A surface examination of these welds will be conducted.

Evaluation - The heat welded exchangers head precludes access and volumetric exam from within. The weld configuration described also precludes volumetric exam from outside, therefore, it is agreed that surface testing is the only practical alternative. It is recommended that code relief be granted.

1.15 Relief Request - The relief requests against the following items/categories have been withdrawn by the licensee. There are no exams scheduled for the inspection period covered by this submittal where relief requests are required.

Item	Category	System
C2.1	C-F	Residual Heat Removal
C2.2	C-F	Residual Heat Removal
C2.3	C-F	Residual Heat Removal
C2.1	C-F	Chemical and Volume Control
C2.2	C-F	Chemical and Volume Control
C2.3	C-F	Chemical and Volume Control
C2.1	C-G	Main Steam
C2.2	C-G	Main Steam
C2.3	C-G	Main Steam
C2.1	C-G	Feedwater
C2.2	C-G	Feedwater
C2.3	C-G	Feedwater

1.16 General

1.16.1 Relief Request - The licensee requests that calibration blocks be made to the requirements of Article T-434.1 in Winter 1976 Addenda of Section V in lieu of I-3121 of Section XI.

Licensee Basis for Request - The reason this alternative is requested is that the Code requires that calibration blocks for the examination of welds in ferritic vessels 2-1/2 inches thick and greater be fabricated from material taken from the component nozzle drop out or material from the component prolongation. As a third alternative, when it is not possible to fabricate the block from material taken from the component, the block may be fabricated from a material of a specification included in the applicable examination volumes of the component. It is required that the acoustic velocity and attenuation of such a block be demonstrated to fall within the range of straight beam longitudinal wave velocity and attenuation found in the unclad components.

For the components in Connecticut Yankee particularly, the pressurizer and steam generators, it will be impossible to meet the requirements of alternatives 1 or 2. Materials of the specification are readily available, but because all the components involved are clad on the inner surface, it would be impossible to obtain a comparison of sound beam velocities and attenuations in the unclad component.

Evaluation - Since there is no material available from a drop out or component prolongation, the licensee has committed to fabricate the calibration block from a material of the same specification, product form and heat treatment as one of the materials being joined. This is in accordance with T-434.1.1 of the Winter 1976 Addenda of Section V. We agree that the requirement of I-3121 that requires the acoustic velocity and attenuation of the block to be demonstrated to fall within the ranges found in the unclad components is impractical since these components are clad.

In that this is so, and that the licensee ultrasonically scans the subject nozzles from the unclad side, it is recommended that relief be granted as requested.

1.16.2 Relief Request - The licensee requests to use Appendix III of Section XI in lieu of Article 5 of Section V as a guideline for piping weld inspection.

Licensee Basis for Request - This alternative is requested because the Code provides no other guideline for the inservice examination of piping welds.

Evaluation - IWA-2232 of Section X states that where Appendix I is not applicable, the provisions of Article 5 of Section V shall apply regarding ultrasonic examinations. Appendix III of Section XI, Winter 1975 Addenda, provides rules for ultrasonic examination of ferritic steels and Supplement 7 provides additional guidance for examination of austenitic welds. Therefore, it is recommended that the use of either Article 5 or Appendix III be accepted.

2.0 PUMPS

2.1 Relief Request - Charging Pumps P-18-1A, and P-18-1B

The licensee has requested relief from directly measuring inlet pressure for each pump during tests.

Code Requirement - Pump inlet pressure measurement is required per Table IWP-3100-1.

Licensee Basis for Request - Instrumentation for direct measurement of pump inlet pressures is not available. It is proposed to use the static pressure of the volume control tank (head and ullage pressure) as the inlet pressure reference when checking the operations of the pumps monthly.

Evaluation - The plumbing from the VCT to the charging pump inlets is a fixed resistance system: Based on this, the licensee's plan to determine and reference the VCT pressure and head to establish pump inlet differences (used to compare outlet pressure readings) is considered an acceptable alternative.

It is recommended that relief be granted from the code requirement to measure inlet pressure.

2.2 Relief Request - Residual Heat Removal Pumps P-14-1A and P-14-1B.

The licensee has requested relief from measuring flowrate during the monthly tests and from direct measurement of pump inlet pressure.

Code Requirement -

a. Table IWP-3100-1 requires that flowrate be measured when testing pumps that operate in a variable hydraulic resistance systems.

b. Table IWP-3100-1 requires that inlet pressure P_1 be measured during pump tests.

Licensee Basis for Request -

a. The RHR pumps are run on recirculation monthly per tech. spec. 4.3. In this mode, flow is restricted by a 3/4 inch recirculation line, and is therefore meaningless. Flowrate measurements will be made during cold shutdowns when the RHR system is in normal operation.

b. Instrumentation is not installed which will permit the measuring of inlet pressure for these pumps. It is proposed to use the static head of the RWST tank as the inlet pressure reference.

Evaluation -

a. The RHR systems design precludes operating the pumps in any other mode but the recirculation mode while the plant is in normal operation. The recirculation circuit is a fixed resistance circuit, and as such would not require flow measurement for pump performance evaluation. However, the recirculation circuit is only sized to flow < 1 percent of the RHR system's design rated flow (5000 GPM per pump). This low flow is not considered valid for evaluating the hydraulic performance of a centrifugal pump. This monthly recirculation test with either code required parameters recorded or determined, would serve as an operability test.

The testing proposed at cold shutdowns with design flowrates and code required parameters (less direct measured inlet pressure), would be a valid hydraulic performance test for the pumps.

In that the RHR system is not designed with the capability to record all code required parameters during monthly tests, and that the licensee has proposed monthly operability tests and design flow hydraulic performance tests at cold shutdowns, it is recommended that relief be granted from the code requirement to measure flowrate monthly.

b. The plumbing from the RWST to the RHR pump inlets is a fixed resistance system. Based on this, the licensee's plan to determine and reference the RWST to pump inlet static head to establish inlet differences (used to compare outlet pressure readings) is considered an acceptable alternative.

It is recommended that relief be granted from the code requirement to measure inlet pressure.

2.3 Relief Request - High Pressure Safety Injection Pumps P-15-1A and P-15-1B.

The licensee has requested relief from measuring flowrate during the monthly tests, from direct measurement of pump inlet pressure, and from measuring bearing temperature T_b.

Code Requirement -

a. Table IWP-3100-1 requires that flowrate be measured when testing pumps that operate in a variable hydraulic resistance system.

b. Table IWP-3100-1 requires that pump inlet pressure P_1 be measured during pump tests.

c. The bearing temperature of all centrifugal pump bearings, and main shaft bearings of reciprocating pumps shall be measured at points selected to be responsive to changes in the temperature of the bearing.

Licensee Basis for Request -

a. The HPSI system does not have instrumentation for measuring flowrates as required by IWP-3100.

b. Instrumentation is not installed which will permit the measuring inlet pressure for these pumps. It is proposed to use the static head of the RWST tank as the inlet pressure reference.

c. Pump bearing temperature cannot be measured on those pumps since the bearings are located deep inside the pump casing and are surrounded by the oil resevoir. There are no design provisions for directly measuring pump bearing temperature. Hand held pyrometers in contact with surface of the pump casing results in questionable data.

Evaluation -

a. The HPSI pumps are run monthly on recirculation. This recirculation flow is approximately 60 percent of the design flow. In that the pump recirculation path is a fixed hydraulic resistance system from/to the RWST, flow measurement is not required by code. The monthly 60 percent design flow tests, and a planned 100 percent flow test at the 1980 refueling interval (revealed at the SER meeting) are believed sufficient to satisfy the code requirement. Therefore, a request for code relief is not required in this case.

b. The plumbing from the RWST to the HPSI pump inlets is a fixed resistance system. Based on this, the licensee's plan to determine and reference the RWST to pump inlet static head, to establish inlet differences (used to compare outlet pressure readings) is considered an acceptable alternative.

It is recommended that relief be granted from the code requirement to measure inlet pressures.

c. It is agreed that measurement of pump bearing temperature on these pumps is considered impractical based on their design. A monthly check on the lubrication level and vibration tests are accomplished per code. Based on this, it is recommended that relief from code requirement to measure T_b be granted.

2.4 Relief Request - Service Water Pumps P-37-1A, 1B, 1C, and 1D.

The licensee has requested relief from directly measuring inlet pressure at each pump during tests.

Code Requirement - Pump inlet pressure measurement is required per Table IWP-3100-1.

Licensee Basis for Request - Instrumentation for direct measurement of pump inlet pressure is not available. It is proposed to establish inlet pressure references during the tests by referencing the head from the level of the river to the pump suction.

516 257

Evaluation - The licensee has stated that the path from the river to the pumps is a fixed hydraulic resistance system. Referencing the river water level with respect to the pump inlets is therefore considered an acceptable alternative to direct measuring of pump inlet pressure.

2.5 Relief Request - Auxiliary Steam Generator Feedwater (Steam Driven) P-32-1A, and P-32-1B.

The licensee has requested relief from measuring flowrate during monthly pump tests.

Code Requirement - Table IWP-3100-1 requires that flowrate be measured when testing pumps that operate in a variable hydraulic resistance system.

Licensee Basis for Request - The auxiliary steam generator feedwater pumps (steam driven) recirculation test circuit does not contain flow instrumentation. Flowrate is determined along with the other code required parameters during refueling outages when a special test setup allows level changes in the demineralized water storage tank to be measured and timed.

Evaluation - The ASGF system's design is such that during normal plant operation, the pumps can only be operated on recirculation flow from the DWST. The recirculation circuit flow is approximately 50 GPM (approximately 10 percent of the ASGF pump's design flow). This low a flowrate is not considered valid for evaluating the hydraulic performance of a centrifugal pump. The monthly tests with the other parameters recorded would serve as operability tests. The testing proposed at refuelings with design condition flowrates (determined) and other code parameters measured, would be a valid hydraulic performance test for the pumps.

In that the ASGF system is not designed with the capability to measure flow during the monthly tests, and that the licensee has proposed monthly operability tests, and design flow hydraulic performance tests at refuelings, it is recommended that relief be granted from the code requirement to measure flowrate monthly.

2.6 Relief Request - Low Pressure Safety Injection Pumps P-92-A and P-92-B.

The licensee has requested relief from the following code requirements;

a. Directly measuring pump inlet pressure.
b. Measuring flowrate during monthly tests.
c. Measuring bearing temperatures.

Code Requirement -

a. Table IWP-3100-1 requires that flowrate be measured when testing pumps that operate in a variable hydraulic resistance system.

b. Table IWP-3100-1 requires that inlet pressure be measured during pump tests.

c. The bearing temperature of all centrifugal pump bearings, and main shaft bearings of reciprocating pumps shall be measured at points selected to be responsive to changes in the temperature of the bearing.

Licensee Basis for Request -

a. The LPSI system is not designed with provisions for measuring flowrate during monthly pump tests.

b. The LPSI system is not designed with provisions for measuring pump inlet pressure. It is planned to use the static head pressure of the RWST as the inlet pressure reference for the LPSI pumps.

c. Pump bearing temperature cannot be measured on this pump since the bearings are located deep inside the pump casing and are surrounded by the oil reservoir. There are no designed provisions installed for directly measuring pump bearing temperatures. Hand held pyrometers in contact with surface of the pump casing results in questionable data.

Running the pumps for prolonged periods to obtain stabilized temperature data is believed detrimental because the pumps are run at low flow (<10 percent of design) in the recirculation mode.

Evaluation -

a. The LPSI systems design precludes operating the pumps in any other mode but the recirculation mode while the plant is in normal operation. The recirculation circuit is a fixed resistance circuit, and as such would not require flow measurement for pump performance evaluation. However, the recirculation circuit is only sized to pass < 10 percent of the LPSI system's design rated flow (5000 GPM per pump). This low flow is not considered valid for evaluating the hydraulic performance of a centrifugal pump. This monthly recirculation test with other code required parameters recorded or determined would serve as an operability test.

The licensee is presently proposing to run design flow hydraulic performance tests on the pumps at the 1980 refueling interval, and approximately every 5 years following.

The proposed frequency of the performance tests is questionable, and should be further reviewed by the staff. Until this is accomplished, it is recommended that the request for relief be denied at this time.

b. The plumbing from the RWST to the LPSI pump inlets in a fixed resistance system. Based on this, the licensee's plan to determine and reference the RWST to pump inlet static head to establish inlet differences (used to compare outlet pressure readings) is considered an acceptable alternative.

It is recommended that relief be granted from the code requirement to measure inlet pressure.

c. It is agreed that of pump bearing temperature on these pumps is considered impractical based on their design. A monthly check on the lubrication level and vibration tests are accomplished per code. Based on this, it is recommended that relief from code requirement to measure T_b be granted.

3.0 VALVES, INSERVICE TESTING PROGRAM

3.1 General: The scope of this review is limited to those valves which perform a safety related function. Safety related valves, for the purpose of IST, have been defined as those valves that are necessary to function to safely shutdown the plant and/or mitigate the consequences of an accident. As a minimum, all valves that receive a containment isolation signal or a safety injection signal shall be included in the IST program.

The following guidelines were developed after review of some initial IST programs.

3.1.1 Leak Testing of Valves which Perform a Pressure Isolation Function

There are several safety systems connected to the reactor coolant pressure boundary that have design pressures that are below the reactor coolant system operating pressure. There are redundant isolation valves forming the interface between these high and low pressure systems to prevent the low pressure systems from being subjected to pressures which exceed their design limits. In this role the valves are performing a pressure isolation function.

The staff considers that the redundant isolation provided by these valves regarding their pressure isolation function is important. Therefore, it is necessary to provide assurance that the condition of each of these valves is adequate to maintain this redundant isolation and system integrity. For this reason it is believed that some methods, such as leak testing, should be used to assure their condition is sufficient to maintain this pressure isolation function.

In the event that leak testing is selected as the appropriate procedure for reaching this objective the staff believes that the following valves should be categorized as A or AC and leak tested in accordance with IWV-3420 of Section XI of the applicable edition of the ASME Code. These valves are:

SI-MOV-861A, 861B, 861C, 861D	(Safety Injection)
SI-CV-862A, 862B, 862C, 862D	(Safety Injection)
SI-V-863A, 863B, 863C, 863D	(Safety Injection)
CD-MOV-871A, 871B	(Safety Injection)
FH-MOV-578, 535, 522, 508	(Loop Fill)
FH-MOV-562, 507, 521, 534, 544, 310	(Loop Drain)
RH-MOV-803, 804, 780, 781	(RHR)
FH-CV-296	(Loop Fill)
FH- -502, 516, 521, 534, 525	(Loop Drain)

We have discussed this matter and identified the valves listed above to the licensee. The licensee has agreed to consider leak testing these valves in accordance with IWV-3420 of the applicable edition of the ASME Code and to categorize these valves with the appropriate designation. If the licensee determines that leak testing is not necessary because there are other methods that the licensee has and will use to determine each valve's condition, the licensee will provide to the NRC for evaluation on a valve-by-valve basis the details of the method used that clearly demonstrates the condition of each valve.

3.1.2 Containment Isolation Valves

The Appendix J review for this plant is a completely separate review from this IST program review. However, the determinations made by that review are directly applicable to the IST program. The present IST submittal should be acceptable until the Appendix J review is completed. At that time, the licensee will be required to amend his IST program to reflect the conclusions of the Appendix J review.

3.1.3 Category A Valve Leak Check Requirements

The staff's present position is that all Category "A" valves shall be leak tested to Section XI requirements. The leak test requirements and exceptions for Category A valves are explicitly stated in ASME Section XI. In principle 10 CFR 50.55 a(g) is separate and different from the requirements of other valve testing requirements in the CFR such as Appendix J. The test requirements of 10 CFR 50.55 a(g) are to establish operational readiness at system function differential pressure. In general:

a. For Category A valves which communicate only with the containment atmosphere, i.e. containment purge, hydrogen purge, Appendix J leak testing results are sufficient for Section XI requirements.

b. For Category A valves which communicate with the primary coolant system, the licensee must perform the leak test at system function differential pressure. Relief to test at system function differential pressure are specified in Section XI and in those cases tests at lower pressure, such as those established for Appendix J requirements, are acceptable provided the licensee can satisfy sub-paragraph IWV-3420 C5 of Section XI.

c. Those valves that perform both a pressure isolation and containment isolation function shall be leak tested to meet Section XI of the applicable edition of the ASME Code in addition to Appendix J of 10 CFR 50 requirements.

3.1.4 Valve Exercising Requirements

The ASME Code requirements for valve exercise tests for category A, B, and C valves allow certain deviations from the prescribed 3 month period if it is impractical" to exercise the valves during plant

operation. It is the NRC staff position that these deviations must be reviewed in order to insure that proper and consistant criteria are used to determine impracticality (i.e., where the failure of a valve in the test position would decrease the availability of a safety system). Accordingly, while there is no relief requested in these cases, a basis for the deviation and an evaluation will be included in this review, to document the criteria used to determine impracticality. When a valve is not exercised at 3 month intervals, it must be exercised at cold shutdowns unless relief is granted. A guideline used by the staff to define the duration of a cold shutdown during which valve testing is required is as follows:

Valve testing should commence not later than 48 hours after shutdown, and continue until complete or plant is ready to return to power. Completion of all valve testing is not a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during subsequent cold shutdowns to meet the Code specified testing frequency.

In the case of valves exercised less frequently than cold shutdown (i.e., refueling), relief from the Code requirement must be requested. These cases are treated as such in this review.

3.1.5 Category E Valves (Physically Locked)

Although IWV-1300 of the 1974 Edition of Section XI of the ASME Boiler and Pressure Vessel Code excludes valves used for operating convenience and maintenance only from testing requirements, it is the staff's opinion and recommendation that any such physically locked valve which is in the normal or alternate flow path of cooling water of engineered safety systems, from the source to the reactor coolant pressure boundary or containment atmosphere, should be included in the valve testing program. If the valve is normally physically locked open or closed, it should be reflected in the program and designated "Category E." This recommendation also applies to engineered safety systems which are designed to remove decay heat from the reactor core following a loss of coolant accident.

3.1.6 Changes to the Technical Specifications

In a November 1976 letter to the Connecticut Yankee Atomic Power Company, NRC provided an attachment entitled "NRC Staff Guidelines for Excluding Exercising (Cycling) Tests of Certain Valves During Plant Operation." The attachment stated that when one train of a redundant system such as in the ECCS is inoperable, nonredundant valves in the remaining train should not be cycled since their failure would cause a loss of total system function. For example, during power operation in some plants, there are stated minimum requirements for systems which make up the ECCS which allow certain limiting conditions for operation to exist at any one time and if the system is not restored to meet the requirements within the time period specified in a plant's Technical Specification the reactor is required to be put in some other mode. Furthermore, prior to initiating repairs all valves and interlocks in the system that

provide a duplicate function are required to be tested to demonstrate operability immediately and periodically thereafter during power operation. For such plants this situation would be contrary to the NRC guideline as stated in the document mentioned above.

The Connecticut Yankee, Haddam Neck Plant's Technical Specifications may have requirements that are contrary to the above mentioned guidelines. We have discussed this situation with the licensee and the licensee has agreed to review the Technical specifications and to consider the need to propose Technical Specification changes which would have the effect of precluding such testing.

If, after making this consideration, the licensee determines that the TS should not be changed because the guidelines are not applicable or if that the guidelines cannot be followed, the licensee shall submit to the NRC the reasons that led to their determination for each potentially affected valve. In the licensee submittal, the potentially affected sections of the TS, in addition to the valves, should be identified.

3.1.7 Corrective Action for Inoperative Valves

ASME Section XI Paragraph IWV 3410 (g) and IWV 3520 (c) concerning corrective action required when a valve fails an exercise test, both state the following: "If the condition is not or cannot be corrected-within 24 hours, the valve shall be declared inoperative. When corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before start-up. A retest showing acceptable operation shall be run following any required corrective action before the valve is returned to service."

It is understood, that constraints and limitations on plant start-up or continued operation with an inoperable valve depend on many specific plant design features and conditions, and that the limiting conditions for start-up and operation have been analyzed and are described in the technical specification. therefore, the possibility exists that the tech. spec. requirements may differ from the above code requirements. The licensee should review this situation and if applicable, request relief in the resubmittal from this part of the code. The licensee's basis for the relief request should list at a minimum the sections/pages of the tech. spec. that apply to the limiting conditions of operation.

3.2 Reactor Coolant System 16103-26045 (Sheet 4)

3.2.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category
PR-MOV-567	B
PR-MOV-569	B
PR-SV-584	C
PR-SV-585	C
PR-SV-586	C
PR-SV-587	C
PR-SV-588	C

3.2.2 The following are valves that were listed in the IST submittal and were agreed upon to be non-safety related (safety related as defined by "NRC Staff Guidance For Preparing Pump/Valve Testing..." dated January 13, 1978), and were deleted from the IST program.

Valve	Valve
RC-MOV-501	PR-AOV-568
RC-MOV-512	PR-AOV-570
RC-MOV-513	PR-AOV-573
RC-MOV-524	PR-AOV-574
RC-MOV-526	PR-MOV-596
RC-MOV-537	PR-MOV-597
RC-MOV-538	PR-MOV-598
RC-MOV-546	PR-MOV-599

3.3 Safety Injection System

3.3.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
*SI-MOV-861A	B	SI-MOV-863A	A
*SI-MOV-861B	B	SI-MOV-863B	A
*SI-MOV-861C	B	SI-MOV-863C	A
*SI-MOV-861D	B	SI-MOV-863D	A
		SI-RV-870	C

*Note: Motor operated valves SI-MOV-861A, 861B, 861C, and 861D are in the HPSI system. The valves are closed during normal plant operation and form part of a redundancy with check valves SI-CV-86A, 862B, 862C, 862D that isolates the HPSI system from the RCS operating pressure. The valves are opened during an emergency condition when HPSI is required.

The licensee is presently exercising these valves monthly per Tech. Spec., without first determining the closed integrity of the 862 series check valves. Discussions led to the licensee agreeing to

516 265

stroke the 851 MOV's quarterly per code preceeded by an integrity check of the 867 check valves. In this case, the licensee would be in compliance with the NRC Staff Guidance of November 1976.

3.3.2 The following are valves that were listed in the IST submittal, and were agreed upon to be non-safety related (safety related as defined by "NRC Staff Guidance For Preparing Pump/Valve Testing...," dated January 13, 1978), and were deleted from the IST Program.

Valve
FP-MOV-31

3.3.3 The following are valves that were not listed in the IST submittal and were agreed upon to be considered safety related and therefore will be added to the resubmittal as shown.

Valve	Category
*SI-MOV-24	E
*RH-HCV-796	E
*RH-FCV-602	E

*Note: These valves are physically locked valves.

3.3.4 Code Relief - Category C Check Valves

3.3.4.1 Relief Request - SI-CV-103, SI-CV-107A, SI-CV-107B, SI-CV-872A, SI-CV-872B

The licensee has requested relief from full or part stroke exercising the subject check valves every 3 months and at cold shutdowns (non-refueling).

Code Requirement - Check valves shall be exercised at least once every 3 months, with the exceptions as shown in the following paragraph.

Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the check valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months. Normally closed check valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown. In case of frequent cold shutdowns these check valves need not be exercised more often than once every 3 months.

Licensee Basis for Request - Quarterly testing: During normal plant operation, it is to generate any flow through the subject check valves, as the system is not designed with any method to apply sufficient pressure to open the check valves.

Cold Shutdown Tests: Performing a design flow test using the LPSI pumps is the only method available (without disassembly) to full stroke exercise the subject check valves. This requires venting the RCS, and removal of the pressurizer manway or several safety valves before a LPSI pump can be used for initiating design flow to the reactor (Low Pressure Overpressure Protection for Reactor Vessel requirements, established by the NRC). Performing this flow test at each cold shutdown would require several days extra work, and extension of what would usually be a "quickie" maintenance outage.

To partially stroke the check valves would require that the RCS be vented, and that the pressurizer level be established at a low level and visually monitored as flow is established from the LPSI pumps and introduced into the RCS (pressurizer).

In both the full stroke and part stroke cases cited, water pumped by the LPSI pumps would originate from the RWST (borated water). Introduction of this water to the RCS would require additional waste liquid processing which is time consuming and delays startup.

Disassembly (where possible) of the check valves is impractical from a time standpoint, and would also increase the length of outages.

Refueling Interval Testing: Connecticut Yankee has historically had water clarity problems when its refueling water is injected to quickly into the cavity. This condition has delayed the refueling more than a day. The cavity is typically filled very slowly (approximately 160 GPM) to preclude this clarity problem.

The total consequences of a rapid fill are not fully known, but the possibilities are:

a. Delay in refueling due to water clarity (experience)

b. Increased radiation exposure for the refueling crew due to shaking up settled crud.

c. When the water is placed back in the RWST, the 10 Ci per tank limit may be exceeded.

A design flow system test which flow checked all the subject check valves was run once in 1971 and never since. The test was accomplished by removal of the pressurizer manway (RCS vented), lowering of the pressurizer level and running the LPSI pump for approximately 30 seconds. This test is considered risky, and any error in its performance could cause a large spill of reactor coolant on the containment floor and equipment. This test is considered to unsafe to run repeatedly or ever again.

A gravity flow test is presently planned at each refueling outage, i.e. flowing from the RWST through the LPSI system to the RCS, using the pressurizer as a resevoir. This test will flow all the subject check valves in the LPSI system. The flowrate will be unknown, but it is expected that this test will show at least partial stroking.

Additionally, at every 5 year interval, it is proposed to perform a LPSI test which would test check valves SI-CV-103, 107A and 107B at design flow. This test requires removal of the reactor head (with SI-CV-872A, 872B, and SI-MOV-871A, 871B, attached), and using the LPSI pumps to inject water into the cavity at design flow.

An attempt will be made at the February 1979 refueling outage to manually move the flappers of check valves SI-CV-872A and 872B when the reactor head is removed. At this time, it is not known whether this is possible due to the piping configuration. Disassembly of these check valves is not possible, as they are welded assemblies.

Evaluation - The LPSI Pump Discharge check valves SI-CV-107A and 107B, LPSI Pump Descharge to RHR check valve SI-CV-103, and Core Deluge check valves CD-CV-872A and 872B are closed during normal plant operation, and are required to open when LPSI flow is initiated to the reactor.

Quarterly Testing: The subject check valve designs are such, that they can only be exercised by disassembling or by flow. The LPSI system configuration is such, that flow can only be initiated through the check valves by activating the LPSI pumps. During normal plant operation, the RCS pressure is approximately 2000 psig, and acts to close CD-CV-872A and 872B (assuming CD-MOV-871A and 871B are open). The discharge pressure of the LPSI pumps is far lower than the RCS operating pressure, and can not open check valves 872A and 872B against the RCS head. SI-CV-103, 107A, and 107B are in series with 872A and 872B and are also prevented from exercising. It should be noted, that the mini-flow recirculation lines off the LPSI pumps are upstream of the 107A and 107B which eliminates any part stroke exercise of these check valves when the LPSI pumps are run monthly.

Based on the above, it is agreed that full or part stroke exercising the subject valves by disassembly (where possible) or flowing is impractical on a 3 month basis.

Cold Shutdown Tests: The licensee's basis for relief has adequately established that full or part stroke exercising the subject check valves by flow or disassembly is highly impractical from a time and operations standpoint.

Refueling Interval Testing: The licensee has proposed to attempt to manually exercise SI-CV-872A and 872B at the February 1979 refueling when the reactor head is removed with these check valves attached. The degree of exercise and test frequency will be proposed in the resubmittal and be based on the results of this test.

The planned gravity flow test's effectiveness is difficult to evaluate because the licensee is not proposing to measure or determine flow. The degree of part stroke exercise should be established to assure that the flow through the check valves is not just seat leakage across a stuck closed flapper.

The LPSI pump/cavity fill, design flow test of SI-CV-103, 107A and 107B is proposed at 5 year intervals. It is recommended, that the licensee explore the possibility of disassembling and full stroke exercising these check valves at refueling intervals, and provide rationale if this is not considered feasible.

Summary: It is agreed that full or part stroke exercising the subject check valves quarterly is impractical, and that exercising at cold shutdowns is also impractical. However, based on the evaluation of the licensee's proposals for tests at refueling intervals, it is recommended that any request for relief from the code exercising requirements be denied at this time. This is based on the following:

a. The licensee has not proposed the degree of exercise and test frequency planned for SI-CV-872A and 872B. This is expected in the resubmittal.

b. The licensee has not proposed how it will be determined how gravity flow through a partially stroked check valve is distinguished from leakage across a stuck closed flapper.

c. The licensee has not addressed the possibility of disassembling SI-CV-103, 107A and 107B at some interval.

3.3.4.2 Relief Request - SI-CV-856A and 856B

The licensee has requested relief from full stroke exercising the subject valves quarterly, and at cold shutdowns (non-refueling)

Code Requirements - See Code Requirement Item 3.3.4.1

Licensee's Basis for Request - Full stroke exercising these check valves require that the RCS be vented, and flow from the RWST be established to the RCS through the valves using the HPSI pumps. The design flow required is approximately 1750 GPM. A part stroke exercise is performed on the valves monthly when the HPSI pumps are tested using the pump test recirculation line. Flowrate through each valves at that time is expected to be approximately 1000 GPM.

Evaluation - The HPSI Pump Discharge check valves SI-CV-856A and 856B are closed during normal plant operation, and their function is to open when the HPSI pumps are activated and supply RWST water to the RCS during the emergency condition.

The licensee proposes to part stroke the check valves during monthly HPSI pump tests, but has not proposed a full stroke exercise test

frequency. The licensee was requested to review the testing on the valves and provide a full stroke exercise test frequency, if possible, and the rationale behind selecting this frequency. The licensee has agreed to provide this information in the resubmittal.

Until this information is received and reviewed, it is recommended that any request for relief from the code exercising requirements be denied at this time.

3.3.4.3 Relief Request - SI-CV-862A, SI-CV-862B, SI-CV-862C, SI-CV-862D

The licensee has requested relief from full or part stroke exercising the subject check valves quarterly and at cold shutdown (non-refueling).

Code Requirement - See Code Requirement Item 3.3.4.1

Licensee's Basis for Request - Full or part stroke exercising these check valves require that the RCS be vented, and flow from the RWST be established through the valves to the RCS using the HPSI pumps. Exercising is not possible when the RCS is at operating pressure (2000 psig). A part stroke exercise flow test (<1 percent of design flow) is planned at refueling.

Evaluation - The safety injection valves SI-CV-862A, 862B, 862C, and 862D are in the HPSI system. The valves are closed during normal plant operation and are part of redundancy that isolates the operating RCS pressure from the lower design pressure HPSI system. The check valves open when the HPSI pumps are activated and RWST water is supplied to the RCS during the emergency condition.

The licensee proposes to part stroke the valves at refuelings, but has not proposed a full stroke exercise test frequency. The licensee has requested to review the testing on the valves and provide a full stroke exercise test frequency, if possible, and the rationale behind selecting the frequency. The licensee has agreed to provide this information in the resubmittal.

Until this information is received and reviewed, it is recommended that any request for relief from the code exercising requirements be denied at this time.

3.3.5 Cold Shutdown Testing of Valves

The following are valves in this system that the licensee cannot exercise every 3 months and intends to full stroke exercise at cold shutdowns. The valves are normally closed and therefore satisfy the code requirement. The intent of this section is to satisfy the requirements of the NRC letter dated January 13, 1978, i.e., "NRC Staff Guidance For Preparing Pump and Valve Testing Program Descriptions and Associated Relief Requests Pursuant to 10 CFR 50.55 a(g)," specifically section 5, page 7.

516 270

3.3.5.1 Category B Valves

3.3.5.1.1 Code Requirement - CD-MOV-871A, CD-MOV-871B

Category B valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shut; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee's Basis for Request - Exercising the subject MOV's open quarterly during normal plant operation would violate an NRC Guideline (November 1976).

Evaluation - The Core Deluge valves CD-MOV-871A and 871B are in the LPSI system. The valves are closed during normal plant operation and form part of a redundancy with check valves CD-CV-872A and 872B that isolates the lower design pressure LPSI from the RCS operating pressure (2000 psig). The valves are openned during an emergency condition when LPSI is required.

The licensee submittal had proposed to exercise the valves every 3 months to code. The staff pointed out the November 1976 Guidelines concerning the exercising power operated valves in series with check valves that would interface with the RCS a operating pressure. The licensee stated that there were no provisions in this system that would enable him to check the closed integrity of the 872A and 872B check valves prior to exercising MOV's 871A and 871B respectively. Based on the staff guideline, the licensee is proposing to full stroke the valves at cold shutdowns and refuelings.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months and that full stroke exercising at cold shutdowns is the practical alternative that satisfies the intent of the code.

3.4 Residual Heat Removal System

3.4.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirements.

Valve	Category	Valve	Category
RH-MOV-21	B	RH-RV-715	C
RH-MOV-22	B	RH-CV-788A	C
RH-MOV-25	B	RH-CV-788B	C
RH-MOV-26	B	RH-V-808A	B
RH-MOV-27	B	RH-MOV-874	E
RH-MOV-28	B		
TH-MOV-29	B		

3.4.2 The following are valves that were not listed in the IST submittal and were agreed upon to be considered safety related and, therefore, will be added to the resubmittal as shown.

Valve	Category
*RHR-V-23A	E
*FH-AOV-796	E
*RH-AOV-602	E
*SI-MOV-24	E

*Note: Valve is physically locked.

3.4.3 Code Relief - Category B Valves

3.4.3.1 Relief Request - RH-MOV-23 and RH-MOV-34

The licensee's submittal requested relief to exercise these valves at reactor refuelings.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - The licensee has stated that the Tech. Spec. calls for the valves to be operated in a no-flow condition.

Evaluation - The containment spray system is set up such that opening Containment Spray valves RH-MOV-23 and RH-MOV-34 will initiate containment spray. In order to isolate these valves, RHR-V-23A would have to be closed. Closing 23A (manual valve inside containment) would put the valve in a non-conservative position, i.e. disabling the Containment Spray system during normal plant operation. This condition would violate Tech. Spec. requirements and the NRC's November 1976 guidelines.

The licensee has agreed to full stroke exercise the subject MOV's at cold shutdowns and refuelings.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted to full stroke exercise the valves at cold shutdowns and refuelings.

3.4.4 Code Relief - Category C Check Valves

3.4.4.1 Relief Request - RH-CV-783 and RH-CV-808A

The licensees have requested that these valves be exercised at reactor refuelings.

Code Requirement - See Code Requirement, Item 3.3.4.1

Licensee Basis for Request - The subject valves must be disassembled to be exercised.

Evaluation - The Containment Sump Suction check valves RH-CV-783 and RH-CV-808A are in the recirculation lines to the RHR pumps. The valves are required to open when the sump recirculation mode is required following the LOCA.

The valves are not designed to be exercised by external actuators, and can only be exercised by flow or by disassembling. Flowing the valves is impractical at any time as the systems configuration is such that the containment sump would have to be filled with water, and the contaminated water flowed back through the RHR pumps to the reactor. Therefore, disassembly and exercise appear to be the practical alternative.

The licensee presently plans to disassemble, exercise, and visually examine the condition of the check valves during the February 1979 refueling period. Based on the results of the examination and test, the licensee will propose what exercising frequency is planned from that point. This information would be included in the resubmittal.

Until this information is received and reviewed, it is recommended that any request for relief from the code exercising requirements be denied at this time.

3.4.5 Cold Shutdown Testing of Valves - See Item 3.3.5

3.4.5.1 Category B

3.4.5.1.1 Code Requirement - RH-MOV-33A and RH-MOV-33B

See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Opening the subject valves during normal plant operation would cause flow transients in the charging system.

Evaluation - Valves RH-MOV-33A and 33B are normally closed valves leading from the RHR pumps to the suction side of the charging pumps. The valves are required to open to feed from the RHR to the charging pumps when this mode of recirculation is required during the emergency condition.

The licensee has indicated that the flow transients caused in the charging system by cycling the valves could cause Reactor Coolant Pump seal damage. Also, opening these valves opens a flow path from RWST to the charging pump suction which would affect boron concentration in the RCS and reactivity.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of part or full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted to full stroke exercise the valves at cold shutdowns and refuelings.

3.4.5.1.2 Code Requirement - RH-MOV-780, RH-MOV-781, RH-MOV-804, and RH-MOV-803.

See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Exercising the subject valves requires depressurizing the RCS.

Evaluation - The Residual Heat Removal Valves RH-MOV-780 (Inboard Stop-Loop #1), RH-MOV-781 (Outboard Stop-Loop #1), RH-MOV-804 (Inboard Stop-Loop #2), and RH-MOV-803 (Outboard Stop-Loop #2) isolate the lower design pressure RHR system from the operational pressure of the RCS (approximately 2000 psig).

The valves are opened when the RHR system is used to remove decay heat from the reactor during normal shutdown conditions. The valves are pressure interlocked with the RCS, and cannot be opened when the RCS is above 375 psig. The valves are full stroke exercised at cold shutdown conditions when the RHR system is used.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months and that cold shutdowns below 375 psig is the only time the valves can be opened.

3.5 Chemical and Volume Control System

3.5.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirements.

Valve	Category	Valve	Category
LD-RV-205	C	BA-MOV-349	B
CH-CV-2[illegible]	C	BA-CV-361	C
CH-CV-272	C	BA-CV-370	C
CH-CV-293	C	BA-MOV-386	B
CH-CV-292B	C	*CH-CV-399	B
CH-CV-292C	C		

*Note: This valve will be shown in the resubmittal as satisfying the code.

3.5.2 The following are valves that were not listed in the IST submittal and were agreed upon to be considered safety related, and therefore, will be added to the resubmittal as shown.

516 274

Valve	Category
*CH-CV-305A	AC
*CH-CV-305B	AC
*CH-CV-305D	AC
*CH-CV-305C	AC
DH-TV-1841	A
DH-TV-1847	A
FH-AOV-110	B

*Note: For the purposes of this review, these valves have been exempted from requiring a relief request pending the Appendix J review.

3.5.3 The following are valves that were listed in the IST submittal, and were agreed upon to be non-safety related (safety related as defined by NRC Staff Guidance for Preparing Pump/Valve Testing...," dated January 13, 1978) and were deleted from the IST Program.

Valve	Valve	Valve
CH-CV-260	CH-CV-268	CH-MOV-298
CH-CV-262	CH-CV-277	CH-CV-325
		CH-CV-326

3.5.4 Code Relief - Category A Valves

3.5.4.1 Relief Request - CH-TV-334

The licensee has requested relief to exercise the subject valve at reactor refuelings.

Code Requirement - Category A valves shall be exercised at least once every 3 months with the exceptions as shown in the following paragraph.

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation the valve shall be part stroke exercised during plant operation and full stroked during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months. Normally closed valves that cannot be operated during normal plant operation shall be specifically identified by the Owner and shall be full stroke exercised during each cold shutdown; in case of frequent cold shutdowns these valves need not be exercised more often than once every 3 months.

Licensee's Basis for Request - Closing this valve isolates seal water supply to the Reactor Coolant Pumps.

Evaluation - The Seal Water Return Line Trip Valve CV-TV-334 is in the seal water supply line from the RC pumps to the charging pumps. The valve is open during normal plant operation and its safety related function is to close to form part of containment. The valve can only be full stroke exercised.

Closing this valve during normal plant operation stops seal water to the RC pumps and could result in pump damage. The licensee has agreed to test the valve at certain cold shutdown conditions and refuelings where the RC pumps are inactive, and operation of the seal water system is not required.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months and that full stroke exercising at cold shutdown conditions mentioned and reactor refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted.

3.5.5 Code Relief - Category B Valves

3.5.5.1 Relief Request - LD-MOV-200

The licensee has requested relief be granted to exercise this valve at cold shutdown.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Operation of the subject valve would shutoff letdown flow.

Evaluation - The Letdown Isolation valve LD-MOV-200 is in the letdown line and is open during normal plant operation. The valve cannot be part stroked, and goes full closed when it's required to operate. Shutting off the letdown line can have an affect on pressurizer level which can result in a reactor trip. The valve will be exercised at cold shutdown and reactor fuelings.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted.

3.5.5.2 Relief Request - CH-MOV-257

The licensee has requested that relief be granted to exercise this valve at cold shutdowns.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Closing the subject valve will cause the charging pumps to cavitate.

Evaluation - The Volume Control Tank Outlet valve is in the line from the VCT to the suction side of the chargng pumps. The valve is open during normal plant operation and is in the path of the makeup and RC pump seal water flow via the charging pumps. The valves safety related function is to close during the emergency condition. Closing the valve during plant operation causes cavitation of the

charging pumps, and shuts off makeup and seal water flow, the results of which could be a reactor trip and RC pump seal damage.

The valve will be full stroke exercised at cold shutdown, and reactor refueling.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted.

3.5.5.3 Relief Request - FH-CV-296

The licensee has requested relief to exercise the subject valves at reactor refuelings.

Code Requirement - See Code Requir ment, Item 3.3.5.1.1

Licensee's Basis for Request - The valve is in the loop fill header and is only opened at refueling.

Evaluation - The loop fill valve FH-CV-296 is closed during normal plant operation and its safety related position is also closed.

The NRC staff considers the subject valves as passive, i.e. a closed valve whose function is to remain closed during the emergency condition. The staff has determined that the exercising requirement of Code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirements.

3.5.6 Cold Shutdown Testing of Valve - See Item 3.3.5

3.5.6.1 Category B Valves

3.5.6.1.1 Code Requirement - BA-MOV-32 and BA-MOV-373

See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Opening the subject valves during normal plant operation would cause reactor coolant water chemistry problems.

Evaluation - BA-MOV-32 and BA-MOV-373 are in the flow path from the RWST to the suction side of the charging pumps. The valves are closed during normal plant operations. Opening them would allow RWST water to flow to the RCS via the charging pumps and result in a boron concentration increase in the reactor coolant water with resultant reactivity changes. Both valves will be full stroke exercised at cold shutdowns and reactor refuelings.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months and that full stroke exercising at cold shutdowns and refuelings is the practical alternative.

3.5.6.1.2 Code Requirement - BA-MOV-366

See Code Requirement, Item 3.3.5.1.1

Licensee's Basis for Request - Operation of this valve would cause water chemistry problems.

Evaluation - The Boric Acid to Charging Pump Valve BA-MOV-366 is closed during normal plant operation and it's safety related function is to open to provide Boric Acid from the BAT to the reactor via the charging pumps. Opening the valve during normal plant operations would supply the boric acid to the RCS resulting in a boron concentration increase and reactivity decrease.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refueling is the practical alternative.

3.5.6.2 Category A

3.5.6.2.1 Code Requirement - LD-AOV-202, LD-AOV-203, and LD-AOV-204

See Code Requirement, Items 3.5.4.1

Licensee Basis for Request - Closing these valves shutsdown the letdown line.

Evaluation - The Letdown Orife Flow Control valves LD-AOV-202, LD-AOV-203, and LD-AOV-204 are partially stroked at frequencies higher than the code required 3 months, during normal plant operation. Full stroking the valves closed shutsoff the letdown flow and could result in a reactor trip. The valves will be full stroke exercised at cold shutdowns and reactor refuelings.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of full stroke exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refuelings is the practical alternative.

3.5.6.3 Category C

3.5.6.3.1 Code Requirement - BA-CV-320

See Code Requirement, Item 3.3.4.1

Licensee Basis for Request - Operation of this valve would cause water chemistry problems.

Evaluation - The Boric Acid Strainer Discharge check valve BA-CV-320 is in the line from the Boric Acid Tank to the suction side of the charging pumps. The valve is required to open when the Boric Acid is required to be supplied to the reactor via the charging pumps during the emergency condition.

The valve is not designed to be exercised by an external actuator, and can only be exercised by flowing the boric acid from the BAT. During normal plant operation, this high concentration boron solution would be supplied directly to the charging pump and increase the boron concentration of the reactor coolant thereby affecting reactivity.

The check valve will be exercised at cold shutdown and reactor refueling.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refueling is the practical alternative.

3.5.6.3.2 Code Requirement - BA-CV-372A

See Code Requirement, Item 3.3.4.1

Licensee's Basis for Request - Operation of this valve would cause water chemistry problems.

Evaluation - The RWST to Charging Pump check valve BH-CV-372A is closed during normal plant operation, and its safety related function is to open when BA-MOV-373 is opened and water is supplied from the RWST to the charging pumps. Opening the check valve during normal plant operation would require opening BA-MOV-373 and flowing the relatively higher borated water from the RWST to the reactor coolant via the charging pumps. This would increase the reactor coolants boron concentration, and result in a reactivity change.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdown and reactor refueling is the practical alternative.

3.5.6.3.3 Code Requirement - *BA-CV-387

See Code Requirement, Item 3.3.4.1

*Note: This valve was mistakenly identified as BA-CV-381 in the IST Program submittal.

Licensee's Basis for Request - Operation of this valve would cause water chemistry problems.

Evaluation - The Boric Acid to Charging Pump check valve BA-CV-387 is closed during normal plant operation and its safety related function is to open when BA-MOV-366 is opened and the concentrated boric acid solution is supplied from the BAT to the charging pumps. Opening -387 during normal plant operation would require opening BA-MOV-366 and flowing the concentrated Boric Acid solution to the reactor coolant via the charging pumps.

516 279

This would increase the reactor coolant's boron concentration, and result in a reactivity change.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and reactor refueling is the practical alternative.

3.6 Containment Isolation Valves

3.6.1 Relief Request - The licensee has requested relief from exercising the following valves per code requirements for Category A and C valves.

Valve	Category	Valve Service
PW-CV-139	AC	Primary Water to PRT
PW-CV-140	AC	Primary Water to PRT
HC-V-212	AE	Space Heater Containment Return
PU-V-242	AE	Cavity Purification Line
PU-V-242A	AE	Cavity Purification Line
HS-CV-295	AC	Containment Space Heating Supply
HS-CV-295A	AC	Containment Space Heating Supply
*BV-1-1B	AE	Containment Purge Air Exhaust
*HCV-1101	AE	Containment Purge Air Exhaust Bypass
*BV-1-1A	AE	Containment Purge Air Supply
*P50	AE	Fuel Transfer Tube
SA-V-411A	AE	Air Monitor Purge
SA-V-413	AE	Service Air to Containment

*Note: These valves were categorized as "A" in the submittal, and were revised to Category AE as a result of the SER meeting.

Code Requirement

Category A - See Code Requirement, Item 3.5.4.1
Category C - See Code Requirement, Item 3.3.4.1

Licensee's Basis for Request - The valves are closed during normal plant operation, and their safety related position is closed.

Evaluation - The NRC staff considers the subject valves as passive, i.e. a closed valve whose function is to remain closed during the emergency condition. The staff has determined that the exercising requirement of Code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirements.

3.7 Main Steam System

3.7.1 Relief Request - The following are valves in the IST program which the licensee intends to test to the applicable code requirements.

Valve	Category	Valve	Category
MS-SV-11	C	MS-NRV-38	BC
MS-SV-12	C	MS-SV-41	C
MS-SV-13	C	MS-SV-42	C
MS-SV-14	C	MS-SV-43	C
MS-NRV-18	BC	MS-SV-44	C
MS-SV-21	C	MS-NRV-48	BC
MS-SV-22	C	MS-PICV-1206A	B
MS-SV-23	C	MS-PICV-1206B	B
MS-SV-24	C	BD-V-506	A
MS-NRV-28	BC	BD-V-515	A
MS-SV-31	C	BD-V-522	A
MS-SV-32	C	BD-V-529	A
MS-SV-33	C	MS-SV-1216A	C
MS-SV-34	C	MS-SV-1216B	C

3.7.2 Code Relief - Category B

3.7.2.1 Relief Request - BD-TV-1312-1, BD-TV-1312-2, BD-TV-1312-3, and BD-TV-1312-4

The licensee has requested to full stroke exercise the subject valves at reactor refuelings.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - The valves are tested as containment isolation valves only.

Evaluation - The Steam Generator Blowdown valves BD-TV-1312-1, -2, -3, and -4 are open during normal plant operation, and their safety related function is to close and form part of containment in an emergency condition. The valves cannot be part stroke exercised, and can only be full stroke exercised together (i.e., all and simultaneously). Full stroke exercising during normal plant operation stops the steam generator blowdown. The licensee has indicated that the code frequency could cause chemistry problems with the steam generator water which could result in tubing degradations.

The licensee has agreed to full stroke exercise the valves at cold shutdowns as well as reactor refuelings.

It is believed that the licensee has demonstrated the impracticality of exercising every 3 months and that full stroke exercising at cold shutdowns and reactor refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted to full stroke exercise at cold shutdown and reactor refuelings.

3.7.3 Cold Shutdown Testing of Valves - See Item 3.3.5

3.7.3.1 Category B

3.7.3.1.1 Code Requirement - MS-TV-1211-1, MS-TV-1211-2, MS-TV-1211-3, and MS-TV-1211-4.

See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Full stroke exercising each of the subject valves closed during normal plant operation shuts off its respective steam line to the turbine.

Evaluation - The Main Steam Outlet valves MS-TV-1211-1, -2, -3, and -4 are open during normal plant operation, and their safety related function is to close. The valves are part stroked at a frequency that satisfies the code, and are full stroked at cold shutdowns. Full stroking any valve quarterly, shuts off the steam in that line, and could result in a reactor trip.

Based on this, it is concluded that the licensee has demonstrated the impracticality of full stroke exercising every 3 months, and that full stroking at cold shutdowns and reactor refuelings is the practical alternative.

3.7.3.1.2 Code Requirement - MS-NRV-11, MS-NRV-21, MS-NRV-31, and MS-NRV-41.

See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Full stroke exercising the subject valves during normal plant operation shutsoff a steam supply line.

Evaluation - The Steam Generator Non-return valves MS-NRV-11, -21, -31, and -41 are open during normal plant operation and their safety related function is to close. The valves are part stroke exercised quarterly and full stroked at cold shutdowns. Full stroking any valve quarterly shutsoff the steam in that supply line, and could result in a reactor trip.

Based on this, it is concluded that the licensee has demonstrated the impracticality of full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns, and reactor refueling is the practical alternative.

3.8 Feedwater System

3.8.1 The following are valves in the IST program, which the licensee intends to test to the applicable code requirement.

Valve	Category
FW-MOV-35	B
FW-CV-143-1	C
FW-CV-143-2	C
FW-CV-143-3	C
FW-CV-143-4	C

3.8.2 The following are valves that were listed in the IST submittal, and were agreed upon to be non-safety related (Safety related as defined by "NRC Staff Guidance for Preparing Pump/Valve Testing....," dated January 13, 1978) and were deleted from the IST Program.

Valve	Category
FW-CV-135-1	C
FW-CV-135-2	C
FW-CV-135-3	C
FW-CV-135-4	C
FW-CV-182	C

3.8.3 Code Relief - Category B Valves

3.8.3.1 Relief Request - FW-MOV-11, FW-MOV-12, FW-MOV-13, and FW-MOV-14

The licensee has requested relief from stroking the subject valves closed every 3 months

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Stroking the subject valves closed during normal plant operation shuts off the feedwater supply to the respective steam generator.

Evaluation - The Steam Generator Feedwater Isolation valves FW-MOV-11, -12, -13, and -14 are normally open, full stroke only type valves. The valves are required to stay open during emergency conditions when emergency feedwater is supplied to the steam generators by the auxiliary steam generated feed pump.

The NRC staff considers the subject valves as passive, i.e. an open valve whose function is to stay open during the emergency condition. The staff has determined that the exercising requirement of Code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the 3 month stroke and stroke timing requirements.

3.8.4 Code Relief - Category C (check valves)

3.8.4.1 Relief Request - FW-CV-192, FW-CV-194, FW-CV-196, and FW-CV-198.

The licensee is requesting relief from exercising the subject valves at 3 month intervals.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - The valves are containment isolation valves and are closed during normal plant operation. The valves are tested to Appendix J requirements.

Evaluation - The NRC staff considers check valves FW-CV-192, -194, -196, and -198 as passive, i.e. a closed valve whose function is to remain closed, as is the case of these containment isolation valves. The staff has determined that the exercising requirement of code Section XI provides no meaningful information for these passive valves, and relieves the licensee from the quarterly stroke requirements.

3.8.5 Cold Shutdown Testing of Valves

3.8.5.1 Category B

3.8.5.1.1 Code Requirement - FW-FCV-1301-1, FW-FCV-1301-2, FW-FCV-1301-3, and FW-FCV-1301-4.

See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Full stroking the subject valves to the closed position shuts off feedwater to the respective steam generator. The valves will be full stroke closed at cold shutdowns and refuelings.

Evaluation - The Feedwater Regulator Valves FW-FCV-1301-1, -2, -3, and -4 are control valves that are open and in constant operation (part stroking) when the plant is in normal operation. Exercising a valve closed, shuts off the feedwater to its respective steam generator and could cause a reactor trip.

The licensee has demonstrated the impracticality of full stroke exercising every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative.

3.8.5.1.2 Code Requirement - FW-HICV-1301-1, FW-HICV-1301-2, FW-HICV-1301-3, and FW-HICV-1301-4.

See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Stroking the subject valves full closed quarterly during normal plant operation causes water hammer problems. This has been verified by operating experience. The valves will be part stroke exercised quarterly, and full stroke exercised at cold shutdowns and refuelings.

Evaluation - The Feedwater Bypass Valves FW-HICV-1301-1, 1301-2, 1301-3, and 1301-4 are valves in the emergency feedwater circuit and provide flow control of emergency feedwater to the steam generators. The valves are normally open and flow feedwater supplied by the feedwater pumps. The licensee has stated that, from experience, closing the valves causes water hammer. In that water hammer is undesirable in a fluid system and can have deleterious effects, it is agreed that full stroke exercising quarterly is impractical, and that full stroke exercising at cold shutdowns and reactor refueling is the practical alternative.

3.8.5.2 Category C

3.8.5.2.1 Code Requirement - FW-CV-153B, FW-CV-156-1, FW-CV-156-2, FW-CV-156-3, FW-CV-156-4, and FW-CV-184.

See Code Requirement, Item 3.3.4.1

Licensee Basis for Request - Opening the subject check valves during normal plant operation would thermally shock the steam generators. The valves will be full stroke exercised at cold shutdowns and refuelings.

Evaluation - Check valves FW-CV-153B, -156-1, -156-2, -156-3, -156-4, and -184 are in the emergency feedwater system from the auxiliary steam generated feed pumps. Part or full stroke exercising the valves would require flowing water from the demineralized water storage tank to the steam generators via the emergency feedwater pump. The demineralized water is at ambient temperature, and would result in thermal shock to the steam generators.

The licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative.

3.9 Service Water

3.9.1 The following are valves in the IST program which the licensee intends to test to the applicable code requirement.

Valve	Category	Valve	Category
SW-AOV-8	B	SW-CV-276A	C
SW-AOV-9	B	SW-CV-276B	C
SW-AOV-129	B	SW-CV-276C	C
SW-AOV-130	B	SW-CV-276D	C

3.9.2 Code Relief - Category B Valves

3.9.2.1 Relief Request - SW-MOV-1, SW-MOV-2

The licensee has requested relief from exercising the subject valves closed every 3 months.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Exercising the subject valves closed every 3 months disrupts cooling water flow to systems required for normal plant operation. The valves will be full stroke exercised at cold shutdowns and refuelings.

Evaluation - The east and west header isolation valves SW-MOV-1 and SW-MOV-2 respectively are open during normal plant operation and are required to close during the emergency condition to assure sufficient service water pressure is available to supply required cooling water to essential service equipment.

The valves cannot be part stroked, and full stroking them during normal plant operation shutsdown cooling water to the turbine oil cooler, GN_2 Cooler, seal oil system coolers and other cooling systems which are required for plant operation.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

3.9.2.2 Relief Request - SW-MOV-3, SW-MOV-4.

The licensee has requested relief from exercising the subject valves closed every 3 months.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - Exercising the subject valves closed every 3 months shutsdown cooling water to the component cooling system heat exchangers. The valves will be full stroke exercised at cold shutdowns and at refuelings.

Evaluation - The Component Cooling (CC) System Heat Exchanger Discharge valves SW-MOV-3 and -4 are open during normal plant operation. The valves cannot be part stroked, and closing the valves would stop service water cooling flow through the CC heat exchangers and cause an increase in temperature of letdown water (non-regenerative heat exchanger). These heat exchanges are required to be operative during plant operations.

Based on the above, it is concluded that the licensee has demonstrated the impracticality of exercising the valves every 3 months, and that full stroke exercising at cold shutdowns and refuelings is the practical alternative that satisfies the intent of the code. It is recommended that code relief be granted as requested.

3.9.2.3 Relief Request - SW-MOV-5, SW-MOV-6

The licensee's submittal has requested relief from exercising the subject valves open every 3 months, but has not proposed any other exercise frequency at this time.

Code Requirement - See Code Requirement, Item 3.3.5.1.1

Licensee Basis for Request - The licensee expects that exercising the valves would require a major cleanup of the residual heat exchangers after service water is introduced into them.

The licensee has proposed to exercise the valves at the next refueling outage (February 1979) and based on the problems encountered (cleanup, time, etc.) make a decision, and propose in the resubmittal the exercise frequency planned.

Evaluation - The RHX inlet valves SW-MOV-5 and -6 are closed during normal plant operation when the component cooling system provides cooling water to the RHX's. In the emergency mode, the CC system drops out, SW-MOV-5 and -6 open, and RHX cooling is provided by the service water system.

It is agreed that the requirement to clean the RHX's and associated plumbing after introduction of service water, makes it impractical to exercise the valves every 3 months as required by the code, and relief from this requirement is justified. However, in that the licensee has not to date proposed an alternative test frequency with supporting rationale, and has deferred doing so until the resubmittal, it is recommended that the request for code relief be denied at this time. The resubmittal with the proposed test frequency and supporting rationale should be reviewed and an evaluation made at that time.

Conclusion

The Inservice Testing Program submitted by the Connecticut Yankee Atomic Power Company for the Connecticut Yankee (Haddam Neck Plant), and modified by this evaluation report is in general compliance with the requirements of Section XI of the 1974 Edition and Addenda through the Summer of 1975 of the ASME Boiler and Pressure Vessel Code as required by 10 CFR 50.55 a(g), and NRC Staff guidance letters and briefings. Those items not found to be in compliance with the above, will be addressed in the CYAPC response to the SER meeting and evaluated further.

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