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August 28, 1995

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: **Docket Nos. 50-361 and 50-362**
ASME Code Update for the Second Ten Year Interval, Inservice Testing Program
San Onofre Nuclear Generating Station
Units 2 and 3

Reference: Letter from Theodore R. Quay (NRC) to Mr. Harold B. Ray (SCE) dated August 31, 1994; Subject: Second 10-Year Interval for Inservice Testing of Pumps and Valves - San Onofre Nuclear Generating Station, Unit No. 2 (TAC No. M87283) and Unit No. 3 (TAC No. M87284)

This letter provides Southern California Edison's (Edison's) response to the referenced August 31, 1994, NRC Safety Evaluation. Enclosure 1 is a table that shows how Edison addressed each of the items contained in Table 3.1 of the INEL Technical Evaluation Report attached to the NRC's Safety Evaluation. Enclosure 2 is Revision 9-2 of SO23-V-3.5, "Inservice Testing of Valves" which was issued on August 25, 1995.

Our review of the NRC Safety Evaluation and NUREG 1482 resulted in changes to our program. These changes consisted of (1) revisions to justifications for non-quarterly test intervals to enhance the clarity of the basis for the extended intervals, and, (2) modification of some test intervals to reflect the latest guidance in NUREG 1482.

San Onofre Unit 2 completed a refueling outage on May 23, 1995, and Unit 3 is currently in a refueling outage which is scheduled to end on October 5, 1995. Some valve test intervals were changed in Revision 9 of the program from cold shutdown or reactor refueling to quarterly. Accordingly, affected Unit 2 and Unit 3 valves will be phased into the quarterly test schedule and tested within 92 days following the completion of the Unit 3 refueling.

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Please let me know if you have any questions.

Very truly yours,

Enclosures

cc: L. J. Callan, Regional Administrator, NRC Region IV
J. E. Dyer, Director, Division of Reactor Projects, Region IV
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ENCLOSURE 1

RESPONSE COMPARISON
FOR INEL TECHNICAL EVALUATION REPORT
TABLE 3.1

Responses to Table 3.1[1]

Deferred Test Evaluations

INEL Technical Evaluation Report (TER)

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 1.0, Part 3, S2(3)1305MU468, 469 and 538, AFW Pump Suction Isolation Valves **Justification**: Closing the suction isolation valve will cause the associated AFW pump to be inoperable. This is contrary to the requirements of Tech Spec 3.7.1.2.1. Stroking the AFW pump suction isolation valve closed every three months will result in the affected pump being declared inoperable each time the valve is stroked closed. This exacerbates the unavailability of the AFW pumps during plant operation. **Alternate Testing**: Test the valve at cold shutd intervals.	ATJ 1.3 does not adequately demonstrate the impracticality of exercising these valves quarterly. **Appendix A, IST Program Anomalies**, para 2, discusses the inadequacy of setting a cold shutdown interval solely on the basis of Technical Specifications entry.	**Resolution**: The test interval has been changed to quarterly. **Basis**: A review of the basis for the non-quarterly interval was completed in light of the guidance in NUREG 1482, issued in April 1995. As a result, the original basis was found to be inconsistent with this new guidance and the test interval was adjusted accordingly.
ATJ 3.0, Part 1, 2(3)HV9200, Charging Pumps to Regenerative Heat Exchanger E063 **Justification**: Exercising while the plant is at power would isolate normal charging to the RCS. This would result in a non-compliance with Technical Specification 3.1.2.2, which required two flow paths for boration during power operation. **Alternate Testing**: Test the valve at cold shutdown. This shifts the testing to a period during which it is allowed by the Technical Specifications and avoids RCS pressure and boration control problems or complications.	It is impractical to exercise this valve quarterly during power operations. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. **Appendix A, IST Program Anomalies**, Para 2, discusses the inadequacy of setting a cold shutdown interval solely on the basis of Technical Specifications entry.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 3.1) In addition to Technical Specification action statement entry, exercising this air operated valve during plant power operation would require securing letdown and charging entirely. This is a lengthy plant evolution as is the restoration of letdown following the exercise test. Further, stopping charging and letdown flow imposes a large thermal transient on the components in the charging/letdown path that would eventually damage these components such as the letdown heat exchanger and the regenerative heat exchanger.

1 Items in the INEL TER Table 3.1 that were listed without comment by the NRC are not listed in this table.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 3.0, Part 3, 2(3)LV0227B, VCT Outlet, and, S2(3)1208MU015, VCT to Charging Pump Suction Check Valve **Justification**: Exercising these valves closed requires shifting charging pump suction and injecting highly concentrated boric acid into the Reactor Coolant System, causing plant shutdown. **Alternate Testing**: Test these valves at cold shutdown.	It is impractical to exercise these valves closed quarterly. Therefore, the alternative is in accordance with Part 10, paras. 4.2.1 and 4.3.2. **Appendix A, IST Program Anomalies**, Para 6 identifies the error in the ATJs such as this one that identify the wrong OM-10 paragraph for Category C valves.	**Resolution**: (SO23-V-3.5, Attachment 3, Para 3.3.1) The referenced OM-10 paragraphs were reviewed for correctness throughout the ATJ section and corrected.
ATJ 3.0, Part 7, S2(3)1208MU084, Charging Pump Discharge to Regenerative Heat Exchanger **Justification**: This valve cannot be stroked closed during normal operation as it would isolate CVCS and charging pumps to the RCS. This would result in a non-compliance with Technical Specification 3.1.2.2, which requires two flow paths for boration during power operation. **Alternate Testing**: Test the valve at cold shutdown. This shifts the testing to a period during which it is allowed by the Technical Specifications and avoids RCS pressure and boration control problems or complications.	It is impractical to exercise this valve quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. **Appendix A, IST Program Anomalies**, Para 2 discusses the inadequacy of setting a cold shutdown interval solely on the basis of Technical Specification entry. Para 3 states, ATJ 3.0, Part 7, is an example of where the justification does not identify any negative consequence that may make more frequent testing impracticable.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 3.7) In addition to Technical Specification action statement entry, exercising this manual valve during plant power operation would require securing letdown and charging entirely. This is a lengthy plant evolution as is the restoration of letdown following the exercise test. Further, stopping charging and letdown flow imposes a large thermal transient on the components in the charging/letdown path that would eventually damage these components such as the letdown heat exchanger and the regenerative heat exchanger.
ATJ 4.0, Part 1a, 2(3)HV6211, 6216, 6223 and 6236, CCW Non-Critical Loop Containment Isolation Valves **Justification**: Exercising HV6211, HV6216, HV6223, and HV6236 during operation would secure cooling water flow from RCP seals, or direct cooling water flow from RCP seals. This could result in seal damage and plant shutdown. **Alternate Testing**: Stroke these valves at cold shutdown intervals to avoid damage to plant equipment which can result from interruption of CCW flow.	It is impractical to full-stroke exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. **Appendix A, IST Program Anomalies**, Para 6 identifies HV6223 and HV6236 were inadvertently omitted from the discussion.	**Resolution**: (SO23-V-3.5, Attachment 3, Para 5.1) Clarified discussion to include HV6223 and HV6236.
ATJ 4.0, Part 5, S2(3)1203MU268 and 269, Service Water Supply to CCW **Justification**: To achieve a close stroke of these check valves, the upstream volume of the associated piping must be isolated and depressurized. This renders the associated CCW surge tank and therefore the associated CCW loop inoperable. The result is entry into multiple Technical Specification LCO Action Statements if done during plant operation. **Alternate Testing**: Stroke at cold shutdown intervals when plant conditions allow CCW loops to be inoperable without rendering several Technical Specification required components inoperable.	It is impractical to full-stroke exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.3.2. **Appendix A, IST Program Anomalies**, Para 2 discusses the inadequacy of setting a cold shutdown interval solely on the basis of Technical Specification entry.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 5.5) To be responsive to the INEL TER, the basis for the Cold Shutdown IST interval was clarified to indicate that testing is consistent with the NUREG 1482, Para 4.1.4 discussion.

Original Submittal Justification and Proposed Alternate Test	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 5.0, Part 3, S2(3)1305MU036 and 129, Main Feed to S/G check valves **Justification**: OM-10, Section 4.3.2.2, Exercising Requirements, Paragraph (e) stipulates if exercising is not practicable during plant operations or cold shutdowns, it may be limited to full stroke during refueling outages. Section 4.3.2.4(c), Valve Obturator Movement, further states, "As an alternative to the testing in (a) or (b) above, disassembly every refueling outage to verify operability of check valves may be used." GL. 89-04, Position 2, allows for development of staggered schedules for testing of like components by establishing an inspection plan for groups of valves. **Alternate Testing**: At cold shutdown intervals, perform a full stroke test (open) of each valve using system flow. At each refueling outage, test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling). If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage. Following reassembly the valve is be tested by partial stroking using system flow.	It is impractical to full-stroke exercise these valves closed quarterly or during cold shutdowns. The alternate method for closure verification is approved by GL 89-04 provided that the testing complies with all of the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, para. 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: Continue to test at Refueling intervals by partial disassembly and manual stroking. In the IST Program, enhance our discussion of the basis for this interval and test technique. **Basis**: (S023-V-3.5, Attachment 3, Para 6.3) To be responsive to the INEL TER, the basis for the Refueling interval was clarified to indicate that non-intrusive test techniques to verify closure have been considered, and determined to be impractical. The valves are located in containment, and performance of magnetic and/or acoustics would require working in containment at power, which would increase radiation exposure. Ultrasonics have been attempted in the past, but were unsuccessful because ultrasonics depend upon water as a medium, and the water drains from these valves upon shutdown. Radiography may be feasible, but would require securing access to the refueling deck during the outage, thus impacting the critical path of the outage. Also, valve degradation has been observed in these valves, and as a result all valves are disassembled each outage to inspect for continued degradation. Thus, no additional impact (e.g., human error) is introduced in performing the hand-stroke to credit the IST. Disassembly and inspection is performed in accordance with, and does not deviate from, OM-10, Para 4.3.2.4, and GL 89-04, Position 2.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 7.0, Part 1, **2(3)HV8150, Isolation Valve - Shutdown Cooling System Heat Exchanger E004 to LPSI Header, and,** **2(3)HV8151, Isolation Valve - Shutdown Cooling System Heat Exchanger E003 to LPSI Header** **Justification**: Applying power or opening these valves while the plant is at power would result in non-compliance with the Technical Specifications. Opening these valves could defeat both trains of LPSI. **Alternate Testing**: Test the valve at cold shutdown.	ATJ does not adequately demonstrate the impracticality of exercising these valves open quarterly during power operation. **Appendix A, IST Program Anomalies**, Para 5: This ATJ indicates that opening the subject valves could defeat both trains of LPSI. It is highly undesirable to defeat both trains of LPSI, however, it is not clear why the valves could not be tested one at a time, which should disable only one train of LPSI at a time.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 8.1) For ECCS system operability, the Technical Specifications (Surveillance 4.5.2.a) require verification at least once per twelve hours that HV8150 and HV8151 are closed and power to the valve operators is removed. Testing these valves at a cold shutdown interval is consistent with NUREG-1482, Para. 3.1.1. Removing these valves from power lockout, restoring power and opening them in Modes 1, 2 or 3 involves a hardship; i.e., repositioning of a breaker from "off" to "on", and closing the manual isolation valves for HV8150 and HV8151. Manual action would be required to restore the ECCS if an accident occurred while the test was in progress. This risk outweighs the benefits achieved with a quarterly test in light of the facts that (1) these valves are in the idle shutdown cooling loops that are not used except when the plant is placed in cold shutdown; (2) being in power lockout, these valves have a minimal probability of failure. They are idle (potential sources of failure are very limited); and, (3) the realignment of the system for the exercise tests in question invalidates the assumptions in the Safety Analysis (see the Technical Specification Bases, Section B 3/4.5.2).

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 7.0, Part 2, S2(3)1206MU004 and 006, Containment Isolation Stop Check Valves for Spray Headers Inside Containment **Justification**: Full-stroke exercising these valves using the containment spray pumps would result in a containment spray-down and consequent potential equipment damage as well as create additional liquid radwaste to be removed from the Containment Building sump. PARTIAL FLOW TESTING: The riser inside the containment building is drained each refueling and refilled prior to returning the plant to service. When the riser is being filled with water, the water can be put in the system upstream of each stop check valve. Therefore, this flow through the Spray Header Containment Isolation Stop Check Valves during the filling of the riser would result in a partial stroke of these valves. Other methods to achieve a partial open stroke are also available. CONCLUSION: NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no way to stroke these valves with the existing system design using flow. The Code required full-stroke testing using flow could only be performed after considerable modification of the system design, such as installation of an instrumented test loop. The high costs of the necessary design changes involved would not be justified by the improvement of the valve testing. Further, the additional valves, piping, supports and penetrations could result in reduced plant reliability. TEST SCHEDULE: Disassembly and inspection of both of these valves each refueling outage requires additional draining of the associated system piping over and above draining the riser as previously discussed. This generates a significant amount of radioactive liquid waste. In addition, considerable radiation exposure can be received by personnel performing the partial disassembly, hand stroking and inspection. As a consequence, there is a clear advantage in reducing the number of these tests required in each refueling. GL 89-04 allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. This is stated in position 2 of the Generic Letter. **Alternate Testing**: At each refueling outage, (1) test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling), and, (2) perform a partial stroke test (open) of each valve using system flow.	It is impractical to full-stroke exercise these valves closed quarterly or during cold shutdowns. The alternate method for closure verification is approved by GL 89-04 provided that the testing complies with all of the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, Para. 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: Continue to test at Reactor Refueling by Disassembly and hand stroking. In the IST Program, enhance our discussion of the basis for this testing. **Basis**: (SO23-V-3.5, Attachment 3, Para. 8.2) In addition to the difficulties described regarding full flow testing, the use of non-intrusive test techniques to verify full open capability has been considered and determined to be impractical. Acoustics were attempted to determine whether the valves went full open at a reduced flow, but no opening impact could be detected (the system arrangement does not permit adequate flow). Disassembly and inspection is performed in accordance with, and does not deviate from, OM-10, Para 4.3.2.4, and GL 89-04, Position 2.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 7.0, Part 4, S2(3)1206MU012, 14, 29 and 30, Containment Spray pump Discharge Check Valves **Justification**: Full stroke exercising of these check valves while the plant is at power would require disabling both trains of LPSI. **Alternate Testing**: Test these valves at cold shutdown intervals.	ATJ does not adequately demonstrate the impracticality of exercising these valves open quarterly during power operation. **Appendix A, IST Program Anomalies**, Para 5: This ATJ indicates that full-stroke exercising the subject check valves would disable both trains of LPSI. It is highly undesirable to defeat both trains of LPSI, however, it is not clear why the valves could not be tested one at a time, which should disable only one train of LPSI at a time.	**Resolution**: (no change in interval) Test these valves at Cold Shutdown (or Reactor Refueling intervals, as explained in "BASIS", below). In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 8.4) The OPEN EXERCISE test for these valves requires a flow rate of 2300-2750 gpm. The flow path for this test involves establishing flow through S2(3)1204MU162 to the RWST. The line-up uses a portion of the common LPSI header for the flow path. Aligning the Containment Spray (CSS) and LPSI systems in this manner renders one train of containment spray and both trains of LPSI inoperable. With the LPSI and CSS aligned to support this testing, LPSI flow from both trains is diverted to the RWST. This constitutes a loss of LPSI system function and places the plant in a condition which is outside the licensing basis. Because of this loss of system function, MU012, 014, 029 and 030 are excluded from quarterly testing consistent with the guidance in NUREG-1482, Para. 3.1.1(1). The EXERCISE CLOSED test is also done at cold shutdown intervals. There is a difference between the CLOSE tests for Unit 2 and for Unit 3. Unit 2 has a vent between valve pairs that allow the CLOSE tests to be performed by measuring leakage using a test rig. Performing these tests at refueling intervals while measuring leakage is consistent with NUREG-1482, Section 4.1.4. This vent does not exist in Unit 3, and the valves are verified CLOSE using radiography. The radiography is performed at refueling intervals on a rotating basis consistent with NUREG-1482, Section 4.1.2. As an additional argument to CLOSE test the valves at refueling intervals, OM-10, paragraph 1.3 defines exercising as "the demonstration based on direct visual or indirect positive indications that the moving parts of a valve function." Since it is not possible to OPEN EXERCISE test these valves at a quarterly interval, verifying the valves CLOSED at a quarterly interval would not satisfy the code requirement to exercise the valves. Therefore, the interval for the CLOSED EXERCISE test is set at the same interval as the OPEN EXERCISE test.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 8.0, Diesel Skid Mounted Valves **Justification**: Each component is demonstrated operable by virtue of the fact that the engine(s) start in the requisite time, carry the required load, and exhibit operating parameters (temperatures, pressures, etc.) that fall within the vendor's recommended values. Monthly surveillance runs of the diesel generators load the engine to approximately 4840 kw. The anticipated Mode 1 through 4 accident loading is 4700 kw (Mode 5 and 6 loading is approximately 80% of this value). Engine parameters are recorded and transmitted to Technical Division for review and trending. The OM-16 code committee has taken the position that Section XI testing does not enhance the reliability of the diesels. **Alternate Testing**: Verify proper operation of the diesel generators during regularly scheduled "loaded run" surveillance. Record engine run data per OP-16 and vendor recommendations.	The diesel generator skid mounted components are tested during the diesel generator loaded run surveillance tests. The loaded run tests are performed at least once each quarter, which is in accordance with Part 10, paras. 4.2.1 and 4.3.2. **Appendix A, IST Program Anomalies**, Para 7: ATJ 8.0 deals with an alternate test method while all other ATJs in the IST program provide bases for other than the quarterly test interval. There may be a more appropriate place in the IST program for the information provided in ATJ 8.0.	**Resolution**: Discussion moved out of SO23-V-3.5. Attachment 3. **Basis**: As suggested by the NRC, moving this discussion to SO23-V-3.5, Attachment 2, Note 17 clarifies the program overall. These valves are non-code skid mounted valves located in the lube oil, fuel oil, starting air, or other diesel generator systems. Proper operation is verified during regularly scheduled "loaded run" surveillance. This is in agreement with NUREG 1482, Section 3.4. These valves are non-Code valves that have a safety function and therefore require periodic surveillance. They are listed in the IST Program for convenience, however, a missed or failed surveillance will not constitute a violation of Technical Specification 4.0.5. See Letter, J. G. Partlow, NRC, to All Licensees, etc, *Minutes of the Public meetings on Generic Letter 89-04, October 25, 1989*, Response to Question #53, and NUREG 1482, Section 2.2.
	The third paragraph following the "Alternate Testing" includes the following statement " ... a single failure of any active component cannot affect the ability to store and deliver fuel." In addition, the fourth paragraph following the "Alternate Testing" includes the statement "A single failure in the starting air system, will not prevent a diesel start." These statements indicate that there is total redundancy in the diesel fuel oil and starting air systems such that one train could fail and the diesel would still be capable of performing its function. However, the fifth paragraph following the "Alternate Testing" states: "Each of the components identified in the attached tables is demonstrated operable by virtue of the fact that the engine(s) start in the requisite time, carries the required load, and exhibits operating parameters (temperatures, pressures, etc.) that fall within the vendors recommended values. " This paragraph does not appear to take into account the total subsystem redundancy referred to in the previous quotations.	**Resolution**: The discussion has been removed from the Program. **Basis**: The conditions under which the Diesel Generator system valves are tested are consistent with the discussion in the NUREG, Paragraph 3.4. Testing of the diesels verifies the operational readiness of the associated skid-mounted valves. In addition, these valves are non-ASME Section III components. Accordingly, our test methodology does not require advance NRC approval.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 9.0, 2(3)HV5686, SA2301MU061 and SA2301MU095, Fire Water System Containment Isolation **Justification**: Exercising these valves during plant power operation will activate the fire protection system in the respective containment building. **Alternate Testing**: Test at cold shutdown intervals.	It is impractical to exercise this valve quarterly. Therefore, the alternative is in accordance with Part 10, paragraph 4.2.1. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: Containment isolation MOV 2(3)HV5686 will be exercised quarterly. The open and close exercise tests for SA2301MU061 and SA2310MU095 have been removed from the IST program requirements. Accordingly, no alternate testing interval justification is necessary. **Basis**: Regarding 2(3)HV5686, a review of the basis for the non-quarterly interval was completed in light of the guidance in NUREG 1482, issued in April 1995. As a result, the original basis was found to be inconsistent with this new guidance and the test interval was adjusted accordingly. Upon further review of the function of SA2301MU061 and SA2310MU095, the IST basis document has been revised to require only a close verification. This verification is conducted concurrent with the seat leakage test and is in accordance with NUREG 1482, Section 4.1.4.
ATJ 11.0, Part 2, Check valves for the CCW surge tank backup nitrogen cylinders, S2(3)2418MU356, S2(3)2418MU358, S2(3)2418MU360, S2(3)2418MU362, S2(3)2418MU364, S2(3)2418MU366, S2(3)2418MU368, S2(3)2418MU371, S2(3)2418MU373, S2(3)2418MU375, S2(3)2418MU377, S2(3)2418MU379, S2(3)2418MU387, S2(3)2418MU389, S2(3)2418MU406, S2(3)2418MU408, S2(3)2418MU410, S2(3)2418MU412, S2(3)2418MU414 and S2(3)2418MU416 **Justification**: These valves open to admit backup nitrogen to the CCW surge tanks from the individual nitrogen storage bottles. They close to prevent system depressurization in the event a bottle is removed for replacement. Testing these valves requires placing the associated Component Cooling Water Loop out of service. This can only be done in a mode in which the Technical Specifications permit one CCW Loop to be inoperable. **Alternate Testing**: Test at cold shutdown intervals.	It is impractical to exercise these valves quarterly during power operations. Therefore, the alternative is in accordance with Part 10, Para 4.3.2. **Appendix A, IST Program Anomalies**, Para 6: This ATJ states that the listed valves admit backup nitrogen to the CCW surge tanks. However, the Alternate Testing states that the valves will be tested at cold shutdown intervals in conjunction with the testing of the associated ADV. There does not appear to be any connection between the listed valves and the ADVs.	**Resolution**: (SO23-V-3.5, Attachment 3, Para 10.2) Delete the reference to ADVs and change the Alternate Testing to read, "Test at cold shutdown intervals in a plant mode that permits the associated CCW train to be inoperable."

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 11.0, Part 3, S2(3)2418MU398 and 402, Nitrogen line check valves in supply to CCW surge tanks **Justification**: To achieve a CLOSE stroke of these check valves, the upstream volume of the associated piping must be isolated and depressurized. This renders the associated CCW surge tank and therefore the associated CCW loop to be inoperable. The result is entry into multiple Technical Specification LCO Action Statements if done during plant operation. **Alternate Testing**: Stroke at cold shutdown intervals.	It is impractical to exercise these valves quarterly during power operations. Therefore, the alternative is in accordance with Part 10, Para 4.3.2. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: Change the test interval to reactor refueling. **Basis**: (SO23-V-3.5, Attachment 3, Para 10.3) The close exercise test is performed very much like a 10 CFR 50, Appendix J seat leakage test. Verifying closure involves installation of a flowmeter on a test tee and measuring leakage flow past the valves. Performing the CLOSE test of these valves in conjunction with the LEAKAGE test at refueling intervals is consistent with NUREG-1482 Section 4.1.4.
ATJ 13.0, Part 1, Reactor head and pressurizer vent valves, 2(3)HV0296A, 2(3)HV0296B, 2(3)HV0297A, 2(3)HV0297B, 2(3)HV0298, and, 2(3)HV0299 **Justification**: These valves are part of the Reactor Coolant System Boundary Isolation. Opening these valves while the Reactor Coolant System is pressurized would release Reactor Coolant to the vent system. Further, power is normally removed from the solenoids. **Alternate Testing**: Stroke these valves open and closed at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The licensee's basis should be clarified. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 13.1) Power is normally removed from these solenoid valves because they are part of the RCS boundary and opening them while the RCS is pressurized would release RCS to the vent system. Both the very restrictive action statement in the Technical Specifications (4 hours) and the risk of a potential accident, dictate against the quarterly IST interval in Modes 1 through 4. • Technical Specification 3.4.10, Reactor Coolant Gas Vent System, requires that the valves listed all remain closed in Modes 1 through 4. If any of these valves are inoperable or open, the action statement must be completed within 4 hours. • The design redundancy of the RCS Gas Vent System serves to minimize the probability of inadvertent or irreversible actuation while ensuring that a single failure of a vent valve, or control system does not prevent isolation of the vent path.[2] If, in Modes 1 through 4, a valve were to remain open during an exercise IST, the potential for a Loss of Coolant Accident (LOCA) would exist.

[2] From Technical Specification basis, Paragraph 3/4.4.10.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 13.0, Part 3, Isolation Valves in the Line from the Regenerative Heat Exchanger to the RCS, 2(3)HV9202, and 2(3)HV9203 **Justification**: These valves must remain open during power operation in order to ensure consistency with assumptions made regarding system flow to the RCS cold legs in the accident analysis and to comply with the intent of LCO 3.5.2. **Alternate Testing**: Stroke these valves open and closed at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The licensee's basis should be clarified. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 13.3) These valves block the charging line from the Regenerative Heat Exchanger to the Reactor Coolant System when they close. They are located in the line between these two components. These valves must remain open during power operation in order to ensure consistency with assumptions made regarding system flow to the RCS cold legs in the accident analysis and to comply with the intent of LCO 3.5.2. In addition to Technical Specification action statement entry, exercising either air operated valve during plant power operation would require securing letdown and charging entirely. This is a lengthy plant evolution as is the restoration of letdown following the exercise test. Further, stopping charging and letdown flow imposes a large thermal transient on the components in the charging/ letdown path which would eventually damage these components such as the letdown heat exchanger and the regenerative heat exchanger.
ATJ 13.0, Part 5, RCS Bleed-off to VCT Isolation. Valves, 2(3)HV9217, and 2(3)HV9218 **Justification**: These valves are the containment isolation valves for the reactor coolant pump seal leak-off line to the Volume Control Tank (VCT). Exercising these valves could result in Reactor Coolant Pump seal failure and subsequent reactor shutdown. **Alternate Testing**: Stroke these valves closed at cold shutdown intervals.	The basis identified for the cold shutdown interval does not contain adequate justification for not exercising these valves quarterly. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 13.5) These valves are the containment isolation valves for the reactor coolant pump seal leakoff line to the Volume Control Tank (VCT). Exercising these valves could result in Reactor Coolant Pump (RCP) seal failure and subsequent reactor shutdown. Operation of the RCP mechanical seals depends on steady bleed-off flow to maintain proper staging and seal cooling. Without continuous bleed-off the seals very quickly overheat and are destroyed Because of historical performance problems with our RCP seals, great care is exercised to avoid even momentary fluctuation or interruption of seal bleed-off flow. Exercising these valves while the RCPs are in operation interrupts the seal bleed-off flow and consequently, HV9217 and HV9218 cannot be shut while the RCPs are in operation without the risk of destruction of the RCP seals.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 13.0, Part 8, S2(3)1201MU200 and 202, LPSI Pump Suction Check Valve **Justification**: These valves can only be exercised while the plant is on shutdown cooling. **Alternate Testing**: Test these valves closed at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.3.2. The licensee's basis should be clarified. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Para 13.9) These check valves provide flow into the suction of the respective LPSI pumps and prevent backflow from the pump into the lines from the RWST, etc. These are check valves on the shutdown cooling (SDC) line to the LPSI pump suctions. The suction from this line comes from the RCS, on the hot leg injection line inside the first pressure isolation valve. The only flow path that would open these valves during plant operation would require taking suction from the RCS and pumping it into the RWST on miniflow, which is not practical. The only practical method of opening these valves is on shutdown cooling, and so the valves must be tested at cold shutdown intervals. Closure of these valves is verified by measuring leakage past the valves. OM-10, Paragraph 1.3 defines exercising as "the demonstration based on direct visual or indirect positive indications that the moving parts of a valve function." Since it is not possible to OPEN exercise test these valves at a quarterly interval, verifying the valve closed at a quarterly interval would not satisfy the code requirement to exercise the valve. Once the valve has been verified closed, there is no mechanism to open the valve once SDC is secured, and hence no benefit on re-verifying closure on a quarterly basis. Therefore, the interval for the CLOSE exercise test is set at the same interval as the OPEN exercise test. This position is further supported by NUREG-1482, Section 4.1.4, which recognizes the difficulty in performing a seat leakage test to satisfy a CLOSE test, and provides the extension of the test interval for testing of this nature is appropriate.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 14.0, Part 3, S2(3)2423MU017[3], Service Air Containment Isolation Check Valve **Justification**: This valve is a containment isolation valve and is not used during power operation. Stroking this valve during operation would require opening the containment penetration and performance of operations within the containment. **Alternate Testing**: Test this valve at reactor refueling intervals.	This alternate testing justification does not contain an adequate justification for not exercising this valve during cold shutdowns. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: The close exercise test has been removed from the Inservice Testing Program Requirements. Accordingly, no alternate testing interval justification is necessary. **Basis**: The basis document calls only for a close verification, upon further review of the function of this valve. This verification is conducted concurrent with the seat leakage test and is in accordance with NUREG 1482, Section 4.1.4.
ATJ 15.0, Part 1, Shutdown Cooling System Valves 2(3)HV0396, 2(3)HV8152, 2(3)HV8153, 2(3)HV9420 and 2(3)HV9434 **Justification**: These valves are employed in directing Shutdown Cooling System flow into the Reactor Coolant System and controlling that flow. Full stroke testing during power operation would result in non-compliance with Technical Specification 3/4.5.2, which requires these valves to be closed with power to the valve operator removed. **Alternate Testing**: Test these valves at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The justification should be clarified. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: (no change in interval) Continue to test at Cold Shutdown intervals. In the IST Program, enhance our discussion of the basis for this interval. **Basis**: (SO23-V-3.5, Attachment 3, Paras. 15.1, 15.2, & 15.3) For ECCS system operability, the Technical Specifications (Surveillance 4.5.2.a) require verification at least once per twelve hours that these valves are closed and power to the valve operators is removed. Testing these valves at a cold shutdown interval is consistent with NUREG-1482, Para. 3.1.1. Removing these valves from power lockout, restoring power and repositioning them in Modes 1, 2 or 3 involves a hardship; i.e., repositioning of a breaker from "off" to "on" (and closing the manual isolation valves for HV8152 and HV8153). Manual action would be required to restore the ECCS if an accident occurred while the test was in progress. This risk outweighs the benefits achieved with a quarterly test in light of the fact that; (1) being in power lockout, these valves have a minimal probability of failure. They are idle (potential sources of failure are very limited); and, (2) the realignment of the system for the exercise tests in question invalidates the assumptions in the Safety Analysis (see the Technical Specification Bases, Section B 3/4.5.2).

[3] This valve number was shown erroneously as S2(3)2317MU017 in the INEL TER Table 3.1.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 15.0, Part 2, Shutdown Cooling System Valves 2(3)HV8160, 2(3)HV8161, 2(3)HV8162, and 2(3)HV8163 **Justification**: These valves are used in establishing the Shutdown Cooling System flow path when the plant is shutdown. Full stroke exercising of this valve during power operation would result in non-compliance with Technical Specification 3/4.5.2, which requires this valve to be open with power removed. **Alternate Testing**: Test this valve at cold shutdown intervals	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The justification should be clarified. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: 2(3)HV8160 and 2(3)HV8161: No change in interval. 2(3)HV8162 and 2(3)HV8163: Change the test interval to quarterly. In the IST Program, enhance our discussion of the basis for the test intervals. **Basis**: (SO23-V-3.5, Attachment 3, Para 15.3) Technical Specification 3/4.5.2, requires valves 2(3)HV8160 and 2(3)HV8161 to be locked in the open position with power removed during plant power operations. Repositioning these valves results in entry into Technical Specification Action Statement 3.5.2. Further, being in the common LPSI header, repositioning either of these valves also renders both trains of LPSI inoperable since they are in the common discharge line for the LPSI system. Because of this loss of system function, 2(3)HV8160 and 2(3)HV8161 are excluded from quarterly testing consistent with the guidance in NUREG-1482, Para. 3.1.1(1).
ATJ 15.0, Part 3, 2(3)HV9300 and 9301, Refueling Water Tank Outlet Valves **Justification**: Closing either valve during normal plant operation will isolate the pump suction and therefore cause the associated train of safety injection (Containment Spray, HPSI and LPSI) to become inoperable. This is contrary to the requirements of Technical Specification 3/4.5.2. and puts the plant in a 72 hour action statement. **Alternate Testing**: Test these valves at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The justification should be clarified. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: The test interval has been changed to quarterly. **Basis**: A review of the basis for the non-quarterly interval was completed in light of the guidance in NUREG 1482, issued in April 1995. As a result, the original basis was found to be inconsistent with this new guidance and the test interval was adjusted accordingly.
ATJ 15.0, Part 6, 2(3)HV9340, 2(3)HV9350, 2(3)HV9360 and 2(3)HV9370 Safety Injection Tank Outlet Valves to the RCS Loops **Justification**: These valves block the discharge path of the Safety Injection Tanks into the Reactor Coolant System when closed. Restoring power to this valve or opening this valve while the plant is at power would result in non-compliance with the Technical Specifications **Alternate Testing**: Test this valve at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. **Appendix A, IST Program Anomalies**, Para 6: This ATJ states that **opening** the subject valves while the plant is at power would result in non-compliance with the Technical Specifications. These SIT block valves are required to be open during power operation.	**Resolution**: (SO23-V-3.5, Attachment 3, Para 15.6) Replace **opening** with **closing** as appropriate in the ATJ. In addition, the ATJ was clarified to show that the test interval is consistent with NUREG-1482, Para. 3.1.1.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 15.0, Part 11, S2(3)1204MU001 and 002, RWST to CS Pump Suction Check Valves **Justification**: These valves cannot be full-stroked using flow during power operation, for the following reasons: The HPSI (shutoff head 1500 psi) and LPSI (shutoff head 200 psi) pumps are unable to overcome Reactor Coolant System pressure (nominal operating pressure = 2000 psi). There is no full flow recirculation to the RWST from either pump. The containment spray pumps cannot be utilized to full-stroke these valves using flow, as the only full flow path during plant operation is through the containment spray header and nozzles. These valves cannot be full-stroked using flow during cold shutdown because sufficient flow to full-stroke the RWST outlet check valves is not achievable in this condition. Return flow from the HPSI and LPSI pump discharge lines is very limited, consisting of mini-flow recirculation lines and Reactor Coolant System vent lines. The containment Spray (CS) pumps have a 6" recirculation line to the RWSTs, but these pumps by themselves cannot develop full-stroke flow for the RWST outlet check valves. Stroking the RWST outlet check valves with flow from the LPSI pumps is prohibited by the Technical Specifications in Cold Shutdown because the LPSI pumps must be aligned to take suction from the Reactor Coolant System to provide shutdown cooling during this mode of operation. The LPSI pumps cannot, therefore, take a suction through the RWST outlet check valves. The equivalent of the combined Containment Spray, LPSI, and HPSI flow rate cannot be developed with the HPSI pumps alone. Furthermore, the HPSI pumps cannot be used to exercise these valves during cold shutdown because of the risk of exceeding cooldown rate limits. The borated water in the RWST is normally at an ambient temperature of = 65°F and the cooled down Reactor Coolant System is nominally at = 135°F. The Code required testing of the RWST outlet check valves while the plant is in Cold Shutdown could only be performed after significant redesign of the system, such as the addition of an instrumented full flow test line. Similar arguments also can be made for testing during reactor refueling. No allowable flow path exists in any plant mode for a full-stroke of the RWST outlet check valves using flow. **Alternate Testing**: Quarterly, perform a partial stroke test (OPEN) of each valve using system flow. At each refueling outage, test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling).	It is impractical to full-stroke exercise these valves quarterly or during cold shutdowns. The alternate method for full-stroke exercising is approved by GL 89-04 provided that the testing complies with all of the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, Para. 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: Continue to partial-stroke test at quarterly intervals and disassemble and hand stroke at refueling intervals as described in the program. **Basis**: (S023-V-3.5, Attachment 3, Para 15.10) Non-intrusive techniques have been considered. However, because a flow path cannot be constructed which will fully stroke the valves, there is no non-intrusive technique such as magnetics or acoustics that can be utilized to verify the valves achieve full stroke capability. Although it is conceivable radiography could be utilized to verify closure, the valve must be disassembled anyway to verify the open capability, and so there is no additional value in verifying closure through non-intrusive techniques. OM-10, Paragraph 4.3.2 allows that a valve may be disassembled as an alternative to full flow testing. GL 89-04, Position 2, allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. Disassembly and inspection is performed in accordance with, and does not deviate from, OM-10, Para 4.3.2.4, and GL 89-04, Position 2.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 15.0, Part 12, S2(3)1204MU003 and 004, Check Valves, Containment Sump to ECCS Pumps' Suction **Justification**: The only source of water to the inlet of the containment sump outlet check valves is the containment building sump. During normal plant operation this sump is required to be kept dry and the isolation valves shut. This system lineup precludes either full-stroke or partial stroke of these check valves using flow in this mode. In cold shutdown or reactor refueling modes, part stroke exercising of these valves is possible with flow from the containment sump, however, the sump is not maintained at a cleanliness level consistent with the internals of the Safety Injection or Reactor Coolant system piping. The cleanup of the containment sump to a cleanliness level consistent with the internals of the Safety Injection or Reactor Coolant system would be labor intensive. If part-stroke exercising were conducted by filling the sump with water and flow testing these valves, this would potentially contaminate the safety injection systems, the refueling water storage tank, and/or the reactor coolant system with low quality water. This contamination of the systems would cause accelerated corrosion and degradation. Extensive flushing and cleanup following such testing would therefore be required. The Code required testing could only be performed after significant system modifications involving considerable costs. These system modifications would involve additional containment penetrations and long runs of large diameter piping with associated supports and isolation valves. NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. **Alternate Testing**: The valves will be partially disassembled, inspected and manually full stroked at each refueling outage on a rotating basis (one valve per refueling). A method of partial flow testing will be developed and used following the partial disassembly and prior to returning the valve(s) to service.	It is impractical to full-stroke exercise these valves quarterly or during cold shutdowns. The alternate method of full-stroke exercise is approved by GL 89-04 provided that the testing complies with all of the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, Para 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: Continue to test at reactor refuelings with disassembly and also with partial flow. Expand our discussion in the program to more clearly describe the status of the valve testing and our basis for the alternative testing we employ. **Basis**: (S023-V-3.5, Attachment 3, Para 15.11) Non-intrusive techniques have been considered. However, because a flow path cannot be constructed which will fully stroke the valves, there is no non-intrusive technique such as magnetics or acoustics that can be utilized to verify the valves achieve full stroke capability. Although it is conceivable radiography could be utilized to verify closure, the valve must be disassembled anyway to verify the open capability, and so there is no additional value in verifying closure through non-intrusive techniques. Disassembly and inspection is performed in accordance with, and does not deviate from, OM-10, Para 4.3.2.4, and GL 89-04, Position 2.
ATJ 15.0, Part 16, S2(3)1204MU022 and 023, RWST Isolation Valves to LPSI Suction **Justification**: MU022 and MU023 are locked open during normal operation. Closing them during plant operation will cause the associated train of LPSI to be inoperable and fail to meet the requirements of Technical Specification 3/4.5.2 which requires two independent Emergency Core Cooling System (ECCS) subsystems to be operable and restore the inoperable subsystem to operable status within 72 hours. **Alternate Testing**: Test these valves at cold shutdown intervals	The alternative testing justification does not adequately demonstrate the impracticality of exercising these valves closed quarterly during power operations. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. Entry into a Technical Specification alone is not sufficient reason to postpone an IST until Cold shutdown or reactor refueling.	**Resolution**: These valves have been removed from the IST Program. **Basis**: Additional review has revealed that the functions of these valves do not fall under the scope statement, Para. 1.1, of Part 10 of the OM Code.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 15.0, Part 19, S2(3)1204MU034, 35, 36, 37, 63 and 104, Safety Injection Pump Miniflow Line Check Valves **Justification**: Verifying closure of these valves requires placing the miniflow line out of service for the HPSI, LPSI and Containment Spray system pumps. This renders those systems our of service and is only practical in modes where these systems are not required to be operable. **Alternate Testing**: Test these valves at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore the alternative is in accordance with Part 10, Para 4.3.2. **Appendix A, IST Program Anomalies**, Para 3: This section does not provide adequate justification for not testing at power operation. The reviewer must make assumptions to confidently postulate the negative consequences of performing testing during power operations.	**Resolution**: Change the IST interval to reactor refueling. **Basis**: (SO23-V-3.5, Attachment 3, Para 15.17) These stop-check valves direct miniflow recirculation from the HPSI, LPSI pumps back to the Refueling Water Storage Tanks. Providing flow or pressure to verify completion of the closed stroke requires placing the miniflow line out of service for the HPSI, LPSI and Containment Spray Systems. These pumps may run for a prolonged time during a small break LOCA and rely upon the miniflow for pump cooling. The pumps will be damaged if this cooling is not available. Thus, placing the miniflow line out of service renders those systems inoperable and is only practical in modes during which these systems are not required to be operable under the Technical Specifications. The only way to verify closure of these valves is to measure leakage into a test volume upstream of the check valves using a hydro pump. The elaborate valve line-up, test equipment required, and high man-hours required to perform this test make it impractical to perform on a more frequent basis. Performing the CLOSE test of these valves in conjunction with the LEAKAGE test at refueling intervals is consistent with NUREG-1482, Section 4.1.4.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 15.0, Part 20, S2(3)1204MU040, 41, 42 and 43, Safety Injection Tank (SIT) Outlet Check Valves **Justification**: Opening these valves during power operation is not possible against normal RCS operating pressure. A part-stroke test is the only test possible during cold shutdown due to system configuration. OM-10, Section 4.3.2.4(c) states, "As an alternative to testing in (a) or (b) above, disassembly every refueling outage to verify operability of check valves may be used." GL 89-04 allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. This is stated in position 2 of GL 89-04. **Alternate Testing**: Part-stroke on a cold shutdown interval. At refueling intervals disassemble and hand stroke.	It is impractical to exercise these valves quarterly or during cold shutdowns. The alternative method for full-stroke exercising is approved by GL 89-04 provided that the testing complies with all of the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, Para 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: These valves will have stroke capability verified using non-intrusive (NI) testing at each refueling outage on a rotating basis in accordance with NUREG-1482 , Section 4.1.2. Full closure of the valves is ensured by leak testing the valves to the limits specified in Technical Specification 4.4.5.2.2 after they have been exercised but prior to Mode 2. **Basis**: (S023-V-3.5, Attachment 3, Para 15.18) This test utilizes a dump of the SITs to achieve the flow necessary to full stroke the valves, and magnetic and acoustic sensors to verify full open stroke of the obturator. This testing is done during filling of the refueling cavity. If the NI testing does not provide adequate results, alternative techniques, including a determination of the "K-value" of the system, and/or a calculation of flow velocity through the valves calculated using changing tank levels, will be utilized to determine a successful stroke. If these techniques are unsuccessful, disassembly and hand-stroking will be performed in accordance with Generic Letter 89-04.
ATJ 15.0, Part 24, S2(3)1204MU099, Manual Containment Isolation Valve - SIT Drain to RWST **Justification**: Opening this valve at power for test requires entry into a Technical Specification Action Statement due to breach of containment integrity. **Alternate Testing**: Part-stroke test this valve at cold shutdown intervals.	The alternative testing justification does not adequately demonstrate the impracticality of exercising this valve quarterly during power operations. **Appendix A, IST Program Anomalies**, Para 2: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. Entry into a Technical Specification alone is not sufficient reason to postpone an IST until Cold shutdown or reactor refueling.	**Resolution**: The exercise test has been deleted from the IST program requirements for this valve. **Basis**: Additional review has revealed that the close function of this manual valve does not fall under the scope statement, Para. 1.1, of Part 10 of the OM Code.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 16.0, Part 4, 2(3)PCV8463 and 8465, ADV Nitrogen Accumulator Pressure Control Valves **Justification**: These valves are pressure control valves and are therefore excluded from inservice testing requirements under OM-10, Section 1.2. The backup nitrogen gas supply to the ADV will not be available while pressure control valves are stroked open. This necessitates an entry into the action requirements of Technical Specification 3.7.1.6. These valves are open stroked during IST of the respective ADV's at cold shutdown intervals. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST. **Alternate Testing**: Test at refueling intervals in conjunction with the testing of the associated ADV.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, paras. 4.3.2. The licensee's basis should be clarified. **Appendix A, IST Program Anomalies**, Paras. 2 and 5: This section does not provide adequate justification for not testing at power operation and/or during cold shutdowns. Entry into a Technical Specification alone is not sufficient reason to postpone an IST until Cold shutdown or reactor refueling.	**Resolution**: (no change in interval) Provide a corrected and clarified justification for alternate testing in accordance with the Code and guidance provided in NUREG 1482 and GL 89-04. **Basis**: (SO23-V-3.5, Attachment 3, Para 16.4) These valves are not Code valves, however, they have been included in the IST program to assure functionality. They are listed in the IST Program for convenience, however, a missed or failed surveillance will not constitute a violation of Technical Specification 4.0.5. See Letter, J. G. Partlow, NRC, to All Licensees, etc, *Minutes of the Public meetings on Generic Letter 89-04, October 25, 1989*, Response to Question #53, and NUREG 1482, Section 2.2. The IST basis documentation requires only certain tests for these valves. The stroke time of these control valves verifies the open stroke. These valves are open stroked during IST of the ADVs at cold shutdown intervals. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST.
ATJ 16.0, Part 5, S2(3)1301MU1264 and 1265, ADV Equalizing Ball Valves **Justification**: These valves are not Code valves. In spite of the fact that they are exempted from IST since they are provided for operating convenience, they have been included in the IST program to assure functionality. MU1264 and MU 1265 are open and closed stroked during IST of the associated ADV at cold shutdown intervals. In order to stroke the valve closed, the associated ADV must be declared inoperable because normal control air must be isolated. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST. The response to Question 53 in Reference 2.5.2 is followed for guidance in these cases. **Alternate Testing**: Test these valves at cold shutdown intervals.	It is impractical to exercise these valves quarterly. Therefore, the alternative is in accordance with Part 10, Para 4.2.1. The justification should be clarified. **Appendix A, IST Program Anomalies**, Para 5: This ATJ states that the listed valves are normally open but are required to close to isolate the ADV nitrogen supply to allow manual ADV operation which is required if remote operation is not possible during a steam generator tube rupture, main steam line break, Feedwater line break, fire and control room evacuation. However, the ATJ further states that the valves are for operating convenience and exempted from IST. If the valves perform a required safety function, they are not operating convenience valves.	**Resolution**: Revise the justification for the cold shutdown interval to provide clarification. **Basis**: (SO23-V-3.5, Attachment 3, Para 16.5) These valves are normally closed and are opened to equalize the pneumatic pressure across the valve actuator to permit manual operation of the atmospheric dump valve. If these valves remain closed, actuator pressure would not be equalized, and manual operation would be difficult. This could delay manual operation of the ADVs. Local manual operation of the ADV is used when the ADV cannot be operated from the Control Room during: a steam generator tube rupture; main steam line break outside containment; feed water line break; fire and control room evacuation. These valves are not Code valves, however, they have been included in the IST program to assure functionality. MU1264 and MU1265 are open and closed stroked during IST of the associated ADV at cold shutdown intervals. In order to stroke the valve closed, the associated ADV must be declared inoperable because normal control air must be isolated. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST. The response to Question 53 in letter, J. G. Partlow, NRC, to All Licensees, etc, *Minutes of the Public meetings on Generic Letter 89-04, October 25, 1989* is followed for guidance in these cases.

Original Submittal Justification and Proposed Alternate Testing	TER Evaluation of the Justification	Resolution of the TER Concern and Basis
ATJ 16.0, Part 7, S2(3)1301MU003 and 005, Check Valves - Steam Supply to AFW Pump Turbine **Justification**: During normal plant operation, main steam pressure tends to open these valves. No pressure source exists to reverse this pressure in the steam line where these valves are located and allow detection of valve closure or valve leakage. Consequently, with the present system design, verifying the closure of the AFP Steam Supply check valves by leak testing or with reverse flow, while the plant is operating, is not practical. Although a temporary external pressure source could be connected to the down-stream piping and apply reverse pressure to these check valves, the required valve lineup would cause the associated auxiliary Feedwater pump to be inoperable during the test. Regardless of plant mode, there is no positive means of verifying that the valve disc travels to the closed position. System connections, such as vents and drains (and appropriate line isolation valves) are not present in the system to allow verification that a pressure differential exists across the AFP Steam Supply check valves when they are in the closed position. OM-10 and NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no way to test these check valves closed with the existing system design using reverse flow or pressure. Testing of these valves could only be accomplished after significant redesign of the system, such as installation of additional isolation valves and appropriate vents and drains in the high pressure steam piping. The high costs of the necessary design changes involved would not be justified by the improvement of the valve testing. Further, the addition of valves, supports and necessary piping modifications could result in reduced plant reliability. **Alternate Testing**: Quarterly, perform a partial stroke test (open) of each valve using system flow. At each refueling outage, test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling).	It is impractical to full-stroke exercise these valves quarterly or during cold shutdowns. The alternative method for full-stroke exercising is approved by GL 89-04 provided that the testing complies with all the provisions of GL 89-04, Position 2. **Appendix A, IST Program Anomalies**, Para 4: The Licensee has not adequately demonstrated the impracticality of verifying the required obturator movement by testing. Some test method may be feasible to verify the required exercise of these valves. The Licensee should consider methods such as using non-intrusive techniques (e.g., acoustics, ultrasonics, magnetics, radiography, and thermography) to verify a full-stroke exercise of the subject check valves. This testing may only be practical at cold shutdowns or refueling outages. The licensee should perform their investigation and if a test method is found to be practicable, the IST requirements of the applicable valves should be satisfied by testing instead of disassembly and inspection. The licensee should respond to this concern.	**Resolution**: Improve the discussion in the program under the basis section for the Alternate Testing methods and intervals chosen. **Basis**: (SO23-V-3.5, Attachment 3, Para 16.7) The use of non-intrusive test techniques are being pursued, with some success, on these valves. Successful acoustic and magnetic traces have been obtained to verify both open and closure of these valves. Nevertheless, we conduct disassembly and inspection every outage because of past problems with these valves. If it is determined that disassembly and inspection is no longer required, the non-intrusive techniques may be implemented. Disassembly and inspection is performed in accordance with, and does not deviate from, OM-10, Para 4.3.2.4, and GL 89-04, Position 2.

ENCLOSURE 2

PROCEDURE SO23-V-3.5,
INSERVICE TESTING OF VALVES
REVISION 9-2