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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE TESTING PROGRAM REQUESTS FOR RELIEF

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT 1

DOCKET NUMBER 50-245

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda, except where relief has been granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a (f)(6)(i), (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the licensee must demonstrate that: (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. Section 50.55a(f)(4)(iv) provides that inservice tests of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed, and subject to Commission approval. NRC guidance contained in Generic Letter (GL) 89-04, Guidance on Developing Acceptable Inservice Testing Programs, provided alternatives to the Code requirements determined to be acceptable to the staff and authorized the use of the alternatives in Positions 1, 2, 6, 7, 9, and 10 provided the licensee follow the guidance delineated in the applicable position. When an alternative is proposed which is in accordance with GL 89-04 guidance and is documented in the IST program, no further evaluation is required; however, implementation of the alternative is subject to NRC inspection.

The Code of Federal Regulations, 10 CFR 50.55a, authorizes the Commission to grant relief from ASME Code requirements or to approve proposed alternatives upon making the necessary findings. The NRC staff's findings with respect to granting or not granting the relief requested or authorizing the proposed alternative as part of the licensee's IST program are contained in this Safety Evaluation (SE).

This SE concerns relief requests and supporting information that were submitted in Northeast Nuclear Energy Company's (NNECO/licensee) letter dated October 30, 1992, for the Millstone Nuclear Power Station, Unit 1, IST Program, Revision 5. A review of the licensee's response to certain items identified in NRC SE dated January 8, 1992, was performed. The results of this review are provided in Table 1, Table of Anomalies and Action Items in NRC Safety Evaluation Dated January 8, 1992. The new or revised relief requests which were included in the submittals are evaluated below.

The Millstone Unit 1 IST Program was developed to the requirements of OM-6, Inservice Testing of Pumps in Light-Water Nuclear Power Plants, and OM-10, Inservice Testing of Valves in Light-Water Nuclear Power Plants, which were incorporated into 10 CFR 50.55a(b), through the 1989 Edition of Section XI, by rulemaking effective September 8, 1992. The staff approves the use of OM-6 and OM-10, with modifications to OM-10 related to containment isolation valve leakage testing. The IST Program is for the third ten-year interval which began August 15, 1991, following the extension of the second ten-year interval program from December 28, 1990, to startup from the 1991 refueling outage.

Several relief requests include discussion of schedules for future modifications. Refueling Outage 14 is scheduled for January 1994, and Refueling Outage 15 is scheduled for 1996. In relief requests which discuss modifications to be completed in these refueling outages, where relief is granted for implementation of testing in accordance with the modifications, the relief becomes effective upon completion, or at startup from the refueling outage. In the interim, the licensee's inservice testing is to be performed in accordance with current testing procedures for these specific relief requests. The licensee has indicated in their submittal that the implementing procedures for Revision 5 of the inservice testing program are being revised over the next year, with final completion scheduled for the 1994 refueling outage. The staff recognizes that procedural development involves an extensive effort that requires a period of time to complete and that several tests are based on a refueling outage schedule; however, it is expected that this effort will be accomplished in a timely manner over the period of development, and that the tests performed on a refueling outage schedule will be conducted during the 1994 refueling outage.

2.0 PUMP RELIEF REQUESTS

A total of eight relief requests for pumps are included in the revised inservice testing program. Each of these are evaluated separately below in accordance with the requirements of OM-6. The requirements for inservice testing were not in effect when Millstone Unit 1 was constructed (Construction Permit date May 19, 1966), and therefore, design features to enable testing were not provided as later required by 10 CFR 50.55a. Because the NRC has determined that flow measurement is required for inservice testing of pumps and that long-term relief is not appropriate (reference GL 89-04, Position 9), the previous SE discussed the lack of flow instrumentation for the pumps subject to inservice testing. The licensee has made an attempt to address the concerns through testing during refueling outages when individual pump flows can be measured, using temporary flow instrumentation, and using instrumentation which does not meet the accuracy and/or full-scale range requirements due to limitations in design features. The relief requests related to flow instrumentation have been evaluated with consideration of these design limitations and the limitations associated with modifications to existing systems.

2.1 Relief Request R-1

Relief from the requirements of OM-6, Section 5.1, to perform inservice testing of the service water pumps (M4-7C and M4-7D) and feedwater coolant injection (FWCI) condensate pumps (M2-6A, M2-6B, M2-7A, M2-7B) nominally every 3 months is requested. Based on the status of available flow instrumentation, the pumps will be monitored quarterly without individual flow measurement, and tested during refueling outages with flow measurements recorded.

2.1.1 Licensee's Basis for Relief

The licensee states:

> Individual pump flow instrumentation is not installed. The required length of straight pipe without obstructions (approximately 10 diameters upstream and 5 diameters downstream) to obtain an accurate flow measurement and comply with OM-6, Paragraph 4.6.1.1, is not available on individual lines on the suction or discharge side of each pump.
>
> There is a flow element on the condensate line which is a common line for all 3 pumps downstream of the steam packing exhauster. All 3 condensate pumps and at least 2 of 3 condensate booster pumps are required for operation at 100% power. The condensate pumps are also operated as necessary during cold shutdown to maintain reactor vessel water level. The condensate booster pumps' fuses are pulled to prevent a feedwater pump start for reactor vessel overpressurization protection in case of a FWCI initiation signal during cold shutdown. Therefore, individual flow measurement is not possible during power operation or cold shutdown.
>
> During normal operation at least 2 service water pumps are required to operate to maintain heat load. This means that measurement of single pump flowrate is not possible during plant operation using the strainer bypass line. Flow instrumentation is installed on the strainer bypass line (common to all 4 service water pumps). This path was determined to be the only path practical for flow measurement; however, it can only be used at refuel when heat load can be minimized to allow single pump operation.

2.1.2 Alternative Testing

The licensee proposes:

> Pump differential pressure and vibration will be recorded on a quarterly basis. These quarterly measurements will be analyzed and compared to reference values per OM-6. Due to the varying Service Water system conditions, an expanded allowable range will be used for evaluating differential pressure during quarterly testing. Past experience has proven these owner specified ranges still allow for early detection of pump degradation.

Each pump will be individually tested during every reactor refueling outage. Individual pump flow, differential pressure, and vibration will be recorded. Either pump flow or pump discharge pressure will be throttled to a reference value as close as practical to the value that each pump is expected to achieve during operation. For the condensate pumps (M2-6 A/B), the flow element on the 16-inch minimum flow line downstream of the Steam Jet Air Ejectors will be used to throttle to a known reference value to measure flow. For the condensate booster pumps (M2-7 A/B), the flow will be throttled to a known reference value and the suction flow will be measured using the flow element downstream of the steam packing exhauster. This testing will be performed when the pumps are known to be operating acceptably. The allowable percentage changes in measured values identified in OM-6, Table 3B, will be used to evaluate the condition of each pump tested.

2.1.3 Evaluation

The basis for relief addresses the quarterly versus refueling outage testing and the alternative testing addresses using an expanded allowable range for differential pressure during quarterly testing. The intent of inservice testing per OM-6 is to assess the operational readiness of pumps and to monitor for degrading conditions. The NRC indicated the importance of monitoring both differential pressure and flow rate to determine pump hydraulic performance in GL 89-04, Position 9, "Pump Testing Using Minimum-Flow Return Line With or Without Flow Measuring Devices." Based on the early construction of Millstone 1, design features for measuring individual pump flow to enable quarterly inservice testing were not provided for the service water pumps and the feedwater coolant injection (condensate) pumps.

Service Water Pumps: The only available instrumented flow path for testing the service water pumps is the strainer bypass line. Testing with flowrate measurement must be conducted during refueling outages when the plant heat loads are low enough to allow single pump operation. Therefore, based on design limitations, it is impractical to measure flow during testing performed quarterly. Individual pump testing is impractical during cold shutdown due to plant heat load considerations. The testing performed quarterly will evaluate the condition of the pumps based on differential pressure and vibration. Vibration data will provide information on the mechanical condition of the pumps, which may be indicative of degradating conditions prior to indications in the hydraulic parameters. The licensee indicates that the expanded range for differential pressure will "still allow for early detection of pump degradation." Expansion of the range during quarterly testing is necessary because the service water system conditions vary depending on plant heat load conditions. Additionally, the four service water pumps discharge into a common supply header, possibly having an impact on the discharge pressure of a single pump, depending on the number of pumps running when the measurement is taken. Degradation in the hydraulic conditions could be masked in this manner; however, by performing testing that conforms to the requirements of OM-6, other than the frequency, during refueling outages, the hydraulic conditions of the pumps can be monitored. Imposition of the requirements to

measure flowrate quarterly in accordance with OM-6 would be a burden on the licensee in that installation of flow instrumentation in the individual service water lines from the pumps to the common supply header could not be effected without major modifications to the piping system. The proposed testing quarterly monitors the mechanical condition of the pumps, and the hydraulic conditions to a more limited extent. The proposed testing dur' g refueling outages provides an assessment of the overall condition of the pumps. Therefore, granting relief is appropriate.

Feedwater Coolant Injection (Condensate) Pumps: The condensate pumps and condensate booster pumps operate in a normal mode during power operation to provide condensate to the suction of the reactor feedwater pumps. The 'A' and 'B' condensate pumps and condensate booster pumps also perform a safety-related function to inject coolant into the reactor vessel in the event of a design basis loss of coolant accident. Individual pump flowrate measurement is impractical during power operations because the flow element in the condensate line measures total condensate flow. During cold shutdown conditions, the condensate pumps operate to maintain reactor vessel level and the condensate booster pumps are electrically prohibited from operating for overpressurization protection of the reactor vessel; therefore, testing with flow measurement is impractical during cold shutdown. The inservice testing for these pumps will consist of quarterly testing which monitors differential pressure and vibration, and testing conducted during refueling outages which conforms to OM-6 requirements, other than frequency and flowrate instrument accuracy (see R-2 below). Vibration data will provide information on the mechanical condition of the pumps, which may be indicative of degradation conditions prior to indications in the hydraulic parameters. By performing testing that conforms to the requirements of OM-6, other than the frequency, during refueling outages, the hydraulic conditions of the pumps can be monitored. Imposition of the requirements to measure flowrate quarterly in accordance with OM-6 would be a burden on the licensee in that installation of flow instrumentation in the individual condensate lines from the pumps to the common line could not be effected without major modifications to the piping system. The proposed testing quarterly monitors the mechanical condition of the pumps, and the hydraulic conditions to a more limited extent. The proposed testing during refueling outages provides an assessment of the overall condition of the pumps. Therefore, granting relief is appropriate.

2.1.4 Conclusion

Relief is granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing in accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility.

2.2 Relief Request R-2

Relief from the requirements of OM-6, Section 4.6.1.1, for instrument accuracy of 2% for the flow measurement instrumentation for use in inservice testing the feedwater coolant injection pumps M2-6/7/10A and M2-6/7/10B, is requested.

2.2.1 Licensee's Basis for Relief

The licensee states:

> The flow measurement equipment configuration currently installed has analog indicators and does not allow for a loop accuracy of 2%. The current loop accuracy is between 3 - 5%. However, during the cycle 14 RFO [refueling outage], MP1 [Millstone Plant, Unit 1] is performing control room design reconstruction which will replace the feedwater instrumentation (FIS-2-1, FIS-2-2, FIS-2-3) with digital flow indicators with 0.25% accuracy which will increase the loop accuracy to less than 3%. This accuracy is not significantly outside the code limit of 2% and will provide repeatable test results to facilitate detection of pump degradation. MP1 is proposing to install similar flow instrumentation for the condensate and condensate booster pumps (FI-2-4A and 4B).

2.2.2 Alternative Testing

The licensee proposes:

> Use existing instrumentation with an accuracy of 3 - 5% until the digital equipment installation is completed during the cycle 15 RFO. Use upgraded flow measurement equipment with an accuracy of ≈ 2.9% once installed.

2.2.3 Evaluation

The intent of the Code requirements on instrument accuracy is to ensure that accurate test data is obtained that is representative of actual pump operating conditions so that a meaningful evaluation of pump performance can be made. The instrument accuracies specified in OM-6 are based on a percentage of full-scale for individual analog instruments and over the calibrated range for digital instruments. In cases where an instrumentation loop consisting of a combination of analog instruments is used, the accuracy should be interpreted to be the loop accuracy, which represents the accuracy of the final measured value obtained from the loop. As clarified in OM Code Interpretation (IN) 91-3, issued May 14, 1991, the accuracy requirements apply only to the calibration of the instruments, and that attributes such as orifice plate tolerances, tap locations, and process temperatures are not to be included in the determination of loop accuracy. The licensee should review the loop accuracy, or the calibrated range for the digital instruments, in consideration of this guidance and determine if relief is required.

An interim period of time is necessary for the licensee to determine if the loop accuracy is correctly stated, or if the accuracy stated in the relief request includes attributes associated with the instrument loop that are not subject to calibration (OM IN 91-3). Once this determination is performed, the relief request should be deleted, if appropriate, or revised to indicate the correct loop accuracy. If the accuracy remains 2.9%, the licensee should determine if meaningful results can be obtained, and if necessary, adjust the

acceptance criteria to account for the inaccuracies. This information should be included in the revised relief request, if necessary.

2.2.4 Conclusion

Relief cannot be granted based on the information provided. The licensee should continue testing in accordance with the inservice testing currently established for these pumps and address the instrumentation loop accuracy as discussed. The results of the determination should be provided to the NRC within 6 months of the date of this SE, either in a letter or in a revised relief request, depending on the results. This remains an open item.

2.3 Relief Request R-3

Relief from the instrument accuracy requirements (2%) of OM-6, Section 4.6.1.1, for the service water flow measurement, is requested.

2.3.1 Licensee's Basis for Relief

The licensee states:

> The required length of straight pipe without obstructions (approximately 10 diameters upstream and 5 diameters downstream) to obtain an accurate flow measurement and comply with OM-6, paragraph 4.6.1.1, is not available on individual lines on the suction or discharge side of each pump. Millstone is installing flow instrumentation on a common downstream header in the strainer bypass line. The accuracy of the flow measurement equipment cannot be verified to be within 2% using the annubar being installed. Expected accuracy is between 3 - 5%.

2.3.2 Alternative Testing

The licensee proposes no alternative testing. Instrumentation with an installed accuracy of 3 - 5% will be used for flow measurement.

2.3.3 Evaluation

The description of the modification appears to indicate that the accuracy of the annubar is included in the accuracy determination for the entire loop. The intent of the Code requirements on instrument accuracy is to ensure that accurate test data is obtained that is representative of actual pump operating conditions so that a meaningful evaluation of pump performance can be made. The instrument accuracies specified in OM-6 are based on a percentage of full-scale for individual analog instruments and over the calibrated range for digital instruments. In cases where an instrumentation loop consisting of a combination of analog instruments is used, the accuracy should be interpreted to be the loop accuracy, which represents the accuracy of the final measured value obtained from the loop. As clarified in OM Code Interpretation (IN) 91-3, issued May 14, 1991, the accuracy requirements apply only to the calibration of the instruments, and that attributes such as orifice plate tolerances, tap locations, and process temperatures are not to be included in

the determination of loop accuracy. The licensee should review the loop accuracy, or the calibrated range for the digital instruments, in consideration of this guidance and determine if relief is required.

Currently, the service water pumps, M4-7C/D, are covered under Relief Request R-1 (see Section 2.1 above) to test with flowrate measurement during refueling outages using the strainer bypass line flow instrumentation. It appears that R-3 applies to both the current testing and to the testing following modifications scheduled for 1994 (the modification schedule was provided in the licensee's submittal). Therefore, an interim period of time is necessary for the licensee to determine if the loop accuracy is correctly stated, or if the accuracy stated in the relief request includes attributes associated with the instrument loop that are not subject to calibration (OM IN 91-3). Once this determination is performed, the relief request should be deleted, if appropriate, or revised to indicate the correct loop accuracy. If the accuracy remains between 3% and 5%, the licensee should determine if meaningful results can be obtained, and if necessary, adjust the acceptance criteria tc account for the inaccuracies. This information should be included in the revised relief request, if necessary.

2.3.4 Conclusion

Relief cannot be granted based on the information provided. The licensee should continue testing in accordance with the inservice testing currently established for these pumps and address the instrumentation loop accuracy as discussed. The results of the determination should be provided to the NRC within 6 months of the date of this SE, either in a letter or in a revised relief request, depending on the results. This remains an open item.

2.4 Relief Request R-4

Relief from the instrument accuracy requirements (2%) of OM-6, Section 4.6.1.1, for the gas turbine fuel forwarding pumps and turbine building secondary closed cooling water pumps is requested.

2.4.1 Licensee's Basis for Relief

The licensee states:

> MP1 was not designed with the allowance to perform accurate pump flow measurement in many cases. This means that frequent piping bends, component interferences, etc., exist which reduce the effectiveness of installed flow instrumentation to an accuracy of as much as $\pm$ 5% of full scale. Until permanent flow instrumentation is installed, MP1 will use portable flow measurement equipment. The repeatability and accuracy of this equipment may not be within 2% accuracy.

2.4.2 Alternative Testing

The licensee proposes:

> Portable measurement instrumentation will be calibrated using a mockup to reflect the material and configuration to the extent practicable. Accuracy is expected to be within ± 5%.

2.4.3 Evaluation

Currently, no installed flow instrumentation is available for the subject pumps. The use of portable instrumentation is necessary to achieve flowrate measurement data during inservice testing until such time that the permanent flow instrumentation installation is completed during the 1996 refueling outage (the schedule for modifications was provided in the licensee's submittal). Temporary flow measurement devices can provide accurate and repeatable results; however, these results can be affected by the piping configuration. When an appropriate length of straight pipe is not available, as is the case at Millstone 1, the accuracy and repeatability will not be within the Code requirements. Therefore, it is impractical to conform with the requirements due to limitations of the design of these systems, and may be impractical following installation of permanent instrumentation unless the modification includes piping changes as well. Immediate imposition of the Code requirements would be a burden on the licensee in that a plant shutdown may result until flow instrumentation could be installed which conforms with the Code, or as described in a later relief request submittal. Additionally, with the current piping configuration, major modifications may be required to meet the requirements for accuracy.

Based on the impracticality of meeting the Code requirements without permanent flow instrumentation, interim relief is appropriate until the installation is complete. In the interim, the licensee should ensure that the temporary flow instrumentation is used in a manner that achieves the minimum inaccuracy (i.e., ensuring placement in the same location each test, locating the best run of piping for stable flow, etc.) in accordance with OM-6, Section 4.6.1.3, "Instrument Location."

2.4.4 Conclusion

Interim relief is granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing is accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility. The interim period expires upon installation of the permanent flow instrumentation during the 1996 refueling outage.

2.5 Relief Request R-5

Relief from the requirements of OM-6, Section 4.6.5, to measure flow using a rate or quantity meter installed in the pump test circuit, is requested for the diesel generator fuel forwarding pumps and the standby liquid control (SBLC) pumps.

2.5.1 Licensee's Basis for Relief

The licensee states:

> Diesel Generator Fuel Forwarding and the Standby Liquid Control systems have no installed flow instrumentation. A test tank (M8-57) is installed in the SBLC system which allows for the injection of demineralized water into the storage tank. During the operability test, the selected pump takes a suction from the test tank and discharges into the storage tank. The fuel forwarding pumps pump diesel fuel from the storage tank (M8-19) directly to the day tank (M8-30). Tank level is monitored over time to determine flowrate. The test results are compared to a previously established reference value in accordance with OM-6, Section 6.1.

2.5.2 Alternative Testing

The licensee proposes:

> Perform calculation using tank level change to determine flowrate during system quarterly operability surveillance test.

2.5.3 Evaluation

OM-6, Section 4.6.5, "Flow Rate Measurement," states the following: When measuring flow rate, use a rate or quantity meter installed in the pump test circuit. If a meter does not indicate the flow rate directly, the record shall include the method used to reduce the data. If the licensee determines that the measurement of tank level over the period of test performance meets the requirements for "a rate or quantity meter installed in the pump test circuit," and the test procedure includes the method used to reduce the data for calculation of flowrate, relief is not required. If these requirements cannot be met, the staff has determined that the use of a tank level to calculate flowrate is an acceptable alternative to the Code, provided the calculated results meet the accuracy requirements of OM-6, ensuring an acceptable level of quality and safety

2.5.4 Conclusion

The proposed alternative to the Code requirements is authorized pursuant to 10 CFR 50.55a(a)(3)(i) based on the alternative providing an acceptable level of quality and safety. If the licensee determines that the alternative meets the requirements of OM-6 Section 4.6.5, this relief request may be deleted, provided the method of reducing the data obtained from the level instrument(s) is included in the test procedure.

2.6 Relief Request R-6

Relief from the requirements of OM-6, Section 6.1, to evaluate deviations in test parameters using the limits given in Table 3 of OM-6, is requested for the diesel generator fuel forwarding pumps and the gas turbine fuel forwarding

pumps As an alternative for these low flow, low head pumps, the licensee proposes to use whole units rather than fractional units based on percentages of the reference values.

2.6.1 Licensee's Basis for Relief

The licensee states:

> Both systems are fixed resistance system; therefore, flow and pressure are measured and compared to their respective reference values. Due to the small absolute value of these numbers, the code allowed ranges for determining a component as being either in alert or required action are a fractional value of 1 psi or 1 gpm. Deviations of less that 1 unit of measure are not necessarily indicative of pump degradation and could result in unnecessarily declaring safety systems inoperable. Millstone proposes to use the following more appropriate ranges:
>
> Low Alert: -2 units (psi or gpm) from reference value
>
> Low Required Action: -3 units (psi or gpm) from reference value
>
> The upper required action range will remain the same.
>
> For example, a pump with a reference flow of 30 gpm would have an alert range of $\geq$ 27 gpm to $<$ 28 gpm rather than a Code range of $\geq$ 27.9 gpm to $<$ 28.5 gpm. Past experience has proven these owner specified ranges still allow for early detection of pump degradation.

2.6.2 Alternative Testing

The licensee proposes:

> Use the following owner specified ranges for determining pump operability:
>
> Low Alert Range: reference value (Q_r or ΔP) -2 units (psi or gpm)
>
> Low Required Action: reference value (Q_r or ΔP) -3 units (psi or gpm)

2.6.3 Evaluation

The Code requirements for establishing alert and required action ranges are to ensure that increased testing or required corrective actions are taken when pump test results indicate degrading performance. Generally, a pump will not indicate improved performance unless modified; therefore, the upper limits are established to indicate that a problem in the test method or test instrumentation exists, rather than a degrading condition in the pump itself. For pumps which have a narrow margin of acceptable values, such as the subject pumps, a change of less than 1 unit of flow or differential pressure may not be indicative of an actual problem.

The licensee has provided no actual values, but rather used 30 gpm as an example. While the rounding of values to the nearest whole number would provide ease in calculations and in reading instruments, if the Code "alert range" requirement is within -1 gpm or psi, a value of -2 gpm or psi may not, necessarily, be adequate for monitoring these pumps for degradation. More details will be required for the staff to make a determination as to the acceptability of the proposed alternative.

2.6.4 Conclusion

Relief cannot be granted based on the information provided. The licensee should review the basis for Relief Request R-6 and resubmit a revised relief request within 6 months from the date of this SE, if it is determined that relief is necessary. The basis for relief should include the actual values of the most recent reference values for each pump. Justification that past experience indicates that the alternative values for the alert and required action limits allows for monitoring degrading conditions must also be included. This remains an open item.

2.7 Relief Request R-7

For the turbine building secondary closed cooling water (TBSCCW) pumps, relief from the requirements of OM-6, Section 5.2, to vary the system resistance until either the flowrate or differential pressure equals the reference value and compare the other, is requested. Alternatively, the licensee proposes to utilize a reference curve to be developed during RFO 14.

2.7.1 Licensee's Basis for Relief

The licensee states:

> This system is a variable resistance system that cannot be throttled during normal operations to a specific reference value. One pump is normally operating with the flowrate varying according to the heat load demand of the components being supplied cooling water. Individual flow instrumentation does not exist for this system. MP1 will install a flow element in the common line at the outlet of the TBSCCW heat exchanger during the cycle 15 RFO.

2.7.2 Alternative Testing

The licensee proposes:

> Perform quarterly vibration and differential pressure measurements. Develop a reference curve from at least 5 points using portable flow instrumentation during the cycle 14 RFO. Perform quarterly flow measurements in the as-found condition, evaluated against the reference curve, starting with cycle 15. Use portable instrumentation until permanent instrumentation is installed during the cycle 15 RFO. Evaluate all measured parameters using OM-6, Table 3b ranges.

2.7.3 Evaluation

The staff has determined that when the flowrate varies according to heat load demand, making the requirements of OM-6 Section 5.2(b) impractical for the subject pumps, the use of a pump curve can be an acceptable, though not equivalent, method of monitoring for degradation. The acceptability of using pump curves is with the following provisions:

1) Curves are developed, or manufacturer's pump curves are validated, when the pumps are known to be operating acceptably.

2) The reference points used to develop or validate the curve are measured using instruments at least as accurate as required by the Code (unless specific relief is approved).

3) Curves are based on an adequate number of points, with a minimum of five.

4) Points are beyond the "flat" portion (low flow rates) of the curves in a range which includes or is as close as practicable to design basis flow rates.

5) Acceptance criteria based on the curves does not conflict with Technical Specifications or Facility Safety Analysis Report operability criteria, for flow rate and differential pressure, for the affected pumps.

6) If vibration levels vary significantly over the range of pump conditions, a method for assigning appropriate vibration acceptance criteria should be developed for regions of the pump curve.

7) When the reference curve may have been affected by repair, replacement, or routine service, a new reference curve shall be determined or the previous curve revalidated by an inservice test.

Imposition of the Code requirements would be a burden on the licensee in that the system, as operating during normal operations, would have to be realigned to perform testing in accordance with the Code. This realignment would affect the heat load and potentially impact the operability of various components which are cooled by the TBSCCW system. Though the use of pump curves is not considered "equivalent" to the Code required testing, it does provide an adequate level of assurance of operational readiness of the pumps.

Additionally, if more accurate instrumentation is installed or becomes available, the applicable curve(s) must be reverified.

2.7.4 Conclusion

Relief is granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing in accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility. This relief is granted with the provision that the

licensee ensure the pump curve testing is implemented in accordance with the seven elements described above.

2.8 Relief Request R-8

Relief from the full-scale range requirements (not greater than 3 times the reference value) of OM-6, Section 4.6.1.2(a), for the pressure gauges installed for the low pressure coolant injection pumps, is requested.

2.8.1 Licensee's Basis for Relief

The licensee states:

> The different system operating requirements (higher pressures under accident conditions, pump pressure when running at or near shutoff) preclude installing and using gauges that meet the OM-6 range requirement of not greater than 3 times the reference value. The existing pressure gauges (0-400, 0-30) are the lowest range practical for the system while avoiding the potential damage from overranging the gauge.
>
> Gauges that exceed the range requirement but are calibrated to a tighter tolerance (i.e., ± 1% accuracy) can provide as accurate and repeatable test data as those that strictly comply to code requirements (i.e., 3 times reference value, ± 2% accuracy). For example, a 0-300 psig gauge with 2% accuracy has a potential error of ± 6 psig, whereas a 0-400 psig gauge with 1% accuracy has a potential error of only ± 4 psig.

2.8.2 Alternative Testing

The licensee proposes:

> Use gauges with the current full scale ranges (0-400 psig, 0-30 psig) which are the lowest ranges practical for the system while avoiding the potential for damage from overranging. The gauges will be calibrated to a minimum accuracy of ± 1% of full scale.

2.8.3 Evaluation

The intent of the OM-6 requirements for full-scale range and accuracy are to ensure repeatable results for inservice tests of pumps. The licensee's alternative proposal meets the intent of OM-6 by narrowing the instrument accuracy to offset the increased full-scale range. Therefore, the alternative is acceptable for implementation.

2.8.4 Conclusion

The proposed alternative to the Code requirements is authorized pursuant to 10 CFR 50.55a(a)(3)(i) based on the alternative providing an acceptable level of quality and safety.

3.0 VALVE RELIEF REQUESTS

3.1 Relief Request V-1

For emergency service water (ESW) valve 1-LPC-4A/B, the licensee requests relief from the requirements of OM-10 to measure stroke time and to verify valve remote position indicators.

3.1.2 Licensee's Basis for Relief

The licensee states:

> Full stroke timing and position indicator check cannot be performed because of the following:
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> 1. The valve will only open if an ESW pump is running.
> 2. Full opening of the valve will cause pump runout, even with 2 pumps operating.
> 3. If the circuitry is defeated to permit opening the valve without a pump running, keep-fill pressure will be lost and the system partially drained.

3.1.3 Alternative Testing

The licensee proposes:

> In lieu of full stroke testing, the valve will be cycled from closed to a throttled position to obtain a flow of 2,500 gpm, then throttled open to obtain a flow of 5,000 gpm, and then closed. By this manipulation of the valve from the Control Room, the inability to establish and adequately maintain the above flow rates would indicate the need for corrective action.
>
> Position indication is verified each surveillance by observing the change in flow as the valve is positioned from closed (green light) to mid-position (red and green light) and back to closed (green light, no flow).
>
> Additionally, these valves are part of the MOV [motor-operated valve] testing program to comply with Generic Letter 89-10 and will be VOTES tested on a schedule determined by that program.

3.1.4 Evaluation

The controlling function of these valves is excluded from the inservice testing requirements of OM-10 by Section 1.2(a)(2). The safety function to close, however, requires these valves to be tested to verify the capability of the valves to close and to monitor for degradation. Though the valves' full-open indication cannot be verified, the mid-position verification based on flow ensures that the closed indication is accurate and, at a minimum, that the open indicating light becomes lit when flow is established. This does

provide assurance that the valve has opened. Based on the safety function of the valves, the verification provides assurance of the operational readiness of the position indication for these valves. Imposition on the licensee of verifying full-open position indication would be a burden in that modifications to the piping system (installation of a test isolation valve) and to the valve circuitry would be required, with only a minor benefit achieved from the modification. The current design configuration makes the verification of the open indication impractical. However, the additional information gained by fully opening the valves does not appear to provide a benefit to safety. Therefore, relief is appropriate for implementing the position indication as proposed.

While VOTES testing (motor-operated valve diagnostic testing system) of the valve assemblies provides significant information about the condition of the valve and operator, including stroke-timing, the frequency of testing is not in accordance with the inservice testing requirements of OM-10. Stroke-timing of power-operated valves is intended to monitor for degradation; however, the periodic verification performed under the motor-operated valve program established as a result of NRC Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance, provides an adequate alternative method for monitoring these valves for degrading conditions, including stroke-timing. Because the testing is more extensive than simply stroke-timing, the frequency of the diagnostic testing is offset by the additional information obtained on the condition of the valves. Therefore, the proposed alternative provides an acceptable level of quality and safety.

3.1.4 Conclusion

The alternative testing is authorized pursuant to 10 CFR 50.55a(a)(3)(i) based on the acceptable level of quality and safety for monitoring these valves for degrading conditions.

3.2 Relief Request V-2

The licensee has requested relief from the requirements of OM-10 Section 4.2.1.4 to measure the stroke time of the standby gas treatment power operated valves, 1-SG-1A/B, 1-SG-2A/B, 1-SG-4A/B. These valves open to allow flow through the system.

3.2.1 Licensee's Basis for Relief

The licensee states:

> These valves do not have individual control switches. The valves open simultaneously upon receipt of an auto open signal from fan start circuitry. The valves and operators are of the same design, size, and manufacturer.

3.2.2 Alternative Testing

The licensee proposes:

> In lieu of establishing a reference value and acceptance ranges for each valve, a maximum stroke time for the group (i.e., 1A, 2A, 4A) to open will be assigned. Therefore, any valve whose cycle time is outside this limiting value can be identified and corrective action taken.

3.2.3 Evaluation

The relief request indicates that testing the valves and measuring individual stroke times is impractical with the current design and testing methods. Though the relief request does not include the estimated stroke time differences between the valves, it implies that the valves should stroke in approximately the same length of time, thereby, making it possible to identify any valve individually which does not stroke in the assigned limiting time. The proposed alternative can provide a means to monitor the valves as a group, provided that all other requirements of OM-10 associated with stroke time measurement, including testing following repair or replacement, are met. To impose the Code requirements in order to measure stroke time of the valves individually, the licensee would be required to modify the control circuitry of the system and/or develop a measurement method employing valve diagnostic equipment, resulting in a burden. If, at a later time, the licensee implements a diagnostic method of monitoring these valves for degradation, including stroke time measurement, this relief request should be reviewed for continued reliance. The licensee must ensure that the implementing procedures for measurement of the stroke time of the group of valves includes a limiting value, a means of identification of individual valves which exceed this value, and requirements for corrective actions for those valves that exceed the limiting value.

3.2.4 Conclusion

Relief is granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing in accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility. The granting of this relief is with the following provisions: (1) all other applicable requirements for stroke time measurement are incorporated in the inservice testing program for the groups of valves; (2) implementing procedures include the limiting value, a means of identifying individual valves which exceed this value, and requirements for appropriate corrective actions for these valves; and (3) if the licensee implements a diagnostic method that allows for individual valve stroke time, this relief request is to be reviewed for continued reliance.

3.3 Relief Request V-3

The licensee has requested relief from the requirements of OM-10, Section 4.3.2.1, for exercise frequency, and Section 4.3.2.4, for obturator movement verification, for the main steam automatic depressurization system (ADS) check

valves (1-AC-164A through F and 1-AC-165A through F) and atmospheric control (AC) check valves (1-AC-48 and 1-AC-49). Both groups of valves function in the closed position to (1) ADS - maintain ADS accumulator pressurized, and (2) AC - prevent loss of N_2 inventory on a loss of drywell N_2 compressor.

3.3.1 Licensee's Basis for Relief

The licensee states:

> The main steam safety/relief valves are provided with an air operator to provide remote valve operation. The check valves are installed in the air supply line to each safety/relief valve. These valves provide a path to supply a backup supply of air (nitrogen) through an accumulator during a loss of normal air supply. Valves 1-AC-164 and 1-AC-165 are 1-inch and installed in series. There are no test connections to allow individually testing those valves. These valves are located in containment and are not accessible during operation or cold shutdown when the drywell atmosphere is inerted.
>
> The atmosphere control check valves prevent reverse flow from the safety-related drywell nitrogen backup supply system to the non-safety drywell compressor. There are no test connections to allow individual valve testing. Exercising these valves requires securing both drywell N_2 compressors and bleeding down the header. The N_2 compressors are required during operation to maintain a 1 psi differential between the torus and the drywell. Also, the potential drop in header pressure from check valve and system leakage may result in an inadvertent MSIV [main steam isolation valve] closure and subsequent reactor scram.

3.3.2 Alternative Testing

The licensee proposes:

> Test these valves in pairs. Reverse flow exercise check valve 1-AC-48 and 1-AC-49 at cold shutdown. Perform a leak test on all valves during each refueling outage. When a component fails to meet its acceptance criteria, both check valves will be declared inoperable and repaired.

3.3.3 Evaluation

The proposed test frequency is in accordance with the requirements of OM-10, Section 4.3.2.2, where exercising of check valves is not practical during power operations or cold shutdown. When the design of check valves is limited such that individual verification of closure and/or leak tightness is impractical, for series valves which are not both required to meet safety analysis assumptions, verification of closure and/or leak tightness of the pair is acceptable to ensure the safety function is maintained. Controls must ensure that if excessive leakage is identified for a pair of valves, and/or reverse flow closure cannot be verified for the pair, both valves are to be repaired or replaced. Imposition of the Code requirements would be a burden

on the licensee in that modifications would be required to either add test instrumentation or remove the internals of one of the two series valves. Provided both valves are not required by the safety analysis, the proposed testing provides an adequate level of assurance of the operational readiness of the series valves.

3.3.4 Conclusion

Relief is granted pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing in accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility. The granting of this relief is with the following provisions: (1) if acceptance criteria for the testing is not met, both valves in the affected pair will be repaired or replaced, and (2) both valves in each pair are not required for safety analysis assumptions.

3.4 Relief Request V-4

The requested relief applies to the control rod drive hydraulic scram valves. The licensee proposes to test these valves in accordance with GL 89-04, Position 7, "Testing Individual Control Rod Scram Valves in Boiling Water Reactors (BWRs)." The staff has determined that Position 7 is an acceptable alternative to the Code requirements provided the testing is performed in accordance with the guidance delineated in the position (reference GL 89-04, page 5). Therefore, this relief request is approved by GL 89-04 and no further evaluation is required. The implementation of the guidance is subject to NRC inspection.

3.5 Relief Request V-5

The licensee has requested relief from the requirements of OM-10, Section 4.2.1.4, for measuring stroke time of the gas turbine starting air and gas turbine fuel forwarding power operated valves. These valves have no individual stroke time indication and stroke in less than 1 second. Proper operation will be verified by proper operation of the gas turbine during the normal monthly operability surveillance test required by Technical Specifications. These valves are non-Code Class components, and are not within the required scope of 10 CFR 50.55a. Therefore, NRC approval of the alternative testing method is not required.

3.6 Relief Request V-6

The licensee has requested relief from the requirements of OM-10, Section 4.2.1.4, for measuring stroke time of the diesel air start power operated valves. These valves have no individual stroke time indication. Proper operation will be verified by normal starting of the diesel during the normal operability surveillance test required by Technical Specifications. These valves are non-Code Class components, and are not within the required scope of 10 CFR 50.55a. Therefore, NRC approval of the alternative testing method is not required.

3.7 Relief Request V-7

The licensee has requested relief from the requirements of OM-10, Section 4.3.2.1, to exercise check valves nominally every 3 months. Diesel generator fuel forwarding check valve 1-FFDG-14 opens to allow diesel fuel oil to the injection pump and 1-FFDG-15 closes to prevent diversion of fuel oil flow. There is no means of verifying full stroke of the check valves. Proper operation will be verified by the starting and acceptable operation of the diesel generator during the normal monthly operability surveillance test required by Technical Specifications. These valves are non-Code Class components, and are not within the required scope of 10 CFR 50.55a. Therefore, NRC approval of the alternative testing method is not required.

3.8 Relief Request V-8

Relief from the exercising requirements of OM-10, Section 4.3.2.1, for the Class 1, Category A/C, feedwater coolant injection (FWCI) check valves 1-FW-9A/B and 1-FW-10A/B is requested. These valves open to allow flow to the reactor and close to provide containment isolation.

3.8.1 Licensee's Basis for Relief

The licensee states:

> These valves are simple checks with no position indication or assist devices. They remain open during normal power operation supplying feedwater to the reactor vessel. These valves are also open during cold shutdown because the condensate/feedwater system (using one condensate pump) is used to maintain reactor vessel level. Exercising these valves requires isolation of all feedwater flow to the reactor vessel, which cannot be done during power operation or cold shutdown.

3.8.2 Alternative Testing

The licensee proposes:

> Verify that the check valves are open by observation of reactor vessel level changes and feedwater flow instrumentation. Verify that the valves are closed at refuel outages during performance of Appendix J type C Local Leakrate Testing. Additionally, these valves are disassembled, inspection, and manually exercised under the Check Valve Inspection Program at a frequency determined per the recommendations of INPO SOER 86-03.

3.8.3 Evaluation

OM-10, Section 4.2.1.5, "Valves in Regular Use," stipulates that valves which operate in the course of plant operation need not be further exercised, with certain requirements for recording data. OM-10, Section 4.3.2.2, "Exercising Requirements," allows testing to be deferred to refueling outages when it is

not practical to perform during normal operations or cold shutdown conditions. The licensee's proposed alternative indicates that the requirements of OM-10 can be met without relief. Therefore, the licensee should ensure that the requirements of Sections 4.2.1.5 and 4.3.2.2 are incorporated into the testing and delete this relief request. A cold shutdown/refueling outage justification for closure verification is required.

3.8.4 Conclusion

No further NRC action is required.

3.9 Relief Request V-9

Relief from the stroke time measure requirements of OM-10, Section 4.2.1.4 is requested for the main steam relief valves, 1-MS-3A through F, which are Category B/C valves that function as power operated relief valves to rapidly depressurize the primary system.

3.9.1 Licensee's Basis for Relief

The licensee states:

> These power operated relief valves are rapid acting valves and they do not have stem or disk position indicators. The open light indication is actuated by pressure sensors located in the relief valve discharge piping and does not reflect valve full stroke open position.

3.9.2 Alternative Testing

The licensee proposes:

> These valves are exercise tested at reactor refueling outages during plant startup (reference CSJ-16). Light indication is verified to actuate during this testing. These valves are also tested in accordance with ASME/ANSI OM-1-1987 and Technical Specification 4.6.E.1.

3.9.3 Evaluation

The relief request does not clarify whether the testing performed at reactor refueling outages is in accordance with the requirements of Section 4.2.1.4. As Category B/C valves, the licensee has determined that stroke time testing of the power operation function of these valves is required. Additionally, the relieving function requires that testing in accordance with OM-1, Section 3.3.1.1, "Main Steam Pressure Relief Valves With Auxiliary Actuating Devices," be performed. The stroke time measurement for power operated valves is intended to provide a method of monitoring the valves for degradation. The alternative testing does not describe a method to meet this intent if stroke time measurement is not performed. However, testing performed in accordance with OM-1, Section 3.3.1.1 may provide, or may be enhanced to provide, a means of monitoring the valves for degradation. The licensee should review the purpose of this relief request and clarify what relief is required, provide adequate justification of the impracticality of performing testing in accordance with the Code, and describe the alternative testing in detail, including the method to monitor these valves for degrading conditions.

3.9.4 Conclusion

Relief cannot be granted based on the information provided. The revised relief request is to be submitted within 6 months of the date of this SE. This remains an open item.

3.10 Relief Request V-10

For reactor water cleanup (RWCU) check valve 1-CU-29 and station air check valves 1-SA-344 and 345 which close to provide containment isolation, relief from the testing requirements of OM-10, Section 4.2.2.2, "Containment Isolation Valves," and Section 4.3.2.1, "Exercising Requirements," is requested.

3.10.1 Licensee's Basis for Relief

The licensee states:

> Check valve 1-CU-29 is the inboard containment isolation valve on the return of the RWCU flow to the reactor vessel. MOV 1-SA-344 is the outboard containment isolation valve on the station air supply header to the drywell. Check valve 1-SA-345 is the inboard containment isolation valve. Currently, there are no test connections available to implement an Appendix J test and verify leak tightness and valve closure. Interim relief is requested until the cycle 15 RFO when necessary modifications can be made.

3.10.2 Alternative Testing

The licensee proposes:

> In the interim, as required, the station air headers inside (downstream of 1-SA-345) and outside (upstream of 1-SA-344) containment and the RWCU system upstream of valves 1-CU-28 and 1-CU-29 will be vented during the Appendix J Type "A" test.

3.10.3 Evaluation

The licensee performed a review of the categorization of all containment isolation valves in response to Anomaly Item 4.3.6 from the January 8, 1992, SE. This review resulted in the three subject valves being categorized as "A/C" and subject to Appendix J local leak rate testing. While interim relief from the Code requirements is appropriate due to the impracticality of performing the testing until modifications can be completed, the licensee should determine if an exemption from 10 CFR 50, Appendix J, is required. The granting of this relief relates only to the requirements of 10 CFR 50.55a. Imposition of the Code requirements in the short-term would be a burden in that an accelerated schedule for the modifications would result, potentially delaying startup from the next refueling outage, 14 RFO. The proposed alternative is acceptable if an integrated leak rate test (Appendix J Type "A" Test) is scheduled for RFO 14, as implied in the alternative testing description. If an integrated leak rate test is not scheduled for RFO 14, the

licensee should propose an alternative that challenges the leak tight integrity of these valves for performance during RFO 14, or otherwise revise the modification schedule for completion during RFO 14.

3.10.4 Conclusion

Relief is granted for an interim period until RFO 15 (1996) pursuant to 10 CFR 50.55a(f)(6)(i) based on the impracticality of performing testing in accordance with Code requirements, and in consideration of the burden on the licensee if the Code requirements were imposed on the facility. The granting of this relief is subject to the performance of an integrated leak test during RFO 14.

3.11 Relief Request V-11

This relief request identifies the check valves for which testing is impractical due to the lack of positive means to ensure full stroke exercising in the open or closed direction. The licensee indicates that a disassembly and inspection program will be implemented for these valves in accordance with OM-10, Section 4.3.2.4(c), based on a sampling frequency as discussed in GL 89-04, Position 2. Because the implementation of a sampling program has been determined to be acceptable per GL 89-04, provided the guidance delineated in Position 2 is followed, no further evaluation is required. If a nonintrusive testing method is determined to provide a practical method of testing any or all of the listed check valves, the relief request no longer applies to these valves.

For the keep fill check valves in series with no intermediate test connections, if the licensee can perform a reverse flow test of the series valves, and the safety analysis does not require both valves to meet design basis assumptions, disassembly and inspection may not be required for verification of the closure capability of the individual valves; however, a separate relief request would be required and a method to verify opening of these valves would need to be developed. Verification that the keep-fill system is maintaining the piping filled may be acceptable for the valve opening function.

3.12 Relief Request V-12

For reactor recirculation check valves 1-RR-111A/B which close to provide containment isolation, relief from the testing requirements of OM-10, Section 4.2.2.2, "Containment Isolation Valves," and Section 4.3.2.1, "Exercising Requirements," is requested.

3.12.1 Licensee's Basis for Relief

The licensee states:

> Check valves 1-RR-111A/B are the inboard containment isolation valves on the reactor recirculation pump seal flush line. Currently, there are no test connections available to implement an Appendix J test and verify leak tightness and valve closure. Interim relief is requested until the cycle 15 RFO when necessary modifications can be made.

3.12.2 Alternative Testing

The licensee proposes no alternative testing.

3.12.3 Evaluation

The licensee performed a review of the categorization of all containment isolation valves in response to Anomaly Item 4.3.6 from the January 8, 1992, SE. This review resulted in the two subject valves being categorized as "A/C" and subject to Appendix J local leak rate testing. While interim relief from the Code requirements is appropriate due to the impracticality of performing the testing until modifications can be completed, the licensee should determine if an exemption from 10 CFR 50, Appendix J, is required. The granting of this relief relates only to the requirements of 10 CFR 50.55a. Imposition of the Code requirements in the short-term would be a burden in that an accelerated schedule for the modifications would result, potentially delaying startup from the next refueling outage, 14 RFO. However, before relief can be determined acceptable, the licensee must determine a test to conduct during RFO 14 (1994) which provides a means of assessing the leak tight integrity of these valves in the interim, or modify the valves during RFO 14.

3.12.4 Conclusion

Interim relief is granted pursuant to 10 CFR 50.55a(f)(6)(i). However, the licensee must submit a revised relief request within 6 months of the date of this SE, which describes an alternative means of assessing the condition of these valves for accomplishing their function to provide leak tight closure for containment isolation. Otherwise, the licensee must evaluate completing the modifications during RFO 14 rather than RFO 15.

3.13 Relief Request V-13

The relief applies to non-Code Class gas turbine fuel forwarding check valves and Code Class 3 turbine building secondary closed cooling water check valves which perform a safety function in the open direction. The valves will be subject to a disassembly and inspection program as an interim alternative to testing until RFO 14 (1994) when testing will be accomplished using portable flow instrumentation, with permanent flow instrumentation modifications scheduled for RFO 15 (1996). The disassembly and inspection activities are approved per GL 89-04, Position 2, provided the guidance delineated in Position 2 is followed, and no further NRC evaluation is required. Implementation is subject to NRC inspection. If non-intrusive techniques are available for RFO 14, testing should be performed in lieu of disassembly and inspection.

3.14 Relief Request V-14

The licensee requests relief from the exercise requirements for Category A/C check valves 1-LP-11A/B in the low pressure coolant injection (LPCI) system which open to allow flow and close to provide reactor coolant pressure boundary integrity. The relief is applicable only to the opening function of

the valves. The licensee intends to implement a disassembly and inspection program, along with part-stroke exercising, to verify the capability of the valves to open. Nonintrusive testing techniques are currently being evaluated which could be utilized during part-stroke testing to meet the requirements for full-stroke testing. Additionally, modifications to the valves' air operator mechanisms, which are no longer in use, are being considered. If such methods are implemented, this relief request will be deleted. The current alternative is approved per GL 89-04, Position 2, provided the guidance delineated in Position 2 is followed, and no further NRC evaluation is required. Implementation is subject to NRC inspection.

4.0 SAFE SHUTDOWN

The licensee has identified that Millstone 1 was licensed with hot shutdown being the safe shutdown condition of the plant, and as a result of the inservice testing bases document review, has removed components from the program which are required for achieving and maintaining cold shutdown. In discussions between NRC and ASME Code committee members, the NRC had identified to the committee members that a number of early plants were licensed to operate with a "safe" shutdown condition of hot standby or hot shutdown, and were not required to achieve cold shutdown following design bases accidents. For such plants, components and systems necessary to achieve cold shutdown may not, therefore, be safety-related and/or subject to quality assurance requirements. These components are not credited to achieve "safe" shutdown. The ASME Code committee members have agreed to revise the scope of the OM Codes and Standards to "safe" shutdown rather than "cold" shutdown in recognition of this apparent conflict for plants such as Millstone 1. The licensee should ensure that the scope of the inservice testing program includes all safety-related ASME Code Class components which are credited in the safety analysis.

5.0 CONCLUSION

The staff concludes that the relief requests as evaluated and modified by this SE will provide reasonable assurance of the operational readiness of the pumps and valves to perform their safety-related functions, provided the licensee makes the applicable modifications described in the relief requests during refueling outages RFO 14 (1994) and RFO 15 (1996). The staff has determined that granting relief pursuant to 10 CFR 50.55a(f)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

For certain items, the staff has requested the licensee to perform additional review and to address the related issues within 6 months from the date of this SE. These items are as follows: Item 4.2.10 of Table 1, and Sections 2.2,

2.3, 2.6, 3.9, and 3.12, of this SE. Other sections may include actions the licensee is to take to address provisions in the granting of relief. These provisions should be incorporated into the inservice testing program within 6 months from the date of this SE unless otherwise noted in the SE.

Principal Contributor: P. Campbell

Date: February 18, 1993

Table 1
Table of Anomalies and Action Items in NRC Safety Evaluation Dated January 8, 1992
Millstone Nuclear Power Station, Unit 1
Northeast Utilities Response Dated October 30, 1992

Anomaly/Action Item	Description of Item in NRC SE Dated January 8, 1992	Description of Actions Taken to Address Items as Described in October 30, 1992, Response	Status of Item and Remaining Action
4.1.1 General	The licensee had submitted the previous program for inservice testing of valves in accordance with the requirements of OM-10, Inservice Testing of Valves in Light-Water Reactor Power Plants which had not yet been approved for implementation by the NRC. This item indicated that the NRC review and evaluation of relief requests had been performed in accordance with the requirements of the 1986 Edition of ASME Section XI, Subsection IWV. [By rulemaking effective September 8, 1992, the staff incorporated the 1989 Edition of ASME Section XI, which references OM-10 for the requirements of inservice testing of valves, with a modification related to containment isolation valves.] The pump testing had been developed using OM-6, Inservice Testing of Pumps in Light-Water Reactor Power Plants. [OM-6 had been approved by NRC in Revision 8 (November 1990) of Regulatory Guide 1.147, Inservice Inspection Code Case Acceptability ASME Section XI Division 1.] It was recommended that the licensee review the references to Section XI, IWV, and OM-6, included in the evaluation sections of the SE, to ensure the references were in accordance with the Millstone IST Program, and further, to include the applicable references in the relief requests when revised.	The licensee has revised the inservice testing program to incorporate the recent rulemaking effective September 8, 1992. The relief requests and cold shutdown/refueling outage justifications have been revised to include the appropriate references to the OM-6 and OM-10 requirements in the "TEST REQUIREMENT" section.	No further action is required.

Anomaly/Action Item	Description of Item in NRC SE Dated January 8, 1992	Description of Actions Taken to Address Items as Described in October 30, 1992, Response	Status of Item and Remaining Action
4.1.2 General	The IST program included a number of relief requests for lack of installed flow instrumentation. These relief requests related to both pump and valve testing. The NRC's position is that the hydraulic performance of pumps can be adequately monitored by measuring flow and differential pressure, or discharge pressure for positive displacement pumps and, that an acceptable test for full-stroke exercising check valves is to pass accident flow rate through the valves, requiring a known flow rate (reference GL 89-04, Positions 1 and 9). The lack of flow measurement was a concern. The licensee was requested to review the issue and provide a schedule for completion of reviews in the Integrated Safety Assessment Program related to flow instrumentation.	The licensee provided a schedule for review and/or installation of flow instrumentation in a submittal dated May 19, 1992. Relief Requests R-1 through R-5 summarize the review of flow instrumentation requirements.	Relief Requests R-1 through R-5 are evaluated in the current SE. Refer to Sections 2.1 and 2.5.
4.1.3 General	This anomaly identified that the inservice testing program indicated that valve exercising during cold shutdown would commence within 48 hours of achieving cold shutdown and continue until all cold shutdown tested valves have been tested or until the plant is ready to startup. The anomaly indicated that this position was consistent with OM-10 which had not, at the time the SE was issued, been endorsed by the NRC in 10 CFR 50.55a. Relief was required to implement this position.	The Millstone-1 IST Program, Revision 5, was developed using OM-10 for valves testing. Based on the rulemaking effective September 8, 1992, and the use of OM-10 to revise the valve inservice testing program, relief to implement the cold shutdown scheduling requirements is no longer required.	No further action is required.

Anomaly/Action Item	Description of Item in NRC SE Dated January 8, 1992	Description of Actions Taken to Address Items as Described in October 30, 1992, Response	Status of Item and Remaining Action
4.1.4 General	This anomaly noted that a number of passive valves were listed in the Millstone-1 IST valve list. The licensee was requested to include a description in the IST program describing the method(s) utilized to verify these passive valves are maintained in the correct position.	The licensee responded that passive valves, by definition, are not required to change position to perform their safety function, and that administrative controls are in place to control system valve alignment. The details of how these administrative controls are accomplished were determined not to be acceptable for inclusion in the IST program document. However, the licensee indicates that position indication of these valves is verified in accordance with the requirements of OM-10, Section 4.1, "Valve Position Verification," and Section 6.1.5, "Position Indication (PI) Verification Testing," of the IST Program, as appropriate.	The administrative controls need not be included in the IST Program. These are, however, subject to NRC inspection. No further action is required.
4.2.1 Relief Requests R-6, R-12, R-14, and R-17	This anomaly addressed pump Relief Requests R-6, R-12, R-14, and R-17. These relief requests discussed the impracticality of varying the system resistance until the flow rate equals the reference value and measuring pressure, or varying the flow rate until the pressure equals the reference value and measuring flow rate. The SE concluded that because flow instrumentation was not provided for the affected pumps, as discussed in separate relief requests, these additional relief requests were not necessary. Interim relief was granted for the separate relief requests in order to provide a period of time for the licensee to evaluate the installation of flow instrumentation. For R-6, R-12, R-14, and R-17, the SE indicated that these relief requests were not applicable at the current time based on the flow instrumentation relief requests.	These relief requests have been replaced, where applicable, by revised Relief Requests R-1 and R-7.	The revised relief requests are evaluated in the current SE. Refer to Sections 2.1 and 2.7.

Anomaly/Action Item	Description of Item in NRC SE Dated January 8, 1992	Description of Actions Taken to Address Items as Described in October 30, 1992, Response	Status of Item and Remaining Action
4.2.2 Relief Request R-1	Relief from the requirements of OM-6, Section 4.6.4, for measuring pump vibration, for various pumps, in two orthogonal directions was denied based on insufficient justification that the requirements were either impractical or presented a burden without a compensating quality or safety benefit. The licensee was requested to review the need for this relief in relation to specific pumps, and if cases were identified which necessitate relief, individual relief requests were to be submitted.	This relief request has been withdrawn. Performance of vibration measurement will be in accordance with the requirements of OM-6.	No further action is required.
4.2.3 Relief Request R-2	Interim relief was granted for the lack of flow instrumentation for quarterly testing of the condensate pumps. The licensee was requested to investigate and evaluate methods to individually measure flow during quarterly testing of each of these three pumps.	Quarterly measurement of individual condensate pump flow has been investigated. The results are documented in Revision 5, Relief Request R-1. Differential pressure and vibration will be monitored quarterly and complete testing in accordance with OM-6, including individual pump flow rates, will be performed during each refueling outage. This is similar to GL 89-04, Position 9, "Pump Testing Using Minimum-Flow Return Line With or Without Flow Measuring Devices." The use of portable flow instrumentation or installation of permanent flow instrumentation that would allow for individual pump flow measurement quarterly was investigated, as requested, and determined not to be possible for the existing system configuration.	Relief Request R-1 is evaluated in the current SE. Refer to Section 2.1.
4.2.4 Relief Request R-3	Relief from the requirements to vary the resistance of the system to a reference value of flow or differential pressure when performing testing of the condensate pumps was denied. Relief was not applicable to the quarterly testing based on the lack of flow instrumentation. For additional testing performed during cold shutdowns and refueling outages, individual pump flow measurement provides a means for the method of testing to meet the requirements of OM-6, and therefore, relief was not considered appropriate for the testing performed at this frequency.	This relief request has been withdrawn. System resistance will be varied during individual condensate pump testing performed during refueling outages. Relief Request R-1, discussed in Item 4.2.3 above, has been submitted related to this issue.	Relief Request R-1 is evaluated in the current SE. Refer to Section 2.1.

Anomaly/Action Item	Description of Item in NRC SE Dated January 8, 1992	Description of Actions Taken to Address Items as Described in October 30, 1992, Response	Status of Item and Remaining Action
4.2.5 Relief Request R-4	Relief to not measure or calculate differential pressure for the condensate pumps was denied due to inadequate justification of the impracticality of meeting the requirements of OM-6. For both the quarterly and cold shutdown/refueling outage testing, the differential pressure should be calculated using the level of the condenser hotwell to determine suction pressure. The licensee was to ensure that the calculation method meets accuracy requirements of OM-6, Table 1.	This relief request has been withdrawn. Pump differential pressure will be determined during condensate pump testing. Suction pressure will be determined from hotwell level and condenser vacuum and differential pressure calculated for the condensate pumps in accordance with OM-6 requirements.	No further action is required.
4.2.6 Relief Requests R-5, R-11, R-16, R-18, R-22, R-23, and R-24	For these relief requests covering various pumps for which no flow instrumentation is installed, interim relief was granted. The interim relief was intended to provide the licensee with a period of time to investigate and evaluate the installation of flow instrumentation or the use of temporarily installed flow measuring devices. See Item 4.1.2 above.	The requirement to measure pump flow identified in these relief requests has been reviewed. Specific information is contained in revised relief requests (renumbered) applicable to the different pumps as follows: R-1: Condensate booster pumps and service water pumps R-5: Diesel fuel oil transfer pumps R-7: Secondary closed cooling water pumps (Previous relief requests R-5, R-11, R-16, and R-22.) The following previous relief requests have been deleted: R-15, R-18, and R-24 - the reactor building closed cooling water pumps, shutdown cooling pumps, and reactor feedwater seal injection pumps have been removed from the IST program as the functions these pumps perform are not within the scope of the program (identified during development of bases document). R-23 - for the gas turbine fuel forwarding pumps, portable flow instrumentation will be used (R-4 addresses the accuracy of this instrumentation).	The renumbered relief requests are evaluated in the current SE. Refer to Sections 2.1, 2.5, and 2.7.

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4.2.7 Relief Request R-7	Relief from the requirements of OM-6, Section 5.2(b) to vary the resistance of the system until the differential pressure or flow rate equals the corresponding reference value for inservice testing the reactor feedwater pumps was evaluated. Based on the licensee's description of the testing, it was determined that relief was not required, as the test conditions are readily duplicated during normal operation. It was recommended that if the licensee determines that flow or differential pressure vary during normal operation to an extent that a reference value, or multiple values, is not readily duplicated, individual pump curves be developed and relief submitted for use of the curves.	This relief request has been withdrawn. The testing is performed at repeatable conditions and reference values have been established in accordance with OM-6.	No further action is required.
4.2.8 Relief Requests R-8 and R-20	Relief was denied for these relief requests concerning the feedwater pumps (R-8) and control rod drive pumps (R-20). The licensee had proposed to perform quarterly testing on only the pump in operation, and not perform inservice testing on the pumps not in service. Justification was not adequate to indicate that testing at the required frequency was impractical or creates a burden without a compensating increase in quality and safety.	These relief requests have been withdrawn. The 'C' reactor feedwater pump was removed from the IST Program per the review performed for the IST bases document. Inservice testing will be performed on the 'A' and 'B' reactor feedwater pumps quarterly. The 'C' pump does not function as part of the feedwater coolant injection system which is the safety mode of operation for the feedwater pumps; however, it will be tested in a supplemental test program. The CRD pumps' function was determined to be outside the scope of the IST Program during development of the bases document; however, these pumps will be tested in a supplemental test program.	No further action is required.

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4.2.9 Relief Request R-9	Relief was granted for utilizing pump curves to allow testing of the emergency condensate transfer pumps in the as-found condition provided the licensee establish the pump curves with a minimum of three points considering the expected range of levels in the condensate storage tank during testing, which determines the suction pressure.	The suction pressure for the emergency condensate transfer pump is measured; therefore, a curve for the condensate storage tank level is not necessary. This relief request has been withdrawn. Testing as described in the relief request is addressed in OM-6. Specifically, OM-6 ¶ 5.2(c) states, "[w]here system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference values." Therefore, the testing performed meets the requirements of OM-6.	No further action is required.
4.2.10 Relief Request R-10	Interim relief was granted to allow a period of time (six months) for the licensee to investigate methods for determining differential pressure for the vertical line shaft service water pumps and emergency service water pumps. The licensee had proposed to measure only discharge pressure, but had not discussed the impracticality of determining suction pressure based on the level of Niantic Bay.	The relief request has been withdrawn. Suction pressure for the service water pumps and emergency service water pumps will be determined based on the Niantic Bay level at the time of the tests and pump differential pressure will be calculated.	The licensee has addressed the concerns of this anomaly.
4.2.11 Relief Request R-19	The licensee had proposed to increase the test interval of the shutdown cooling pumps and testing the pumps only during cold shutdowns and refueling outages if the shutdown cooling system was placed in service. It was noted in the SE that a test path was discussed in SAR Section 5.1.8 which could be utilized for quarterly inservice testing. The relief request did not discuss the alternative flow path. The relief request was denied.	This relief request has been withdrawn. The shutdown cooling system was reviewed during development of the IST basis document and the system pumps' function was determined to be outside the scope of the IST program. This determination was based on the plant being licensed for hot shutdown as the safe shutdown condition (see Section 4.0 of the current SE). Therefore, these pumps have been removed from the program. However, the shutdown cooling pumps will continue to be tested as part of a supplemental test program.	No further action is required.

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4.2.9 Relief Request R-9	Relief was granted for utilizing a pump curves to allow testing of the emergency condensate transfer pumps in the as-found condition provided the licensee establish the pump curves with a minimum of three points considering the expected range of levels in the condensate storage tank during testing, which determines the suction pressure.	The suction pressure for the emergency condensate transfer pump is measured; therefore, a curve for the condensate storage tank level is not necessary. This relief request has been withdrawn. Testing as described in the relief request is addressed in OM-6. Specifically, OM-6 Section 5.2(c) states, "[w]here system resistance cannot be varied, flow rate and pressure shall be determined and compared to their respective reference values." Therefore, the testing performed meets the requirements of OM-6.	No further action is required.
4.2.10 Relief Request R-10	Interim relief was granted to allow a period of time (six months) for the licensee to investigate methods for determining differential pressure for the vertical line shaft service water pumps and emergency service water pumps. The licensee had proposed to measure only discharge pressure, but had not discussed the impracticality of determining suction pressure based on the level of Niantic Bay.	The relief request has been withdrawn. Suction pressure for the service water pumps and emergency service water pumps will be determined based on the Niantic Bay level at the time of the tests and pump differential pressure will be calculated.	The licensee has addressed the concerns of this anomaly.
		This relief request has been withdrawn. The shutdown cooling system was reviewed during development of the IST basis document and the system pumps' function was determined to be outside the scope of the IST program. This determination was based on the plant being licensed for hot shutdown as the safe shutdown condition (see Section 4.0 of the current SE). Therefore, these pumps have been removed from the program. However, the shutdown cooling pumps will continue to be tested as part of a supplemental test program.	No further action is required.

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4.2.12 Relief Request R-21	Interim relief was granted for a period of six months to allow a period of time for the licensee to develop and implement a method to determine the differential pressure for the vertical line shaft diesel fuel oil transfer pumps and gas turbine fuel oil forwarding pumps.	This relief request has been withdrawn. The licensee has determined that the requirements of OM-6 Section 4.6.5 can be met. The suction pressure for the diesel fuel oil transfer pumps and gas turbine fuel forwarding pumps will be determined based on the storage tank level at the time of the test and pump differential pressure will be calculated.	No further action is required.
4.3.1 Cold Shutdown Justifications	For Relief Requests V-1, V-2, V-4, V-5, V-6, V-7, V-10, V-11, V-14, V-16, V-19, V-22, V-27, V-30, V-31, V-38, and V-39, the licensee had requested extension of the test interval from quarterly to each cold shutdown and refueling outage. These relief requests were not evaluated in the SE. It was recommended that the licensee change these relief requests to cold shutdown justifications which include a basis for the impracticality of performing the inservice testing during power operations. If the test interval is discussed in GL 89-04 positions, the basis for extending the interval should reference the applicable position such as Position 7 relating to control rod drive scram valves in BWRs.	The listed valve relief requests have been changed to cold shutdown/refuel justifications, except for V-31 and V-38 which have been withdrawn and V-39 which has been incorporated into a new V-3 relief request.	No further action is required. Relief Request V-3 is evaluated in the current SE. Refer to Section 3.3.
4.3.2 Relief Request V-8	For the feedwater coolant injection check valves, relief was denied to extend testing to refueling outages. The relief request did not provide sufficient justification for not performing testing during cold shutdown conditions. The licensee was requested to address this concern within six months.	This relief request has been revised to provide additional justification for not testing feedwater coolant injection containment isolation check valves 1-FW-9A/B and 1-FW-10A/B during cold shutdown conditions.	Revised Relief Request V-8 is evaluated in the current SE. Refer to Section 3.8.

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4.3.3 Relief Request V-13	This relief request concerned the control rod withdrawal/insert check valves. The proposed alternative testing stated that the valves operate in the course of normal plant operation at a frequency that exceeds the exercise requirements of the Code. Relief is not required if the test frequency for inservice testing meets or exceeds the Code requirements. The licensee was to ensure that testing in the course of operating the valves is proceduralized with the acceptance criteria included in the procedure, and performed in accordance with Code requirements and/or guidance in GL 89-04 positions. If Code requirements other than those related to frequency cannot be met by this testing, specific relief is required.	This relief request has been withdrawn. As the test frequency exceeds the exercise frequency requirements of the Code, relief is not required.	No further action is requi ed.
4.3.4 Relief Request V-23	This relief request concerned the emergency service water (ESW), low pressure coolant injection heat exchanger outlet throttle valves. The request indicated that stroke time testing could not be performed due to the type of controller for these valves and that fully opening the valves could damage the ESW pump. The licensee proposed to operate the valves to a position greater than 25% travel. The relief request was insufficient to allow for adequate review and this was an open item of the SE.	Relief Request V-23 has been revised to provide additional details and justification for the proposed alternative testing of emergency service water valves 1-LPC-4A/B. V-23 has been renumbered as V-1.	Relief Request V-1 is evaluated in the current SE. Refer to Section 3.1.
4.3.5 Relief Request V-28	For the standby gas treatment sequence valves, which operate automatically during the start sequence of the system, individual stroking is not possible. The licensee proposed to exercise and stroke time the valves as a group. The relief request was insufficient to allow for adequate review and this was an open item of the SE.	Relief Request V-28 has been revised to provide additional details and justification for the proposed alternative testing of standby gas treatment system valves. V-28 has been renumbered as V-2.	Relief Request V-2 is evaluated in the current SE. Refer to Section 3.2.

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4.3.6 Relief Request V-32	The licensee requested relief for not leak testing containment isolation valves which are not subject to Appendix J local leak rate testing. However, the valves were categorized in the inservice testing program as "A" or "A/C." It was recommended that the licensee determine the correct categorization of these valves, and if it is determined that the valves are Category A or A/C, the valves are subject to leak rate testing per 10 CFR 50.55a, Section XI, and/or OM-10. If not, the leak rate testing requirements of the Code do not apply. Valves which function as containment isolation valves may have a separate leak-tight safety function.	Relief Request V-32 has been withdrawn. As part of the IST Program design bases review, all valves were analyzed for determination of Category A status. Appropriate valve specific relief requests have written to address cases where testing is not possible due to system configuration (see Relief Requests V-10 and V-12).	Relief Requests V-10 and V-12 are evaluated in the current SE. Refer to Sections 3.10 and 3.12.
4.3.7 Relief Request V-33	The licensee proposed to extend the verification of the 1-CU-29 reactor water cleanup check valve's capability to close to a refueling outage interval, and to utilize a water leakage test, which is performed in lieu of the Appendix J local leak rate test (Appendix J exemption), as the verification. Interim relief was granted to allow for a period of time for the licensee to determine if closure verification could be performed on a cold shutdown frequency. The valve was presumed to be exercised quarterly during the cycling of the penetration's second containment isolation valve, 1-CU-28, but this test cannot be credited as no position indicating devices are installed.	Relief Request V-33 has been revised and renumbered as V-10. Interim relief has been requested until the cycle 15 refueling outage. Modifications are to be performed which will allow reverse flow exercise testing and Appendix J local leak rate testing of check valve 1-CU-29.	Relief Request V-10 is evaluated in the current SE. Refer to Section 3.10.
4.3.8 Relief Request V-35	For explosively actuated shear valves in the transversing incore probe (TIP squib valves 1, 2, 3, and 4), the licensee proposed to remove and test all four valves every four years rather than test one of each batch every two years in accordance with the Code requirements. Relief was denied as the basis for the alternative proposal provided no justification that the Code requirements could not be met, or that the Code requirements were a hardship with no compensating increase in quality and safety.	This relief request has been withdrawn. Testing of explosively actuated valves will be performed in accordance with OM-10, Section 4.4.1, requirements.	No further action is required.

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4.3.9 Relief Request V-41	Relief was granted for implementing a check valve disassembly and inspection program for the low pressure coolant injection pump minimum flow recirculation check valves. The licensee was instructed that the program should be implemented in accordance with the guidelines in GL 89-04, Position 2, including a partial-stroke of the valves, if possible, following reassembly.	Relief Request V-41 has been incorporated into new Relief Request V-11 which provides the details of the disassembly and inspection program for these and other check valves.	Relief Request V-11 is evaluated in the current SE. Refer to Section 3.11.
4.3.10 Relief Requests V-42 and V-43	Relief was granted for leak testing the low pressure coolant injection check valves and the core spray keep-fill check valves in pairs rather than individually with the provision that if excessive leakage is identified, both valves of the applicable pair be repaired or replaced.	Relief Requests V-42 and V-43 have been incorporated into new Relief Request V-11 which provides the details of the disassembly and inspection program for these and other check valves.	Relief Request V-11 is evaluated in the current SE. Refer to Section 3.11.
4.3.11 Relief Request V-44	For both sets of the core spray pump and low pressure coolant injection pumps motor bearing oil cooler solenoid valves, no remote position indication was installed and stroke times were not measured. Alternatively, the operation of the valves was verified by observation of cooling water pressure to the coolers during quarterly pump surveillance. Interim relief was granted to allow a period of time for the licensee to determine a method of monitoring these valves for degradation.	This relief requests has been withdrawn. The core spray pump and low pressure coolant injection pump motors have been replaced with a design that does not require cooling water for the motor bearings. Therefore, the subject valves, 1-CS-25A/B and 1-LP-52 A/B, are no longer required.	No further action is required.
4.3.12 Relief Request V-46	For the TIP nitrogen purge containment isolation check valve, relief was denied to not exercise the valve quarterly or during cold shutdown conditions. The licensee proposed to exercise the valve during open during the operation of the TIP machines and closed by Appendix J local leak rate testing performed during refueling outages. Relief was denied based on insufficient information in the relief request justifying not performing the testing at the Code required frequency.	Relief Request V-46 has been changed to cold shutdown/refueling outage justification CSJ-23. Additional information is included in CSJ-23 to justify extending the test frequency to every refueling outage in order to verify closure during the Appendix J local leak rate testing.	No further action is required.

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4.3.13 Relief Requests V-48 and V-49	The licensee requested relief from performing pressure isolation valve leakage testing for the low pressure coolant injection pressure isolation valves and core spray pressure isolation valves, and to alternatively perform the Appendix J local leak rate testing to verify the leak-tight integrity of these valves. The SE identified that the testing must be correlated to account for the different test medium (air versus water) and pressure differentials between the two types of leak tests. Interim relief was granted to provide the licensee a period of time to evaluate the testing. It was further recommended that the licensee review the requirements of all of the pressure isolation valves to ensure leakage testing is adequate.	The subject relief requests have been withdrawn. Pressure isolation valves will be tested in accordance with OM-10, Section 4.2.2.3, requirements.	No further action is required.
4.3.14 Relief Request V-45	The anomaly related to the reactor water cleanup system relief valve vent line to torus check valve 1-CU-69, which was identified as a containment isolation valve. The relief request indicates the class and category as "ANSI B31.1/C," and lists no other safety function than containment isolation. It was recommended that the Code classification and category of this valve be reviewed against the requirements of ASME Section II, Section XI - IWA-1320, 10 CFR 50.55a(g)(1), and Generic Letter 89-04 - Position 10. The relief request was to be revised accordingly.	The functions of valve 1-CU-69 have been reviewed and a determination made that the valve does not provide a containment isolation function. Valve 1-CU-69 has been removed from the IST Program; therefore, Relief Request V-45 has been withdrawn.	No further action is required.
4.3.15 General - Valves	It was noted that the valve relief requests (as well as the valve table) did not specify the safety-related function(s) of the valves to open or close. It was recommended that the relief requests be revised to include this information. Certain assumptions were made by the NRC reviewer on valve safety function based on the information in the licensee's basis for relief and in the Millstone 1 Updated Final Safety Analysis Report.	The relief requests and cold shutdown/refueling outage justifications now include the information identifying the safety-related function of each valve to open or close. The valve table indicates the normal position of each valve, but does not list the position or positions required for fulfillment of the safety function(s) of the valves.	No additional response is required; however, the licensee should consider adding a column to the valve table indicating the required safety position(s) for future revisions.

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4.3.16 Relief Request V-24	The licensee had requested relief from the quarterly testing of certain shutdown cooling system valves and proposed to exercise the valves for operability at reactor refueling outages and at cold shutdown if the shutdown cooling system is placed in operation. As discussed in Item 4.2.11 above, the shutdown cooling system can be operated at each cold shutdown. Therefore, it was recommended that the licensee change Relief Request V-24 to a cold shutdown justification and perform the testing at each cold shutdown and refueling outage if the testing has not been performed within the previous 3 months, in accordance with IWV-3412 and IWV-3522.	Relief Request V-24 has been changed to cold shutdown/refueling outage justification CSJ-24 which indicates that the applicable valves will be tested during cold shutdown conditions.	No further action is required.
4.3.17 Relief Request V-50	This relief request covered a number of pump discharge check valves. The licensee had requested relief from full-stroke exercising the applicable check valves. Flow instrumentation was not available for verifying full-stroke opening, though pump flow measurement may currently be available at some frequency, or will be available at a later date. Monitoring system parameters for verifying reverse flow closure can be acceptable if the parameters provide positive assurance of valve closure, such as monitoring idle pump rotation during quarterly testing of another pump. However, for long-term relief, the licensee had not discussed the use of GL 89-04, Positions 1 or 2, as alternatives to testing with flow measurement. It was recommended that testing methods be developed to meet the Code requirements and/or GL 89-04 guidelines.	Relief Request V-50 has been deletnd and the required information is included in two cold shutdown/refueling outage justifications (CSJ-1 for feedwater coolant injection and CSJ-29 for service water) and one relief request (V-13 for gas turbine fuel forwarding and secondary closed cooling water). It was determined that relief is not required for diesel fuel oil forwarding check valves.	Relief Request V-13 is evaluated in the current SE. Refer to Section 3.13.
4.3.18	It was noted that the licensee's submittal did not include a Relief Request V-12 and that Relief Request V-40 was noted as deleted.	The comment has no relevance to the revised IST Program.	No further action is required.