TECHNICAL EVALUATION REPORT

Turkey Point Nuclear Power Plant, Units 3 and 4
Florida Power and Light Company
Pump and Valve Inservice Testing Program
Revision 0, Third Ten-Year Interval

Docket Numbers: 50-250 and 251
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ABSTRACT

This report presents the results of Brookhaven National Laboratory's evaluation of the relief requests, cold shutdown and refueling outage justifications and, for selected systems, a review of the scope of the Turkey Point Nuclear Power Plant, Units 3 and 4, ASME Section XI Pump and Valve Inservice Testing Program.

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1.0 INTRODUCTION

Contained herein is a Technical Evaluation report (TER) of Revision 0 of the ASME Section XI Third Ten Year Program for pump and valve inservice testing (IST) submitted to the U.S. NRC by Florida Power & Light Company for its Turkey Point Nuclear Power Plant, Units 3 and 4 on January 12, 1994 (Ref. 1). The program for this third ten year interval is based on the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1989 Edition (Ref. 2). The 1989 Edition of Section XI provides that the rules for inservice testing of pumps and valves are as specified in ASME/ANSI OMa-1988 Part 6 and 10 (Refs. 3, 4), respectively.

This program revision supersedes all previous submittals. The Turkey Point Nuclear Units 3.and 4 are Westinghouse Pressurized Water Reactors (PWRs) which began commercial operation on February 22, 1974 for Unit 3 and April 15, 1974 for Unit 4. The third ten year inspection interval is defined for Unit 3 as beginning February 22, 1994 and ending February 21, 2004, and for Unit 4 as beginning April 15, 1994 and ending April 14, 2004.

Title 10 of the Code of Federal Regulations, §50.55a ¶(f) (Ref. 5) requires that inservice testing of 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 specific relief has been requested by the licensee and granted by the commission pursuant to §50.55a ¶(a)(3)(i), (a)(3)(ii), or (f)(6)(i). Florida Power & Light has requested relief from certain ASME Section XI testing requirements. A review of the relief requests was performed using Section 3.9.6 of the Standard Review Plan (Ref. 6); Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," (Ref. 7), and the Minutes of the Public Meeting on Generic Letter 89-04, dated October 25, 1989 and September 26, 1991 (Refs. 8 and 9); and Draft NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," (Ref. 10). The IST Program requirements apply only to component (i.e., pumps and valves) testing and are not intended to provide a basis to change the licensee's current Technical Specifications for system test requirements.

The licensee, in the January 12, 1994 submittal of the Third Ten Year IST Program, states in Attachment 1 that no NRC action is required for six of the seven relief requests. As discussed in Question 70 of the Minutes of the Public Meetings concerning Generic Letter 89-04, requests are subject to review by the NRC at each ten-year update to assure consistency with current NRC regulatory positions.

The review performed for this TER did not include verification that all pumps and valves within the scope of 10 CFR 50.55a and Section XI are contained in the IST Program, and did not ensure that all applicable testing requirements have been identified.

Section 2.0 of this report presents the evaluation of four pump relief requests. One pump relief request (PR-5) was evaluated separately by the NRC (Ref. 11). Section 3.0 presents the evaluation of one of the two valve relief requests (VR-2). The other relief request was authorized by Generic Letter 89-04 and was not specifically evaluated in this Technical Evaluation Report (i.e., VR-1). However, any anomalies associated with the relief request are addressed in Section 5 of the report. The evaluation of the 32 Cold Shutdown Justifications and the 26 Refueling Outage Justifications is presented in Section 4.0, with reference to Table 1 for the Cold Shutdown Justifications and Table 2 for the Refueling Outage Justifications. Section 5.0 summarizes the actions required of the licensee resulting from the TER evaluations of the relief requests and the deferral justifications while Section 6.0 lists the references.

2.0 PUMP RELIEF REQUESTS

In accordance with §50.55a, Florida Power & Light Company has submitted five relief requests for pumps at the Turkey Point Nuclear Units 3 & 4 which are subject to inservice testing under the requirements of OMa-1988 Part 6. One of the relief requests, PR-5, was reviewed separately by the NRC by letter dated May 19, 1994. The other four relief requests have been reviewed to verify their technical basis and determine their acceptability. The relief requests, along with the Technical Evaluation by BNL, are summarized below.

2.1 Relief Request No. PR-1, Boric Acid Transfer Pumps

Relief Request: The licensee has requested relief, for the Boric Acid Transfer Pumps *-P203 A&B, from the requirements of OMa-1988 Part 6, ¶5.2(d) that an inservice test shall be conducted with the pump operating at specified test reference conditions. Pressure, flow rate and vibration shall be determined and compared with corresponding reference values.

Alternate Testing: During quarterly testing of these pumps, differential pressure and vibration measurements will be taken utilizing the fixed resistance flowpath and evaluated in accordance with Table 3 of OMa-1988 Part 6. At each reactor refueling these pumps will be tested and all appropriate measurements taken in accordance with Paragraph 5.2. This satisfies the requirements of NRC Generic Letter 89-04, Position 9.

Licensee's Basis for Relief: The licensee states that: "The normal test loops for these pumps consist of fixed resistance circuits sized to limit flow but with no flow measuring devices installed. Since the system resistance is fixed and can be assumed to be a constant, pump degradation can be monitored by comparing successive measurements of pump differential pressure.

An alternative test circuit is available in which pump flowrate can be measured, however it requires injection of highly concentrated boric acid solution into the reactor coolant system. During plant operation, this is not practical since it would adversely effect reactor power level and create a potential plant transient. If injection were to be performed during cold shutdown periods the result would be excessive boration of the reactor coolant system and associated potential difficulties during the subsequent plant startup. This is especially significant near the end of core life."

Evaluation: Generic Letter 89-04, Position 9 (Ref. 7), states that an inservice pump test requires that the pump parameters shown in ASME Section XI, Table IWP-3100-1 (or correspondingly OMa-1988 Part 6, Table 2) be measured and evaluated to determine pump condition and detect degradation. Pump differential pressure and flow rate are two parameters that are measured and evaluated together to determine pump hydraulic performance.

In cases where flow can only be established through a non-instrumented minimum-flow path during quarterly pump testing and a path exists at cold shutdown or refueling outages to perfor[illegible], a test of the pump under full or substantial flow conditions, the NRC has determined that increased interval is an acceptable alternative to the Code requirements provided that pump differential pressure, flow rate, and bearing vibration measurements be taken during this testing, and that quarterly testing also measuring at least pump differential pressure and vibration be continued. Data from both of these

testing frequencies should be trended, as required by IWP-6000 {or correspondingly OMa-1988 Part 6, ¶7.3(f)}. Specifically, Part 6, ¶7.3(f) states that: "The Owner shall maintain a record of each test which shall include the following: ...(f) comparisons with allowable ranges of values and analysis of deviations."

It is impractical for the licensee to use the instrumented flow path for quarterly or cold shutdown testing due to the injection of boric acid. If the Code requirements were imposed on the licensee, power fluctuations and transients would occur during operation and cold shutdowns would be extended. Since the alternate proposed by the licensee provides reasonable assurance of operational readiness and based on the impracticality of complying with the Code requirements, and the burden on the licensee if the Code requirements were imposed, it is recommended that relief be granted pursuant to 10 CFR 50.55a(f)(6)(i).

2.2 Relief Request No. PR-2, Residual Heat Removal Pumps

Relief Request: The licensee has requested relief for the Residual Heat Removal Pumps *-P210 A&B, from the requirements of OMa-1988 Part 6, ¶5.2(b), which state that the resistance of the system shall be varied until the flowrate equals the reference value. Alternatively, the flowrate may be varied until the differential pressure equals the reference value.

Alternate Testing: During quarterly testing of the RHR pumps, a fixed-resistance test circuit will be used and pump differential pressure and flowrate will be determined and compared to their respective reference values per Paragraph 5.2(c).

During testing performed at cold shutdown or refueling, pump differential pressure, flowrate, and vibration will be recorded and evaluated per Paragraph 5.2(b). Testing during cold shutdowns will be on a frequency determined by intervals between shutdowns. For intervals of 3 months or longer, testing will be conducted at each shutdown.

Licensee's Basis for Relief: The licensee states that: "During quarterly testing of the RHR Pumps, flow is routed through a minimum flow recirculation line leading to the suction of the pump being tested. This recirculation flowpath is capable of passing a flowrate somewhat less than 10 percent of that at the pump design operating point. A flow instrument is installed in this recirculation piping, however there is concern regarding the practice of throttling under minimum flow conditions with the potential for causing pump damage. In addition, hydraulic pump test data at or near a pump's shutoff head provides little information as to the mechanical condition of a pump.

NRC Generic Letter 89-04, Position 9, (Reference 2.7) allows elimination of minimum flow test line flowrate measurements providing inservice tests are performed during cold shutdowns or refueling under full or substantial flow conditions where pump flowrate is recorded and evaluated. The proposed alternate testing is consistent with this philosophy and the intent of this position.

These pumps are standby pumps and little degradation is expected with respect to hydraulic performance during operational periods when the pumps are idle. Thus, the alternate testing will provide adequate monitoring of these pumps with respect to the applicable Code requirements to ensure continued operability and availability for accident mitigation."

Evaluation: Generic Letter 89-04, Position 9 (Ref. 7), states that an inservice pump test requires that the pump parameters shown in ASME Section XI, Table IWP-3100-1 (or correspondingly OMa-1988 Part 6, Table 2) be measured and evaluated to determine pump condition and detect degradation. Pump differential pressure and flow rate are two parameters that are measured and evaluated together to determine pump hydraulic performance.

In cases where flow can only be established through a non-instrumented minimum-flow path during quarterly pump testing and a path exists at cold shutdown or refueling outages to perform a test of the pump under full or substantial flow conditions, the NRC has determined that increased interval is an acceptable alternative to the Code requirements provided that pump differential pressure, flow rate, and bearing vibration measurements be taken during this testing, and that quarterly testing also measuring at least pump differential pressure and vibration be continued. Data from both of these testing frequencies should be trended, as required by IWP-6000 {or correspondingly OMa-1988 Part 6, ¶7.3(f)}. Specifically, Part 6, ¶7.3(f) states that: "The Owner shall maintain a record of each test which shall include the following: ...(f) comparisons with allowable ranges of values and analysis of deviations."

The licensee is measuring pump flow rate and differential pressure quarterly using a fixed-resistance test circuit. According to the Pump Program Tables, the licensee is also measuring vibration quarterly. The licensee is measuring pump flowrate (Ref. 1), vibration, and differential pressure also at cold shutdowns or refueling outages. Based on the potential damage to the pumps when throttling the minimum flow rate, testing in accordance with the Code is impractical. The alternate testing proposed by the licensee provides reasonable assurance of operational readiness. Based on the impracticality of complying with the Code requirements and the burden on the licensee if the Code requirements were imposed, it is recommended that relief be granted for the alternative use of OMa-1988, Part 6, ¶5.2(c) pursuant to 10 CFR 50.55a(f)(6)(i).

In any future revision of this request, the licensee should indicate that vibration is being measured quarterly.

2.3 Relief Request No. PR-3, Residual Heat Removal Pumps

Relief Request: The licensee has requested relief, for the Residual Heat Removal Pumps *-P210 A&B, from the requirements of OMa-1988 Part 6, ¶4.6.1.2(a), that the full-scale range of each analog instrument shall be not greater than three times the reference value.

Alternate Testing: When measuring the suction and discharge pressures of the RHR pumps, in lieu of satisfying the specified instrument range requirement of ¶4.6.1.2.(a), the instruments used for measuring pressure will meet the following specifications:

Accuracy: ±0.25 percent of Full Scale (or better)

Range: Compound Gauge: 1st revolution 0-300 psig.
2nd revolution 300-600 psig. (or better)

Licensee's Basis for Relief: The licensee states that: "The installed suction and discharge pressure gauges of the RHR pumps are sized to accommodate the pressure range of 4 to 600 psig expected under standby and cold shutdown testing conditions (instrument range is 0-600 psig). As a result, the instrument range exceeds the Code requirement since, under some test conditions, the pump suction and/or discharge pressures can be considerably less than 200 psig, or 1/3 times the pressure gauge range.

In this particular case, the specification for the installed gauges is as follows:

Range: Compound gauge: 1st revolution 0-300 psig;
2nd revolution 300-600 psig.
Accuracy: ±0.25 percent of full scale (±1.5 psig)

Suction Pressure

Suction pressure measurements are used primarily to derive the pump differential pressure through calculation. The accuracy of the suction pressure measurement normally has little or no effect on the results of this calculation since, generally, the pump discharge pressure exceeds the suction pressure by 2 or 3 orders of magnitude. When determining pump differential pressure (Dp), where typically RHR Pump Dp is approximately 100 psig (discharge and suction pressures approximately 120 and 20 psig, respectively) the maximum effect of suction pressure inaccuracy is ±1.5 psig, or ±1.5 percent of the calculated Dp. This compares reasonably with the maximum allowable accuracy (per Code) of the suction pressure gauge of ±2 percent of 60 psig, or ±1.2 psig.

Discharge Pressure

Discharge pressure measurements are also used to derive the pump differential pressure through calculation. When determining pump differential pressure (Dp), where typically RHR Pump Dp is approximately 100 psig, (discharge and suction pressures approximately 120 and 20 psig., respectively) the maximum effect of the discharge pressure inaccuracy is ±1.5 psig, or ±1.5 percent of the calculated Dp. This is considered to be negligible when compared to the maximum allowable accuracy (per Code) of the discharge pressure gauge of ±2 percent of 360 psig, or ±7.2 psig.

Combination

Based on the inaccuracies of the suction and discharge pressure gauges (±1.5 psig), the largest possible error in the differential pressure calculation is ±3 psig (assuming a conservative simple arithmetical method). Thus the maximum inaccuracy is approximately three times better (5.4 psig) than the "allowable" combined Code inaccuracy of 8.4 psig."

Evaluation: In Draft NUREG-1482 Section 5.5.1 (Ref. 10), the NRC notes that the Code (i.e., OMa-1988 Part 6, ¶4.6.1.2) requires each analog instrument to have a full-scale range 3 times the reference value or less. The Code (i.e., Table 1) requires an accuracy for analog instruments of ±2% of full-scale and ±2% of total loop accuracy for a combination of instruments.

When the range of a permanently installed analog instrument is greater than 3 times the reference value but the accuracy of the instrument is more conservative than the Code requirement, the NRC may grant relief when the combination of range and accuracy yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements.

The licensee's proposed alternative testing is to use pressure gauges for pump suction and pump discharge pressures having a range of 0 to 600 psig. Under some test conditions, this range exceeds 3 times the reference value, since under some test conditions the pump suction and/or discharge pressure can be considerably less than 200 psig. However, the maximum inaccuracy of the suction pressure and the discharge pressure instruments individually is ±1.5%. The maximum inaccuracy of the combination of suction and discharge pressure readings is only ±5.4 psig, which is less than 65% of the allowable combined Code inaccuracy for differential pressure readings of ±6% of readings or ±8.4 psig.

Therefore, the combination of range and accuracy yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements. The relief requested by the licensee provides an acceptable level of quality and safety and it is recommended that the alternate be authorized pursuant to 10 CFR 50.55a(a)(3)(i).

2.4 Pump Relief Request No. PR-4, Generic Relief

Relief Request: The licensee has requested relief, for all pumps in the program, from the requirements of OMa-1988 Part 6, ¶4.6.2.1 that if the presence or absence of liquid in a gage line could produce a difference of more than 0.25% in the indicated value of the measured pressure, means shall be provided to ensure or determine the presence or absence of liquid as required for the static correction.

Alternate Testing: If the presence or absence of liquid in a gage line used for sensing pump suction pressure could produce a difference of more than 0.25% in the calculated value of the pump differential pressure, means shall be provided to ensure or determine the presence or absence of liquid as required for the static correction used.

Licensee's Basis for Requesting Relief: The licensee states that: "When this requirement is applied where measured pressures are at relatively low levels, e.g., suction pressure, the 0.25% limit many times results in complicated venting procedures and related health physics risks associated with the disposal of radioactive contaminated water with no commensurate improvement of test reliability.

Normally, the only quantitative use of suction pressure measurements, where significant accuracy is required, is in determining pump differential pressure or head. In most cases the pump discharge pressure exceeds the suction pressure by at least a factor of five (5). This being the case, a .25% error introduced into the suction pressure measurement results in an error of .05% in the differential pressure calculation. This is insignificant in light of the potential 6% error allowance applied to both the suction and discharge pressure instruments (Paragraph 4.6.1.1)."

Evaluation: The requirement to account for the presence or absence of liquid in pressure sensing lines is intended to ensure that accurate pressure measurements are obtained. Pump suction pressure itself is not required to determine pump performance, and there are no acceptance criteria for it. This is recognized in ASME/ANSI OMa-1988, Part 6, which eliminates pump suction pressure

measurement as a requirement. It was included in Section XI to help the licensee recognize that adequate suction pressure is required for proper pump operation. Its only quantitative use is in calculating pump differential pressure, if it cannot be measured directly. Therefore, the error in suction pressure measurement is only important to the calculated value of differential pressure. The licensee's alternative for accounting for liquid in the gage lines is acceptable since it meets the intent of the Code. However, it must be proceduralized properly to ensure that the accuracy of differential pressure measurements meets the Code requirements.

Since the licensee's proposed alternative provides an acceptable level of quality and safety, it is recommended that relief be authorized pursuant to 10 CFR §50.55(a)(3)(i) with provisions. The licensee should ensure that the calculation of pump differential pressure is proceduralized properly to account for liquid in the pressure sensing gage lines so that the accuracy of the final value meets Code requirements.

3.0 VALVE RELIEF REQUESTS

In accordance with §50.55a, Florida Power & Light Company has submitted two relief requests for specific valves at the Turkey Point Nuclear Power Plant Units 3 & 4 which are subject to inservice testing under the requirements of ASME Section XI. These relief requests have been reviewed to verify their technical basis and determine their acceptability. The first relief request, VR-1, is authorized by Generic Letter 89-04. The other relief request, VR-2, is reviewed and evaluated below.

3.1 Relief Request No. VR-2, Safety Injection System Check Valves

Relief Request: The licensee has requested relief, for the Safety Injection System check valves 3-0873 A&B (4-0873 A&B) and 3-0874 A&B (4-0874 A&B), from the requirements of OMa-1988 Part 10, ¶4.3.2 that check valves shall be exercised nominally every 3 months.

Alternate Testing: Valve closure testing will conform to the requirements of Turkey Point Technical Specification, Section 4.4.6.2.2.

(The requirements of Technical Specification 4.4.6.2.2 are as follows:

Each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-1 shall be demonstrated OPERABLE by verifying leakage to be within its limit:

* At least once every 18 months;

* Prior to entering Mode 2 whenever the plant has been in cold shutdown for 72 hours or more and if leakage testing has not been performed in the previous 9 months;

* Prior to returning a valve to service following maintenance, repair, or replacement work on the valve; and

* Following valve actuation due to automatic or manual action or flow through the valve:

1. Within 24 hours by verifying valve closure, and

2. Prior to entering Mode 2 by verifying valve leakrate.)

Licensee's Basis for Relief: The licensee states that: "Since these are simple-acting check valves with no provision for determining disc position, the only practical means of verifying closure involves performing a leak test. Performance of such a test at each cold shutdown would constitute an unreasonable burden on the plant staff. The Technical Specifications, Section 4.4.6.2.2, establishes a more appropriate frequency for leak testing based on their pressure isolation function. The Technical Specification requirements are adequate to confirm valve operability in the closed position."

Evaluation: All of the subject valves are two inch check valves located inside containment. Check valves 3-0873 A&B and 4-0873 A&B open to provide flowpaths for borated water injection from the SIS pumps to each of the RCS cold legs. They close to provide isolation of the Safety Injection System from the RCS high pressure. Check valves 3-0874 A&B and 4-0874 A&B open to provide

flowpaths for borated water injection from the SIS pumps to "A" and "B" RCS hot legs. They close to provide isolation of the safety injection system from the RCS high pressure.

Section XI requires that check valves performing a safety function in the closed position be exercised to that position, and allows for the licensee to verify the exercise by visually observing the valve, recording an electrical signal initiated by a position-indicating device, observing the appropriate pressure indication in the system, performing seat leakage testing, or using other positive means. These valves do not have remote position indication and are located inside reactor containment. The only practical means of verifying valve closure is by performing a seat leakage test. To perform a seat leakage test during power operation or during every cold shutdowns would require personnel entry inside the containment, resulting in additional radiation exposure to personnel and subjecting personnel to safety hazards.

The proposed alternative requires leak testing every refueling outage (since the valves are exercised open at refueling outages per Refueling Outage Justifications ROJ-SI-1 and 2), following maintenance, following actuation, and at some cold shutdowns.

Therefore, based on the impracticality of performing a seat leakage test during power operation or during every cold shutdown, the proposed alternative provides seat leakage testing to verify valve closure during refuelings and some cold shutdowns in accordance with the Code, and is acceptable pursuant to OMa-1988, Part 10, ¶4.3.2.2(c) and (e).

Although the Technical Specification is adequate to verify closure, if they are used in lieu of the Code's leakage testing requirements (i.e., ¶4.2.2.3) the licensee should note that in Generic Letter 89-04, Position 4, the NRC describes concerns with the adequacy of testing PIVs. The leak rate testing specified in a plant's Technical Specifications is considered adequate to meet the intent of IWV-3420 and OMa-1988, Part 10 ¶4.2.2.3. As noted in Position 4, the licensee should ensure that each PIV is leak tested individually. Furthermore, such testing should be conducted at the differential pressure required by the Code, or the measured leakage should be adjusted as provided by the Code.

The licensee may consider the leakage testing performed to meet the Technical Specification requirements to also meet the IST requirements if the intent of the Code is met, e.g., leakage limits are established, corrective actions taken as required, and valves are individually leak tested. However, the licensee should ensure that the test differential pressure specified in the Technical Specifications, if applicable, is essentially equivalent to the "function maximum pressure differential," or that the measured leakage is adjusted to the "function maximum pressure differential" in accordance with the formula specified in the Code, i.e. IWV-3423(e) or OM-10, ¶4.2.2.3(b)(4).

While other aspects of the Technical Specifications have been reviewed and determined by the NRC to be acceptable, the licensee should ensure that any testing requirements that are not specifically detailed in the Technical Specifications are imposed on the PIVs to comply with the leakage testing requirements of the IST Program. The major difference between Technical Specification and IST requirements relates to the acceptance criteria specified in some licensees' Technical Specifications between a nominal leakage limit and an upper limit. If this is allowed by the Technical Specifications, then this is considered acceptable for acceptance criteria for the IST Program.

In the specific case of Turkey Point, Technical Specification 3.3.6.2 does specify an upper leakage limit for PIVs. Therefore, the Technical Specification leakage limits are acceptable as acceptance criteria for the IST Program. However, the licensee must ensure that the pressure differential requirements of OM-10, ¶4.2.2.3 as discussed above are met.

Additionally, several apparent inconsistencies were noted during the review of this relief request. Specifically, all of the valves identified in the relief request are listed as Reactor Coolant System Pressure Isolation Valves (PIVs) in Table 3.4-1 of the Technical Specifications (Ref. 15). It appears that the licensee inadvertently has omitted valves 3-0873C and 4-0873C from the relief request, not only because these valves provide an analogous function to 3-0873 A&B and 4-0873 A&B, but also because they are listed in the Valve Program Tables as being subject to Valve Relief Request VR-2 for exercising closed, and they are listed in Table 3.4-1 of the Technical Specifications as Reactor Coolant System Pressure Isolation Valves.

Furthermore, the Valve Program Tables indicate that the SIS Cold Leg Injection check valves 3-0875A thru C and 4-0875A thru C are subject to Valve Relief Request VR-2 for exercising closed, and are also listed in Table 3.4-1 of the Technical Specifications, yet these valves are not included in the request.

The Valve Program Tables indicate that SIS Cold Leg Injection check valves 3-0876A thru C, also PIVs listed on Table 3.4-1 of the Technical Specifications, are exercised closed per an unspecified relief request. It appears that the intended relief request is VR-2.

Check valves 3-0876 D&E and 4-0876 D&E on the Alternate Low Head Safety Injection lines from the Residual Heat Removal (RHR) heat exchangers, also listed on Table 3.4-1 of the Technical Specifications, have neither an exercise open nor an exercise close test listed in the Valve Program Tables. Only a seat leakage test for PIVs at refueling outages is specified. Although the licensee may consider 3-0876 D&E and 4-0876 D&E as passive valves because they are isolated upstream by normally closed MOV-3-872 and MOV-4-872, the licensee should verify whether these valves perform a safety function in the open position and whether an exercise closed test, which may be satisfied by the seat leakage test, is also required.

The licensee should note that the NRC considers check valves, and other automatic valves designed to close without operator action after an accident and for which flow is not blocked, as "active" valves which would be classified as such in the IST Program. Similar criteria can be applied to the opening function of a check valve. The flow through a check valve in a system is "blocked" by a flange closure in the line, a locked closed valve other than a check valve, or some other means of precluding flow through the system. A valve is "positively held in place" if it has an operator or other auxiliary device to maintain the disk in an open or closed position. Even though the licensee may have considered these valves passive from a single failure criterion, they must open to perform a safety function, and they should be considered active for testing purposes.

In summary, the licensee could convert this request into a deferral justification and should include valves:

- 3-0873C and 4-0873C
- 3-0875A thru C and 4-0875A thru C.

The licensee should also verify whether:

- Cold Leg Injection check valves 3-0876A thru C should be included in the request,
- Valves 3-0876 D&E and 4-0876 D&E on the Alternate Low Head Safety Injection lines from the Residual Heat Removal (RHR) heat exchangers perform a safety function in the open position and whether a quarterly exercise closed test is also required. The licensee should also review whether these valves are active rather than passive valves.
- the pressure differential requirements of OM-10, ¶4.2.2.3 for seat leakage testing are met by the Technical Specification required testing for PIVs.

If the licensee determines that the proposed leak rate testing in the Technical Specifications are not adequate to meet the Code requirements for leak rate testing (i.e., ¶4.2.2.3), a relief request should be prepared and submitted for review.

4.0 DEFERRED TESTING JUSTIFICATIONS

Florida Power & Light Co. has submitted 32 Cold Shutdown Justifications and 26 Refueling Outage Justifications which document the impracticality of testing valves quarterly, during operation, as required by OMa-1988, Part 10. These justifications were reviewed to verify their technical basis. Generally, those tests involving a plant trip, damage to a system or component, or excessive personnel hazards are not considered practical. Removing one train for testing or entering a limiting condition of operation is not sufficient basis alone for not performing the required tests, unless some other justification is provided such as that the testing renders systems inoperable for extended periods of time. As discussed in Generic Letter 91-18, it is not the intent of IST to cause unwarranted plant shutdowns or to unnecessarily challenge other safety systems. Other factors, such as the effect on plant safety or risk and the difficulty of the test may be considered.

In some of the Cold Shutdown Justifications (CSJs), the licensee has not provided sufficient information as to the time available before damage to equipment would occur following closure of a valve, or failure in the closed position. The licensee should provide additional information in the basis to justify why the plant could not achieve a normal shutdown in the event that a valve failed in the closed position. In other cases, the licensee's basis for deferring testing is that testing could place the plant in a 72 hour Limiting Condition of Operation (LCO) action statement. As discussed above, this is not a sufficient basis for not performing the required tests.

For several of the Refueling Outage Justifications (ROJs) relating to the Safety Injection System, the licensee should revise the justifications to clarify whether the full-stroke open test is conducted at the maximum required accident flow rate as discussed in Generic Letter 89-04, Position 1. If a reduced flow rate is used, a positive means for verifying the valves open to the full-stroke position is required. Such means for verification must meet all of the six criteria identified in Position 1. Draft NUREG-1482, Section 4.1.2, further discusses the use of nonintrusive techniques as a means for verifying valve position and states the acceptability of sample testing.

BNL's evaluation of each Cold Shutdown Justification and Refueling Outage Justification is provided in Tables 4-1 and 4-2, respectively. Each justification has been given an item number to aid with the discussions. The anomalies associated with the specific justifications are presented in Paragraph 5.5 and 5.6 of this TER.

Table 4.1 Turkey Point Units 3 and 4 Cold Shutdown Justification Evaluation

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
COMPONENT COOLING WATER				
CC-1	MOV-3-0626 and MOV-4-0626, 3" motor operated gate valves, MOV-3-0716 A&B, MOV-3-0730, and MOV-4-0716 A&B, MOV-4-0730, 6" motor operated gate valves, Cat. B, Component Cooling Water Supply/Return Isolation Valves, normally open	5613(4)-M-3030-5(4), Rev. 5, "Component Cooling Water System (Sheet 5)"	"These valves are required to be open to ensure continued cooling of reactor coolant pump auxiliary components including the controlled seal leakage system, the pump seals, and the main drive motors. Closing these valves during pump operation could result in degradation of the RCP seals and motors, eventually resulting in potential RCP damage and subsequent plant shutdown."	Exercise to closed position with stroke time measured during cold shutdown with the reactor coolant system cooled down and vented. Position indication verification every 2 years.

Evaluation: These valves are normally open in the flow paths to the thermal barrier cooling coil and the upper and lower bearing oil cooling. Upon receipt of a high-high containment pressure signal these valves close. These valves fail as is upon loss of power.

Closing these valves for testing could significantly heat the motors and the pump seals. It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly because this could challenge the integrity of the RCP seals and/or exceed the design temperatures for other auxiliary components in the thermal barrier and cause the motors to be tripped due to high bearing oil temperature. In Draft NUREG-1482, ¶3.1.1.4 states that Reactor Coolant pumps need not be stopped for cold shutdown testing. The NRC recommends that affected valves be tested during plant outages when RC pumps are stopped for a sufficient period of time and on a refueling outage schedule, but not more than once every 92 days.

The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CC-2	MOV-3-1417, MOV-3-1418, and MOV-4-1417, MOV-4-1418, 10" motor operated gate valves, Cat. B, Component Cooling Containment Supply/Return Isolation Valves, normally open	5613(4)-M-3030-5(4), Rev. 5, "Component Cooling Water System (Sheet 5)"	"These valves provide normal cooling to the normal containment coolers, control rod drive mechanism coolers, and the primary shield cooling coils. Exercising any of these valves during plant operation at power could cause overheating of the associated components. Should any one of these valves fail to reopen after closure serious damage to equipment could occur necessitating an immediate plant shutdown and cooldown."	Exercise to closed position with stroke time measured at cold shutdown. Position indication verification every 2 years.

Evaluation: These valves are the supply and return valves to the normal containment coolers, control rod drive mechanism coolers, and the primary shield wall coils. Upon receipt of a safety injection signal these valves close. These valves fail as is upon loss of power.

It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly because with the plant at power damage due to overheating could occur to the control rod drive mechanisms fan motors, shield wall, and containment cooler fan motors. The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CC-3	3-0738, 4-0738, 3" check valve, Cat. C, Excess Letdown Heat Exchanger CCW Supply Check Valves, normally closed	5613(4)-M-3030-5(4), Rev. 5, "Component Cooling Water System (Sheet 5)"	"These valves are simple check valves located inside the containment building with no external or remote position indication; thus the only practical method of determining disc position is via a backflow or backleakage test. During the performance of such a test, a considerable length of piping (and potentially the heat exchanger) is drained. Since the CCW water is treated with a chemical corrosion inhibitor, this would create a significant waste disposal problem, whereby performance of this test on a quarterly basis would prove to be an unwarranted burden on the plant staff."	Exercise to the closed position at cold shutdowns.

Evaluation: This check valve closes to protect against backflow of CCW flow through the excess letdown heat exchanger.

It is impractical to test these valves quarterly because both the valves and test connections are located inside containment and an excessive length of time would be required to setup the testing. This may result in increased personnel exposure and delay plant operations.

The alternative provides exercising to the closed position during cold shutdowns in accordance with OMa-1988 Part 10, ¶4.3.2.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
REACTOR COOLANT SYSTEM				
RC-1	PCV-3-0455C, PCV-3-0456, and PCV-4-0455C, PCV-4-0456, 2" air operated globe valves, Cat. B, Power-Operated Relief Valves, normally closed	5613(4)-M-3041-2, Rev. 12, "Reactor Coolant System (Sheet 2)"	"Exercising these valves at power has the potential for causing seat damage that could result in unacceptable RCS leakage. Consequently, this could necessitate isolation of the affected PORV(s)."	Fail safe test at cold shutdowns. Exercise to closed and open positions with stroke time measured at cold shutdowns. Position indication verification every 2 years.
Evaluation: It is impractical to part-stroke or full-stroke exercise these valves to the open position quarterly because this could result in a loss of coolant accident. Generic Letter 90-06 states that stroke testing of the PORVs should not be performed during power operation due to the risk associated with challenging these valves in this condition. The alternative provides full-stroke exercising to the open and closed position and fail safe testing at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c) and ¶4.2.1.6.				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
RC-2	SV-3-6318 A&B, SV-3-6611, SV-6612, and SV-4-6318 A&B, SV-4-6611 , SV-4-6612, 1" solenoid operated globe valves, Cat. B, Reactor Coolant System Vents, locked closed	5613(4)-M-3041-2, Rev. 12, "Reactor Coolant System (Sheet 2)"	"These valves are administratively controlled in the key-locked closed position to prevent inadvertent operation. Since these are Class 1 isolation valves for the reactor coolant system, failure of a valve to close or leakage following closure could result in a loss of coolant in excess of the limits imposed by the Plant Technical Specifications. Furthermore, failure of the valve to indicate a return to the fully closed position following exercising, could likely result in a containment entry at power or a plant shutdown."	Exercise to open position with stroke time measured during cold shutdown with the reactor coolant system cooled down and vented. Position indication verification every 2 years.

Evaluation: These are the Reactor Vessel Head Vent Valves.

It is impractical to exercise these reactor head vent valves to the open position quarterly because these valves are administratively controlled in the key-locked closed position to prevent inadvertent operation, and prevent the possibility of a loss of coolant accident in excess of the limits imposed by the Plant Technical Specifications.

The alternative provides full-stroke exercising to the open position during cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CHEMICAL & VOLUME CONTROL SYSTEM				
CV-1	CV-3-0204, and CV-4-0204, 2" air operated globe valve, Cat. A, Letdown Line Outboard Isolation Valves, normally open. Also, containment isolation valves for penetration P-14	5613(4)-M-3047-1, Rev. 8, "Chemical and Volume Control System Charging and Letdown (Sheet 1)"	"Closing these valves during operation would result in undesirable pressurizer level or CVCS system transients with the potential for a plant trip. If a valve failed to reopen, then an expedited plant shutdown would be required."	Fail safe test at cold shutdowns. Exercise to closed position with stroke time measured at cold shutdowns. Seat leakrate test per 10 CFR 50, App. J every 2 years, Position indication verification every 2 years.

Evaluation: These valves are in series with, and redundant to, the 3 air-operated valves located inside containment on the letdown line. Upon receipt of a safety injection signal these valves close.

Exercising these containment isolation valves during operation quarterly would introduce upsets in the operation of the letdown, charging and seal injection subsystems. If the closure of the valve lasts too long, or fails in that position, the pressurizer level would be affected with the likelihood of a Unit trip.

It is impractical to part-stroke or full-stroke these valves closed quarterly because of the resulting RCS transients that can challenge the reactor protection system.

The alternative provides for full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-2	3-0357, and 4-0357, 4" check valve, Cat. C, RWST Discharge Valves, normally closed	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown (Sheet 2)"	"Exercising these check valves during operation would require injection of RWST borated water into the reactor coolant system. This would, in turn, result in boration of the reactor coolant system with an adverse reaction in reactor power and the potential of a power transient."	Exercise to open position at cold shutdowns.

Evaluation: These valves are in the line from the Refueling Water Storage Tank to the charging pump suction header, and open to provide a backup for emergency boration. The charging pump in operation continues flow during a LOCA because it does not receive a safety injection signal. The charging pumps would draw suction from the RWST via the safety injection line. Hence, it is required to be full-stroke exercised to the open position.

If tested during power operation, the RCS pressure prevents the charging pump from reaching full injection flow. Flow would have to be drawn from the RWST through check valve 3(4)-0357, which in turn would result in an increase in boron concentration in the RCS and a power transient.

The alternative provides full-stroke exercising to the open position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.3.2.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-3	HCV-3-0121, and HCV-4-0121, 3" air operated globe valve, Cat. B, Charging Line Flow Control Valves, normally open	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown (Sheet 2)"	"These valves provide the primary flow path to the RCS via the Charging Pumps. Measuring valve opening stroke time would first necessitate valve closure. Closing these valves during operation could result in oscillations in RCP seal injection flow and undesirable pressurizer level transients with the potential for a plant trip."	Fail safe test and exercise to open position at cold shutdowns.
Evaluation: These are the flow control valves in the charging line from the charging pumps to the non-regenerative (or letdown) heat exchanger. They are open during normal operation and emergency boration. In a LOCA, the letdown and seal water lines are isolated but the charging pump in operation continues flow. Hence, in a LOCA, the charging line flow control valves remain open. In addition, the emergency boration flow must pass through this valve and seal water injection line. It is impractical to part-stroke or full-stroke exercise these valves to the open or closed position quarterly because this action could cause a pressurizer level transient and possible plant trip. The alternative provides full-stroke exercising to the open position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-4	LCV-3-0115B, and LCV-4-0115B, 4" air operated butterfly valve, Cat. B, RWST Outlet Valves, normally closed	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown (Sheet 2)"	"Opening these valves during operation would result in injection of RWST borated water into the reactor coolant system. This would, in turn, result in boration of the reactor coolant system with an adverse reaction in reactor power and the potential for a power transient."	Exercise to open position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These valves are in the line from the Refueling Water Storage Tank to the charging pump suction header. These valves open as a backup for emergency boration. The charging pump in operation continues flow during a LOCA because it does not receive a safety injection signal. The charging pumps would draw suction from the RWST via the safety injection line.

If tested during power operation, the RCS pressure prevents the charging pump from reaching full injection flow. Flow would have to be drawn from the RWST through level control valve 3(4)-0115B, which in turn would result in an increase in boron concentration in the RCS and a power transient.

The alternative provides full-stroke exercising to the open position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-5	LCV-3-0115C, and LCV-4-0115C, 4" motor operated gate valve, Cat. B, Volume Control Tank Outlet Valves, normally open	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown (Sheet 2)"	"Closing these valves during operation would necessitate configuring the Charging Pump suction from the VCT to the RWST in order to maintain charging flow. Injection of RWST borated water into the RCS would result in over boration with an adverse reaction in reactor power level and a potential for a reactor power transient."	Exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These valves are located between the outlet of the VCT and the charging pumps. These valves fail as is upon loss of power. Upon receipt of a safety injection signal these valves close to isolate the VCT.

It is impractical to part-stroke or full-stroke exercise these valves closed quarterly because of potential for a reactor power transient due to overboration of the RCS as a result of the need to align the charging pumps' suction to the RWST to maintain charging flow and prevent loss of pump net positive suction head (NPSH).

The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-6	MOV-3-0381, MOV-3-6386, and MOV-4-0381, MOV-4-6386, 3" motor operated gate valves, Cat. A, RCP Seal Water Return Isolation Valves, normally open between penetration P-25	5613(4)-M-3047-3, Rev. 10, "Chemical and Volume Control System Seal Water Injection to RCP (Sheet 3)"	"Exercising these valves to the closed position when the reactor coolant pumps (RCP's) are in operation would interrupt flow from the RCP seals and may result in damage to the pumps' seals."	Exercise to closed position with stroke time measured during cold shutdowns with the reactor coolant system cooled down and vented. Seat leakrate test per 10 CFR 50, App. J every 2 years. Position indication verification every 2 years.

Evaluation: Upon receipt of a safety injection signal these valves close.

It is impractical to exercise these valves to the closed position quarterly because this action could damage the reactor coolant pump (RCP) seals. In Draft NUREG-1482, ¶3.1.1.4 states that RCPs need not be stopped for cold shutdown testing. The NRC recommends that affected valves be tested and cause a loss of cooling flow during plant outages when RCPs are stopped for a sufficient period of time and on a refueling outage schedule, but not more than once every 92 days.

The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
RESIDUAL HEAT REMOVAL SYSTEM				
RH-1	3-0753 A&B, and 4-0753 A&B, 10" check valves, Cat. C, Residual Heat Removal (RHR) Pump Discharge Check Valves, normally closed	5613(4)-M-3050-1, Rev. 8, "Residual Heat Removal System (Sheet 1)"	"The only flow path available for full-flow exercising these valves to the open position requires pumping from each RHR pump to the reactor coolant system. The residual heat removal system is designed and interlocked so as to make it impossible to pump to the reactor coolant system at elevated pressures. Note that these valves will be partial-stroke exercised open on a quarterly basis via the minimum flow test lines."	Partial exercise to the open position quarterly (during plant operation). Exercise to the open and closed positions at cold shutdowns.

Evaluation: These check valves open to permit flow from the RHR pumps during normal shutdown and also during a large LOCA. These valves are required to close to protect the RHR pumps from reverse flow.

It is impractical to quarterly full-stroke exercise these valves open quarterly because the RHR pumps cannot develop sufficient discharge pressure to inject into the RCS.

The alternative provides part-stroke exercising to the open position quarterly and full-stroke exercising to the open position at cold shutdowns in accordance with OMa-1988, Part 10, ¶4.3.2.2(b).

However, the licensee has provided no information as to why the valves cannot be verified closed quarterly, because based upon review of the P&ID these check valves are outside containment and there appear to be available test connections and, as discussed in GL 89-04 Position 3 (Ref. 7), verification of closure may be achieved by a leak test, even if no leakage limits apply, and verifying closure capability does not require exercising the valve open first.

The licensee should revise and resubmit this deferral to discuss the impracticality of verifying closure of these valves quarterly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
RH-2	MOV-3-0750, MOV-3-0751, and MOV-4-0750, MOV-4-0751, 14" motor operated gate valves, Cat. A, RHR Supply from the Reactor Coolant System Isolation Valves, locked closed	5613(4)-M-3050-1, Rev. 8, "Residual Heat Removal System (Sheet 1)"	"These valves are provided with electrical interlocks that prevent opening when any one of the following conditions exists (in the corresponding unit): * Reactor coolant system pressure exceeds 525 psig; * MOV-*-862 A or B is open; or * MOV-*-863 A or B is open. This precludes exercising these valves in any other plant condition than cold shutdown."	Exercise to closed and open positions with stroke time measured at cold shutdowns. Seat leakrate test for pressure isolation valves and position indication verification every 2 years.
Evaluation: It is impractical to full-stroke exercise these valves open or closed quarterly because these valves are pressure isolation valves which protect the RHR system from RCS pressure [and the potential for an inter-system LOCA (ISLOCA)]. The alternative provides full-stroke exercising to the open and closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).				
RH-3	MOV-3-0862 A&B, MOV-4-0862 A&B, 14" motor operated gate valves, Cat. B, RHR Pump Suction Isolation Valves, locked open	5613(4)-M-3050-1, Rev. 8, "Residual Heat Removal System (Sheet 1)"	"Exercising and failure of either of these valves in the closed position during testing will isolate both unit's residual heat removal pumps from the respective refueling water storage tank rendering them inoperable and losing all capability of low-pressure safety injection."	Exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.
Evaluation: These valves provide double isolation for the Residual Heat Removal pump suction from the Refueling Water Storage Tank. It is impractical to full-stroke exercise these valves quarterly since closure of either of these valves would render both trains of RHR pumps, which are also the Low Pressure Safety Injection Pumps, inoperable. The alternative provides full-stroke exercising to the open and closed positions at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
RH-4	MOV-3-0863 A&B, MOV-4-0863 A&B, 8" motor operated gate valves, Cat. B, Safety Injection Pump Recirculation Phase Suction Stop Valves, locked closed	5613(4)-M-3050-1, Rev. 8, "Residual Heat Removal System (Sheet 1)"	"Failure of either of these valves in the open position during testing will open a recirculation path from the discharge of the RHR heat exchangers to the RWST or suction of the RHR pumps. In the event of a safety injection signal, this would result in diverting flow from the injection flow path and thus adversely impact the effectiveness of the LP safety injection system function."	Exercise to open position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These locked closed valves are opened in the recirculation phase of a LOCA to provide a suction source for the high head safety injection pumps and containment spray pumps while the RWST isolation valves are closed.

These valves if opened during operation would develop a circular flow path from the RWST to RHR pumps and RHR heat exchangers through the valves with a return to the RHR pumps. In addition to the possibility of a safety injection signal that would adversely impact the effectiveness of the LP safety injection system, there is also the burden of draining the circular test loop after testing. Therefore it is impractical to test these valves quarterly.

The alternative provides full-stroke exercising to the open position at cold shutdowns in accordance with OMA-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CONTAINMENT PURGE SYSTEM				
CP-1	POV-3-2600, POV-3-2602, and POV-4-2600, POV-4-2602, 48" and 54" air operated butterfly valves, Cat. A, Containment Building Purge Supply/Exhaust Outboard Isolation Valves, normally closed	5613(4)-M-3053-1, Rev. 8, "Containment Purge System and Penetration Cooling System (Sheet 1)"	"Due to the history of these valves with respect to operational-related seat leakage, the plant staff has imposed restrictions on their operation whereby unnecessary cycling of the valves is to be avoided and additional leak tests are performed based on cycling frequency. Thus, it is undesirable to cycle these valves more often than is absolutely necessary. In addition, typically these valves are closed (their safety-related position) during plant operation and are usually opened only for containment ventilation during shutdown periods."	Fail safe test and exercise to closed position with stroke time measured at cold shutdowns. Seat leakrate test per 10 CFR 50, App. J, and, Position indication verification every 2 years.
Evaluation: It is impractical to part-stroke or full-stroke exercise these valves quarterly because of their large size, 48 inches and 54 inches in diameter, and potential for damage as a result of frequent cycling, and their required normally closed position during plant operation. The alternative provides full-stroke exercising to the closed position at cold shutdown in accordance with OMa-1988 Part 10, ¶4.2.1.2(c) and fail safe testing at cold shutdowns in accordance with ¶4.2.1.6 and ¶4.2.1.1.				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CP-2	POV-3-2601, POV-3-2603, and POV-4-2601, POV-4-2603, 48" and 54" air operated butterfly valves, Cat. A, Containment Building Purge Supply/Exhaust Inboard Isolation Valves, normally closed	5613(4)-M-3053-1, Rev. 8, "Containment Purge System and Penetration Cooling System (Sheet 1)"	"Due to the history of these valves with respect to operational-related seat leakage, the plant staff has imposed restrictions on their operation whereby unnecessary cycling of the valves is to be avoided and additional leak tests are performed based on cycling frequency. Thus, it is undesirable to cycle these valves more often than is absolutely necessary. In addition, typically these valves are closed (their safety-related position) during plant operation and are usually opened only for containment ventilation during shutdown periods."	Fail safe test and exercise to closed position with stroke time measured at cold shutdowns. Seat leakrate test per 10 CFR 50, App. J, and, Position indication verification every 2 years.
Evaluation: It is impractical to part-stroke or full-stroke exercise these valves quarterly because of their large size, 48 inches and 54 inches in diameter, and potential for damage as a result of frequent cycling, and their required normally closed position during plant operation. The alternative provides full-stroke exercising to the closed position at cold shutdown in accordance with OMa-1988 Part 10, ¶4.2.1.2(c) and fail safe testing at cold shutdowns in accordance with ¶4.2.1.6 and ¶4.2.1.1.				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SAFETY INJECTION SYSTEM				
SI-1	MOV-0878 A&B, 4" motor operated gate valves, Cat. B, SIS Pump Discharge Unit Cross-Tie, normally open	5613(4)-M-3062-1, Rev. 6, "Safety Injection System (Sheet 1)"	"The Turkey Point plant design takes credit for the added redundancy of the shared safety injection systems and the capability of maintaining four (4) pumps capable of taking suction from either refueling water storage tank. The plant Technical Specifications require three of the four pumps to be operable during single unit power operation, and all four pumps to be operable during dual unit power operation, when Tavg is greater than 380 deg.F. Failure of either one of these valves to reopen while testing would reduce the capability of the safety injection system to respond to a LOCA in the operating unit(s) and place the plants in a 72 hour LCO action statement."	Exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: It is not apparent from the Turkey Point UFSAR, Appendix A, paragraph on "Sharing of the High Head Safety Injection Pumps" under what circumstances these normally open valves would be required to close, nor whether these valves would be required to reopen following closure.

The possibility of entering an LCO is not a sufficient basis for not performing the required testing, unless the testing renders systems inoperable for an extended period of time. The licensee should full-stroke exercise these valves closed quarterly within the Technical Specification time of 72 hours, or provide justification that it is impractical to perform the testing during power operation.

The licensee should also verify whether a safety function to open (or reopen following closure) exists and revise the Program accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-2	MOV-3-0856 A&B, and, MOV-4-0856 A&B, 2" motor operated globe valves, Cat. B, SI and CS Minimum Flow Line Isolation Valves, normally open	5613(4)-M-3062-1, Rev. 6, "Safety Injection System (Sheet 1)"	"Exercising or failure of either of these valves in the closed position during testing will prohibit flow through the minimum flow recirculation lines for the associated safety injection and containment spray pumps. Due to the probability of damage should these pumps be started and operated in this condition (no flow), exercising of these valves will only be performed during cold shutdown periods when these pumps are not required to be operable."	Exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These valves isolate the containment spray recirculation line and the Accumulator test line to the RWST as well as the safety injection pump recirculation test line. In addition the failure of either of these valves removes the miniflow protection of the safety injection pumps.

It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly because of potential pump damage to the safety injection or containment spray pumps.

The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

However, the licensee has only specified an exercise closed test in the Valve Program Tables. It appears that these valves may have a safety function in the open position as well to provide minimum flow. The licensee should review the safety function of these valves and revise the program accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-3	MOV-3-864 A&B, and MOV-4-864 A&B, 16" motor operated gate valves, Cat. B, RWST Outlet Isolation Valves, locked open	5613(4)-M-3062-1, Rev. 6, "Safety Injection System (Sheet 1)"	"Failure of these valves in the closed position isolates the associated RWST rendering the associated safety injection and containment spray systems inoperable. Thus, closing any of these valves while the associated unit is not in a cold shutdown or refueling mode is considered imprudent."	Exercise to the closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These valves provide double isolation to the high head safety injection system and the RHR/LHSI system. Testing these valves during normal operation would render both the high and low head safety injection systems inoperable. These valves are closed either during a normal plant shutdown to prevent injection of the RWST inventory into the RCS or in the recirculation phase of a LOCA.

It is impractical to full-stroke exercise these valves closed quarterly because closure of either of these valves would render both trains of the safety injection system inoperable.

The alternative provides full-stroke exercising to the closed position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

The licensee should also verify whether a safety function to open (or reopen following closure) exists and revise the Program accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-4	MOV-3-866 A&B, and MOV-4-866 A&B, 2" motor operated globe valves, Cat. B, Hot Leg Safety Injection (SI) Isolation Valves, locked closed with breakers open	5613(4)-M-3062-1, Rev. 6, "Safety Injection System (Sheet 1)"	"Opening either of these valves while the RCS is at operating pressure subjects the SI system to a situation where the only isolation between the RCS and SI systems is established by a single check valve. Because of this, opening these motor-operated valves while the RCS is at pressures above 600 psig is considered to be imprudent."	Exercise to closed and open positions with stroke time measured at cold shutdowns. Position indication verification every 2 years.
Evaluation: These valves isolate safety injection flow to the hot legs and are opened if needed during the recirculation phase of a LOCA. It is potentially unsafe to full-stroke exercise these valves open during normal operation because only a single check valve would remain to isolate the SI System from full RCS pressure. The alternative provides full-stroke exercising to the closed and open positions at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-5	3-0876A, and 4-0876A, 8" check valve, Cat. A&C, Low-head Safety Injection/RHR Injection Check Valves, normally closed, pressure isolation valves	5613/4-M-3064-1, Rev. 9, "Safety Injection Accumulator System Inside Containment"	"The only flow path available for full-flow exercising these valves is via the RHR pumps to the reactor coolant system. The residual heat removal system is designed and interlocked to preclude injection into the reactor coolant system at elevated pressures. Verifying closure of these valves would require establishing a test boundary which could only be obtained via isolation of the RWST, thereby rendering the Low Head Safety Injection System capability inoperative."	Exercise to open position at cold shutdowns. Exercise to the closed position at "other" test frequency (no relief request is referenced in the Valve Program Tables). Seat leakrate test for pressure isolation valves every 2 years.

Evaluation: These check valves are in the RHR/LHSI line and actuate after MOV-3-0744A opens to provide a flow path to the RCS cold legs.

It is impractical to part-stroke or full-stroke exercise these check valves to the open position quarterly because of the RHR interlock with the RCS plus the fact that the RHR pumps can not develop sufficient pressure to overcome the RCS pressure.

The licensee's alternative provides full-stroke exercising to the open position at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.3.2.2(c).

It is not evident what the reference is for the "other" test frequency concerning closure testing. No relief request is referenced in the Program Table. Since these are pressure isolation valves, it appears that these valves should have been included in VR-2. The licensee should refer to the evaluation for VR-2. The licensee should revise this deferral justification accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-6	3-0876 B&C, and 4-0876 B&C, 8" check valves, Cat. A&C, Low-Head Safety Injection/RHR Injection Check Valves, normally closed, pressure isolation valves	(5613/4-M-3064-1) 5613/4-M-3064-1, Rev. 9, "Safety Injection Accumulator System Inside Containment"	"Verifying closure of these valves would require establishing a test boundary which could only be obtained via isolation of the RWST, thereby rendering the Low Head Safety Injection System inoperative."	Partial-stroke test to open position at cold shutdowns. Exercise to open position at each refueling outage. Exercise to the closed position at "other" test frequency. (No relief request is referenced in the Valve Program Tables). Seat leakrate test for pressure isolation valves every 2 years.

Evaluation: These check valves are in the RHR/LHSI line and activate after MOV-3-0744A and MOV-3-0744B open to provide a flow path to the RCS cold legs.

The part-stroke exercising open at cold shutdowns and full-stroke exercising open at refueling outages was separately presented by the licensee as a Refueling Outage Justification. The licensee should refer to the evaluation for ROJ-SI-4.

It is not evident what the reference is for the "other" test frequency concerning closure testing. No relief request is referenced in the Program Table. Since these are pressure isolation valves, it appears that these valves should have been included in VR-2. The licensee should refer to the evaluation for VR-2. The licensee should revise this deferral justification accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-7	3-0875 A,B,&C, and 4-0875 A,B,&C, 10" check valves, Cat. A&C, SIS Cold Leg Injection Check Valves, normally closed, pressure isolation valves	(5613/4-M-3064-1) 5613/4-M-3064-1, Rev. 9, "Safety Injection Accumulator System Inside Containment"	"Verifying closure of these valves during power operation would require establishing a test boundary which could only be obtained via isolation or de-pressurization of the SIS Accumulators, and is therefore considered imprudent."	Partial-stroke test to open position at cold shutdowns. Exercise to open position at each reactor refueling outage. Exercise to closed position at "other" test frequency (no relief request is referenced in the Valve Program Tables). Seat leakrate test for pressure isolation valves every 2 years.

Evaluation: These are the primary pressure isolation valves for safety injection into each cold leg.

The part-stroke exercising open at cold shutdowns and full-stroke exercising open at refueling outages was separately presented by the licensee as a Refueling Outage Justification. The licensee should refer to the evaluation for ROJ-SI-5.

It is not evident what the reference is for the "other" test frequency concerning closure testing. No relief request is referenced in the Program Table. Since these are pressure isolation valves, it appears that these valves should have been included in VR-2. The licensee should refer to the evaluation for VR-2. The licensee should revise this deferral justification accordingly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-8	MOV-3-0744 A&B, and MOV-4-0744 A&B, 10" motor operated gate valves, Cat. B, RHR/Low-Head Cold Leg Injection Isolation Valves, normally closed	5613/4-M-3064-1, Rev. 9, "Safety Injection Accumulator System Inside Containment"	"Opening these valves while the RCS is at operating pressure results in a situation where the only isolation between the RCS and RHR systems is established by two check valves. Failure of these check valves to seat could subject the RHR system to pressures above its design pressure. Therefore, opening these motor-operated valves while the RCS is at pressures above 600 psig is considered imprudent."	Exercise to the open and closed positions with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These valves open on a safety injection signal to provide a flow path to the RCS cold legs. These valves are not pressure isolation valves. The two downstream check valves are the pressure isolation valves.

It is potentially unsafe to part-stroke or full-stroke exercise these motor operated valves to the open position during normal operation because only two check valves would remain to isolate the SI System from the RCS pressure.

The alternative provides full-stroke exercising to the open and closed positions at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-9	MOV-3-0865A thru MOV-3-0865C, and MOV-4-0865A thru MOV-4-0865C, 10" motor operated gate valves, Cat. B, Safety Injection Accumulator Isolation Valves, locked open, breakers open	5613/4-M-3064-1, Rev. 9, "Safety Injection Accumulator System Inside Containment"	"During plant operation these valves are required to be locked open to ensure availability of the safety injection accumulators. Intentionally isolating an accumulator during operation is considered to be imprudent. Furthermore, if a valve were to fail in the closed position during testing, a plant shutdown would be required."	Exercise to the closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.
Evaluation: These are the SI Accumulators' outlet isolation valves. It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly because these valves are locked open with their breakers open during power operation. The licensee's alternative of full-stroke exercising to the closed position at cold shutdowns is in accordance with OMa-1988 Part 10, ¶4.2.1.2(c).				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
MAIN STEAM SYSTEM				
MS-1	3-10-0004 thru 3-10-0006, and 4-10-0004 thru 4-10-0006, 26" stop check valves, non-Code, Cat. C, Main Steam Non-Return Valves, normally open	5613(4)-M-3072-1, Rev. 15, "Main Steam System (Sheet 1)"	"During plant operation at power, closure of any one of these valves is not practical as it would require isolating a steam generator which would result in a severe transient on the steam and reactor systems and result in a probable plant trip."	Exercise to closed position but stroke time not measured at cold shutdowns. Inspection at least once per 10 year inspection interval.
Evaluation: These valves are not included within the ISI class boundaries and are exempt from the requirements of the Code but have been included in the Program to ensure that inservice testing is adequate to demonstrate their continued operability. Since these are not Code Category valves, no evaluation is required.				
MS-2	CV-3-1606 thru CV-3-1608, and CV-4-1606 thru CV-4-1608, 6" air operated globe valves, Cat. B, Main Steam line Atmospheric Steam Dump Valves, normally closed	5613(4)-M-3072-1, Rev. 15, "Main Steam System (Sheet 1)"	"Opening these valves during power operation would result in unacceptable power transients unless the valves are isolated prior to opening. Isolation of one of these lines will reduce the related plant capability to limit a pressure transient and prevent lifting of a safety valve in the event of such an occurrence."	Fail safe test, and exercise to the open and closed positions with stroke time measured, at cold shutdowns.
Evaluation: It is impractical to exercise these valves open during normal operation because of power transients due to loss of steam and a possible plant trip. The licensee's alternative provides for full-stroke exercising to the open and closed position and fail safe testing at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c) and ¶4.2.1.6.				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
MS-3	POV-3-2604, POV-3-2605, POV-3-2606, and POV-4-2604, POV-4-2605, POV-4-2606, 26" air operated, power assisted check valves, Cat. B&C, Main Steam Isolation Valves, normally open	5613(4)-M-3072-1, Rev. 15, "Main Steam System (Sheet 1)"	"During plant operation at power, closure of any one of these valves is not practical as it would require isolating a steam generator which would result in a severe transient on the steam and reactor systems and result in a plant trip."	Exercise to the closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These are the normally open Main Steam Isolation Valves (MSIVs).

It is impractical to full-stroke exercise these valves closed during normal operation because of power transients due to loss of steam which will result in plant trip. However, the licensee has not provided a basis for not partial-stroke exercising these valves closed quarterly.

The licensee should revise and resubmit this justification to discuss the impracticality of partial-stroke exercising these valves closed quarterly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
FEEDWATER SYSTEM				
FW-1	FCV-3-0478, FCV-3-0488, FCV-3-0498, and FCV-4-0478, FCV-4-0488, FCV-4-0498, 12" air operated globe valves, Cat. B, Main Feedwater Flow Control Valves, normally open	5613(4)-M-3074-3, Rev. 10, "Feedwater System (Sheet 3)"	"Testing of these valves to the closed position during plant operation above 20% reactor power would result in severe steam generator level transients and a plant trip."	Fail safe test, and exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.

Evaluation: These are the normally open Main Feedwater Flow Control Valves.

It is impractical to full-stroke exercise these valves to the closed position quarterly because they control the flow of feedwater to the steam generators and closure would result in loss of steam generator level control and a plant trip. However, the licensee has not provided a basis for not partial-stroke exercising these valves closed quarterly.

The licensee should revise and resubmit this justification to discuss the impracticality of partial-stroke exercising these valves closed quarterly.

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
FW-2	FCV-3-0479, FCV-3-0489, FCV-3-0499, and FCV-4-0479, FCV-4-0489, FCV-4-0499, 4" air operated globe valves, Cat. B, Main Feedwater Regulating Valve Bypass Valves, normally closed	5613(4)-M-3074-3, Rev. 10, "Feedwater System (Sheet 3)"	"Opening these normally closed valves in order to exercise them to the closed position would result in possible steam generator level transients with the potential of a plant trip. In addition, testing requires installation of electrical jumpers in various safeguard relay racks which provides the potential for an inadvertent plant trip. These valves are normally closed and remain so except for low-power periods associated with startup and shutdown."	Fail safe test, and exercise to closed position with stroke time measured at cold shutdowns. Position indication verification every 2 years.
Evaluation: These are the normally closed Main Feedwater Regulating Valve Bypass Valves. These valves are only used for startup and normal shutdown. It is impractical to test these valves to the open position at power because of the potential of a plant trip resulting from steam generator level changes and the test setup which requires installation of jumpers in various safeguard relay racks. The licensee's alternative provides for full-stroke exercising with stroke time measured to the closed position and fail safe testing at cold shutdowns in accordance with OMa-1988 Part 10, ¶4.2.1.2(c), ¶4.2.1.4, and ¶4.2.1.6.				

Table 4.1 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
AUXILIARY FEEDWATER SYSTEM				
AF-1	3-10-0381, 3-10-0382, 3-10-0383, and 4-10-0381, 4-10-0382, 4-10-0383, 4" check valves, Cat. C, Aux. Feedwater Steam Supply Non-Return Valves, normally closed	5613(4)-M-3075-1, Rev. 6, "Auxiliary Feedwater System Steam to Auxiliary Feedwater Pump Turbines (Sheet 1)"	"Verification of closure capability for these valves requires isolation of the respective steam supply line from its associated steam generator and performing a backflow test. Considering the importance of the auxiliary feedwater system and the undesirability of altering system lineups while the plant is operating, it would be imprudent to perform such a test at plant conditions other than cold shutdown."	Exercise to the closed position at cold shutdowns. Exercise to open position quarterly (during plant operation).
Evaluation: These normally closed valves are in the steam supply to the three auxiliary steam driven turbines. Flow diagrams (5613(4)-M-3075-1) and (5610(4)-M-3075-1) show that these valves can be full-stoke exercised open during the Turbine Driven Auxiliary Feedwater Pump quarterly test and therefore, testing quarterly is practical. However, verifying closure does require isolation to make use of the test connections around these check valves. There are 3 (100%) steam driven pumps for both Units. Only one auxiliary feedwater pump is needed per Unit. Taking one out of service leaves two to serve both Units. The possibility of entering an LCO is not a sufficient basis for not performing the required testing unless the testing renders systems inoperable for an extended period of time. The licensee should exercise these valves closed quarterly or revise and resubmit the deferral request to demonstrate that quarterly testing is impractical.				

Table 4.2 Turkey Point Units 3 and 4
Refueling Outage Justification Evaluation

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
PLANT SERVICE AIR SYSTEM				
SA-1	3-40-0205 (4-40-0205) 2 in. normally closed Service Air Containment Isolation, Cat. A/C, Check Valves	5610-M-3013-1, Rev. 5, "Instrument Air System Service Air Distribution From Units 1&2"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at Refueling Outages and seat leakage tested every 2 years under Appendix J.
Evaluation: These valves provide containment isolation for the Service Air System to Units 3 & 4 ring headers inside containment. It is impractical to full-stroke exercise these valves to the closed position quarterly because the valves are located inside containment and an extensive test set-up would be required to perform a seat leakage test. However, the licensee has not provided justification as the why a reverse seat leakage test could not be performed during cold shutdowns. In its submittal of the Inservice Testing Program for the St. Lucie Unit 2 plant, Revision 2, September 15, 1992, the licensee indicated that analogous valve V-181270 in the Service Air System is full-stroke exercised to the closed position during those cold shutdowns in which the section of the Service Air system inside containment is in service. Therefore, the licensee should full-stroke exercise the subject valve {3-40-0205 (4-40-0205)} to the closed position during those cold shutdowns when the Service Air system header inside containment is in service or revise this justification to justify deferring full-stroke exercising the subject valves to the closed position during refueling outages.			

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
COMPONENT COOLING WATER SYSTEM				
CC-1	3-0721A, B & C (4-0721A, B, & C) CCW Supply to RCP Thermal Barrier Cooling Coil 1.5 in. normally open, Cat. C, check valves	(5613 (4)-M-3030-5(4), Rev. 5, "Component Cooling Water System"	"These piston check valves are located inside the containment building with no external or remote position indication; thus the only practical method of verifying closure is via a backflow or backleakage test. Performance of such a test during shutdowns would require draining a considerable length of piping. Since the CCW water is treated with a chemical corrosion inhibitor, this would create a significant waste disposal problem, which would prove to be an unwarranted burden on the plant staff."	Per the Valve Program Tables, these valves are exercised to the closed position at refueling outages.

Evaluation: These valves are located inside containment. They are normally open and must close to prevent reverse flow of CCW through the Reactor Coolant Pumps' (RCPs) thermal barrier cooling coils.

These valves do not have remote position indication. It is impractical to full-stroke exercise these valves during power operation because it would interrupt CCW flow to the RCP thermal barrier cooling coils, which could damage the RCP seals. The licensee proposes to verify closure of these valves by a reverse flow or backleakage test during refueling outages. In Draft NUREG-1482, ¶3.1.1.4 states that RCPs need not be stopped for cold shutdown testing. The NRC recommends that affected valves be tested during plant outages when RCPs are stopped for a sufficient period of time and on a refueling outage schedule, but not more than once every 92 days. OM-10 allows the test interval to be extended to refueling outages when the tests cannot be practically performed during power operation or cold shutdown outages.

The proposed alternative provides exercising to the closed position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(e). However, the licensee should revise this deferral request to conform to the guidance provided in Draft NUREG-1482, ¶3.1.1.4.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
RESIDUAL HEAT REMOVAL SYSTEM				
RH-1	3-2052 (4-2052) Containment Spray Suction Relief Discharge 1 in. normally closed, Cat. C Check Valves	(5613(4)-M-3050-1), Rev. 5, "Residual Heat Removal System"	"These valves are located between the containment recirculation sump and the innermost containment isolation valve located outside containment. The only feasible method of exercising these valves to the open position is to induce flow in the line via an alternate medium such as air or water. Opening the drain connection valve during power operation would constitute a breach of containment integrity and therefore is considered imprudent. The injection of air or water into this system during cold shutdowns could ultimately result (in) airborne contamination or drainage to the containment sump, thereby creating a significant clean-up effort which would prove to be an unwarranted burden on the plant staff."	Per the Valve Program Tables, these valves are full-stroke exercised open during refueling outages.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
Evaluation: These valves are on lines which discharge into the RHR South Recirculation sump lines leading to the RHR Pump A suction header, the sumps being located inside containment. The lines discharge, at a point outside containment, into the RHR South Recirculation lines upstream of the normally closed RHR isolation valves which are located outside containment. There are no isolation valves inside containment leading from the recirculation sumps. These valves do not have remote position indication. It is impractical to part-stroke or full-stroke open these valves during power operation because this would require opening a drain connection, and such opening of a drain connection would constitute a breach of containment integrity. It is impractical to part-stroke or full-stroke exercise these valves during cold shutdowns because this would require the injection of air or water into this system which could ultimately result in airborne contamination or drainage to the containment sump, thereby creating a significant clean-up effort which would prove to be an unwarranted burden on the plant staff. The proposed alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(e).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
NITROGEN AND HYDROGEN SYSTEM				
NH-1	3-0518 (4-0518) Nitrogen Supply to PRT Containment Isolation 0.75 in. Cat. A/C, normally closed Check Valves	5610-M-3065-1, Rev. 11, "Nitrogen and Hydrogen Systems Nitrogen Supply"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leakage tested every 2 years under Appendix J.
NH-2	3-0519 (4-0519) Nitrogen Supply to PRT Containment Isolation 0.75 in. Cat. A/C, normally closed Stop Check Valves	5610-M-3065-1, Rev. 11, "Nitrogen and Hydrogen Systems Nitrogen Supply"	"These valves are normally closed with the valve operating shaft for 3-0519 (stop check) in the open position. The only effective method of verifying closure of these valves is to perform a reverse flow (leak test). This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leakage tested every 2 years under Appendix J.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
Evaluation: (NH-1 and NH-2). Both valves 3-0518 (4-0518) and 3-0519 (4-0519) are located inside containment and in series in lines leading to the Pressurizer Relief Tanks (PRT). These valves do not have remote position indication. The licensee states that the only practical or effective method of verifying closure of these valves is by performing a seat leakage test. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown. The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
AUXILIARY FEEDWATER SYSTEM				
AF-1	AFWU-3-0017 (AFWU-4-0016) AFW Pump Bearing Cooling Water Return 2 in., Cat. C, normally closed Check Valves	5610-M-3075-2, Rev. 5, "Auxiliary Feedwater System - Auxiliary Feedwater Pumps"	"Full-stroke exercising of these valves would require simultaneous operation of all three auxiliary feedwater pumps. Operation in such a mode during a test is not practical nor desirable. It is unlikely that the 8-18 gpm developed by one operating auxiliary feedwater pump is sufficient to fully open these valves. Thus, the use of non-intrusive methods of verifying full stroke is impractical."	Per the Valve Program Tables, these valves are part-stroke exercised open quarterly and disassembled and inspected at refueling outages.

Evaluation: The AFW system consists of three 100% capacity turbine-driven pumps shared between Units 3 and 4. Any one pump can be aligned to either unit. The check valves, AFWU-3-0017 (AFWU-4-0016), are in a header which returns the bearing cooling water for all three AFW pumps to the Condensate Storage Tank of either Unit 3 or Unit 4.

It is impractical to full-stroke exercise these valves quarterly because this would require simultaneous operation of all three AFW pumps to develop sufficient flow to reach full-stroke opening. OMa-1988, Part 10, ¶4.3.2.4(c) specifies that as an alternative to testing valve obturator movement in accordance with ¶4.3.2.4(a) or (b), disassembly every refueling outage to verify operability of check valves may be used. Generic Letter 89-04, Position 2 states that valve disassembly and inspection can be used as a positive means of verifying closure capability, and that, if possible, partial stroking quarterly or during cold shutdowns, or after reassembly must be performed.

The proposed alternative provides for disassembly and inspection of each valve at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.4(c) and part-stroke exercised open quarterly in accordance with Generic Letter 89-04, Position 2.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
INSTRUMENT AIR SYSTEM				
IA-1	3-40-0336 (4-40-0336) Instrument Air Supply Containment Isolation 2 in., Cat. A/C, normally open Check Valves	5613(4)-M-3013-7, Rev. 2, "Instrument Air System Inside Containment"	"These valves are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leakage tested every 2 years under Appendix J.
IA-2	3-40-340A (4-40-34OA) Instrument Air Supply Containment Isolation 2 in., Cat. A/C, normally open Check Valves	5613(4)-M-3013-7, Rev. 2, "Instrument Air System Inside Containment"	"Stop-check valve 3-40-340A is normally closed with the valve operating shaft in the open direction while 4-40- 340A is a simple, normally closed, check valve. The only effective method of verifying closure of either of these valves is to perform a reverse flow (leak test). This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdowns."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leakage tested every 2 years under Appendix J.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
Evaluation: (IA-1 and IA-2). These valves are located inside containment and in series on the 2 in. header which supplies Instrument Air to air-operated devices inside the containment, with valve 40-336 upstream of valve 40-440A. These valves do not have remote position indication. The licensee states that the only practical or effective method of verifying closure of these valves is by performing a seat leakage test. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown. The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
PRIMARY MAKEUP WATER SYSTEM				
PM-1	3-10-0567 (4-10-0567) Primary Makeup Water Containment Isolation 2 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3020-2, Rev. 9, "Primary Makeup Water System"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require a considerable effort, including bleeding down the pressure in the primary water supply system, which is undesirable during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown. In addition, these valves are normally closed during plant operation with the inboard manual valves (*-10-0582) also closed. Thus, in effect, they are passive valves and essentially, need not be exercised."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leakage tested every 2 years under Appendix J.

Evaluation: These check valves open to supply primary makeup water to the RCS, which is not a safety-related function, and are normally closed during plant operation.

These valves do not have remote position indication. The licensee states that the only practical or effective method of verifying closure of these valves is by performing a seat leakage test. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown.

The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CHEMICAL & VOLUME CONTROL SYSTEM				
CV-1	3-0397 A&B 4-0397 C&D Boric Acid Transfer Pump Discharge 2 in., Cat. C, normally closed Check Valves	5610-M-3046-1, Rev. 11, "Chemical and Volume Control System-Boric Acid System"	"During plant operation the boric acid pumps are tested via a recirculation flowpath that is not provided with flow indication. At cold shutdown conditions, the pumps can be aligned to the suction of the charging pumps and thus through an instrumented line. However, testing these valves in this manner would result in the introduction of highly concentrated boric acid solution to the RCS, and thus cause considerable operational difficulty during the ensuing startup. This would be especially true near the end of core life (EOL)."	Per the Valve Program Tables, these valves are part-stroke exercised open quarterly and also exercised closed quarterly. These valves are full-stroke exercised open at refueling outages.

Evaluation: These valves must open to provide flow from the Boric Acid Transfer pumps' discharge to the Units 3 & 4 Boric Acid Blenders.

Full-stroke exercising of these valves to the open position cannot be verified quarterly because there is no means for flow indication on the recirculation test lines from the discharge of the Boric Acid Transfer pumps. It is impractical to full-stroke exercise these valves to the open position during cold shutdowns because to measure the valve flow through an instrumented line would require aligning the flow to the suction of the Charging pumps, which in turn would result in the injection into the RCS of highly concentrated boric acid. Introduction of highly concentrated boric acid into the RCS during cold shutdowns could extend the shutdown.

The proposed alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(e).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-2	3-0312C (4-0312C) Charging Header Containment Isolation 3 in., Cat. C, normally open Check Valves	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. During plant operation, the valves are normally open supplying charging water to the reactor coolant system. Interruption of this flow during operation could result in a CVCS flow imbalance and a possible plant trip as a result of pressurizer level fluctuations. Performing leaktests of these valves involves a considerable effort such that testing at each cold shutdown outage would constitute an unreasonable burden on the plant staff."	Per the Valve Program Tables, these valves are full-stroke exercised open quarterly and exercised closed every 2 years.

Evaluation: These valves are in the header supplying normal charging flow to the RCS from the reciprocating charging pumps. These valves are inboard containment isolation valves.

It is impractical to full-stroke exercise these valves closed quarterly because interrupting the normal charging flow to the RCS during plant operation could result in a CVCS flow imbalance and a possible plant trip as a result of pressurizer level fluctuations.

The licensee states that the only practical or effective method of verifying closure of these valves is by performing a seat leakage test. These valves do not have remote position indication. In the Valve Program Tables, the licensee states that these valves are exercised to the closed position every 2 years. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown.

The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-3	3-0351 CV-3 (4-0351) Emergency Boration 2 in., Cat. C, normally closed Check Valves	5613(4)-M-3047-2, Rev. 12, "Chemical and Volume Control System Charging and Letdown"	"Testing these valves requires the introduction of highly concentrated boric acid solution from the boric acid tanks to the suction of the charging pumps. This, in turn, would result in the addition of excess boron to the RCS which adversely affects plant power level and operational parameters with the potential for an undesirable plant transient and a plant trip or shutdown. During cold shutdown, the additional boric acid introduced into the RCS would cause considerable operational difficulty during the ensuing startup."	Per the Valve Program Tables, these valves are full-stroke exercised open at refueling outages.
Evaluation: These valves open to provide emergency boration flow to the RCS. It is impractical to part-stroke or full-stroke open these valves quarterly because this would introduce highly concentrated boric acid solution from the boric acid tanks to the suction of the charging pumps. This, in turn, would result in the addition of excess boron to the RCS which adversely affects plant power level and operational parameters with the potential for an undesirable plant transient and a plant trip or shutdown. It is impractical to part-stroke or full-stroke exercise these valves open during cold shutdowns because this would require injection into the RCS of highly concentrated boric acid. Introduction of highly concentrated boric acid into the RCS during cold shutdowns could extend the shutdown. The proposed alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(e).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CV-4	3-0298A thru 3-0298C (4-0298A thru 4-0298C) RCP Seal Water Containment Isolation 2 in., Cat. C, normally open Check Valves	5613(4)-M-3047-3, Rev. 10, "Chemical and Volume Control System Seal Water Injection into RCP"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. During plant operation, the valves are normally opened supplying seal water to the RCP's. Interruption of this flow during pump operation could result in RCP seal failure. Performing leaktests of these valves involves a considerable effort such that testing at each cold shutdown outage would constitute an unreasonable burden on the plant staff."	Per the Valve Program Tables, these valves are exercised closed at refueling outages.

Evaluation: These valves are normally open to provide seal water injection flow to the Reactor Coolant pumps. These valves are inboard containment isolation valves.

It is impractical to part-stroke or full-stroke exercise these valves closed quarterly because this would interrupt flow to the RCP seals during pump operation, possibly causing RCP seal failure.

The licensee states that the only practical or effective method of verifying closure of these valves is by performing a seat leakage test. These valves do not have remote position indication. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown.

The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SAFETY INJECTION SYSTEM				
SI-1	3-0879 A&B (4-0879 C&D) Safety Injection Pump Discharge 3 in., Cat C, normally closed Check Valves	5613(4)-M-3062-1, Rev. 6, "Safety Injection System"	"Full stroke exercising of these valves would require operating each safety injection pump at nominal accident flowrate. At power operation the only flowpath available for such operation would necessitate injecting into the reactor coolant system since the full flow recirculation path is located upstream of the pump discharge check valves. During cold shutdown conditions, injection via the SIS pumps is precluded by operational restrictions related to low-temperature over-pressurization protection concerns and Turkey Point Technical Specifications, Section 3.4.9.3."	Per the Valve Program Tables, these valves are part-stroke exercised open and exercised closed quarterly. They are full-stroke exercised open at refueling outages.

Evaluation: These valves open to allow SI flow from the SI pumps during a SI Actuation. These valves are on the discharge lines of the Safety Injection pumps A & B downstream of the full flow recirculation test lines for the SI pumps.

It is impractical to full-stroke exercise these valves to the open position quarterly because the valves are downstream of the full flow recirculation test line and would require injection at the nominal accident flow rate into the RCS during power operation. At power operation, the SI pumps cannot develop sufficient discharge pressure to overcome RCS pressure. During cold shutdowns, Technical Specification 3.4.9.3 requires that the high pressure SI flow paths to the RCS shall be isolated.

The alternative provides part-stroke exercising to the open position quarterly and full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10, ¶4.3.2.2(b) and (e).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-2	3-0874 A&B (4-0874 A&B) Safety Injection Hot-Leg Injection 2 in., Cat. C, normally closed Check Valves	5613(4)-M-3062-1, Rev. 6, "Safety Injection System"	"Exercising these valves (open) requires operating a safety injection pump and injecting into the reactor coolant system. At power operation this is not possible because the SIS pumps cannot develop sufficient discharge pressure to overcome reactor coolant system pressure. During normal cold shutdown conditions, injection via the SIS pumps is precluded by operational restrictions related to low-temperature over-pressurization protection concerns and Technical Specifications."	Per the Valve Program Tables, these valves are full-stroke exercised open at refueling outages (and exercised closed as per VR-2, and seat leak rate tested for pressure isolation function at refueling outages).

Evaluation: These valves open to allow SI flow into the RCS during the Hot Leg recirculation phase following a LOCA. These valves are PIVs on the SIS hot leg injection lines to the RCS. They are located inside containment and are downstream of the normally closed SIS motor-operated isolation valves.

It is impractical to part-stroke or full-stroke exercise these valves open quarterly because these valves are located downstream of the full flow recirculation test line and would require injection at the nominal accident flow rate into the RCS during power operation. At power operation, the SI pumps cannot develop sufficient discharge pressure to overcome RCS pressure. During cold shutdowns, Technical Specification 3.4.9.3 requires that the high pressure SI flow paths to the RCS shall be isolated.

The alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10, ¶4.3.2.2(e).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-3	3-0873A thru 3-0873C (4-0873A thru 4-0873C) SIS Cold Leg Branch Injection Line 2 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3064-1, Rev. 9, "Safety Injection System Accumulator Inside Containment"	"Full stroke exercising of these valves would require operating a safety injection pump at nominal accident flowrate and injecting into the reactor coolant system. At power operation this is not possible because the safety injection pumps can not develop sufficient discharge pressure to overcome reactor coolant system pressure. During normal cold shutdown conditions, injection via the safety injection pumps is precluded by operational restrictions related to low-temperature over-pressurization protection concerns."	Per the Valve Program Tables, these valves are full-stroke exercised open during refueling outages (and exercised closed per VR-2 and seat leak rate tested for pressure isolation function at refueling outages).

Evaluation: These valves are containment isolation valves on the SIS cold leg branch injection lines to the RCS which open to allow flow upon an SI actuation signal. They are located inside containment and are downstream of normally closed SIS motor-operated isolation valves outside containment.

It is impractical to part-stroke or full-stroke exercise these valves open quarterly because these valves are located downstream of the full flow recirculation test line and would require injection at the nominal accident flow rate into the RCS during power operation. At power operation, the SI pumps cannot develop sufficient discharge pressure to overcome RCS pressure. During cold shutdowns, Technical Specification 3.4.9.3 requires that the high pressure SI flow paths to the RCS shall be isolated.

The alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10, ¶4.3.2.2(e).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-4	3-0876 B&C (4-0876 B&C) Low Head Injection Line 8 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3064-1, Rev. 9, "Safety Injection System Accumulator Inside Containment"	"Since no recirculation path exists, exercising these valves requires operating an RHR pump and injecting into the reactor coolant system. At power operation this is not possible due to system design pressure and interlocks that prevent operation of the RHR system in cooldown alignment when RCS pressure exceeds 515 psig. During normal cold shutdown conditions, injection via the RHR pumps is practical and these valves can be full-stroke exercised. Since they have no position indicators and are installed such that the only lineup available causes them to form a parallel path, full accident flow through each valve cannot be confirmed and thus full stroke verification by simple means is not possible. Employing non-obtrusive methods for verifying full stroke would require extensive preparations including containment entry, insulation removal, erection of scaffolding, etc. and thus is not practical during cold shutdown periods."	Per the Valve Program Tables, these valves are part-stroke exercised open during cold shutdowns and full-stroke exercised open at refueling outages (and exercised closed per an unspecified relief request and seat leak rate tested for pressure isolation function at refueling outages).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
Evaluation: These valves are PIVs on the low pressure SI lines from the LPSI/RHR pumps to the RCS cold legs Loops B and C, and must open upon depressurization of the RCS following a SI actuation. They are located inside containment and are downstream of normally closed SIS motor-operated isolation valves inside containment. It is impractical to part-stroke or full-stroke exercise these valves open quarterly because these valves are located downstream of the recirculation test lines for the RHR pumps, and the RHR pumps cannot develop sufficient discharge pressure to inject into the RCS, and interlocks are in effect which prevent operation of the RHR system in cooldown alignment when RCS pressure exceeds 515 PSIG. It is impractical to full-stroke exercise these valves open during cold shutdowns because, although full-stroke exercising is possible by injection via the RHR pumps into the RCS, the valves have no position indicators and are installed such that the only lineup available causes them to form a parallel path. Therefore, verification of full stroke at full accident flow rate by simple means is not possible. It is impractical to employ nonintrusive methods to verify full stroke because such methods would require extensive preparations such as entry into containment, removal of insulation and erection of scaffolding. The proposed alternative provides part-stroke exercising to the open position during cold shutdowns and full-stroke exercising at refueling outages in accordance with OMa-1988 Part 10, ¶4.3.2.2(d).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-5	3-0875A thru 3-0875C (4-0875A thru 4-0875C) SIS Cold Leg Injection 10 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3064-1, Rev. 9, "Safety Injection System Accumulator Inside Containment"	"Partial-flow testing of these valves requires injecting fluid into the RCS. At power operation this is not possible because neither the RHR or the SIS pumps can develop sufficient discharge pressure to overcome reactor coolant system pressure. During normal cold shutdown conditions, however, injection via the RHR pumps can be accomplished. With respect to full stroke exercising of these valves to the open position, in order to satisfy the requirements of Generic Letter 89-04, a demonstration of the maximum accident flow must be performed or some other indication of full-stroke of the obturator must be provided. For these valves the maximum accident flowrate is defined as that flowrate resulting from a fully pressurized SIS accumulator injecting into a de-pressurized RCS loop. Achieving this flowrate during power operation is not practical due to limitations associated with the reactor coolant system pressure. It has been demonstrated, by past testing, that these valves can be opened by blowdown from a partially pressurized (100 psi) accumulator to the associated RCS loop. Performing such a test	Per the Valve Program Tables, these valves are part-stroke exercised open at cold shutdowns and full-stroke exercised open during refueling outages (and exercised closed per VR-2 and seat leak rate tested for pressure isolation function at refueling outages).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-5 Cont'd			during plant operation is not possible due to the limitations associated with reactor coolant system pressure. The extensive preparations (including insulation removal, erection of scaffolding, etc.) required to perform such a test make it impractical to perform during cold shutdown periods."	

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing

Evaluation: These valves are pressure isolation valves on the SIS cold leg injection lines to the RCS. They are located inside containment and are downstream of normally closed SIS motor-operated isolation valves inside containment. The valves may be supplied by flow from the SI or LPSI/RHR pumps or the SI Accumulators.

It is impractical to part-stroke or full-stroke exercise these valves open quarterly because these valves are located downstream of the recirculation test lines for both the SI and RHR pumps, neither the SI nor RHR pumps can develop sufficient discharge pressure to inject into the RCS.

Also, the maximum accident flow rate is the flow rate resulting from a fully pressurized SIS accumulator injecting into a depressurized RCS loop. This flow rate cannot be achieved during power operation because the high RCS pressure also would prevent injection into the RCS. The licensee states that from past testing, it has been demonstrated that these valves can be full-stroke opened by blowdown from a partially pressurized (~ 100 PSIG) accumulator to the associated RCS loop.

It is also impractical to perform such a test during power operation because the high RCS pressure again would prevent injection into the RCS. It is impractical to perform such a test during cold shutdowns because the extensive preparations such as removal of insulation and erection of scaffolding would delay plant startup. However, during normal cold shutdown periods, part-stroke exercising to the open position is possible by injection into the RCS through operation of the RHR pumps.

The proposed alternative provides part-stroke exercising to the open position during cold shutdowns and full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(d), provided that the full-stroke exercising open test is conducted at the maximum required accident flow rate.

It appears that the licensee is proposing performing a reduced pressure flow test as a means of full-stroke exercising the valves open. It is not evident how a reduced pressure flow test alone will verify that the valves are full-stroke exercised open. The licensee should indicate whether the full-stroke open test is conducted at the maximum required accident flow rate as discussed in Generic Letter 89-04, Position 1. If a reduced flow rate is used, a positive means for verifying the valves open to the full-stroke position is required. Such means for verification must meet all of the six criteria identified in Position 1. Draft NUREG-1482, Section 4.1.2, further discusses the use of nonintrusive techniques as a means for verifying valve position and the acceptability of sample testing.

The licensee should revise this justification to clarify the testing method, since it does not appear to comply with Generic Letter 89-04, Position 1.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
SI-6	3-0875 D-F (4-0875 D-F) SI Accumulator Discharge 10 in., Cat. C, normally closed Check Valves	5613(4)-M-3064-1, Rev. 9, "Safety Injection System Accumulator Inside Containment"	"Full stroke exercising of these valves to the open position, based on the maximum accident flowrate resulting from SIS accumulator injection to a de-pressurized RCS loop, is not practical due to limitations associated with the effects of such a test on system components. It has been demonstrated, by past testing, that these valves can be fully opened by blowdown from a partially pressurized (100 psig.) accumulator to the associated RCS loop. Performing such a test during plant operation is not possible due to the limited pressure capability of the SI tanks. During cold shutdown periods the extensive preparations required to perform an accumulator discharge test make it impractical. The only practical means of verifying closure involves performing a leakage test. Performance of such a test would necessitate closure of the upstream motor operated valve or de-pressurization of the associated SIS accumulator, which is not practical during power operation and would constitute an unwarranted burden on plant staff during cold shutdowns."	Per the Valve Program Tables, these valves are full-stroke exercised open and exercised closed at refueling outages.

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing

Evaluation: These valves open to provide SI accumulator flow into the RCS during a depressurization of the RCS. The valves must close upon any repressurization of the RCS following any accident sufficient to cause the accumulators to discharge into the RCS.

It is impractical to part-stroke or full-stroke exercise these valves open quarterly at the maximum required accident flow rate. The maximum required accident flow rate is the flow rate resulting from a fully pressurized SIS accumulator injecting into a depressurized RCS loop. This flow rate cannot be achieved during power operation because the high RCS pressure also would prevent injection into the RCS. The licensee states that from past testing, it has been demonstrated that these valves can be full-stroke opened by blowdown from a partially pressurized (~ 100 PSIG) accumulator to the associated RCS loop.

It is also impractical to perform such a test during power operation because the high RCS pressure again would prevent injection into the RCS. It is impractical to perform such a test during cold shutdowns because the extensive preparations such as removal of insulation and erection of scaffolding would delay plant startup.

During normal cold shutdown periods, part-stroke exercising to the open position is not possible by injection into the RCS through operation of the RHR pumps, since the only sources of flow for these valves are the accumulators.

The proposed alternative provides full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(e), provided that the full-stroke exercising open test is conducted at the maximum required accident flow rate.

It appears that the licensee is proposing performing a reduced pressure flow test as a means of full-stroke exercising the valves open. It is not evident how a reduced pressure flow test alone will verify that the valves are full-stroke exercised open. The licensee should indicate whether the full-stroke open test is conducted at the maximum required accident flow rate as discussed in Generic Letter 89-04, Position 1. If a reduced flow rate is used, a positive means for verifying the valves open to the full-stroke position is required. Such means for verification must meet all of the six criteria identified in Position 1. Draft NUREG-1482, Section 4.1.2, further discusses the use of nonintrusive techniques as a means for verifying valve position and states the acceptability of sample testing. The licensee should revise this justification to clarify the testing method.

The licensee states that the only practical means of verifying closure of these valves is by performing a leakage test. These valves do not have remote position indication. It is impractical to verify the closure capability of these valves quarterly because the valves are located inside containment. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown. The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).				
SI-7	3-0945E (4-0945E) Safety Injection Nitrogen Supply 1 in., Cat. A/C, normally closed Check Valve	5613(4)-M-3064-1, Rev. 9, "Safety Injection System Accumulator Inside Containment"	"These are check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leak tested for containment isolation function every 2 years under Appendix J.
Evaluation: These are normally closed valves located inside containment which supply nitrogen to pressurize the SI accumulators inside containment. They are required to remain closed for containment isolation during a LOCA. It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly since containment entry would be required. These valves do not have remote position indication. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown. The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CONTAINMENT SPRAY SYSTEM				
CS-1	3-0890 A&B (4-0890 A&B) Containment Spray Pump Discharge 6 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3068-1, Rev. 8, "Containment Spray System"	"Since these are simple-acting check valves with no provision for determining disc position, the only practical means of verifying closure involves performing a leaktest. Performance of such a test would require considerable effort, including isolation and draining of the containment spray piping, system reconfiguration, hooking up and disconnecting leak testing equipment, and pressurizing the downstream piping with air or nitrogen while venting the upstream piping. Such a test is not practical during plant operation and could result in delays in the return to power operation during cold shutdown periods to the extent that it would be an unreasonable burden on the plant staff. These valves remain closed at all times except during an MHA in which the containment spray system operates for containment cooling and de-pressurization."	Per the Valve Program Tables, these valves are exercised closed and seat leak rate tested for containment isolation function every 2 years under Appendix J (and disassembled and inspected and part-stroke exercised open under VR-1).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
Evaluation: These valves open during a Maximum Hypothetical Accident (MHA) in which the containment spray system operates for containment cooling and de-pressurization and close for containment isolation. These valves are located outside containment on the discharge lines from the Containment Spray pumps downstream from the pumps' recirculation test lines. As noted, these valves are located outside containment but lack remote position indication. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. The licensee states that to perform a seat leakage test during power operation would require an extensive test setup involving draining the Containment Spray piping. Since these valves are located downstream of normally closed motor-operated isolation valves on the CS pumps' discharge lines, it is not clear why draining of the CS piping is required because it appears that the piping segment containing the check valves is normally drained and full of air because they lead to the CS spray headers inside containment. Nevertheless, since the valves are normally closed and are required to remain closed during a LOCA except if the CS is required to operate, performance of the seat leakage testing during power operation would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. To perform the seat leakage testing during cold shutdowns could extend the shutdown. The alternative provides exercising to the closed position at refueling outages, the test interval not to exceed 2 years, in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).				

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
CONTAINMENT POST-ACCIDENT EVALUATION				
CA-1	3-11-0003 (4-11-0003) Containment Atmosphere Sample Return Isolation 1 in., Cat. A/C, normally open Check Valves	5613(4)-M-3094-1, Rev. 10, "Containment Post Accident Evaluation System"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leak rate tested for containment isolation function every 2 years under Appendix J.

Evaluation: These valves are located inside containment and must close for containment isolation.

It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly since containment entry would be required. These valves do not have remote position indication. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown.

The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).

Table 4.2 (Cont'd)

Item No.	Valve Identification	Drawing No.	Licensee's Justification For Deferred Testing	Proposed Alternate Testing
BREATHING AIR SYSTEM				
BA-1	3-BA-0201 (4-BA-0201) Breathing Air Supply Containment Isolation 2.5 in., Cat. A/C, normally closed Check Valves	5613(4)-M-3101-1, Rev. 1, "Breathing Air System Distribution"	"These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require entry into the containment building and thus is impractical to perform during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown."	Per the Valve Program Tables, these valves are exercised closed at refueling outages and seat leak rate tested for containment isolation function every 2 years under Appendix J.

Evaluation: These valves are located inside containment and must close for containment isolation.

It is impractical to part-stroke or full-stroke exercise these valves to the closed position quarterly since containment entry would be required. These valves do not have remote position indication. In accordance with OM-10, ¶4.3.2.4(a), seat leakage testing is an acceptable means of verifying closure. It is impractical to perform a seat leakage test during power operation because this would require entry inside containment. Access for testing presents a personnel safety hazard due to high radiation levels and proximity to high energy systems. Leak testing these valves during cold shutdowns would be burdensome to the licensee due to the extensive test setup, which would require substantial manhours and radiation exposure to test personnel, and could extend the shutdown.

The alternative provides exercising to the closed position at refueling outages in accordance with OMa-1988, Part 10, ¶4.3.2.2(e) and 4.3.2.4(a).

5.0 IST PROGRAM RECOMMENDED ACTION ITEMS

Inconsistencies, omissions, and required licensee actions identified during the review of the licensee's third interval Inservice Testing Program are summarized below. The licensee should resolve these items in accordance with the evaluations presented in this report.

5.1 The IST Program's scope was reviewed for selected systems. The pumps and valves in the Component Cooling Water, Residual Heat Removal, and Safety Injection Systems were reviewed against the requirements of Section XI and the regulations. The review results showed compliance with the Code, except for the following items. The licensee should review these items and make changes to the IST Program, where appropriate. Additionally, the licensee should verify that there are not similar problems with the IST Program for other systems.

A. General

Several relief valves are not in the IST Program. For example, on P&ID 5613-M-3030-2, RV-3-747A & B, the relief valves on the bypass lines around the normally closed CCW outlet isolation valves MOV-3-749 A & B from the RHR Heat Exchangers, are not in the Program. Also other relief valves on this drawing are not in the Program.

The Code requires testing of all relief valves installed in systems that perform a function to achieve or maintain safe shutdown conditions or in mitigating an accident. An inquiry has been submitted to the ASME to clarify the Code requirements concerning thermal relief valves which are only required to function when components, e.g. heat exchangers, are isolated. The licensee should review the basis for excluding those relief valves from the IST Program and ensure that the basis agrees with the Code interpretation when published.

B. Component Cooling Water System

1. The licensee should verify that there are no Category A isolation valves for the component cooling water (CCW) system, as none are listed in the Program.

2. Control valve RCV-3-609 (P&ID 5613-M-3030-1 @ C7), on 4"-AC-153R, the CCW Surge Tank outlet line to the Waste Disposal System, appears to be normally or intermittently open, and is designated to fail closed, is not in the Program. The licensee should review the function of this valve and revise the Program as necessary.

3. Control valve TCV-3-144 (P&ID 5613-M-3030-2 @ D5) is not in the Program. The P&ID indicates that it is actually Out of Service but is required to Fail Open.

4. Six inch check valve 3-0717, (P&ID 5613-M-3030-5 @ E3) normally open, and appears to have a safety related function to close as a Containment Isolation Valve for Penetration P-03 to isolate CCW flow to the Reactor Coolant Pumps, is not in

the Program. The licensee should review the function of this valve and revise the Program as necessary.

C. Residual Heat Removal System

1. Air-operated, fail open butterfly valve, HCV-3-0758 (P&ID 5613-M-3050-1 @ C5) from the RHR heat exchanger to the normal RHR/low head injection to the RCS cold legs is not in the program. The licensee should review the function of this valve and revise the Program as necessary.

D. Safety Injection System

1. On page 84 of the valve table (for Unit 3), check valve 3-0875C, has been designated Category C but because it is a pressure isolation valve it should be designated A/C. (See also Table 3.4-1 of Technical Specifications).

2. The licensee should verify why check valves, 3-0875D, 3-0875E, and 3-0875F (P&ID 5613-M-3064-1), have not been classified as pressure isolation valves while the other branching check valves have been so classified.

5.2 In Pump Relief Request PR-4 for all pumps in the IST program, the licensee should ensure that the calculation of pump differential pressure is proceduralized properly to account for liquid in the pressure sensing gage lines so that the accuracy of the final value meets Code requirements.

5.3 In any future revision of Pump Relief Request PR-2 for the Residual Heat Removal Pumps, the licensee should also indicate that vibration is being measured quarterly.

5.4 In Valve Relief Request VR-2 for check valves in the Safety Injection System which are pressure isolation valves (PIVs), in which the licensee wants to perform a seat leakage test verification of valve closure in accordance with the frequencies specified in Technical Specification 4.4.6.2.2, the licensee could convert this request into a deferral justification and include valves:

- 3-0873C and 4-0873C,
- 3-0875A thru C and 4-0875A thru C.

The licensee should also verify whether:

- Cold Leg Injection check valves 3-0876A thru C should be included in the request,
- Valves 3-0876 D&E and 4-0876 D&E on the Alternate Low Head Safety Injection lines from the Residual Heat Removal (RHR) heat exchangers perform a safety function in the open position and whether an exercise closed test is also required. The licensee should also review whether these valves are active, rather than passive.
- The pressure differential requirements of OM-10, ¶4.2.2.3 for seat leakage testing are met by the Technical Specification required testing for PIVs.

If the licensee determines that the proposed leak rate testing in the Technical Specifications is not adequate to meet the Code requirements for leak rate testing (i.e., OM-10 ¶4.2.2.3), a relief request should be prepared and submitted for review.

5.5 The licensee has submitted 32 Cold Shutdown Justifications (CSJ) which document the impracticality of testing valves quarterly, during operation, as required by OMa-1988, Part 10. The following deferrals require further action by the licensee:

* In CSJ-RH-1 for the Residual Heat Removal (RHR) pumps' discharge check valves 3-0753 A&B and 4-0753 A&B, the licensee has provided no information as to why the valves cannot be verified closed quarterly, because there appear to be available test connections and, as discussed in GL 89-04 Position 3 (Ref. 7), verification of closure may be achieved by a leak test, even if no leakage limits apply. The licensee should revise and resubmit this deferral to discuss any impracticality of verifying closure of these valves quarterly.

* In CSJ-SI-1, for the SIS Pump Discharge Unit Cross-Tie, normally open motor operated gate valves MOV-0878 A&B, it is not apparent from the Turkey Point UFSAR, Appendix A, paragraph on "Sharing of the High Head Safety Injection Pumps" under what circumstances these normally open valves would be required to close, nor whether these valves would be required to reopen following closure. The possibility of entering an LCO is not a sufficient basis for not performing the required testing, unless the testing renders systems inoperable for an extended period of time. The licensee should full-stroke exercise these valves closed quarterly within the Technical Specification time of 72 hours, or provide justification that it is impractical to perform the testing during power operation. The licensee should also verify whether a safety function to open (or reopen following closure) exists and revise the Program accordingly.

* In CSJ-SI-2, for the SI and CS Minimum Flow Line Isolation Valves, normally open motor operated globe valves, MOV-3-0856 A&B, and MOV-4-0856 A&B, the licensee has only specified an exercise closed test in the Valve Program Tables. It appears that these valves have a safety function in the open position as well. The licensee should review the safety function of these valves and revise the program accordingly.

* In CSJ-SI-3 for the locked open RWST Outlet Isolation Valves, motor operated gate valves MOV-3-864 A&B and MOV-4-864 A&B, the licensee should also verify whether a safety function to open (or reopen following closure) exists and revise the Program accordingly.

* In CSJ-SI-5, CSJ-SI-6, and CSJ-SI-7, for SIS check valves which are pressure isolation valves, the licensee refers in the Valve Program Tables to an "other relief request" regarding exercising to the closed position. It is not evident what the reference is for the "other relief request" concerning closure testing. Since these are pressure isolation valves, it appears that these valves should have been included in Valve Relief Request VR-2. The licensee should refer to the evaluation for VR-2.

* In CSJ-AF-1 for the normally closed, Auxiliary Feedwater Steam Supply Non-return check valves on the inlet to the AFW steam-driven pump turbines, Flow diagrams (5613(4)-M-3075-1) and (5610(4)-M-3075-1) indicate that these valves can be full-stoke exercised open during the Turbine Driven Auxiliary Feedwater Pump quarterly test and therefore, testing quarterly appears practical. However, verifying closure does require isolation to make use of the test connections around these check valves. There are 3 (100%) steam driven pumps for both Units. Only one auxiliary feedwater pump is needed per Unit. Taking one out of service leaves two to serve both Units. The possibility of entering an LCO is not a sufficient basis for not performing the required testing unless the testing renders systems inoperable for an extended period of time. The licensee should exercise these valves closed quarterly or revise the deferral to demonstrate that quarterly testing is impractical.

5.6 The licensee has submitted 26 Refueling Outage Justifications (ROJ) which document the impracticality of testing valves quarterly, during operation, as required by OMa-1988, Part 10. The following deferrals require further action by the licensee:

* In ROJ-SA-1 for the normally closed Service Air containment isolation check valves 3-40-0205 (4-40-0205), the licensee has not provided justification as to why a reverse seat leakage test could not be performed during cold shutdowns. In its submittal of the Inservice Testing Program for the St. Lucie Unit 2 plant, Revision 2, September 15, 1992, the licensee indicated that analogous valve V-181270 in the Service Air System is full-stroke exercised to the closed position during those cold shutdowns in which the section of the Service Air system inside containment is in service. Therefore, the licensee should full-stroke exercise the subject valves {3-40-0205 (4-40-0205)} to the closed position during those cold shutdowns when the Service Air system header inside containment is in service or revise this justification to justify deferring full-stroke exercising the subject valves to the closed position during refueling outages.

* In the following ROJs there is no seat leakage testing for containment isolation function every 2 years under Appendix J prescribed in the Valve Program Tables. The licensee should verify whether seat leakage testing under Appendix J is being performed:

  -In ROJ-CV-2 for the normally open Charging Header containment isolation check valves 3-0312C (4-0312C), and

  -in ROJ-CV-4 for the normally open RCP Seal Water containment isolation check valves 3-0298A thru 3-0298C (4-0298A thru 4-0298C).

* In the following ROJs, the proposed alternative provides part-stroke exercising to the open position during cold shutdowns and full-stroke exercising to the open position during refueling outages in accordance with OMa-1988 Part 10 ¶4.3.2.2(d), provided that the full-stroke exercising open test is conducted at the maximum required accident flow rate. It appears that the licensee is proposing to perform a reduced pressure flow test as a means of full-stroke exercising the valves open. It is not evident how a reduced pressure flow test alone will verify that the valves are full-

stroke exercised open. The licensee should indicate whether the full-stroke open test is conducted at the maximum required accident flow rate as discussed in Generic Letter 89-04, Position 1. If a reduced flow rate is used, a positive means for verifying the valves open to the full-stroke position is required. Such means for verification must meet all of the six criteria identified in Position 1. Draft NUREG-1482, Section 4.1.2, further discusses the use of nonintrusive techniques as a means for verifying valve position and the acceptability of sample testing. The licensee should revise the following justifications to clarify the testing method, since they currently do not appear to comply with Generic Letter 89-04, Position 1:

-In ROJ-SI-5 for the normally closed SIS Cold Leg Injection check valves 3-0875A thru 3-0875C (4-0875A thru 4-0875C), and

-In ROJ-SI-6 for the normally closed SIS Accumulator Discharge check valves 3-0875 D-F (4-0875 D-F).

6.0 REFERENCES

1. Third Ten-Year Inservice Testing (IST) Program; Revision 0, Turkey Point Units 3 and 4, T.F. Plunkett, Florida Power & Light Company, to USNRC, January 12, 1994.

2. ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection, 1989 Edition.

3. ASME/ANSI OMa-1988, Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants".

4. ASME/ANSI OMa-1988, Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants".

5. Title 10, Code of Federal Regulations, Section 50.55a, Codes and Standards.

6. Standard Review Plan, NUREG-0800, Section 3.9.6, Inservice Testing of Pumps and Valves, Rev. 2, July 1992.

7. NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs", April 3, 1989.

8. Minutes of the Public Meetings on Generic Letter 89-04, October 25, 1989.

9. Supplement to the Minutes of the Public Meetings on Generic Letter 89-04, September 26, 1991.

10. Draft NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants", P. Campbell, November 1993.

11. NRC Letter to Mr. J.H. Goldberg, Florida Power & Light Co., from Mr. H.N. Berkow, "Turkey Point Units 3 and 4 - Relief Request Concerning Vibration Measuring Instrumentation (TAC Nos. M88761 and M88721)", with accompanying Safety Evaluation, May 19, 1994.

12. NRC Safety Evaluation, Turkey Point Units 3 and 4, IST Program Plan, August 20, 1992.

13. 1988 Final Safety Analysis Report (FSAR) for Turkey Point Units 3 and 4.

14. 1990 Updated Final Safety Analysis Report (UFSAR) for Turkey Point Units 3 and 4.

15. Technical Specifications, Turkey Point Units 3 and 4.

Appendix A Turkey Point Nuclear Power Plant
Units 3 & 4 - List of Reference Drawings

Flow diagram Dwg. No.	System	Revision*
5613(4)-M-3030-5(4)	Component Cooling Water System (Sheet 5)	Rev. 5
5613(4)-M-3041-2	Reactor Coolant System (Sheet 2)	Rev. 12
5613(4)-M-3047-1	Chemical and Volume Control System Charging and Letdown (Sheet 1)	Rev. 8
5613(4)-M-3047-2	Chemical and Volume Control System Charging and Letdown (Sheet 2)	Rev. 12
5613(4)-M-3047-3	Chemical and Volume Control System Seal Water Injection to RCP (Sheet 3)	Rev. 10
5613(4)-M-3050-1	Residual Heat Removal System (Sheet 1)	Rev. 8
5613(4)-M-3053-1	Containment Purge System and Penetration Cooling System (Sheet 1)	Rev. 8
5613(4)-M-3062-1	Safety Injection System (Sheet 1)	Rev. 6
5613(4)-M-3064-1	Safety Injection Accumulator System Inside Containment	Rev. 9
5613(4)-M-3072-1	Main Steam System (Sheet 1)	Rev. 15
5613(4)-M-3074-3	Feedwater System (Sheet 3)	Rev. 10
5613(4)-M-3075-1	Auxiliary Feedwater System Steam to Auxiliary Feedwater Pump Turbines (Sheet 1)	Rev. 6
5610-M-3013-1	Instrument Air System Service Air Distribution From Units 1&2	Rev. 5
5613 (4)-M-3030-5(4)	Component Cooling Water System	Rev. 5
5613(4)-M-3050-1	Residual Heat Removal Sys[illegible]	Rev. 5

Appendix A (Cont'd)

Flow diagram Dwg. No.	System	Revision*
5610-M-3065-1	Nitrogen and Hydrogen Systems Nitrogen Supply	Rev. 11
5610-M-3075-2	Auxiliary Feedwater System - Auxiliary Feedwater Pumps	Rev. 5
5613(4)-M-3013-7	Instrument Air System Inside Containment	Rev. 2
5613(4)-M-3020-2	Primary Makeup Water System	Rev. 9
5610-M-3046-1	Chemical and Volume Control System-Boric Acid System	Rev. 11
5613(4)-M-3047-2	Chemical and Volume Control System Charging and Letdown	Rev. 12
5613(4)-M-3047-3	Chemical and Volume Control System Seal Water Injection into RCP	Rev. 10
5613(4)-M-3062-1	Safety Injection System	Rev. 6
5613(4)-M-3064-1	Safety Injection System Accumulator Inside Containment	Rev. 9
5613(4)-M-3068-1	Containment Spray System	Rev. 8
5613(4)-M-3094-1	Containment Post Accident Evaluation System	Rev. 10
5613(4)-M-3101-1	Breathing Air System Distribution	Rev. 1
5613(4)-M-3019-1	Intake Cooling Water Pumps	Rev. 11

*Unit 3 revision numbers only.